

New Call Book and Log, Circuit, Set

# Radio Digest

1030  
Illustrated PROGRAMS

SEPTEMBER, 1927

Printed in U.S.A.  
Off. & Canada

TWENTY-FIVE CENTS



Complete  
**Call Book  
and Log**  
This Issue

Columbia System Launched; Graham McNamee; Calcaterra's Vari-Phase; WTIC History; WSEA Expands; Picture Features; A. C. Super; Mr. Lowery Replies; Little Joe of WCFL



**30  
DAYS  
FREE  
TRIAL**

# 7 Tube Set Single Dial Radio



**Metrodyne  
Radio Sets**  
Are Equipped  
For  
**BATTERY or  
ELECTRIC**  
operation

The  
**Metrodyne**  
ONLY ONE DIAL TO TUNE

**Retail Price**  
**\$75<sup>00</sup>**  
Completely Assembled  
**Big Discounts to  
Agents and Dealers**

Wonderful offer direct from the factory! The world's greatest radio! A perfect working, single dial control, 7 tube receiver! And just to prove our claims, we will ship it to your home for **30 days' free trial**. Test it under all conditions. Test it for distance, volume and tonal quality—and if you are not convinced that it is the **best single dial set** you ever heard, return it to the factory. We don't want your money unless you are completely satisfied.

## Three Year Guarantee Metrodyne Super-Seven Radio

**BIG PROFITS  
TO AGENTS AND DEALERS**  
Our Agents and Dealers make big money selling Metrodyne Sets. You can work all or part time. Demonstrate the superiority of Metrodynes right in your home. Metrodyne Radios have no competition. Lowest wholesale prices. Demonstrating set on 30 days' free trial. Greatest money-making opportunity. Send coupon, a letter or a postal for our agent's proposition.

A single dial control, 7 tube, coast to coast radio set. Tested and approved by Popular Science Institute of Standards, Popular Radio Laboratory, Radio News Laboratory and by America's leading Radio Engineers. Designed and built by radio experts. Only the highest quality low loss parts are used. Magnificent, two-tone walnut cabinet with beautiful, gilt metal trimmings. Very newest 1928 model, embodying all the latest refinements.

Easiest set to operate. Only one small knob tunes in all stations. The dial is electrically lighted so that you can log stations in the dark. The volume control regulates the reception from a faint whisper to thunderous volume, **1,000 to 3,000 miles on loud speaker!** The Metrodyne Super-Seven is a beautiful and efficient receiver, and we are so sure that you will be delighted with it, that we make this liberal **30 Days' Free Trial Offer**. You to be the judge.



## 30 Days' Free Trial—3 Year Guarantee Metrodyne Super-Six

Another triumph in radio. Here's the new 1928 model Metrodyne 6-tube, two-dial, long distance receiving set. Approved by leading radio engineers of America. Highest grade low loss parts, completely assembled in a beautiful walnut cabinet. Easy to operate. Dials easily logged. Tune in your favorite station on same dial readings every time—no guessing.

Mr. Howard, of Chicago, said: "While five Chicago broadcasting stations were on the air I tuned in seventeen out-of-town stations, including New York and San Francisco, on my loud speaker horn, very loud and clear, as though they were all in Chicago."

We are one of the pioneers of radio. The success of Metrodyne sets is due to our liberal 30 days' free trial offer, which gives you the opportunity of trying before buying. Thousands of Metrodynes have been bought on our liberal free trial basis.

**6  
Tube Set**  
**\$48<sup>50</sup>**  
RETAIL PRICE  
Completely  
Assembled

**Mail This  
Coupon**   
or send a postal or letter. Get our proposition before buying a radio. Deal direct with manufacturer.  
**SAVE MONEY — WRITE NOW!**

## MAIL COUPON BELOW

Let us send you proof of Metrodyne quality—our **30 days' free trial offer and 3 year guarantee**

Mrs. Wm. Leffingwell, Westfield, N. J., writes: "The Metrodyne Radio I bought of you is a wow! This is as good as any \$225 machine I have ever seen."

N. M. Greene, Maywood, Ill., writes: "My time is up and the Metrodyne works fine. I got Havana, Cuba, Oakland, Calif., Denver, Colo., Toronto, Canada, all on the loud speaker."

J. W. Woods, Leadville, Colo., writes: "Received the 7-tube Metrodyne in fine condition. Had it up and working same day received. Was soon listening to Los Angeles, San Diego, Oakland and other California points; also St. Louis, Kansas City and other east and south stations—all coming in fine. Am more than pleased. Sure enjoying it."

We will send you hundreds of similar letters from owners who acclaim the Metrodyne as the greatest radio set in the world. A postal, letter or the coupon brings complete information, testimonials, wholesale prices, and our liberal **30 days' free trial offer**.

**METRO ELECTRIC COMPANY**  
2161-71 N. California Ave., Dept. 21  
Chicago, Illinois

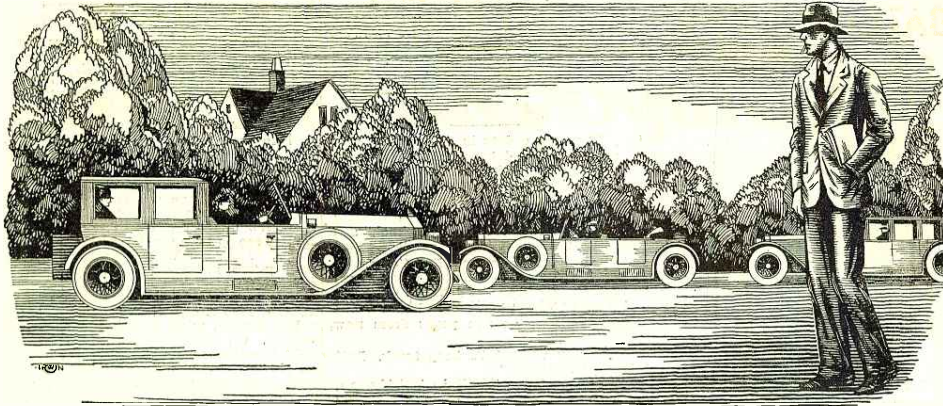
Gentlemen: Send me full particulars about Metrodyne 6 tube and 7 tube sets and your **30 days' free trial offer**.

Name.....  
Address.....

If you are interested in AGENT'S proposition, place an "X" in the square

**METRO ELECTRIC COMPANY**  
2161-71 N. California Ave. Dept. 21, Chicago, Illinois





Many times in the old days, while I trudged home after work to save carfare, I used to gaze enviously at the shining cars gliding by me, the prosperous men and women within. Little did I think that inside of a year, I, too, should have my own car, a decent bank account, the good things of life that make it worth living.

# I Thought Success Was For Others

*Believe It or Not, Just Twelve Months Ago I Was Next Thing to "Down-and-Out"*

**T**ODAY I'm sole owner of the fastest growing Radio store in town. And I'm on good terms with my banker, too—not like the old days only a year ago, when often I didn't have one dollar to knock against another in my pocket. My wife and I live in the snuggest little home you ever saw, right in one of the best neighborhoods. And to think that a year ago I used to dodge the landlady when she came to collect the rent for the little bedroom I called "home"!

It all seems like a dream now, as I look back over the past twelve short months, and think how discouraged I was then, at the "end of a blind alley." I thought I never had had a good chance in my life, and I thought I never would have one! But it was waking up that I needed, and here's the story of how I got it.

**I** WAS a clerk, working at the usual miserable salary such jobs pay. Somehow I'd never found any way to get into a line where I could make good money.

Other fellows seemed to find opportunities. But—much as I wanted the good things that go with success and a decent income—all the really well-paid vacancies I ever heard of seemed to be out of my line—to call for some kind of knowledge I didn't have.

And I wanted to get married. A fine situation, wasn't it? Mary would have agreed to try it—but it wouldn't have been fair to her.

Mary had told me, "You can't get ahead where you are. Why don't you get into another line of work, somewhere that you can advance?"

"That's fine, Mary," I replied, "but *what* line? I've always got my eyes open for a better job, but I never seem to hear of a really good job that I can handle." Mary didn't seem to be satisfied with the answer, but I didn't know what else to tell her.

*It was on the way home that night that I stopped off in the neighborhood drug store, where I overheard a scrap of conversation about myself. A few burning words that were the cause of the turning point in my life!*

With a hot flush of shame I turned and left the store, and walked rapidly home. So that was what my neighbors—the people who knew me best—really thought of me!

"Bargain counter sheik—look how that suit fits," one fellow had said in a low voice. "Bet he hasn't got a dollar in those pockets." "Oh, it's just 'Useless' Anderson," said another. "He's got a wish-bone where his back-bone ought to be."

As I thought over the words in deep humiliation, a sudden thought made me catch my breath. Why had Mary been so dissatisfied with my answer that "I hadn't had a chance?" *Did Mary secretly think that too?* And after all, wasn't it true that I had a "wish-bone" where my back-bone ought to be? Wasn't that why I never had a "chance" to get ahead? It was true, only too true—and it had taken this cruel blow to my self-esteem to make me see it.

With a new determination I thumbed the pages of a magazine on the table, searching for an advertisement that I'd seen many times but passed up without thinking, an advertisement telling of big opportunities for trained men to succeed in the great new Radio field. With the advertisement was a coupon offering a big free book full of information. I sent the coupon in, and in a few days received a handsome 64-page book, printed in two colors, telling all about the opportunities in the Radio field and how a man can prepare quickly and easily at home to take advantage of these opportunities. I read the book carefully, and when I finished it I made my decision.

**W**HAT'S happened in the twelve months since that day, as I've already told you, seems almost like a dream to me now. For ten of those twelve months, *I've had a Radio business of my own!* At first, of course, I started it as a little proposition on the side, under the guidance of the National Radio Institute, the outfit that gave me my Radio training. It wasn't long before I was getting so much to do in the Radio line that I quit my measly little clerical job, and devoted my full time to my Radio business.

Since that time I've gone right on up, always under the watchful guidance of my friends at the National Radio Institute. They would have given me just as much help, too, if I had wanted to follow some other line of Radio besides building my own retail business—such as broadcasting, manufacturing, experimenting, sea operating, or any one of the score of lines they pre-

pare you for. And to think that until that day I sent for their eye-opening book, I'd been waiting "I never had a chance!"

**N**OW I'm making real money. I drive a good-looking car of my own. Mary and I don't own the house in full yet, but I've made a substantial down payment, and I'm not straining myself any to meet the installments.

Here's a real tip. You may not be as bad off as I was. But, think it over—are you satisfied? Are you making enough money, at work that you like? Would you sign a contract to stay where you are now for the next ten years, making the same money? If not, you'd better be *doing* something about it instead of drifting.

This new Radio game is a live-wire field of golden rewards. The work, in any of the 20 different lines of Radio, is fascinating, absorbing, well paid. The National Radio Institute—oldest and largest Radio home-study school in the world—will train you inexpensively in your own home to know Radio from A to Z and to increase your earnings in the Radio field.

Take another tip—No matter what your plans are, no matter how much or how little you know about Radio—clip the coupon below and look their free book over. It is filled with interesting facts, figures, and photos, and the information it will give you is worth a few minutes of anybody's time. You will place yourself under no obligation—the book is free, and is gladly sent to anyone who wants to know about Radio. Just address J. E. Smith, President, National Radio Institute, Dept. K-96, Washington, D. C.

J. E. SMITH, President,  
National Radio Institute,  
Dept. K-96, Washington, D. C.

Dear Mr. Smith:

Please send me your 64-page free book, printed in two colors, giving all information about the opportunities in Radio and how I can learn quickly and easily at home to take advantage of them. I understand this request places me under no obligation, and that no salesmen will call on me.

Name .....

Address .....

Town .....State .....

NUMBERS 13 and 14

OFFICIAL BALLOT

Announcers' Contest

RADIO DIGEST FOURTH ANNUAL GOLD CUP AWARD

GOLD CUP AWARD Editor, Radio Digest, 510 North Dearborn Street, Chicago, Ill.

Please credit this ballot to:

Form for ballot with fields for Name, Station, Call Letters, Signed, Address, City, State.

9-1-27

Last Lap Around For Gold Trophy

Announcers Run Neck and Neck as Fans Rush Ballot to Make Deadline, Sept. 22

THE Fourth Annual Gold Cup race, sponsored by Radio Digest, to determine the world's most popular broadcast announcer is on the last lap.

The final ballot is printed in this issue. All votes must be in the office of Radio Digest not later than midnight of September 22.

Fans Write Letters

Many interesting letters have been received from fans in behalf of their candidates. As the result of a letter from H. Hawes, Moose Jaw, Canada, containing 43 votes for Bert Hooper, CKCK, Regina, we are submitting Mr. Hooper's name on the Canadian list.

Now is the time to send every ballot that has been saved to obtain the benefit of bonus votes for carrying them in series. Remember the winner will receive a gold loving cup, fashioned in the shape of a microphone. The second winner will receive a silver loving cup and the Canadian winner will also receive a silver cup.

GOLD CUP STANDINGS

- List of Gold Cup Standings including names like Pat Barnes, WHT, Uncle Joe Paassen, ESSD, Henry Field, KPNF, etc.

Canadian Candidates

- List of Canadian Candidates including Billy Ward, JCRM, G. A. Wright, CNRV, etc.

Brandon Will Get Station

MOOSE JAW, Sask.—Settlement is now in sight as to the question of Brandon, Manitoba, being permitted to have its own broadcasting station.

WIBO GYPSY MAIDEN SMILES FROM COVER

THERE may be a touch of familiarity to Radio Digest readers in the face of the young lady who honors, this, our first cover in colors. She is Miss Bernice Ozmun of Station WIBO, Chicago. Now you remember. There's a toss to the head, a glint in the eye and a melting snap in that gypsy cap, which makes the ensemble hard to beat.

CULVER BUDDIES RADIO PARTNERS

Decide to Share Luck, but Drift Apart—Chance Makes Them Partners Again

TWO young cadets in their smart gray uniforms stood beneath a tree at the end of the parade ground. They looked over the waters of the little lake and decided that after all life was a serious proposition.

"Culver is a great little old school," said Red Nichols.

"You know it," answered Bill Coats. "I expect we'll look back to these days a good many times in the years to come."

"Wonder where we'll be next year?"

"Where'll we be five years from now, Bill?"

"Tell you what, let's keep track. Let's always be buddies."

"That's a pledge, Old Pal. And if one or the other strikes a pile of luck the other is in on it, what?"

"I swear."

"Shake hands, Red."

But Life sent them apart and for a while they almost forgot. Then—

A few days ago Bill, otherwise known as William P. Coats, became manager of the Don Voorhees orchestra, star attraction of the new Columbia Broadcasting company.

The dominant feature of the orchestra is Red Nichols and his Five Pennies.

Bill had forged ahead as an executive. Red Nichols is known the country over as the hottest horn tooter on parade. His unit has the unique distinction of making records for all of the phonograph companies. Bill and Red are partners again—and they say such things don't happen in real life.

SHORT WAVES

By Marcella

Hal Totten Asks Secretary; Why Rocky Never Popped the Question; Marcella Roth Visits Marcella; New Member of Schlagenhauer Ranch; Chester of WTAG Unsusceptible; Imogene Disappointed; Al Melgarde's Bad Habits.

WON'T it be nice when you can hop on a wave and get wherever you want in one second? Here's that handsome George Sutherland, blonde, and Marcella's terribly susceptible to blondes, invites me to take a ride in his new Buick coupe. He says WSEA's studio is only twenty-two miles from Norfolk and he could take me for a swim in nineteen or twenty minutes. Ho hum! It's hot here and I'd love a dip in the ocean. Thanks a lot, George, wish Radio were more advanced. On the other hand, Mr. Talbot of KOA promises me some real thrills driving on two wheels around some of those Colorado hairpin mountain roads. So you see if waves could transport one what a lovely time a person could have.

Bless your heart, Marie Anne, I can see that, for all you are such a dainty little miss, you adore those great big he-men who announce sports. Hal

Totten, WMAJ, wrote me a nice letter telling about himself and I might just as well give it to you as is. "Sorry your letter hasn't found its way to my desk sooner. Ask for the information you ask for, I don't look like much. My hair's just plain brown, I guess. My secretary says my eyes are hazel. I have been voting five years—just average height—a little too heavy—not single. I've been a hoodlum newspaper man (isn't that what all newspaper men are?) for five years. My Radio experience deals almost entirely with sports."

Rocky Wolfe of WLS, my dear M. A., is the funniest person you ever want to meet. Can't you tell from his picture that he is comical? He is nice and tall and has pretty gray hair. My goodness, I've forgotten the color of his eyes. I was laughing so hard at the funny thing he was saying I never noticed. No wonder he has never married. He couldn't pop the question without making a joke out of it, and what girl would stand for that?

Your other questions I shall answer all together. Elsie May and Ralph never came back to WLS. Sen Kaney is living with his wife in St. Louis. Didn't you read about his romance? Some wealthy girl liked his voice over the Radio and when she came to Chicago happened to mention the fact to mutual friends. They met and the result. Steve Trumbull, formerly of KYW and WBBM, is just a dreamer who loves to do impossible things. The last heard he was going to buy a boat and catch fish off the coast of Mexico. As to Kitius, no one seems to know where he is.

G. C. Arnoux, Freddie, is the nicest thing. I met him two years ago when he came through here on his way up to Wisconsin to be married. My, but he was excited. He is quite tall and has light hair and blue eyes and just loads of personality. You heard about his darling little daughter, didn't you? I mentioned it. When I hear from Bobby and Frank will tell you know about them.

Mrs. Mac, you place me in a terribly embarrassing position. How can I write to KOMO and ask them whether Doug has been married twice? Just can't be that rude. Ask me something else.

Little Marcella Roth came in this week and a more unassuming little girl, never walked into this office. She dresses very simply, just as any little girl might dress, and is quiet and well behaved, which we imagine is unusual for a little actress of her age, because, you see, she is only eleven. Under her arm she clutched a molly dog which opened and became a purse, a very handy thing to have. Under her other arm she lugged an enormous autograph book. Her mother told me her stage appearances have been too numerous to mention. Another thing, too, even though she is a permanent member of the Saenger Stock company, she studies hard because she says she doesn't intend to grow up stupid. But meantime she likes being a little girl because she adores dolls and never feels that her family is a bit too large.

Have you heard about Bobette Sal? She is the latest addition to the Schlagenhauer ranch. Surely you know Mrs. Schlagenhauer, that funny Art Linker, who entertains over KYW? Well, anyway, the little daughter only arrived weeks ago.

(Continued on page 10)

CONTENTS

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Table of Contents listing articles such as 'All the News in Radio', 'Last Lap for Gold Cup', 'Graham McNamee—Portrait Study', etc.

Looking Ahead

Major J. Andrew White, dean of all sport announcers, is preparing a special article for the next Radio Digest which will relate some of the thrilling highlights of his eventful career.

Football for 1927, incidentally, promises to be one of the most popular games of the year. Radio has gone far to stimulate new interest in this collegiate sport.

The next issue of Radio Digest will carry pictures and story of how the microphone operates on the gridiron.

John G. Ryan's authoritative directions on how to make an A. C. Super will be told in detail in the October Radio Digest. Set builders will welcome this return of an old friend in our enlarged Radio Digest.

New Hook-ups with the latest in scientific inventions for making up-to-the-minute receivers are being tried out by Radio Digest engineers, and will be described in forthcoming issues. You must not miss a single number if you are planning to do any set building this Radio season.

Special articles about broadcasting stations and artists, with photographs, are desired. No manuscripts accepted unless typewritten and prepaid, or returned without return postage being inclosed. All manuscripts are sent at owner's risk.

Newsstands Don't Always Have One Left WHEN YOU WANT

Radio Digest

YOU WANT IT!

BE SURE OF YOUR REGULAR COPY BY SUBSCRIBING NOW

SEND IN THE BLANK TODAY

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

Form for subscription with fields for Name, Address, City, State.



# Graham McNamee—Millions Listen to Him



**G**RAHAM McNAMEE, whose voice has been heard by more people than any man living, is shown in action in two customary poses. "Mac," as his cronies call him, is right up front when there's a Lindbergh reception, a president or crown prince speaking or a national fist fight. He's always up and at them—live and virile. So much so that a restraint on his enthusiasm has been invented. If you will look close at the large photograph you will see sort of a muzzle in the form of a wire loop. This is to keep Graham from getting at you when something exciting happens and he wants to shout to millions what he has seen. In addition to hearing him regularly over the WEF chain his followers will catch him on the Tunney-Dempsey fracas in Chicago when he gives a first hand blow to blow description of that great battle. To sort of refreshen you on his style in this issue will be found a verbatim report of his remarks on the last fight.



# OFFICIAL CALL BOOK AND LOG

—Corrected Every Issue—

### KDKA

Pittsburgh, Pa. 315.6m-950kc. 30,000 watts. Westinghouse Elec. & Mfg. Co. Daily ex Sun, 10 am, 12, 3:05 pm, 4:35, markets, weather; 11:57, time; 2:30 pm, and every 30 min. baseball; 5, dinner concert (ex Sat, 7, 11, 6:20), road reports; 7, WJZ, Tues, 6 pm, sacred songs; 10:35, Grand theater revue. Wed, 6:30 pm, power; 7:30, Homer Smith concert. Thurs, 6:30, Radioette. Fri, 10 pm, dance program. Sun, 1 pm, WJZ; 5:30, 6:30, baseball; 6, Midsummer Dream. KDKA Little symphony; 7:30, WJZ. Eastern.

### KDLR

Devils Lake, N. Dak. 230.6m-1300kc. 15 watts. Radio Elec. Co. Announcer, Harold Serungard. Daily ex Sun, 12:12-12:30 pm, weather, 6-6:30, markets. Mon, 9:30-11:30 pm. Wed, 8-9 pm, bond. Sun, 41 am, church, 4:30-6. Central.

### KDYL

Salt Lake City, Utah. 258.5m-1160kc. 100 watts. Intermountain Broadcasting Corp. Announcer, Philip E. Lesky. Slogan, "Out on the Great Divide." Daily ex Sun, 2-5 pm. 6-12 mid. Sun, 10-12 am. Mountain.

### KELW

Barab, Calif. 228.9m-1310kc. 250 watts. Earl L. White. Daily ex Sun, Wed, Fri, 11 am-1 pm; 6-7, 8-10. Fri, 5-6 pm. Last Sat, in month, 10-12. Pacific.

### KEX

Portland, Ore. 239.9m-1250kc. 2,500 watts. Western Broadcasting Co. Daily ex Sun, 10:12-30 pm, 6-12 mid. Sun, 6-11 pm. Pacific.

### KFAB

Lincoln, Neb. 309.1m-970kc. 2,000 watts. Nebraska Buick Auto Co. Announcer, Gayle Grubb. Daily ex Sun, 9:30-9:55 am, weather reports; 3-4 pm, Mon, Tues, Wed, Fri, 10-10:11 am, home economics. 11:45-12:30 pm, 1:15-1:30 pm, talks; 3:00-4 pm, 7:30-8:30, 8:05-8:30, college of agriculture; 8:30-10-30, Thurs, Sat, 3-4 pm. Sat, 9:30-9:55 am; 8:30-6:30 pm, 8:30-10, 12-2 am. Sun, 4-5 pm; 9:11. Founded Dec. 4, 1924. Central.

### KFAD

Phoenix, Ariz. 272.6m-1100kc. 500 watts. Electrical Equip. Co. Announcer, Arthur C. Anderson. Slogan, "The Voice of Phoenix." Daily ex Sun, 12:15-1:15 pm, 3-4, 6-7, 8-9. Daily ex Sun, Wed, 6-7 pm; 9-11, concert, news, stocks. Thurs, 9:30 pm. Sun, 11 am, 6 pm, 8. Installed July 30, 1925. Mountain.

### KFAU

Boise, Idaho. 285.5m-1050kc. 4,000 watts 6 am-6 pm, 2,000 watts. Independent School Dist. of Boise. Mon, Tues, Wed, Thurs, Fri, 12:30-1 pm, weather, markets, U. S. program. Tues, 7:30-8 pm, children's hour; 8-10, music. Thurs, 8-10 pm. Sun, 7:30-9 pm. Founded Oct. 1923. Mountain.

### KFBB

Havre, Mont. 275.1m-1090kc. 50 watts. F. A. Buttrey Co. Announcer, E. A. Baer. Daily ex Sun, 12:30-1:30 pm, music, markets, weather reports. Wed, 7:30-9 pm. Sun, 10-30 am, 2:30 pm. Founded 1921. Mountain.

### KFBC

San Diego, Calif. 247.8m-1210kc. 100 watts. Howard Shores. Daily ex Sun, Fri, 12-1 pm. Daily, 8-10 pm. Sat, 10 pm. Sun, 9-10 am. Bible lesson, sermon. Pacific.

### KFBK

Sacramento, Calif. 535.4m-560kc. 100 watts. Sacramento Bee. Mon, Announcer, R. K. Clark. Mon, Thurs, Sat, 7:30-10 pm. Founded 1921. Pacific.

### KFBL

Everett, Wash. 223.7m-1340kc. 50 watts. Lesse Bros. Mon, Wed, Fri, 6:30-8 pm. Tues, Thurs, Sat, 7-8 pm. Thurs, 9:30-10:30 am. Sun, 11-12 mid. Pacific.

### KFB5

Trinidad, Colo. 238m-1260kc. 15 watts. "The Fisher Peak Station." School District No. 10. Second and fourth Mondays, 7:30-9:30 pm. Mountain.

### KFBW

Laramie, Wyo. 428.3m-700kc. 500 watts. Bishop N. Thomas. Announcer, P. C. Smith.

### KFCB

Phoenix, Ariz. 243.8m-1230kc. 125 watts. Nielsen Radio Supply Co. Announcer, E. A. Nielsen. Slogan, "Kind Friends Come Back." Mon, Thurs, 8-9 pm. Sun, 12-2 am, 9:30-10:30 pm. Mountain.

### KFCR

Santa Barbara, Calif. 211.1m-1420kc. 50 watts. Santa Barbara Broadcasting Co.

### KFDM

Beaumont, Tex. 374.8m-800kc. 500 watts. Magnolia Petroleum Co. Announcer, Magdolne Micks. Slogan, "Kall for Dependable Magnolene." Tues, Fri, 12:30-12:55 pm, band concert; 8-10, concert. Sun, 11-12 am, 8-9 pm. Founded Oct. 1, 1924. Central.

### KFDX

Shreveport, La. 236.1m-1270kc. 250 watts. First Baptist church. Announcer, John S. Ramond. Wed, 9-10 pm. Sun, 10:50-12 m, 7:45-9. Founded 1922. Central.

### KFDY

Brookings, S. D. 394.5m-760kc. 500 watts. State College of Agriculture and Mechanical Arts. Announcer, Don Williams. Daily ex Sun, 12:15-1:15 pm. Central.

### KFDZ

Minneapolis, Minn. 215.7m-1390kc. 10 watts. Harry D. Iverson. Thurs, 9 pm. Sun, 5-45 pm. Central.

### KFEC

Portland, Ore. 214.2m-1400kc. 50 watts. Meier & Frank Co., Inc. Announcer, L. W. Jones. Daily ex Sun, 12 m, weather reports; 4-5 pm, music, 6-7. Central.

### KFEL

Denver, Colo. 247.8m-1210kc. 250 watts. Eugene P. O'Fallon, Inc. Announcer, I. H. Hathaway. Daily ex Sun, 7:15 am, gym; 10, 11, 2, 4, 5, 6, Tues, Thurs, 8 pm. Fri, 8 pm. Sat, 9 pm. Sun, 9 am, 5 pm. Mountain.

### KFEQ

St. Joseph, Mo. 230.6m-1300 kc. 1000 watts. J. L. Scroggin. Announcer, Clarence Koch. Daily ex Sun, 5:30-7:30 pm, music, 8:30, 10, 11, 12, markets; 2, music; 6:30-7:30, 8:30-10. Founded 1922. Central.

### KFEY

Kellogg, Idaho. 232.4m-1290kc. 10 watts. Bunker Hill & Sullivan Mining & Con. Co. Announcer, Walter C. Clark. Slogan, "Voice of the Copper Adrenes." Mon, Thurs, 7-8 pm. Sun, 11 am, 7:30 pm. Pacific.

### KFCQ

Boone, Iowa. 209.7m-1430kc. 10 watts. Boone Biblical school.

### KFHH

Wichita, Kan. 245.8m-1220kc. 500 watts. Hotel Lassen. Announcer, J. L. Fox. Daily ex Sun, 8:30 am, 9, 10, 11, 1-2 pm, markets; 1:15, music; 7:30, Sun, 9:30 am, 7:30 pm. Founded Dec. 1, 1925. Central.

### KFHA

Gunnison, Colo. 254.1m-1180kc. 50 watts. Western State College of Colorado. Announcer, E. Russell Wightman. "Where the Sun Shines Every Day." Tues, Fri, 7-9:30 pm. Founded May 1922. Mountain.

### KFHL

Oskaloosa, Iowa. 212.6m-1410kc. 10 watts. Penn College. Announcer, Donald Haworth. Tues, Fri, 7 pm. Fri, 9-245 am. Sun, 4 pm. Central.

### KFI

Los Angeles, Calif. 468.5m-640kc. 5000 watts. Earle C. Anthony, Inc. Announcer, Leslie Adams. Slogan, "A National Institution." Daily ex Sat, Sun, 5:30-11 pm. Sat, 3:30-2 am. Sun, 10-11 am, 6-11. Installed Spring, 1920. Pacific.

### KFIF

Portland, Ore. 214.2m-1400kc. 50 watts. Benson Polytechnic Schol. Announcer, Albert Skei. Tues, 8:15-9:15 pm. Pacific.

### KFIO

Spokane, Wash. 245.8m-1220kc. 100 watts. North Central High School.

### KFIQ

Yakima, Wash. 208.2m-1440kc. 1000 watts. First Methodist Church. Announcer, Dr. I. M. Miller. Wed, 7 pm, organ. Sat, 7 pm. Sun, 11 am, 7:30 pm. Pacific.

### KFIU

Tuneau, Alaska. 225.4m-1330kc. 10 watts. Alaska Elec. Light & Power Co. Announcer, O. E. Schoenbell. Mon, Wed, Fri, 6-7 pm. Alaskan time.

### KFKB

Milford, Kan. 241.8m-1240kc. 2500-1500 watts. J. R. Brinkley, M. D. Mon, Fri, 6-7 pm, 9-10. Tues, Thurs, Sat, 6-7 pm. Wed, 6-10 pm. Sun, 8-10:30 am, 6-10. Central.

### KFKU

Lawrence, Kan. 254.1m-1180kc. 500 watts. University of Kansas. Announcer, George W. Tompkins. Mon, Thurs, 7-8 pm. Founded Dec. 15, 1924. Central.

### KFKZ

Kirksville, Mo. 225.4m-1330kc. 15 watts. State Teachers College. Announcer, F. M. Henry. Mon, 8:30-9:30 pm. Thurs, 8-9 pm. Founded 1923. Central.

### KFLV

Rockford, Ill. 267.7m-1120kc. 100 watts. Swedish Evangelical Mission Church. Announcer, A. T. Frykman. Fri, 8:30 pm. Sun, 10-40-12n. Central.

### KFLX

Galveston, Texas. 270.1m-1110kc. 100 watts. George R. Clough.

### KFMR

Sioux City, Iowa. 440.9m-680kc. 100 watts. Morningside College. Daily ex Sun, Sat, 11:40-12:30 pm. Tues, Wed, Thurs, Fri, 7:30-8:30 pm. Founded 1924. Central.

### KFMX

Northfield, Minn. 236.1m-1270kc. 500 watts. Carleton College. Daily, 10-30 am, time. Tues, 9:30 pm, talk. Wed, Fri, 9-10 pm, concerts. Sun, 7 pm.

### KFNW

Shenandoah, Iowa. 461.3m-650kc. 2000 watts. 6 am-7 pm. 1000 watts. Henry Field Seed Co. Announcer, Henry Field. Slogan, "Friendly Station in a Friendly Town." Daily ex Sun, 10-11, 12:30-2:30, 3, checking clear time. Sun, 12-1, 2, 3, 4, services; 6:30-7, Golden Rule, church service. Founded Feb. 1924. Central.

## CHALLENGE!

ONE DOLLAR will be paid to the Radio fan submitting the most errors in any one station's listing in this Official Call Book and Log. Letters must reach Radio Digest office not later than a month from date of issue corrected. Readers are not limited to correcting one station, but such corrections must be certified by the stations themselves, and NOT by comparison to other so-called accurate broadcasting directors and lists. Readers also must live in same state or province as stations corrected are located. Station verifications must accompany corrections. That's just how sure Radio Digest is that this Official Call Book and Log is correct! To make the challenge fair for everyone, broadcasting stations and their employes are barred from this offer.

In this issue is a complete alphabetical arrangement according to wave lengths, a wave length index, and a state, city index of stations. The information contained in each station data listing is given in the following order: Call letters, city, state, watts antenna input, owner's name, announcer's name, slogan used, if any, name of listener in "club," schedule of operating hours, and kind of time used, as "Central," "Mountain," etc. Each issue of Radio Digest gives one the most complete and accurate Call Book and Log obtainable. This service is original with this publication, and has been maintained from the start. Right of reproduction without permission of any or all of the data contained herein is forbidden.

### KFIZ

Fond du Lac, Wis. 267.7m-1120kc. 100 watts. Fond du Lac Communwealth Reporter. Announcer, Albert Mayer. Daily ex Sun, 5 pm, news, markets, weather. Sun, 6-7 pm. Central.

### KFJB

Marshalltown, Iowa. 247.8m-1210kc. 100 watts. Marshalltown Electric Co. Announcer, E. N. Peak. Slogan, "Marshalltown, the Heart of Iowa." Daily ex Sun, 10 am, 12-1:30 pm. Tues, Fri, 8:30 pm. Sun, 11 am, 7:30 pm. Central.

### KFJF

Oklahoma City, Okla. 272.6m-1100kc. 750-1000 watts. National Radio Mfg. Co. Announcer, Tired Hand. Slogan, "Radio Headquarters of Oklahoma City—The City of Opportunity." Daily ex Sun, 10-10:30 am, music; 12-1:30 pm, 3-5, 7-9:30, music. Daily ex Sun, 9 am, 10-30, 12:30, 4:30, 7:30, markets. Sat, 11-2 am, American Legion Radio Post. Sun, 9 am, Bible lecture; 10 am, Men's Bible class; 11 am, 8 pm, First Baptist church. Central.

### KFJI

Astoria, Ore. 249.9m-1200kc. 15 watts. E. E. Marsh and Liberty theater. Announcer, E. E. Marsh. Wed, 11-11:30 pm, organ. Sun, 12:30-1:30 pm. Pacific.

### KFJM

Grand Forks, N. D. 333.1m-900kc. 100 watts. University of North Dakota. Daily, 12m, 6 pm, 8. Central.

### KFJR

Portland, Ore. 282.6m-1060kc. 100 watts. Ashley C. Dixon & Son. Announcer, Ashley C. Dixon. Sr. Mon, 7:30-8:45 pm. Tues, Wed, 7:15-8:30 pm. Thurs, 7:30-9:30. Fri, 12-1 am. Sat, 1:30-3 pm. Pacific.

### KFJY

Fort Dodge, Iowa. 440.9m-680kc. 100 watts. Tunwell Radio Co. Announcer, Carl Tunwell. Daily ex Sun, 10:30-11:30 am, 5:45-7 pm. Tues, 10-11:30 pm. Thurs, Fri, 8:30-9:30 pm. Wed, 3-4 pm. Sun, 11-12:30 pm. Founded Oct. 1923. Central.

### KFJZ

Fort Worth, Texas. 249.9m-1300kc. 500 watts. W. D. Branch. Daily ex Wed, Sun, 10-10 am, 4-6 pm, 6:30-7; 8:30-9:30. Sun, 1-3 pm, 7-9:30 pm. Central.

### KFKA

Greeley, Colo. 309.8m-750kc. 200 watts. Colorado State Teachers' College. Announcer, H. E. Green.

### KFOA

Seattle, Wash. 447.5m-670kc. 1000 watts. Rhodes Radio Service. Announcer, Luther J. Jensen. Slogan, "The Gateway to the Orient." Mon, 7-11 pm. Tues, Thurs, Fri, 12:30 pm, 2-2:30, Mon, 7-8 pm; 8:15-9, 9:30-11. Tues, 7:30-10 pm. Wed, 7-10 pm. Thurs, 6:30-11 pm. Fri, 7-12 mid, Sat, 7-7:30 pm. Sun, 8:30-9 pm. Sun, 2-3 pm. Pacific.

### KFON

Long Beach, Calif. 241.8m-1240kc. 500 watts. Nichols & Warriner, Inc. Slogan, "Where Your Ship Comes In." Announcer, Hal G. Nichols. Daily and Sun, 9:30 am-12 mid. Pacific.

### KFOR

Lincoln, Neb. 217.3m-1380kc. 100 watts. David City Tire & Elec. Co. Founded 1924.

### KFOX

Omaha, Neb. 258.5m-1160kc. 300 watts. Board of Education. Technical High. Daily ex Sun. Sat, 9:15-10:15 am. Tues, 7:30-9 pm. Central.

### KFOY

St. Paul, Minn. 285.5m-1050kc. 250 watts. Beacon Radio Service. Announcer, M. G. Goldberg. Daily ex Sun, 9 pm. Mon, 7 pm. Central. Founded Mar. 1924.

### KFLP

Dublin, Texas. 275.1m-1090kc. 15 watts. C. C. Baxter. Announcer, Mon, Thurs, 8 pm. Sat, 11 pm. Sun, 8:30-9 pm. Central.

### KFPM

Greenville, Texas. 230.6m-1300kc. 15 watts. The New Furniture Co. Announcer, Dave Alkovich. Jr. Slogan, "The New Furniture Co., the Home of Good Furniture." Located at Greenville, Texas, Where You Find "The Blackest Land, the Whitest People." Daily ex Sun, 1 pm, music. Tues, Wed, Fri, 8 pm. Sun, 8:30-9 pm. "Keeping Pace with Christ Means Progress." Daily ex Sun, 6:30-7 am, 2:30-3 pm. Central.

### KFPR

Los Angeles, Calif. 232.4m-1290kc. 250 watts. Los Angeles Co. Forestry Dept. Irregular schedule.

### KFPW

Carterville, Mo. 263m-1140kc. 50 watts. St. John Baptist church. Slogan, "Keeping Pace with Christ Means Progress." Daily ex Sun, 6:30-7 am, 2:30-3 pm. Central.

### KFPY

Spokane, Wash. 245.8m-1220kc. 250 watts. Synops Investment Radio Co. Announcer, E. H. Crane. Daily ex Sun, Sat, 9:45-11 am, 3-5 pm, 6-10:30. Sun, 12-12 mid. Pacific.

### KFQA

St. Louis, Mo. 322.4m-930kc. 50 watts. The Principia. Announcer, E. H. Crane. Founded 1924. Central.

### KFQB

Fort Worth, Tex. 222m-1350kc. 2000 watts. Lone Star Broadcast Co. Announcer, Roland M. Perry. Daily ex Wed, Sun, 9:30-10:30 am, 12-1 pm, 3-4, 7:30-10:30. Wed, 9:30-10:30 am, 12-1 pm. Sun, 11-12 m., 6-7 pm, 7:30-11. Central.

### KFQD

Anchorage, Alaska. 344.6m-870kc. 100 watts. Anchorage Radio Club. Daily ex Sun, 8:10 pm. Alaskan time.

### KFQU

Alma, Calif. 249.9m-1200kc. 100 watts. W. E. Riker. Announcer, Arthur J. Landstrom. Daily ex Sun, 5:30-7 pm. Daily ex Mon, 9-10 pm. Sun, 11-12 m, 8-9 pm. Pacific.

### KFQW

Seattle, Wash. 217.3m-1380kc. 100 watts. KFQW, Inc. Pacific. Daily ex Sun, 12-1 pm, 4:30-5:30, 6-7 pm, 8:30-10, 10-11. Sun, 10-12 n. Pacific.

### KFQZ

Hollywood, Calif. 232.4m-1290kc. 100 watts. Taft Radio Company. Announcer, Dave Ward. Daily ex Sun, 12-1 pm, 6-7, 8-11. Sun, 11-12n, 8-11 pm. Pacific.

### KFRC

San Francisco, Calif. 454.3m-600kc. 500 watts. Don Lee, Inc. Announcer, Harrison Holliday. Daily ex Sat, Sun, 7-9 am, 10-12 m., 12-1 pm, 4:30-12 mid, 7-9 am, 10-12 m., 12-1 pm, 4:12 mid. Sun, 12-1 am, 12-1 pm, 5-10:30. Pacific.

### KFRU

Columbia, Mo. 249.9m-1200kc. 500 watts. Stephens college. Announcer, La Von Rall. Daily ex Sun, 11-30 am, 2:35, 6:15 pm. Sun, 7:30 am, 9:20. Central.

### KFSD

San Diego, Calif. 440.9m-680kc. 500 watts. Airfan Radio Corp. Daily ex Sun, 10-11 am, 6-10 pm. Sun, 11 am, 2-4 pm. Pacific.

### KFSG

Los Angeles, Calif. 275.1m-1090kc. 500 watts. Angeles Temple.

### KFUL

Galveston, Texas. 258.5m-1160kc. 500 watts. Thomas Groggan & Bros.

### KFUM

Colorado Springs, Colo. 236.1m-1270kc. 100 watts. Gortley Mountain Highway. Announcer, Howzid Brown. Mon, Thurs, 6:30-9:30 pm. Thurs, 8:30-9:30 pm. Fri, 4-5 pm, 6:30-7:30 pm. Sun, 11-12:30 pm. Mountain.

### KFUV

St. Louis, Mo. 545.1m-550kc. 500 watts. Concordia Theological Seminary (Lutheran). Announcer, Herm. H. Hohenstein. Mon, 8 pm, Wed, 9:30 pm. Sun, 9:15 pm. Founded Dec. 4, 1924. Central.

### KFUP

Denver, Colo. 227.1m-1320kc. 100 watts. Fitzsimons General Hospital, Educational and Recreational Dept. Daily ex Sat, and Sun, 10-11 am. Tues, Thurs, Fri, 7:30 pm. Mountain.

### KFUR

Ogden, Utah. 225.4m-1330kc. 50 watts. Peery Building Co. Tues, Thurs, Sat, 9:50-11:50 pm, dance music. Mountain.

### KFUS

Oakland, Calif. 256.3m-1170kc. 50 watts. The Gospel Radio. Slogan, "The City of Opportunity." Mon, Wed, Fri, 10-11 am. Wed, Fri, 8-9 pm, 11-12n, 1:30-2:30 pm, 6:30-7:30.



# COLUMBIA A SYSTEM READY TO GO

## MAJ. WHITE ASSEMBLES PERSONNEL

**Business Man Discovered as Talented Announcer—To Conceal Identity**

**Howard Barlow Directs**

**Five Studios Nearing Completion First Broadcast Sept. 18—Symphony Organized**

**B**EGINNING Sunday afternoon, September 18, the competitive element in nation-wide broadcasting enters by way of the 16 carefully selected and strategically located high powered Radio stations included in the Columbia Broadcasting System's network, which covers the United States east of the Rocky Mountains.

In spite of the fact that this is still a day of pioneering in Radio, the new Columbia chain enters as a lusty full strided youth, and a well manned organ-

Van Praag galvanized into action. He signed Harry Glantz, world famous trumpeter. He signed R. Meredith Willson, flutist and Ivor Karman, violinist. Ossip Giskin, Hungarian cellist was added, and John J. Perletto, whose baritone solos have been featured with Sousa's band in national tours, phonograph records, and in famous symphony orchestra concerts; Alexander Semmler, concert pianist, and at present conductor of the Grand Street Follies, which is in the middle of a successful New York run; and others of equal importance.

To direct this orchestra, Howard Barlow, brilliant young American conductor and composer and a particularly brilliant musical arranger, was selected.

Each of these artists is under agreement to play either as soloist, or as a member of the orchestra, exclusively for the Columbia chain.

**Don Voorhees Conducts Specialties**

Don Voorhees, who has the record for the longest unbroken orchestra run on Broadway, and who has been musical director for Earl Carroll since the second

or not, gives the Columbia chain a chance to insure that in none of its programs will there be a possible excuse for anything but the best obtainable entertainment talent.

Major J. Andrew White, dean of broadcasters, and builder of the first Radio station designed to furnish free entertainment to Radio set owners, as Vice-President of the Columbia chain brings to the Columbia network an experience dating back into Radio's very earliest days, and brings also his pioneering spirit which has in the past been responsible for so many of the forms of Radio entertainment so popular today.

**Mystery Announcer**

A new personality will make its debut before the millions of Radio's audience with the opening program in the person of a man whose identity will be concealed behind a black mask, and who will be known only as The Voice of Columbia.

The Voice of Columbia is a discovery of Major White's. Fooling around with an indoor microphone one evening, this man, who happens to hold a high place in the

## MAMMOTH BANQUET WILL OPEN SEASON

**RECORD BREAKING HOOK-UP OF 100 STATIONS**

**Mirth and Music of New York Radio Dinner Will be Heard from Ocean to Ocean**

**S**EPTEMBER, always a momentous month in Radio, is at hand with a new horizon and prospects of a season even more wonderful for the listener than has ever been known before.

The real official autumn opening, perhaps, should date from the Radio World's Fair in New York and the Fourth Annual Radio Industries Banquet the night of September 21 in the Hotel Astor.

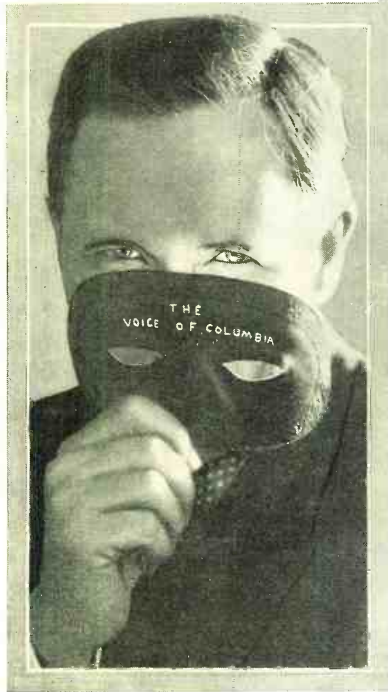
By that time practically everybody will be home from the vacation wandering. There will be time to overhaul the old set or install the new one. Every tube should be hitting 100 per cent and the last touch completed to begin the greatest feast of Radio entertainment of all time.

The Radio banquet will certainly be largely attended with listeners of approximately 100 broadcasting stations occupying seats around the table from coast to coast and Arctic to Anarectic.

**Another Record Breaker**

Each big national hook-up during the past year has been a record breaker. First came the Lindbergh reception with fifty stations, then the Dempsey-Sharkey fight with fifty-one stations and now comes the Radio banquet with every indication that

## MAJOR WHITE, HIS VOICE, HIS BATON



At left is the semi-masked "Voice of Columbia" who did not choose to become an announcer but was drafted by Major White who heard him mimicking a mikemester. The major sits in the center while to the right is Mr. Howard Barlow who will direct the Columbia Symphony orchestra, comprised of twenty-two artists.

ization, and a wealth of musical and entertainment experience as a background.

Already a standard of Radio showmanship has been adopted to govern its programs now in rehearsal, and already it has gathered in its organization a group of exclusive celebrities, whose music and fun will be heard only over the Columbia chain, and a staff of broadcasting directors, announcers and technical experts, whose association with the Columbia chain insure an instant prestige.

**Judson Takes Charge**

The musical experience and resources of Arthur Judson, outstanding American musical impresario, and who has charge of the musical end of all Columbia chain programs, has made itself felt. Mr. Judson, who has a life-time contract with Maurice Van Praag, said to be one of the finest, if not the finest judge of musical talent in the world, instructed Van Praag to assemble a Radio symphony orchestra which would include twenty-two celebrities and soloists, and which would set a new standard in musical excellence for orchestras of this size.

edition of the Earl Carroll Vaudeville, has been put in charge of a dance and specialty orchestra.

Red Nichols, popular for his phonograph record and Radio work, heads a specialty musical group.

Chamber music groups, a string quartet, and several dance orchestra units are included in a list that already totals 80 musicians and groups under exclusive contract.

The signing of these artists and organizations represents an innovation in the field of nation-wide broadcasting as a result of the Columbia chain's policy, which sells not only the chain over which the program is broadcast, but also the program itself, together with an adequate staff of Radio showmen, continuity writers, directors and technical experts, to insure that the programs will justify the slogan which the Columbia chain has set for itself. The slogan is: "Always entertainment on every Columbia hour."

With an organization of this sort permanently attached to the chain, and definitely on the chain payroll whether used

commercial world, began broadcasting.

A few experiments followed, and the Major decided that this nimble wit and affable voice would simply have to go on the air.

**Five Studios Ready Soon**

Work has progressed to the finishing stages in the three new indoor and two outdoor studios for WOR, which is the key station to be used by the new Columbia chain.

No announcement as to the sponsors of the programs have yet been made, except in the case of the Columbia Phonograph company, which will have the hour between 9 and 10 o'clock each Wednesday night.

The list of stations in the new chain are WOR, New York; WEAN, Providence; WNAC, Boston; WFBL, Syracuse; WMAK, Buffalo (Lockport); WCAU, Philadelphia; WJAS, Pittsburgh; WADC, Akron; WAU, Columbus; WKRC, Cincinnati; WGHP, Detroit; WMAO, Chicago; KMOX, St. Louis; WCAO, Baltimore; KOIL, Council Bluffs; WOWO, Ft. Wayne.

at least 100 stations will be listening in. It will be well worth while, for the most popular of all the Radio entertainers will be brought together for this big event. In many places there will be actual banquet assemblies of Radio folk who will be tuned in to the central program as it originates in New York.

Microphones joining the three chains of the National Broadcasting system, the Columbia Broadcasting system, a local New York bloc of stations and a limited selection of seventy individual stations that have applied for wire connections for this particular occasion will carry the atmosphere of the banquet program throughout the land. Never before have the wire companies been taxed to such extremes for service.

Major J. Andrew White, veteran Radio announcer and master of ceremonies, will be in his accustomed place and direct the show, which will continue from 7 p. m. until 1 a. m., E. S. T.

**Leading Entertainers**

Prominent among the long list of entertainment features will be Rox's Gang. (Continued on page 10)



# PICTURING BROADCAST ACTIVITIES



**"YOU** see, it's like this," said Charlie, the trained seal in the WEEI studio, while Big Brother Bob Emery held the microphone. "I got a big yap-yarp-a-toire an' you'd be surprised but Boston folks seem to like my Hula-yarp-yarp-hula best. Yawrd-gop! No, I ain't gotta cold, it's this grass step-in that's making me sneeze—it tickles. Har! Har! Listen!" Then Charlie began to execute his Waikiki Wiggle, swishing his grass negligee and making funny little noises that Brother Bob interpreted as a Hawaiian lullaby.



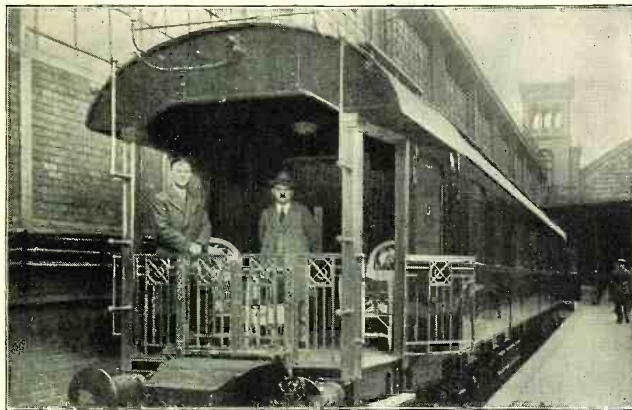
**ONE** of the very nicest story ladies that ever entertained bedtime listeners was Val McLaughlin of WLS, WOC, WOW and other places. This is Val, but she's Mrs. Van Zile now, and this is her best listener, 'cause he's Val, Jr., See?



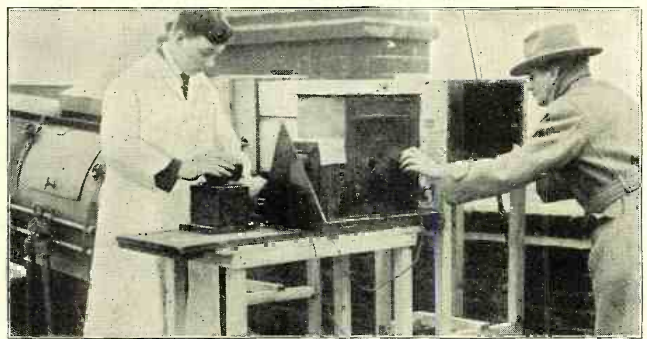
**"ALAN A DALE"** of Robin Hood (above) as she appeared before the WBAL microphone in Baltimore a few days ago. Her other name is Georgie Kelley.



**SAMMY MANDELL**, lightweight champ, talked "Clean Living" to a WJR audience recently.



**KEMAL PASHA**, the Mussolini of Turkey, had the above car fitted out for official use. It is equipped both for Radio reception and transmission. If K. P. wants to give a rear platform address he can begin long before he reaches the town by aid of microphone and local amplifiers.



**ONE** of the foremost inventors of the day in the development of television is J. L. Baird of Scotland, who recently came to the United States to arrange for transatlantic tests of his device for sending moving pictures through the air. He has already devised a television receiving set to be sold for \$45. The picture shows him in his laboratory (right) conducting an important experiment with the aid of an assistant. Must have been a wee bit chilly, what?



**ONE** guess as to where this little beauty broadcasts. Sure! Hollywood! She is the cutie who sings cute songs at Warner Brothers KFWB and her name is Jackie Lucas. Duncan Photo.



**WOWCASTERS** of WOW, Omaha. This quartet of bright young people is responsible for the snappy youthful atmosphere that one always finds in the programs from the Woodmen of the World station in the near-west metropolis. Left to right they are Mrs. Goldie Funk, hostess; Lester Palmer, Eugene Konecky and Harold Palmer. At the time this picture was taken they were acknowledging donations to the Mississippi flood relief funds. On momentous occasions of this sort all four "man" the microphones and sometimes work through night and day.



# RADIO PERSONALITIES AND EVENTS



**F**LY Fishing for Trout" was the refreshing subject of one of a series of vacation talks by Jud Landon (above), lawyer and sportsman, who addressed WGY audiences from Schenectady.



**W**HAT does a great author talk about? Well, here's Rex Beach telling WFLA listeners at Clearwater, Fla., about that last fishing exploit. (No wise cracks, now, about expert fish stories.)



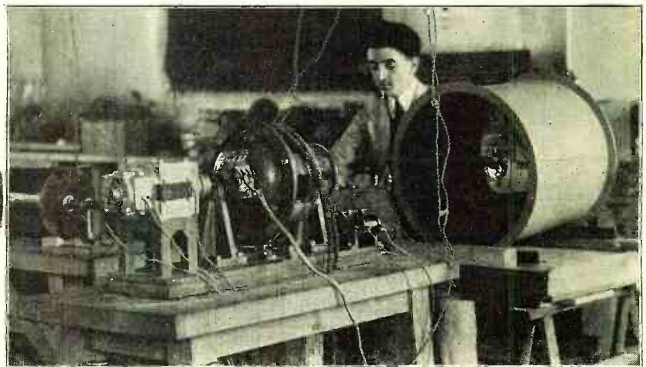
**H**ER name is Marcella. She chats and sings interestingly over WJJD, the Mooseheart station!



**S**OME teachers seem to have eyes in the backs of their heads, but Principal W. E. Orcutt of Central Junior High School, Marion, O., has a voice in all the rooms of his school simultaneously by aid of the principles of broadcasting. Picture shows him at his desk addressing "general assembly" through his specially devised microphone.



**W**INNER of recent Radio auto race in Marseille, France. Each driver received Radio instructions as to the route while he raced. A good receiver, good pair of ears, quick wit and a speedy car brought home the bacon for the little Amilcar shown in the picture. Fifty entrants participated.



**I**N France, Edouard Belin made the first progress with television and some of the early principles that he evolved are still considered fundamental. A beam from the arc at left is reflected by a small pair of oscillating mirrors, one scanning the image horizontally, the other perpendicularly. From the image to a photo-electric cell, which controls the impulse to the air or wire.



**O**NCE upon a time, dear children, the Whispering Pianist—the renowned apostle of the soft and low—conducted this symposium known as the Society Syncopators. Art brought 'em from Los Angeles to Chicago; then he stumbled onto whispering into the air and now look at him! Guess which is Art in the picture.



**O**H, hum, Mr. Barry-Tone didn't show up for the evening program at WFL Philadelphia, had toothache or something, so Harold Simonds, the announcer, "filled in." So far as the Radio audience is concerned they would rather hear Mr. Simonds sing any time, anyway.



## ANTENNA REPLACES OLD NAME PLATE TO TIE UP HOME WITH HISTORIC HARTFORD



**E**VEN in the early days of American history the name of Hartford, Connecticut, was blazoned across the continent in line with the progress of the pioneer and early settlers. As farm communities grew into villages and towns and better houses began to appear one might observe over the door post of the average home a small rectangular plate. And conspicuously on that plate was the name "Hartford," a sign that back in Hartford, Connecticut, was assurance of full indemnity to the owner in case of loss by fire. Hartford is still keeping its contact with the home. Today, as ever, it is in full step with the times. The old tin door plate has largely disappeared, but in its stead has come the aerial of the Radio receiving set. While in the city of Hartford itself is the broadcasting station, WTIC.

This station of the Travelers Insurance company provides more than casual entertainment. It was one of the first stations in the United States to provide special service to the public schools. Its Music Appreciation course attracted the atten-

Supper hours in many a home are made more cheerful by tuneful melodies of the Sea Gull Trio at WTIC, Hartford.

tion of broadcasters throughout the country and the plan of instruction was adapted by other stations.

The pictures shown on this page portray some of the popular entertainers heard at WTIC. The upper photo shows the Sea Gull Trio, heard twice weekly at the dinner hour by listeners as far west as the Mississippi. Beloved by the fans are the Harmony Belles in the circle, whose voices blend exceptionally well in the microphone and over the ether waves. But the Bandelleros and the Toreador in the lower picture have captured the hearts of all with their Spanish guitars and banjos. "WTIC, Hartford,"—it's still a symbol to the home lover.



Attuned like two matched pearls are the voices of the Harmony Belles (center) and Spanish folk songs by the Bandelleros and Toreador below are why girls stay home and tune in WTIC.

## Radio Commission Continues Licenses For Further Test of New Regulations

### Heavy Autumn Broadcasting Will Prove Efficacy of Present Wave Allocations—Few Changes Ordered as Result of Appeals by Station Owners

**O**NCE more the federal Radio commission has renewed lease of life to the large majority of Radio stations that have complied with its dictates and otherwise comported themselves in a way believed to be best for the general public welfare.

Only a few have fallen by the wayside and some of those were considered doomed to fall anyway, commission or no commission. The next sixty days of intensive broadcasting will tell the tale of just how well the control body has judged and acted.

In the meantime there have been a num-

ber of appeals against it to keep the wolf from the door.

A few questions and satisfactory answers and Mr. Havens was told to go home and put his transmitter back on the 220.4 wave. He went rejoicing, for even 220.4 looked good to Mr. Havens as compared to 206.5.

It was just another example of the fact that real values are comparative, because in the other case KLDS at Independence, Mo., had an authorized wave of 233 meters and found it entirely inadequate. The owners insisted emphatically that nothing less than 451.3 meters could begin to serve the full purpose of the station.

#### 100,000 Congregation

Station KLDS belongs to the Reorganized Church of Jesus Christ (Latter Day Saints) and Mr. Arthur D. Church, director, aided by Dr. Frederick M. Smith, president of the church, told of the vital importance the broadcasting station and its proper functioning bore on the spiritual welfare of the members of the church. It



## Graham McNamee's Voice Heard More Than That of Any One Who Ever Lived

### Abandons Concert and Choir Singing to Win Fame as Announcer—Still Envis Artist Celebrities Who Come to WEAF Studios to Entertain

**I**T WAS a damp June day in 1923 that a rather slim young man in his summer suit entered the reception room of WEAF in New York and inquired for the manager. After a short wait he was taken to a private office where he disclosed the fact that he was a singer, a baritone, known somewhat to the concert stage and in various choir lofts. His voice was his fortune, but the season was at an end and in the meantime he had to live. Was there an opening for a new announcer at WEAF—just long enough to tide him over until the fall season opened?

Station WEAF was quite young and in the growing stage. In a few minutes the rather diffident young man, whose speaking voice had really created an impression on the manager, was before a microphone. How would it come through an amplifier? The test was successful and Graham McNamee was signed as the new announcer for the summer of 1923.

That was the beginning of a Radio voice that probably has been heard by more people than any other voice that ever lived in the history of the world. Graham McNamee was hired for the summer.

#### Crisis in August

Oh, yes, he would return to the concert stage and the choir lofts in the fall. But there was a tone to the mail that came WEAF that seemed to indicate otherwise. The crisis in the slim young man's life came on August 31, just prior to the opening of the autumn season. The Greb-Wilson bout was on the schedule, McNamee announcing.

"Wonderful, brilliant, we saw it as though with our own eyes." Such was the theme of the letters that swarmed into the broadcasting station after that smart bit of ringside description. The slim young man, comparatively unknown, could hardly comprehend the success he had accom-

plished. He had never intended to become a famous Radio announcer. He could not conceive that anything really worth while could be accomplished in the hushed seclusion of an upstairs studio. He had dreamed of the plaquid of an auditorium, perhaps even the opera.

#### Hard to Comprehend

But here he was with people who would fill a hundred auditoriums taking the pains to sit down and write him letters to tell him how they admired his vocalized vision of a prize fight. It was almost incomprehensible, but he decided to give up the concert and church idea for the fall and see what there was to it. The company had hired a famous sports writer to broadcast the World's Series between the Giants and the Yankees that fall. But the well known writer found kidding a microphone and cuffing a typewriter two quite separate and distinct callings. McNamee filled the breach at the third game, and decided his fate by finishing the series.

The station extended its service by connecting with other influential stations, and as the station's influence grew so expanded the fame of Graham McNamee. Through it all he kept his head and the poise that had distinguished his personality over the air.

#### Master of Ceremonies

Throughout the memorable presidential campaign of 1924 he served as master of ceremonies, introducing the national celebrities at the conventions to the Radio listeners. Later he brought the voices of the successful candidates directly to the people from the homes of the winners.

Thus, in and out through the fabric of history during these past four years has been woven the voice of this announcer; from the Capitol, the White House, the opera, the open square, until it has become familiar to millions.

ber of pleadings and near-threats in various efforts to have the commission reconsider and re-assign waves to individual stations dissatisfied with their present allotments. To the most of these appeals the commission has remained smilingly adamant. Some have been called to explain why, in view of the fact that they had disobeyed orders and wobbled off their waves, why the commission should give them any further consideration in the way of renewing licenses. To those who argued that their transmitters had accidentally strayed from the straight and narrow lane prescribed by the commission and that it never, never would happen again, a semi-pardon was extended and they were given thirty days to prove their sincerity.

#### Judgment Rendered

Two particular cases of appeal may be of interest, considering that the commission acted favorably for one and unfavorably for the other.

Wilbur M. Havens, one of the owners of WMBG, Richmond, Va., took a day off to call on the commission at Washington to see what could be done about getting back his old wave of 220.4 meters in the place of the 206.5 wave that had been wished onto him by the government. In the old days he had twenty good paying customers to help grease the generators. But all had deserted except two and WMBG was

In the year of the conventions his name was offered as a candidate for the Radio Digest gold cup—the first to be offered for the world's most popular announcer. Over 50,000 listeners registered their votes in his favor and he was presented with the cup at the Radio Show in New York City.

Although he still sings and only recently completed a short but highly successful concert tour over the central states, McNamee is rarely heard to sing over the air. The reason for this is not explained, unless it may be assumed that he has observed the fate of certain others who have proved very excellent announcers but rather disappointing as Radio singers. He still seems to feel a little doubtful as to the verity of the laurels bestowed by Radio listeners and looks wistfully at the haloed names of those who have climbed the peaks in song.

was pointed out that of the 100,000 members of the congregation listening to KLDS, 25,000 were isolated and unable to attend regular church service. By operating on a low wave many of the former listeners were now unable to get the spiritual uplift and religious communion they had enjoyed previously.

Mr. Church and Dr. Smith were fortified by legal counsel in the person of Franklin Jones, attorney for KLDS. Mr. Jones believed that KLDS had an equitable right to the higher wave as it was older and more powerful than any other station now on that wave.

When the commission denied the plea Mr. Jones said he would resort to legal action as he believed the commission was acting outside the protection afforded by the constitution by taking away their wave length and giving it to somebody else.

#### Deny Chain Stations

Application for changes in the American Broadcasting company stations, requested as follows, were denied: KFX and KXL of Portland, Ore., for 339.4 meters with a power output of 20,000 watts; KYA of San Francisco, Cal., for an increase of power to 1,000 watts; KJR of Seattle, Wash., for 545.1 meters with a power output of 20,000 watts, and KGA of Spokane, Wash., for a similar increase.

Certain points of the Radio Act of 1927 are being argued for interpretation by some of the stations seeking more favorable conditions for themselves. WICC at Bridgeport, Conn., wants to know whether the commission can designate any particular spot in a state where a station may be located, especially as WICC is trying to have its station installed in Sport Hill the residential section of Eason and the Sport Hill folks are raising objections for fear the station will prevent them from hearing other stations.

In Indianapolis WFBM wants more power and a better wave on the grounds that Chicago and Illinois have more than their share of these more desirable conditions, whereas the Radio act states that there shall be an equitable distribution of licenses, wave lengths and power among states and communities.

Shenandoah is under fire again. Officials of the University of Iowa station, WSUI, are squeamish about the proposal to admit KMA of Shenandoah to their 710 kilocycle frequency.



# Pot-Hooks Make Left-Hooks Permanent

Stenographic Record of Dempsey-Sharkey Bout Broadcast

By Graham McNamee and Phillips Carlin

**G**OING to the fight? That is the question on lips everywhere among persons sportively inclined. Experts have estimated that, taking it the world over, about 100,000,000 persons would like to be one of Mr. Tex Rickards' ticket buyers when Mr. Gene Tunney and Mr. Jack Dempsey climb into the squared circle in Chicago the twenty-second day of this month.

But, inasmuch as Soldier Field can only accommodate about 150,000 cash customers the rest of the millions will have to depend on Radio Mike. And Radio Mike will be on the job with a ringside seat to verbally see all that takes place for all who have ears to hear and can get within reasonable distance of a loud speaker or a pair of headphones.

**Will Be Well Served**

Considering past performances they will be efficiently served. On another page of this Radio Digest will be seen two vivid pictures of Graham McNamee as he appears in action before the microphone, voicing the things that he sees for those that cannot see.

It was Mr. McNamee of the National Broadcasting company who saw the Dempsey-Sharkey fight and reported it to approximately 50,000,000 who were listening in through the large hook-up of broadcasting stations. The arrangement was an enterprise of the Scripps-Howard newspapers. Phillips Carlin, associate of Mr. McNamee, assisted in the broadcast by scene descriptions between rounds.

The New York Times printed a verbatim report of Mr. McNamee's comment. For those who did not hear but would have here:

**Verbatim Radio Report**

I liked to follow his broadcast it is repeated. Graham McNamee—The crowd is giving Jack Dempsey as great an ovation as any man ever received on any occasion. They are certainly giving it to him, and this man who has just come into the ring does not look like the man who slinked into the ring down in Philadelphia in an indeterminate manner last year, when he was there to box with the now heavyweight champion of the world, Gene Tunney.

Jack Dempsey looks more like Jack Dempsey than I have seen him in the past four years. He really looks like the old Jack Dempsey, and he looks as if he was ready to go.

He is dancing around in his corner now. Here comes Sharkey. Sharkey is just coming through the ropes. He is also getting a tremendous ovation. Both boys go to the center of the ring and shake hands with one another, and give each other a nice greeting, and in a few moments will be ready to go, after the cameramen are through with them.

They have both taken off their bathrobes now. Jack Dempsey is in black tights with red trimmings, and he now has a fight sweater around his shoulders, and he is dancing lightly over in his corner.

Jack Sharkey in the other corner took his bathrobe off, and now they have wrapped it around him to keep the cold winds off of him for the moment.

**Both Appear to Be Cool**

Both boys looking cool, looking around in an interested way, Jack Dempsey with

his back turned to the ring talking to some friends, now out over the corner and still keeping up that light little dance. His legs look fine. They are trim, hard; the muscles don't swell too much, but they look good. Jack O'Sullivan, the referee, also looks good. He looks as if he was ready for a fifteen-round scrap with any man.

Mickey Walker, the middleweight champion of the world, has just come in and has gone over to shake hands with Jack Dempsey. They shake hands with one

roars of the crowd. Gene is getting a fine hand. He immediately goes over to Jack Dempsey and Jack comes running out of his corner to say "hello" to him, and Tunney shakes hands with Jack Dempsey, and then goes over to Jack Sharkey, then shakes hands. They smile at one another, pass a few kind words and Tunney is now out of the ring again.

Sharkey is very much more quiet and still than is Dempsey, and he has his eyes on Dempsey every moment, whereas

(Humphries announced that Jack Dempsey is to meet Jack Sharkey.)

McNamee—And now they both have their wraps off. Dempsey, as I have said, with black and red tights, and Sharkey with purple tights.

And now the boxers are in the middle of the ring taking their final instructions from O'Sullivan. In a moment they will be back in their corners. They touch gloves. They are back in the corners, and the handlers now must get out. These two boys find themselves in the middle of the ring, and—the bell!

**ROUND ONE**

They immediately rush in. Sharkey rips a left to the body, and then Dempsey drives five short rights to the body, followed by two rights to the head, both short. Did not do much damage, but they were there. Sharkey drives a left to the body and then to the face. Dempsey drives right and left to the body, and then right twice more to the body. Dempsey coming in very low.

They are mixing it hard. Sharkey gets a left in the body and Dempsey drives three short lefts and a right to the body as they are working shoulder to shoulder with their bodies close to each other. So far the infighting has been in favor of Dempsey.

Jack Sharkey comes in sideways and drives a right which hit Dempsey on the back of the head. Then Sharkey puts over two short lefts, followed by a right to the side of Jack Dempsey's head.

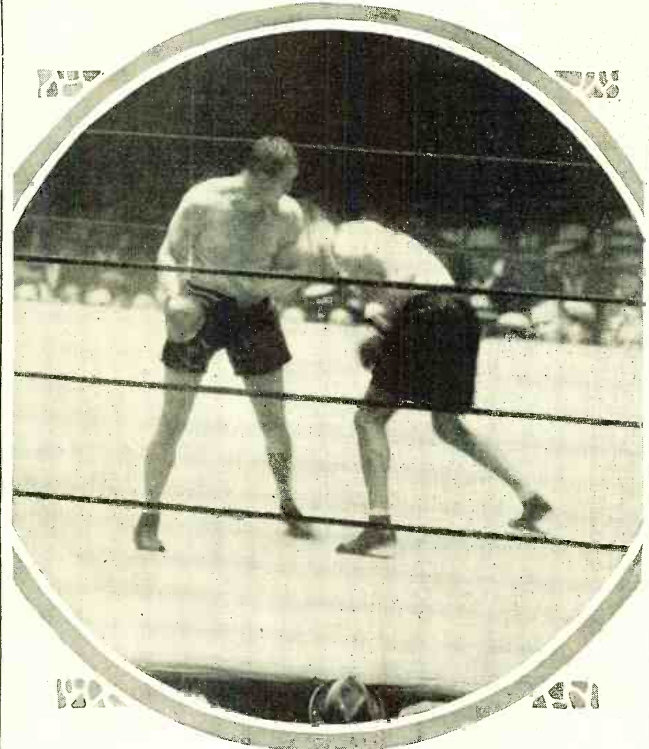
Sharkey sends in a light left jab to Dempsey's face, but Dempsey comes in and pounds Sharkey's midsection. Sharkey puts a nice right to Dempsey's jaw, which makes Dempsey shake his head, but does not seem to hurt him very much. Dempsey comes in again and they are again close in, Dempsey pounding the midsection and Sharkey trying to work away to get a little outside long range fighting.

But Dempsey follows with his head right on Sharkey, and is now pounding his middle. Sharkey tries a left which misses, but brings over a nice right to Dempsey's body. Dempsey shakes his head again and comes in for that short fighting. He is again pounding hard at Sharkey's midsection and then brings up his right in an uppercut and sends Sharkey's head back. Dempsey tries a long left, but misses. Sharkey crawls in under Dempsey and they are in the middle of the ring, the referee separating them.

Sharkey gets in a short right to the body and again their arms are locked. Now they are apart again and Dempsey puts over a hard left to the jaw and then Sharkey puts over two lefts and two rights and Dempsey is going. It looked as though Dempsey were being knocked out. Sharkey puts over a left, a right, another left, another right.

Dempsey is groggy for the moment and falls against the ropes, but he is back again. He puts over a hard left, sending Sharkey back across the ring. Sharkey comes back again with a left and a right to Jack's jaw. Dempsey is a little better at the infighting and Sharkey is better at boxing. (End of round.)

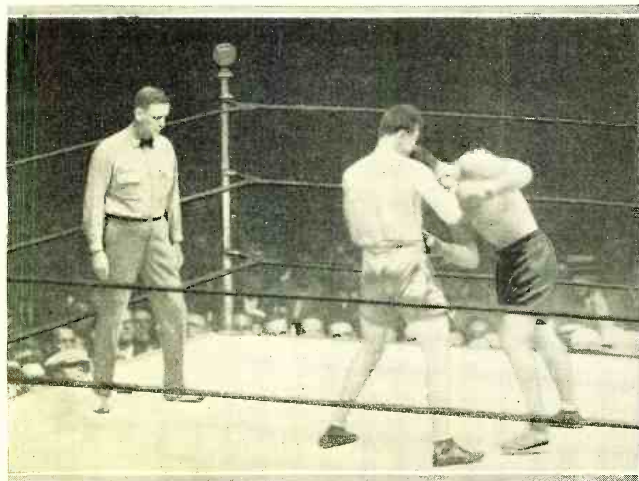
Phillips Carlin—That was a real round for a moment. Dempsey was quite groggy.



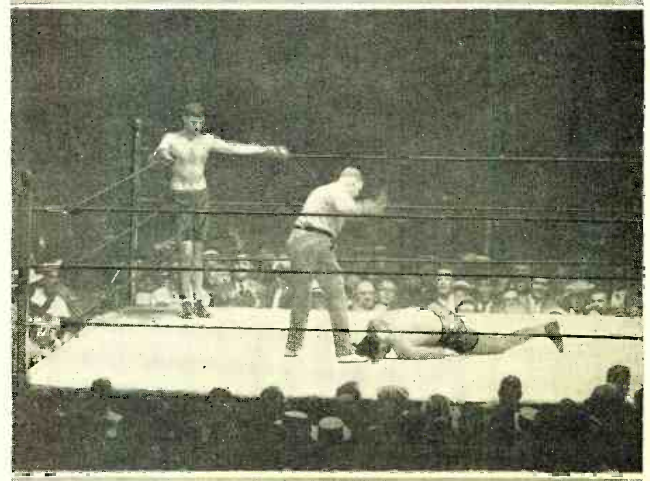
This is the famous Dempsey crouch which he used to advantage in rushing Sharkey in the sixth round and was regarded by experts as the beginning of the end of Sharkey.

another, smile and Mickey comes back and leans against the ropes. Joe Humphries has just taken off his hat, gone to the center of the ring, and is going to make an announcement. \* \* \* Gene Tunney is now climbing into the ring and is being introduced over the

Dempsey has hardly glimpsed at Sharkey. You remember, last year Dempsey was looking at Tunney in a rather odd sort of a way all the time. This time he is not too interested. Now listen to Joe Humphries, the great announcer, announce this.



In Round Two McNamee reports this scene: "Sharkey puts a terrifically hard right over on the side of Dempsey's head." And that was where Dempsey proved he had the stamina to take it.



"Sharkey is down from a left to the side of the body. Sharkey is down. Dempsey has returned to his corner. They are counting over Sharkey," said the announcer as the above scene was snapped.



## DEMPESEY FIGHT BY AIR

(Continued from page 9)

It did not last long, but he took three hard lefts and three hard rights, and they did not do him a bit of good. Sharkey seems really the more quiet of the two. Dempsey seems to go in with just one idea, to get in and rip those hard lefts and rights to Sharkey's body, and he already has Sharkey's midsection quite red from the effect of those ripping left and right hand blows.

Sharkey's condition possibly is not quite as good physically as Dempsey's, as his midsection hangs just a wee bit, where Dempsey looks harder. Dempsey looks great, but he is just a bit slow on the boxing.

### ROUND TWO

McNamee—Sharkey jabs out his left, but misses. He stabs his left again and then rushes Jack Dempsey across the ring, and gets across a nice right. They are in the center of the ring again now. Dempsey lands a good left to the kidneys, another right to the body, then three lefts to the midsection, and Sharkey bends down and comes in under Dempsey's guard with a left. Dempsey chases Sharkey across the ring this time and drives a left to the body and they clinch. As they break Dempsey gets in a short right to the face. Sharkey puts a terrifically hard right over on the side of Dempsey's head. Now they are sparring for a moment. Dempsey swings a wild right but it goes over Sharkey's head. Now Dempsey is in close again and drives two short lefts to the body. They are looking each other over for a moment. Dempsey comes in again with his head down and then, raising his body, rips the right over to the side of Sharkey's head.

Dempsey has been a bit more aggressive than Sharkey so far. Now they come together again, but no blows are struck as they go in a clinch. They are out of the clinch and Sharkey puts over a hard left, and then two short rights to the side of Dempsey's face. Dempsey in turn gets over two good short hooks, left hooks, to Sharkey's face.

Sharkey tries a left and is short. Another left sends Dempsey's head back. Sharkey's left jabs certainly have a lot of stuff behind them, whereas Dempsey's left hooks are terrific.

I will say at this time Dempsey seems just a bit more than Sharkey. Perhaps it is the youth.

They are again lying on each other's shoulders with their heads and pummeling at the body. Sharkey bounds back against the ropes and takes a hard blow, and then in the middle of the ring they get together, and Dempsey pounds Dempsey's head with three rights and three lefts. Dempsey comes back with two, one left jab and one left hook. They are up and at each other again.

Dempsey pushes Sharkey across the ring, breaking Sharkey up with a right uppercut. Dempsey gets in his left to the side of the jaw and crosses with his left, while Sharkey comes back with two straight lefts. Dempsey again tries that left to the side of Sharkey's face. They clinch for a moment. Dempsey puts Sharkey's arms down and tries to get over a long left swing which did not land. Now, they are in the center of the ring again. Dempsey is dancing a moment before he comes in, and at the bell lands a short left to Sharkey's midsection. (End of round.)

Carlin—have been to quite a few prize-fights in my life, but this one has got us all sitting on the edge of our chairs. The seconds are rubbing the two fighters and fixing their noses, giving them a little ammonia or something of that kind.

### ROUND THREE

McNamee—Here we go now again. Both boys dash out. They dance around each other for just a moment and Dempsey drives the left to the midsection. Sharkey misses a long right uppercut. Now they are sparring for the moment. Sharkey puts over a hard left to the body, and then a left-right. Sharkey again gets his left into Dempsey's face, while Dempsey gets a one-two to the body. Dempsey drives his left to Sharkey's face. Now they are quiet.

Sharkey drives a left and misses. Dempsey comes in with a right to the body and then a left to the jaw. Dempsey gets a nice left over to Sharkey's jaw, and follows it with a terrific left that drives Sharkey almost away around. Sharkey comes back with a light right to Dempsey's midsection. He misses a wild right and gets a left over to the side of Dempsey's face. Dempsey gets in another left jab and Sharkey comes back with a right and left to the body.

Dempsey comes in fast and swings, but a little too far around Sharkey, and Sharkey catches him with a short left on the nose. Now they are at it again in the center of the ring, but they have each other's arms locked up. They are apart again. Sharkey gets over a hard left to the side of the head and then, while they are locked, another hard left uppercut to Dempsey's face, which throws his head back.

Again they are locked, and again Sharkey breaks away and puts a right and left to either side of Dempsey's face. These are all short blows. Sharkey puts in one long left which Dempsey is working at. Dempsey, coming in again, drives his left

and right twice each to the body, and then as Jack Sharkey bends over to avoid a left he gets a right pretty high up on the face.

Dempsey is constantly trying to weave more closely now—get in tight. Sharkey comes in very low also and Dempsey takes two long lefts to the face and also a right. Sharkey is pummeling Dempsey's body now with his left. Dempsey seems a little tired. I think, but still he goes back to the fray, weaving in. Again he drives his right to the body, and then quickly to the side of Sharkey's face.

This round is a little bit slower. Sharkey drives lefts and rights to the body and then right and left to Dempsey's face, and straightens Dempsey up. We thought he was going down for a moment, but he came back and drove his left into a lot of gloves and elbows.

Sharkey is now learning how to guard his midsection from a good many of Dempsey's hooks. Sharkey's foot slipped right out of the ring entirely and he goes partially down, but it is not a knockdown. Just before he slips Dempsey put over two lefts and two rights.

When Sharkey's foot slipped out of the ring, forcing him almost to one knee. Dempsey grabbed him and helped him rise to his feet.

Now, while they are resting, they both look good. Neither one looks in any way particularly rattled.

### ROUND FOUR

They both come out fast in the center of the ring. No blows have been struck as yet. Sharkey swings a hard right that does not land. A left jab lights on Dempsey's nose and another left jab high up on his head. Then Sharkey comes in sideways and lands his right to the side of Dempsey's head. Then Dempsey gets in and lands about five lefts to Sharkey's midsection and brings up his right to Sharkey's face. Now he is pounding Sharkey in the midsection with lefts and rights.

When they are apart, Sharkey puts a right and left to Dempsey's jaw. Dempsey is coming in, weaving in again, and drives a left to Sharkey's face, and then Sharkey retaliates with a left and a right to the face.

Dempsey is working almost constantly on the body, while Sharkey pays most of his attention to the head. They are in the middle of the ring, sparring for the moment. Sharkey misses two lefts, and then puts left in, and then drives a right and a left and another left to Dempsey's face at close quarters.

These are all pretty short blows, but they are hard. Dempsey drives a hard left to Sharkey's ear. Sharkey comes back with a right to Dempsey's face. Again Sharkey drives his left to Dempsey's face at short quarters. Dempsey gets over a beautiful right that twists Sharkey's head around, and then Sharkey covers up and Jack cannot hit him.

Now they are in the center of the ring again, sparring. Sharkey tries a left, but misses. Dempsey gets in close again, and gets Jack three times with his right into the midsection. Sharkey tries a long swing with his left and misses, and Dempsey retaliates with a right drive to the body.

Dempsey is constantly working to get in under Sharkey, and plays for the body all the time. Sharkey comes back, gets under Dempsey, and then gets away, and drives his right to the jaw. Dempsey's right scores very hard on Sharkey's jaw, and then he drives over a left to the same place, at close quarters. Sharkey tries a haymaker, but misses entirely. Dempsey gets over a left to the jaw. Sharkey puts over a right, and again they are sparring. Dempsey puts over two short lefts to Sharkey's head.

Dempsey is in close now, both working for the body, and, while it looks as though Dempsey were getting in a terrific lot of blows, Sharkey stops many of them. They are close all the time, but at the same time Dempsey is putting some hard rights and lefts to Sharkey's jaw when he comes up out of his clinches. Dempsey's right and left to the jaw, and then Sharkey comes back with a left and right to the body, and the round ended in a beautiful flourish. No question about it, that was one nice round. [End of round.]

Carlin: During the first round Dempsey was landing on Sharkey's midsection time and time again without any effect at all. Then, during the next round, the second round, Sharkey learned how to keep away from some of these lefts. Then, in the third round, he got even better, but during this round Dempsey again came back and pummeled him pretty hard with those short vicious left hooks that are peculiarly Dempsey's own.

### ROUND FIVE

McNamee: Going into the fifth round, both boys come out fast again. They circle around one another. Sharkey tries his left and misses. Dempsey tries a long right and just barely catches Sharkey. Sharkey puts in two light rights and one light right, drives in his left twice on Dempsey, and then his right a couple of times more. Dempsey did not get in a blow during all that flurry. Sharkey feints with his right, but nothing happens. Sharkey puts over a long left but is a little bit short. Dempsey drove a nice short left to Sharkey's face. Sharkey gets in two short lefts to Dempsey's face.

Dempsey is working at Sharkey's middle again. He is landing maybe fifty

per cent of his blows. Sharkey comes in again and tries a left to Dempsey's jaw. Dempsey is really the aggressor so far. Dempsey puts his right in on the body and follows it to follow Sharkey. Sharkey leads with his left. Sharkey comes in hard with his left, driving it to Jack's face; again that left jab. That left jab of Sharkey's is awfully, awfully mean, and that left hook of Dempsey's is awfully mean.

Now they are almost faced again, locked in the middle of the ring, both a little bit tired. Dempsey is bobbing and weaving, trying to get into Sharkey again now. Sharkey has been trying to keep him off with his left. He puts in two light lefts and then swings a haymaker, but is short with it. Sharkey puts in another left to Dempsey's face. Dempsey slides over Sharkey's back with the left hand, pummeling him in the body several times with short blows as they are close together. Sharkey's left again finds Dempsey's face.

Now, the in-fighting is considerably slower than it was. Both boys are fairly tired. Sharkey put in a hard left and a hard right to Dempsey's head. Dempsey still comes in tough, boring in all the time, and drives a hard left and another hard left to Sharkey's middle. He never stops for a moment. He is right after him all the time. He tries a hard left but it is a little short. Now they are close together. Generally the man who backs up is Sharkey. As Dempsey comes in he catches a hard left but he sends one back to Sharkey in return, both to the face. Dempsey puts in a good one to the face. Dempsey gets over a beautiful short left hook to the side of Sharkey's jaw, and another one, and then a right-hook, all of them short, while he was in close. Sharkey jabbed Dempsey twice and then swung a right, which was short. [End of round.]

Carlin: Another round is over. At the end of the fifth round the boys were boxing hard, and we have come to the conclusion that we are watching a pretty good bout. This is nothing like Philadelphia.

### ROUND SIX

McNamee: They both come out again, avoiding each other in circles. Dempsey puts a long left to Sharkey's face. And another that is pretty, but it lands short. Sharkey puts a light left to Dempsey's face, and another. Dempsey swings a left but Sharkey ducks it. Sharkey straightens him up with a short right uppercut. The referee parts them as they go in a clinch. Sharkey seems constantly short with his right hand. He has tried it a good many times, but he is short all the time.

Dempsey pounds a hard right, but Sharkey catches it on the glove. Now they are apart again. Dempsey is still trying to come in. Sharkey swings his right, but is short. Dempsey swings a hard left, but Jack ducks under it. That is about all that has happened so far. Now Jack goes in close, drives a couple of lefts and rights to the body while Sharkey gets a left and a right over to Dempsey's face. Sharkey puts a hard right uppercut to Dempsey's jaw, as Dempsey keeps weaving in.

Sharkey has a pretty good game of coming in under Dempsey no matter how long Dempsey comes in weaving. Now they are shoulder to shoulder again, but not doing anything for the moment, just struggling a bit. Sharkey puts a light left to the face and then a right and a left, both of which are light, to the face.

Not much action now. They are wandering around the ring looking each other over. Now they have gone into a half-clinch again and Dempsey puts over a hard left which strikes the top of Sharkey's head. He tries another left for the jaw, a swing, but is just short. But he is constantly boring in. Sharkey puts in the hardest blow of the fight, which shook Dempsey heavily, a left uppercut to the jaw, a right upper to the jaw, but Dempsey comes back the best he can and puts in a number of body blows at close quarters. Dempsey's head is now leaning against Sharkey's chest as Dempsey strives to beat up the body.

Sharkey had a reputation, you know, of not being able to hit in the midsection, but he has certainly been taking some. Now they are close again, Dempsey pounding the midsection. Now the referee parts them. As they come together Sharkey puts a short left to Dempsey's face, and Dempsey constantly bores in, trying again for the knockout. Both boys swing rights and lefts, both aiming.

Dempsey gets Sharkey with a long left that was pippin, and Sharkey comes back and retaliates with a right to the face. Sharkey really looks in a little better shape than Dempsey.

I don't know whether you heard or are hearing the boos of the crowd or not, but after the bell rang Dempsey struck Sharkey once, and then upon Sharkey turned around and hit Dempsey twice, not hard, but just to show, I believe, that he did not care to be hit after the bell had rung.

### ROUND SEVEN

McNamee: Now they are back in the middle of the ring. Dempsey puts a left to the jaw. Sharkey retaliates with a left to the body. Dempsey gets in another left to the body. They are close in together, and Sharkey is working at punches, and Sharkey seems to me to be a little arm-

weary. Dempsey drives another short left to the body, and again another short left to the body, and right. Then he brings his right up to Sharkey's jaw, and Sharkey catches him with a right to the jaw. All these blows are short.

Sharkey is down from a left to the side of the body. Sharkey is down! Dempsey has returned to his corner. They are counting over Sharkey, and he is out. Sharkey, knocked cold by Jack Dempsey, is carried to his corner by Dempsey and the referee. Sharkey is knocked cold! He is taken over to the other side of the ring. That was one of those terrific left hooks to the jaw. Sharkey down! It was a left hook to jaw.

I am sorry I stopped there for a moment. Time, 45 seconds, Joe Humphries just told me—a left hook to the jaw. Now, just a minute; I am going to try to get Jack to say something. In just a few moments we hope to have Dempsey over here to say a word to his admirers. Dempsey tonight seems to be the most popular pugilist that ever walked. Jack, Jack, Jack! Just say "Hello," Jack.

Dempsey: Hello, everybody! I am tickled to death to be here. Thank you very much.

McNamee: At the time of the knockout it did not seem that there would be a knockout, but all of a sudden this famed left hook of Dempsey came over with terrific force and Sharkey fell forward. Those are the hard blows; always the blows that bring a man down face foremost. Sharkey has just recovered from the effect of his terrific knockout and is now retiring from the ring. Humphries will tell you about the time.

Humphries: Time of round, 45 seconds, seventh round; the winner, Dempsey by a knockout.

A new record, even exceeding that of the Lindbergh reception in Washington, was set up by broadcasters of the Dempsey-Sharkey fight. The transcontinental network had one more station when Station KIIQ of Spokane, Wash., agreed to join and broadcast the fight, making a total of fifty-one stations from Maine to California and from Texas to the Canadian border. Official estimates of the audience for this network of broadcasting stations put the number at 50,000,000, believed to be the largest Radio audience on record.

## SHORT WAVES

By Marcella

(Continued from page 2)

"Get hot, Marcella, and dig up all the dirt for me about Al Melgarde," says D. M. L. The best I can do is tell you that Al has sandy hair, what there is of it. All the men at WLS are the nicest things and everyone of them is married. Al is too old for beautiful children. He is six feet tall and is about thirty-three years old. Oh my yes, he has his vices. If you don't tell anybody, here they are. He goes duck hunting and plays golf and worst of all, likes to fish. His poor family!

You have me all wrong, Caroline. WFBE has not answered my letters as to where Louis John Johnen has gone. Be your most frivolous.

Where, oh where, has that Arthur Hays gone? Elizabeth Ann, I guess we will have to page him, for no one answers any letters about him.

What deep secret would you like to know about your favorite broadcast star? Drop me a note, girls and boys, and I'll do my best to answer here. MARCELLA.

## RECORD RADIO BANQUET

(Continued from page 5)

Columbia Light Opera company, Cluquet Club Eskimos, American Singers, Major Bowes and the Capitol Family, Moran and Mack, Red Nichols and the Charleston Chorus and the Happiness Boys.

But the banquet is only the beginning. When the last word has been said Major White and probably several others of the leading functionaries will be whirled away to a flying field and bundled into airplanes for a jump to Chicago. They will have a few hours to nap as the planes zip over the clouds. Then they will come down, possibly in Chicago's island airport, just off the shore from Soldier Field, where the championship heavyweight fight will be held the evening of September 22.

All day electrical engineers will be laboring to effect the prodigious switch-over from the New York key to the Chicago key. When the gong strikes and the two gladiators of pugilism stand beneath the glare of the movie lights ready for action the microphone masters will be but a few feet away telling the Radio listeners from Seattle to Miami just what is being said and done as each moment progresses. It may be possible to hear the thud of padded fists slugging against hardened flesh through the microphones erected at the ring corners, as in the Dempsey-Sharkey fight.





## MAJOR FROST SURRENDERS SHIRT

"Sir, you will find here some of your bosom friends," said the pirate to Maj. Frost, presenting one autographed shirt front. "And I should say from general appearances of the memorial that they were all on a grand tear." Then they handed him the sweet corn and onions.



All work and no play makes salesfolk a dull company; and, with business competition the way it is, an up-and-going organization like the Cunningham tube makers and dealers can't tolerate dullness. So here we have Mr. Curtis A. Wessel in the last act of demanding the shirt off the back of Major Herbert H. Frost, general sales manager of E. T. Cunningham, Inc., at a Cunningham distributor's convention in Chicago.

"However," explained the bandit, politely returning with the starched front copiously autographed. "We have decided to return the hard boiled portion, as you probably will need it." Major Frost responded appropriately and fittingly in a blue shirt that had been given him as a substitute for the dress garment. He was presented with a bouquet of practical garden offerings.

## Old Bill Thrilled by Katz's Violin

WMBB Listeners Introduced to Century Old Cremona That Entertained Czarina of Russia

JUST a violin, but it takes Old Bill of the Trignon to tell WMBB listeners the story of Theodore Katz and his old Cremona.



"Really it's a romance," he says with a touch of dramatic emphasis. "Katz and his violin are a devoted pair. Each gives to the other that which the one lacks. Yes, yes—a true case of soul affinity, for a violin, I tell you, is a living thing in the hands of a master! Oh, you smile—a bit of wood and a piece of string? Well, what of it? What are we any of us but a bit of dust into which the Supreme Master has willed the breath of life?"

"So it is with Katz and his violin, the great Cremona. For nearly a century it has laughed and wept to sway the heart strings of a great possession. In the hands of its present master it has brought tears to the sad eyes of the murdered Czarina. It has thrilled the gay dancers of Paris and soiced the grief of those who mourned. From hands that have touched and lips that have caressed, now turned to dust, it has inhaled a living spirit, deathless as the angels. And now it comes to you with the master who feels it to be veritably a part of his own being. Listen, and you will hear the heart beats of a world that has rolled away!"

"What's the idea?" asked a visitor at the studio, for Old Bill was really wiping his eyes.

"I'm a hard old cuss," said Old Bill, rustling through a sheaf of note papers. "But I get feelings sometimes when I think of what is passing on, so full of meaning and so little noted. Ha! Ha! Sh! Listen!"

**Mexico Builds Powerful Stations**  
MEXICO CITY.—Two powerful Radio sending and receiving systems being completed at Chapultepec by the government will give Mexico world communication.

## WCFL Plans Broadcast of Invisible Labor Day Parade of Bygone Years

Chicago Federation of Labor Station Conceives Novel Idea to Carry on Old Custom—Radio Cultivates Good Will for Organization

LABOR DAY on the air will have an unusual setting from the WCFL station in Chicago. This station, owned and operated by the Chicago Federation of Labor, will present an old time Labor Day parade. It will be purely an imaginary parade but so far as the listener is concerned it will be just as real as though the announcer occupied a balcony on Michigan Avenue and described the scene as an eye witness for his Radio audience.

The broadcast will be made on the evening of September 2, from the Brunswick recording studios of the station, and since it will occur some two or three days before Labor Day, it follows there is something more unusual about the broadcast than merely its uniqueness.

Although modern figures in the labor world will be announced as taking part in the parade, actually the description and the incidental musical program will be



EDDIE HANSON

based on memory of parades of a decade or more ago. In other words, the imagination of the continuity staff of the station will be called in to provide a graphic description of a feature of past labor days, peopled with men and women of the present and with both old and new tunes and features of entertainment.

**Start From Water Tower**  
The imaginary parade will start from a point near the famous water tower, at Chicago Avenue and Michigan Boulevard, and proceed down the boulevard to Twelfth Street, where it will turn into Grant Park and through the park to Soldiers' Field. There it will pass before a reviewing stand occupied by national, state and city labor officials and public officers.

There will be nearly two hundred divisions, each with its own form of entertainment and each described in some detail by the WCFL announcer.

Of course, the incidental features of any Labor Day parade will be seen by the announcer and told to the Radio audience.

Brass bands, fife and drum corps, bugle corps, floats bearing singers and other entertainers, the cries of vendors of programs, peanuts, candy, chewing gum and other necessities of any well ordered parade will be heard. Rain or shine, the parade will be held and spectators may be assured of comfortable positions—in front of the loud speaker—from which to enjoy it.

When WCFL first took the air in December, 1926, it was not received with the popularity that it has since achieved. Street car strikes and building strikes had aroused a somewhat pessimistic attitude toward labor organizations by the general public. But WCFL has banished a great deal of that prejudice by proving itself of real service to everybody.

### Creates Good Will

The station was installed at the extremity of the Municipal Pier, a microphone was placed on the mayor's desk in the city hall and labor provided official Chicago an opportunity at all times and with the utmost convenience to communicate with the citizenship.

Programs were of good quality and facilities were extended. A \$25,000 Barton organ was installed and Eddie Hanson, star organist for the Balaban & Katz theaters, engaged for daily recitals. Subsequently loop studios were obtained with Brunswick company where Brunswick records are made. Some of the best Brunswick artists are heard regularly through WCFL.

Maurice Wetzel, famed for his originality and broadcast stunts, was engaged as director. Through the forward enterprise of C. E. Lundquist, business manager, the station has been able to fulfill the many hopes that had been cherished for its purpose as an instrument of public service and a builder of good will for the "Voice of Labor," which is its slogan.

Chicago was the first to have a Radio station owned by labor. Recently another labor station, WDEB, was dedicated in New York. The project of linking up a chain of labor stations has been considered for some time but Mr. Lundquist states that the plan has not reached the stage of definite action.

There are over 350,000 members of organized labor in the Chicago district and all are in harmonious working agreement.

## LITTLE JOE IS A "DIALECTICIAN"

Little Joe and his 'jo get confidential with the WCFL microphone—pity the poor piano once Joe gets a heel-hold on the keyboard. Joe has a box full of dialects ready for any song or occasion. Maurice Wetzel casts him the "WCFL Dialectician."



LITTLE JOE WARNER is generally the life of the party when WCFL, the Chicago Federation of Labor broadcasting station, puts on a program. Besides being a mere string twanger he has a voice and is an accomplished "dialectician"—if you know what that means. His song, "Wer You Worka Jon," called for many repetitions. Little Joe is really little, as one may see from his perch on top of the piano to reach the microphone. WCFL is located on the Municipal pier, a mile out from the shore in Lake Michigan. Special programs are broadcast from the Brunswick studios on Wabash Avenue. There also is a microphone through his station located on the mayor's desk in the city hall, convenient at all times for official communications to the people of Chicago.

### WJZ Uses Man's Size Tube

NEW YORK.—A Radio tube large enough to hold a tall man now operates in the transmitter of WJZ. It is seven and one-half feet high, weighs 100 pounds and has a power of 100 kilowatts.

## Non-Static Trio

THIS musical threesome helped the Subantenna Crusaders to keep their regular Wednesday evening KYW programs a noteworthy feature on that station. It is more than likely that the Subantenna Crusaders and their accompanists will be back on the air again when the leaves turn.





## ORIGIN OF "AIN'T GONNA RAIN" TOLD

WENDELL HALL CORNERED BY GIRL REPORTER

Song Hit Master Grows Suspicious When Asked What Inspired Him—Then Makes Confession

"It ain't gonna rain no mo; Oh it ain't gonna—" and right there, where the quotation mark ends, they shot him. They threw the body over the dyke and five minutes later the sun broke through the clouds and the rain stopped.

"Say, who started that song anyway?" asked the leader of the midnight patrol as he steadied the boat against the chimney while two bravny assistants lifted poor old Granny Stashaway off the gable of her hut for removal to the camp on the levy around the little bend.

And when he asked that question the doughty gentleman from Louisiana started something which you, you dear reader, are to learn more about here and now.

But you probably already know who started that song. Almost anybody who ever graced a pair of ears with a brace of head phones knows a certain red headed chap by the name of Wendell Hall, with a suite in the Loop-End building at State and Lake streets, Chicago, is the person who made rain the most advertised act of nature ever known in the history of the world, not excluding the historic nonstop deluge recorded in the log of Captain Noah's well known ark.

By Little Girl Reporter

Radio Digest's Little Girl Reporter was sent out to hunt down Mr. Hall and drag forth from him the terrible secret of how he came to write, "It Ain't Gonna Rain No Mo'." and this is her report:

"It had started to sprinkle and Moore had just raised my silk to protect my permanent permanent wave. As I glanced weatherward my eye caught a broad glint of gold lettering in an upper window across the street.

"Wendell Hall Music Publishers. . . . My quarry! Picking my way between two Checkers and a Yellow I gained the entrance of the building and soon as in the elevator soaring to the sixth floor.

Busy Mr. Hall

Mr. Hall was very busy in his private office but in a few minutes I entered, just as a slick looking agent of a large theatrical circuit stepped out, tucking some official looking papers into an inside pocket.

"Oh, Mr. Hall, how do you do?" I gasped.

He pretended he knew me at once but just couldn't think of my name.

"Sure," he laughed. "Funny how names slip you for a minute. Ah—member the big time we had up at the WLS birthday party an—"

"And you wore a red bandana and a Cornville hat?"

"Yeah—that's the time." (I had a good giggle to myself 'cause I wasn't there. Just had heard about it.

"Oh, dear, didn't we have fun! Mr. Hall. But that doesn't help me out any right now."

"Well, well, what can I do for you? Wanna hear my latest? I got seventeen out now—all my own stuff—and they're goin' hot! Let me—"

Won't Be Sidetracked

"Don't you try to get me off the track, sir. I'm here for a purpose. Honest Injun, now; how come you wrote, 'It Ain't Gonna Rain No Mo'?' No foolin' I want the low down—and nothing but, honesta—"

Immediately Mr. Hall became nervous and fidgety. He glanced out the window where little drops were trickling down the glass. The habitual long black cigar suddenly vaulted from one corner of his mouth to the other. He turned his startled eyes on me questioningly for an instant.

"I'm sure I heard you correctly?" One sandy eyebrow arched kater-corner from the tip of his cigar. "You asked me, did you not, how I came to write, 'It Ain't Gonna Rain No Mo'?"

"Yes, that's exactly what I asked you. And I meant it!"

"How very strange, very strange. I can't recall—no, I don't believe anybody ever asked me that question before. Do you mind telling me why, WHY you asked that question? I really must know."

He set his jaws in a grim, suspicious manner while I explained the purpose of my quest.

Confidence Restored

Presently his features relaxed slightly and he leaned toward me confidentially. "Very well," he said, huskily, "you shall hear the truth. I tell it now for the first time. Once in England there was a scribe approached me and I knew that he had malice in his heart as he almost ventured to ask me a similar question. But I choked him before he could get it off his tongue. He has never been able to speak above a whisper since. I feared that you too—"

"My goodness!"

"Fear not. To tell you the ghastly truth," he paused to go over to the door, listen, then close it tightly—"I must confess—I heard that tune first, long, long ago when I was knee high to a tree toad. It stuck in my memory. I dreamed of it.

It became part of my life, my soul, my very being! I learned the business of writing music that I might engrave it indelibly. Ah! Fate brought me to KYW. 'Twas but a few years ago. I hummed and mumbled little verses that came into my mind. They fitted the tune. Never sang the same words twice until finally it all resolved into one set of verses which I really nailed down to. 'It Ain't Gonna Rain No Mo' and the Radio listeners demanded that I sing it over and over again.

"From Radio station to studio I wandered over the face of the earth. Everywhere I was imprompted to sing that rain song. I went to Hawaii, London, Paris and even to New York. At last I realized that I had something—a song that was valuable. The record people wanted it, I sold it to Victor. Three years and it became popular. I made, 'It Ain't Gonna Rain No Mo' and it made me. Yes suh! It and Radio—well that's my secret. I've told you everything now. That's all; there isn't any more. My conscience is clear now. I—"

Well, there's the story. And if you don't believe it, try asking Wendell Hall how he ever happened to write "It Ain't Gonna Rain No Mo'."

## LITTLE MISTRESS OF WLW ORGAN



## Borrows \$50 And Wins \$500 Prize

Lexington Woman Envious Editor—Another String of \$3,000 Awarded—WJR Mystery Entry

"I almost envy you the power to make so many people happy, as you are doing. I know I never had such a thrill in my life as I felt upon receiving your letter of the first stating I had won one of the first prizes. And a queer coincidence was that I had just made arrangements to borrow fifty dollars for an operation that had to be performed. It is such a wonderful feeling of relief to know that that will be taken care of. And besides there are one pair of eyes and four sets of teeth to be fixed. Isn't it nice to know that someone is getting it who really needs it instead of someone who can have all of those things done anyway!"

That's a good sample of the letters of acknowledgment received by Radio Digest for Whozit prize winners announced from issue to issue. This letter was written by Mrs. Louise Baker, 185 Massachusetts ave., Lexington, Mass.

And here we are with another list of prize winners scattered across the continent—three of the twenty-four stations that played the Radio Digest game of Whozit:

### Prize Winners

**WMAK, Buffalo, N. Y.**  
1st Prize, \$500—Mrs. J. C. Albright, Medina, N. Y.

2nd Prize, \$300 Federal Orthosonic Receiver—Miss Ruth Newman, Lyndonville, N. Y.

3rd Prize, \$200 Howard Receiver—Mrs. Leon Y. Lassiter, 1702 Troost avenue, Tulsa, Okla.

**WMC, Memphis, Tenn.**  
1st Prize, \$500—Alma Tschumi, 745 St. Paul avenue, Memphis, Tenn.

2nd Prize, \$300 Atwater Kent Equipment—Mrs. J. F. Flowers, Carlsbad, N. M.  
3rd Prize, \$200 Atwater Kent Equipment—Mary Sue Robinson, Milan, Tenn.

### KFWB, Hollywood, Calif.

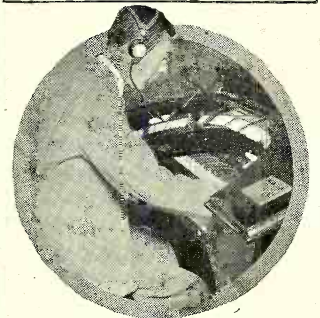
1st Prize, \$500—Minnie B. Morris, 4515 South 17th street, Omaha, Neb.

2nd Prize, \$300 Orthophonic Victrola—Mrs. J. M. Cashin, 112 North Broadway, Greenville, Miss.

3rd Prize, \$200 Atwater Kent Receiver—Mrs. Fred Westfall, 735 Hamilton street, Toledo, Ohio.

PROBABLY the greatest and most cumbersome—as well as the most expensive—instrument in all the musical repertoire of WLW, Cincinnati, is the pipe organ. In its serried tubes and massive flutes are brought together all the elements of the symphonic orchestra and brass band. Each note is attenuated by an electric nerve brought to a bewildering circle of small white keys, stops and pedals. Great and ponderous as it is, this mighty instrument becomes utterly docile and sweet between the slim young fingers of Miss Bessie Critcher whose picture smiles at you from above.

## KPO DEDICATES NEW BROADCAST ORGAN

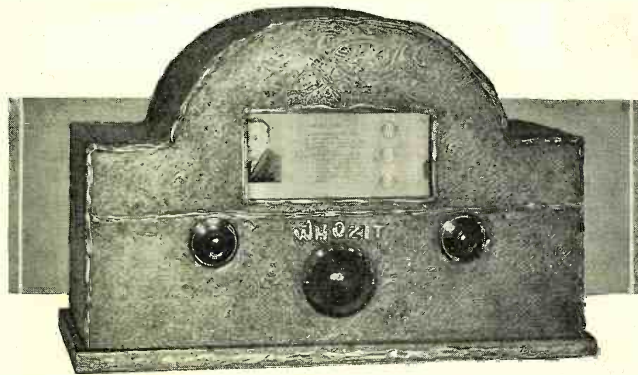


### UDA WALDROP, KPO

BROADCASTING pipe organs have become to make life more enjoyable to the Radio listener. The organ of the air is a special creation of the art of music. The latest, and possibly the finest, example of this instrument is the new Philharmonic organ inaugurated August 16th in the KPO studio at San Francisco.

San Francisco is the home of great organists. The KPO organ was introduced to the Pacific coast area by Uda Waldrop, one of the few distinguished concert organists. Mr. Waldrop personally supervised the construction of the Philharmonic at Weite company in New York. Certain tones have been eliminated to give more volume to others, more adaptable for transmission than the notes of the theater or church organ. The product is the result of six years' experimental work to achieve this end.

## WHOZIT ENTRY FROM WJR MAY WIN PRIZE IF OWNER PROVES PROPERTY



SOME admiring listener of WJR, Detroit, spent many hours and some money to fashion the above cabinet as an entry in the Radio Digest Whozit contest. It is one of the best entries from the Detroit station and doubtless is entitled to a prize in the opinion of the judges if they can locate the Whoziteer who made it. No name is attached to the entry but there are sufficient marks to satisfy the judges if the rightful owner will write in and describe its appearance and contents. The owner must be sure to give convincing details.

There are still many entries to be awarded prizes, which are being presented at the rate of \$3,000 each issue. Every selection made by the judges is carefully investigated to make sure that all rules and conditions were complied with by the individuals to be awarded prizes. Many thankful letters have been received from those who have already received either cash or a valuable receiver in reward for their efforts in learning names, facts and writing about the artists who entertain over 24 of the leading broadcast stations.



## Boy Radio Chief Builds WSEA, Va.

Tom Little Is Typical Go-Getter—President of Two Companies Builds Norfolk Station

"THE Voice of Tidewater Virginia" at WSEA, Virginia Beach, has developed such range and power that a great many people have expressed particular interest as to the forces and personalities behind it.

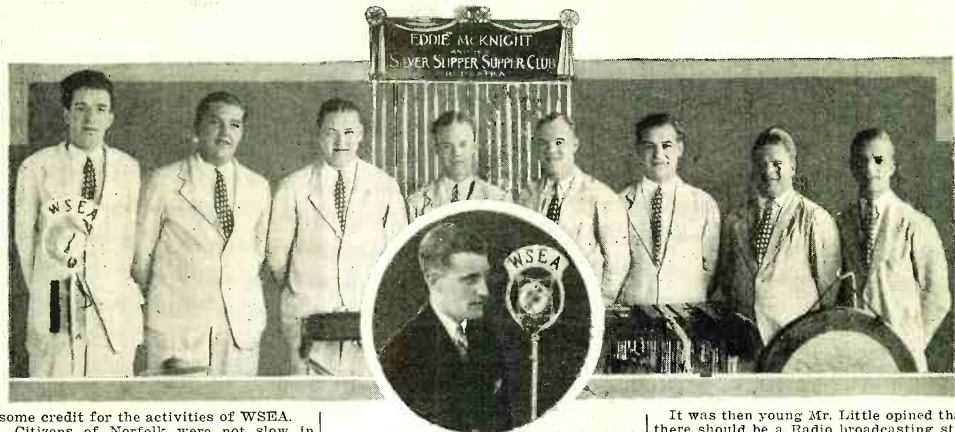
"In reality 'The Voice of Tidewater Virginia' is none other than that of George L. Sutherland, manager and announcer at WSEA, who came to Virginia Beach with several years of experience in the Radio field," says the Virginia Pilot and Norfolk Landmark.

But back of Mr. Sutherland is still another dominant personality. His name is Tom F. Little. Mr. Little is 25 years old and president of the Radio Corporation of Virginia, president of the Virginia Beach Broadcasting company, organizer of the Twenty-ninth Signal company of the Virginia National Guard, the only military unit of the kind in the state, a first lieutenant in the U. S. army reserves, is Tidewater representative of the Independent Wireless company of New York, installs and inspects all ship wireless of coastwise and trans atlantic passenger and freight ships, privately owned, and government vessels. Besides that he has taken several jaunts around the world as wireless operator. But these are just incidental interests of this young corporation magnate. His real job is supervising a general Radio store, said to be the largest in the state.

Thank Mr. Little

So Mr. Little, who is merely an executive and not an artist, by profession, deserves

## DIRECTOR AND THE SILVER SLIPPER BOYS OF WSEA



some credit for the activities of WSEA.

Citizens of Norfolk were not slow in joining the Radio craze at the beginning. They enjoyed Atlantic City and New York stations until the warm weather began to interfere. Then dust began to collect on the receivers. In 1925 some of the old timers gathered around and talked about organizing a broadcasting station in Norfolk.

The idea proved immediately popular but it seemed there were certain interests hostile to the idea. Negotiations were opened for the old WLS 500-watt transmitter at Chicago. An option was paid. But efforts to obtain a license in Washington met with

such opposition that all the up-hill work that had been accomplished went down to defeat in the office of the department of commerce.

It seemed like a stone wall until the attorney general proclaimed his famous opinion so far as it concerned the authority of the secretary of commerce to withhold licenses from ambitious would-be broadcasters.

Previous efforts had sapped the first enthusiasm of those who thought they had labored to perform a public good and their labors had been unappreciated.

It was then young Mr. Little opined that there should be a Radio broadcasting station in the Tidewater Virginia area. Past sporadic and unsuccessful agitations on the subject bore no weight with him in his final decision to get behind the project. He proposed that the new broadcasting station should be located in the Cavalier hotel. He organized the financial backing and engaged Thomas McCaleb, the best engineer he could find, to begin construction at once.

When the station was ready to take the air with the best possible transmitter manufactured he sent to Miami and persuaded Mr. Sutherland of WMB on the Fleetwood hotel to take charge of the programs. The voice of Mr. Sutherland had already become famous through the Miami station and Station WJZ, Springfield, Mass., previously. The station was dedicated April 11, 1927.

One famous orchestra after another was added to the WSEA string of musical entertainers, and probably the grand climax came with the arrival of Eddie McKnight's Silver Slipper orchestra from WPG's famous studio on the Million Dollar Steel Pier at Atlantic City. This orchestra had been a favorite with Virginia listeners for three years.

Silver Slippers Assist

But the Silver Slipper boys did not detract in the least from the popularity of the Ben Bernie Cavalier Hotel orchestra or the aggregation of ten artists under the leadership of Mr. Moe Baer, who began as a prodigy himself by leading an orchestra in a Baltimore theater when he was 12 years old. Mr. Sutherland promptly inaugurated a program of features that included news flashes, play-by-play sports, financial reports, police news of general interest, special music for studio, dinner and dancing; fun and frolic clubs, famous speakers, stunts, farm reports, conventions and numerous other incidentals. The new fall program will see this list largely extended, says Mr. Sutherland.

Originally WSEA had a wave of 516.9 meters, but the Radio commission took this wave from them and gave them 218.3 meters instead. Recent efforts to regain the original wave were not successful.

## Atwater Kent To Pay RCA Back Royalties

ANOTHER proud head bends to the Radio Corporation of America patent rights and the Atwater Kent Manufacturing company has announced its agreement to pay royalties over the selling period since January, 1923. The negotiations were carried on between Atwater Kent, head of his own organization, and David Sarnoff, vice president and general manager of the Radio Corporation of America.

The agreement also provides for the payment of royalties on future sales of "such sets" (words of Atwater Kent official announcement) to be made by the Atwater Kent Manufacturing company. The terms of royalties are based on the standard RCA licensing agreement of 7½ per cent.

"It is the policy of the Radio corporation to encourage legitimate competition," said Mr. Sarnoff. "We have never desired a monopoly in the sale of radio receiving sets, but have wanted to be compensated for basic invention and development. No restriction has been placed on volume or prices of Atwater Kent."

The condition now existing among Radio manufacturers has been compared to that which a few years ago existed in the motion picture industry, when practically all the patents were controlled by the General Film company. When the grip of this powerful combination had been broken the motion picture industry quickly blossomed into its present magnitude.

## WDAD ARTISTS COMPRISE ONE BIG HAPPY FAMILY



sometimes we find our own entertainers from people who never before appeared in public," he said.

Mr. Exum told the story of a blustering young fellow who butted in while the announcer was on the air.

"Tell 'em I'll challenge everybody within hearing to a French harp contest," he whispered.

Exum Tells Fans

Acting on the spur of the moment Mr. Exum told his listeners what had just been said and set a time for the contest.

When the time came for the voting a little hunch-backed darky boy appeared to contest for the honors.

The challenger faded out of sight after the small black boy demonstrated his ability before the microphone. The listeners voted almost unanimously for the little hunchback, not knowing that he was as black as the ace of spades. The boy proved his genius so well he was afterward sent to New York for special training.

One reason that housewives and members of the Parent Teachers' Association like WDAD is that they are getting a lot of helpful information from Mrs. Gordon Parman, director of the home service bureau. Mrs. Parman bakes and cooks because she dotes on it as an art. She maintains a permanent exposition and does her culinary work in a kitchen studio right before the microphone.

"It pays to advertise, and to advertise over the air," said Mr. Exum. "Our broadcasting has brought a phenomenal growth to our automobile accessories business."

DOWN at Station WDAD in Nashville they have a jolly, happy family of entertainers. It is the only station in town, so it is claimed, that maintains a staff of paid artists. That may be one reason why they all seem so happy. But, according to F. E. Exum, announcer, who recently paid a visit to Radio Digest, the good cheer and fellowship is just as great among the WDAD listeners as it is among the artists—and the listeners aren't paid, except for what they gain through tuning in the station.

"Sometimes we write our songs and

THEY look and play like real Hawaiians and many listeners of WDAD, Nashville, will swear that they are real Hawaiians. But, as a matter of fact, the gentleman on the left is Bob Martin and his partner is Tom Fields—the team of Fields and Martin. The good looking lady, below, is Mrs. Gordon Parman, and she knows her onions when it comes to cooking nice things to eat. She directs the WDAD home service bureau.





# Broadcasting of Interest to Home Makers

## Menus, Recipes for the School Child

Contributed by Radio Food Experts

**R**EALIZING that the children would be starting school this month and the busy mother would appreciate a little help on the problem of feeding the youngsters we have written to the various experts broadcasting over the air and have asked their advice about foods for school children.

Mrs. Katherine Norton Britt, manager of the Buffalo Home bureau who broadcasts Tuesday morning at 10:30 a. m. from WGR, has written the following capable article which will give the mother a general idea about children's foods. Mrs. Britt, a graduate of the Teachers college at Columbia university, specializes in diet and nutrition.

### Balanced Diet

Mrs. Katherine Norton Britt, WGR. School days return with the tang of fall in the air, and it can hardly be said that they have been eagerly awaited by mother or child. For, as the children lose the sturdy tanned appearance and fret under the classroom routine any mother looks a little anxious. Now is the time to supplement the meager pittance of sunlight with two daily teaspoonfuls of cod liver oil, bottled sunlight.

Next, look to the food, a fat child is not always a well nourished child. It may be that your child in the midst of plenty is suffering from malnutrition. There are a few vital elements necessary in the child's diet. Milk is very important. It cannot be overstressed. Give Mary milk, raw or in custards, junket, malted milk, milk puddings, etc.

Children need a certain amount of protein, for which there is no better source than meat. Four ounces of beef or mutton daily is enough for the child from six to twelve years. Calcium is furnished in milk if sufficient quantities be given. Iron is present in milk, but in small quantities. Beef, mutton, eggs, oatmeal, whole wheat bread, peas, beans, raisins and prunes furnish iron, but spinach is the richest in this element. Iodine is usually supplied by drinking water, but in regions where water is furnished from mountain streams and inland lakes, iodine must be furnished by other means. Salt water fish is rich in this property. The humble codfish especially is a splendid food.

Ripe fruits provide valuable mineral salts. Bananas, because picked green, do not contain elements found in bananas that ripen on trees; also because the fat of

bananas is hard to digest, they must be used sparingly. Apples must not be eaten unless thoroughly ripe. Orange, grapefruit and lemon juice must be given. Baked apples are good, also stewed fruits. Prunes and figs are especially valuable as regulators of the bowels. And it is now generally conceded that it is better for the child to get the sugar of his food from fruit and starches than to be fed sugar in the diet.

With a diet including all these elements, I assure you the children will be prepared to face the rigors of the coming season and emerge strong and well.

We are going to specialize this issue in giving you ideas for the children's lunches. Mrs. Anderson, who has three children of her own, contributes the following ideas.

### The "Packed Lunch"

Judith Anderson, WLW

As the "packed lunch" seems to present the greatest problem to mothers, I am offering some hints on the packing of lunches as well as a few menus for the month of September.

The container for the lunch should be strong, light and slightly ventilated. Unless hot soups or cocoa are provided at the school, a thermos bottle should be part of the equipment. Line the container with a paper napkin, and wrap each article of food in waxed paper. It is well to pack the foods in the order of their use; that is, with the dessert in the bottom. And don't forget the folded napkin in the top of the container.

Salads may be made of vegetables and placed in a lettuce lined drinking cup with a damp lettuce leaf placed over the top and the whole wrapped in waxed paper. Various sizes of small screw top glass jars are ideal in which to carry cooked fruits, sandwich fillings, sauces, sliced fruits, cottage cheese and the like. Celery, lettuce, raw carrots, tomatoes, or some fresh uncooked fruit should be included in every lunch. Include in the daily lunch a "wee surprise"—a bit of pure candy, chocolate, an unusual cake, mints, or nuts, raisins or dates. These are to be eaten as dessert, of course, and should be packed in the bottom of the container.

Children adore individual servings, so try adding wee fruits, tarts, sponge cakes made in muffin tins, and cups of custard. Bake the sandwich bread in round cans occasionally as the child will like the new round sandwiches. Attractive sandwiches can also be made with cookie cutters.



Aunt Minnie, WLS

**L**ITTLE did Aunt Minnie, Mrs. Minnie G. Stearns, think when she worked so hard on the farm down in Philo, Champaign County, Illinois, that some day she would be talking to thousands of other farm women, through a metal disc called a microphone. Twice a week at WLS, Chicago, Aunt Minnie gives advice on what to do with the farm, the poultry, the animals and the children. For there is no part of the farm work she has not handled herself and she is the mother of six children.

In order to understand how WLS heard of Aunt Minnie, one must go back twenty-five years to the time Mrs. Stearns, not being satisfied with scrubs and mongrels, bought one setting of pure bred eggs and started pure bred chicken raising. Through advertising in a national farm journal she sold these chickens all over the United States and even shipped large consignments to South Africa. The journal, interested in this enterprising farm woman, asked for a personal letter about her success through advertising and for a picture of herself. When this picture was published, Aunt Minnie was asked for articles on farming by farm papers all over the United States, and it was thus she broke into the editorial game.

Self-educated, Aunt Minnie studied the books and good magazines she kept in her

home and learned how to write in magazine and newspaper style. She has that thing called a "nose for news" and she has the feeling for a good story. All her writing during her busy life has been done at night. More than one night has found her writing until 2 o'clock in the morning.

For over twenty-five years this unassuming farm woman has carried a three-week job, that of a farmer, that of an editor, and that of a mother and been equally successful in all. She only gave up farming two years ago when her youngest son married. Her editorial work had attracted the attention of WLS and the offer to work for this big broadcaster came to her at a time when she was looking for something new to do. As she is on the air only two mornings a week, her broadcasting does not interfere with her writing. She still sends out articles on all sorts of subjects. She is also the associate editor of a large Illinois paper.

### Meat Dishes for the Child's Lunch

John Cutting, WMAQ

#### 1 Broiled Bacon with Spinach

Boil or steam the spinach until tender, using only a little water and allowing it to cook down. When done, cut spinach into small pieces or force it through a coarse sieve. Season with a very little salt.

Cut bacon into thin slices and broil on a wire rack or place on a trivet in a hot oven allowing the fat to drip off as the bacon cooks. Remove from the fire when bacon becomes transparent but not crisp and serve with the spinach.

#### 2 Mutton Broth with Barley

Make a mutton broth according to general directions for making meat broths. It can be seasoned by adding a bit of carrot, celery and parsley to the broth while cooking. When done, chill, remove fat and strain.

Soak the barley over night. Add to broth and simmer till barley is tender. If the broth cools down too much, add hot water to dilute it.

#### 3 Liver and Raisin Sandwich Filling

1 cup liver, cooked very finely chopped  
1/2 cup seedless raisins - 1/4 teaspoon onion, ins grated  
1/2 teaspoon salt - 2 tablespoons mayonnaise

Grind liver and raisins, add seasonings and moisten with mayonnaise to give good consistency to spread.

## WOMAN'S PROGRAM INDEX

(Daily Unless Indicated)

### Household Economics, Women's Hour, Etc.

Atlantic	Eastern	Central	Mountain	Pacific
9:10 a. m.	7:10	6:10	5:10	4:30
WJZ (344.6m-590kc), Home question box.				
10	9	8	7	6
WIP (508.2m-590kc), Menu, Tues, Thurs, Sat.				
WGDS (349m-860kc)				
10:30	8:30	7:30	6:30	5:30
WTAG (283.3m-1040kc), ex Sat.				
WWJ (374.6m-800kc), Tonight's dinner.				
10:45	8:45	7:45	6:45	5:45
WBZ (333.1m-900kc), Radio Chef.				
11	9	8	7	6
WBAR (270.1m-1110kc), Modern Housekeeping hour; less work in the American home.				
WCH (361.2m-830kc), ex Sat.				
WEAF (491.5m-610kc)				
WLAN (423.3m-700kc), Woman's hour.				
11:15	10:15	9:15	8:15	7:15
KDKA (315.6m-950kc), Homekeepers' period, Tues, Thurs.				
WCBE (516.9m-580kc), Household hints, Ann Page.				
11:30	10:30	9:30	8:30	7:30
WOR (422.2m-710kc), National Radio Home-Makers' club.				
WRG (475.9-630kc) Mon.				
12 n.	11	10	9	8
WEIB (365.6m-820kc), Prudence Penny.				
WMAQ (447.5m-670kc), Calnet hour.				
WSD (475.9-630kc)				
12:30 p. m.	11:30	10:30	9:30	8:30
WGN (305.9m-980kc), Home management.				
WMAK (458.1m-550kc), Food talk, Tues, Sat.				
12:45	11:45	10:45	9:45	8:45
WHAD (293.9m-1020kc)				
WMAK (545m-550kc) Food talk.				
1:30	12:30	11:30	10:30	9:30
KPVI (307.7m-1120kc)				
KYA (269.1m-970kc), Shopping service, Mon, Tues.				
2	1	12	11	10
KGV (491.5m-610kc), Household helps.				
KJB (348.6m-860kc), Prudence Penny.				
KPD (422.2m-710kc), Tues, Thurs.				
KPDS (340.7m-880kc)				
2:05	1:05	12:05	11:05	10:05
WJZ (454.3m-660kc), Daily menu, Mon, Fri.				
2:20	1:20	12:20	11:20	10:20
KFI (468.5m-640kc), Mon, Wed, Fri.				
WSM (340.7m-880kc)				
2:30	1:30	12:30	11:30	10:30
KEX (239.9m-1250kc)				
ROMO (305.9m-980kc), Toting Cooking school.				
WGY (379.5m-790kc), Economics talk.				
2:40	1:40	12:40	11:40	10:40
KJR (348.6m-860kc), Shopping service.				
3	2	12	11	10
KOIN (319m-940kc), Housewife's hour.				
WGHP (319m-940kc), Home hour.				
3:05	2:05	1:05	12:05	11:05
KJA (348.6m-860kc), Residence Penny.				
3:15	2:15	1:15	12:15	11:15
KOIL (277.6m-1080kc), Shoppers' aid.				

### Fashions and Sewing

Atlantic	Eastern	Central	Mountain	Pacific
2:20 p. m.	1:20	12:20	11:20	10:20
WJZ (454.2m-660kc), "Personality in Dress."				
2:35	1:35	12:35	11:35	10:35
KPO (422.3m-710kc), Fashion critic, Fri.				
2:45	1:45	12:45	11:45	10:45
WOS (468.5m-640kc), Wed.				
2:55	1:55	12:55	11:55	10:55
KQA (325.9m-920kc), Fashion review, Tues.				

### Health and Beauty

Atlantic	Eastern	Central	Mountain	Pacific
10:15 a. m.	8:15	7:15	6:15	5:15
WTAG (516.9m-580kc), Health talk.				
10:30	8:30	7:30	6:30	5:30
WNAC (265.3m-1130kc), Care of the hair.				
WTAG (516.9m-580kc), Talk to mothers, Thurs.				
11	10	9	8	7
WVAC (447.5m-670kc), Mon, Thurs, lesson in beauty.				
11:45	10:45	9:45	8:45	7:45
WTAM (309.3m-750kc), Tues.				
12:30 p. m.	1:30	12:30	11:30	10:30
KFON (241.8m-1240kc), Physiology of beauty.				
KYA (269.1m-970kc), Care of the hair, Tues, Wed, Fri.				
2:30	1:30	12:30	11:30	10:30
KJR (348.6m-860kc), Health talk.				
2:45	1:45	12:45	11:45	10:45
WEIB (365.6m-820kc), Health talk, Dr. Bunsdesen.				
3:00	2:00	1:00	12:00	11:00
KGA (260.7m-1130kc), Dietetic talk, Wed.				
3:20	2:20	1:20	12:20	11:20
WRBL (232.4m-1200kc) WEOA (282.3m-1060kc) Care of the hair, Tues, Thurs, Sat.				
KLZ (267.7m-1190kc), Care of the hair, Mon, Wed, and Fri.				
3:40	2:40	1:40	12:40	11:40
WDAD (225.4m-1330kc), Care of the hair, Tues, Thurs.				
3:50	2:50	1:50	12:50	11:50
KHI (405.2m-740kc), Dr. Phillip M. Lovell.				
4	3	2	1	12
KNX (316.9m-890kc), Dr. Robert T. Williams.				

### Gardening

Atlantic	Eastern	Central	Mountain	Pacific
10:35 a. m.	9:35	8:35	7:35	6:35
WCAE (516.9m-580kc), Garden bulletin.				
2:20 p. m.	1:20	12:20	11:20	10:20
KFI (468.5m-640kc), "How and What to Plant."				
2:30	1:30	12:30	11:30	10:30
WVAC (447.5m-670kc), Garden bulletin.				
4:15	3:15	2:15	1:15	12:15
WIP (508.2m-590kc), Home Gardening, Mon.				

### Women's Clubs

Atlantic	Eastern	Central	Mountain	Pacific
10:30 a. m.	9:30	8:30	7:30	6:30
WIP (508.2m-590kc), Women's club.				
11:30	10:30	9:30	8:30	7:30
WHT (416.4m-720kc), Women's club.				
7	6	5	4	3
KNX (336.9m-890kc), L. A. Dist. Federation Women's clubs, Fri.				

### News

Atlantic	Eastern	Central	Mountain	Pacific
10 a. m.	9:30	8:30	7:30	6:30
WGN (305.9m-980kc)				
10:30	9:30	8:30	7:30	6:30
WEIB (365.6m-820kc)				
11:35	10:35	9:35	8:35	7:35
WVAC (447.5m-670kc)				
11:55	10:55	9:55	8:55	7:55
WEI (447.5m-670kc)				
12:30 p. m.	11:30	10:30	9:30	8:30
WHAS (461.3m-650kc)				
12:45	11:45	10:45	9:45	8:45
WTIC (475.9m-630kc)				
1	11	10	9	8
WTAG (516.9m-580kc)				
1:45	12:45	11:45	10:45	9:45
KOIL (277.6m-1080kc)				
2	12	11	10	9
KGV (491.5m-610kc)				
2:30	1:30	12:30	11:30	10:30
KFON (241.8m-1240kc)				
WGBP (236.1m-1270kc)				
2:40	1:40	12:40	11:40	10:40
WCAE (516.9m-580kc)				
3	2	1	12	11
KGA (260.7m-1130kc)				
WHAD (293.9m-1020kc)				
4	3	2	1	12
WVAC (516.9m-580kc)				
4:15	3:15	2:15	1:15	12:15
WTAG (516.9m-580kc)				
4:35	3:35	2:35	1:35	12:35
WEIB (365.6m-820kc)				
4:55	3:55	2:55	1:55	12:55
WMAK (458.1m-550kc)				
5:10	4:10	3:10	2:10	1:10
WTIC (475.9m-630kc)				
5:15	4:15	3:15	2:15	1:15
WTAG (516.9m-580kc)				
5:40	4:40	3:40	2:40	1:40
WDBO (288.3m-1040kc)				
5:50	4:50	3:50	2:50	1:50
KOA (325.9m-920kc)				
6	5	4	3	2
KOIN (319m-940kc)				
6:20	5:20	4:20	3:20	2:20
WTAG (516.9m-580kc)				
6:30	5:30	4:30	3:30	2:30
KJA (348.6m-860kc)				
6:40	5:40	4:40	3:40	2:40
WVAC (516.9m-580kc)				
6:50	5:50	4:50	3:50	2:50
WTIC (475.9m-630kc)				



# Clean, Brush and Rejuvenate for Fall

## Hints on Overhauling Receiving Sets

By James McDonald

**L**AST season's programs were mighty good and evening after evening we had wonderful entertainment both from the chains and from individual stations. Those who had brand new sets or had taken the comparatively short amount of time necessary to clean up the old one, heard orchestras and soloists with a realism that made the Radio a program of entertainment, when guests were present, of which one could be proud. Dinner hour programs from metropolitan hotel orchestras served to make many a dinner (or supper, depending on where you live) much more enjoyable. This year we are promised more good programs, and many even better ones.

It is up to the owner of each individual set to see that his reception is clear, clean and consistently good—free from interruptions of the set's own making and from the "static" which frequently mars the long-looked-forward-to feature. I have emphasized that word "static" because the majority of the crackling which interferes with perfect reception up in northern states, is made right in the installation itself. Much of the "bad atmospheres" with which we grandiloquently alibi poor performance to our friends, is due to low efficiency in the set or its power supply.

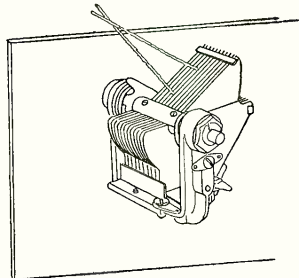
### Sets Need Care

Personally I believe every set owner is willing to take care of his set if he is told how to do so intelligently and clearly. In many cases, owners will prefer to have a service company do this, but there presumably are several hundred thousand who must do it themselves either because of distance from service stations, limited finances, or just because they like to putter around "the old set" for the fun of it. My own sets (of which there are four) have received a cleaning recently, as did their predecessors in years gone by, and probably the system I have learned to follow and the points to be given special attention which I have learned will be of value to those less experienced.

We will begin with the most important, proceeding to those points not quite so essential, so that should you be unable to complete the program you will at least have the essential work done. It would be better that a thorough job be done, though, and every step is desirable.

### Power Supply First

Power supply comes first, the set will function to some extent with other units



Brush Variable Condensers With Pipe Cleaners

faulty, but power supply, and "A" supply in particular, should be right. The majority of filaments these days are lighted by a storage battery, kept at top charge by a trickle charger, thrown on and off either automatically through a relay or by hand. If this trickle charger is of the dry type there is nothing you need do to it. If of the solution type, it should be overhauled. Presumably you used it most of last season and the bottom of the jar is covered with fine powder or the solution is cloudy, or both.

Get a renewal bottle of solution from the maker or your dealer, then pour out the old stuff (keeping the hands out of it) and scrub the interior of the jar and the electrodes, bottom of cover, etc. If one of the electrodes is pretty well worn out, see your dealer about getting a renewal. When all is clean again, replace the cover and pour in the new solution. Before attaching the wires again, clean up the binding posts where they make contact with the wires, either with a file, emery paper or a knife blade point. Then scrape the wire terminals shiny and tighten them down tightly under the binding posts.

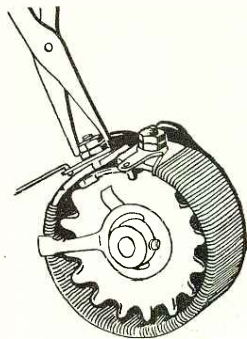
### Discharge the Battery

Proceeding now to the battery, it would be a good idea to completely discharge it by letting it run with trickle charger disconnected and then giving it a good charge either at a battery station or with a friend's two or five ampere charger.

Possibly the trickle charger you have been using was of the kind where a two-ampere charging rate can be obtained also, by changing a connection. If you

will but do it, let the battery run down once more to zero and kick it up again. This operation is advised by many battery men as it is not good for the battery to be always at top charge, or near it, any more than it is good for your watch spring to be always wound full. The life or pep seems to go if not occasionally permitted to go through a complete charging or winding.

The top of the battery should be well cleaned off, as the gases and moisture have collected on the top, which does nothing any good. Probably, also, the terminals have been corroded to some extent. This top and terminal cleaning should be done with strong ammonia water and a soft rag. It may prove necessary to chip off corrosion with a knife blade to get anywhere near raw metal again. Where wire terminals are to be caught under a wing nut, scrape or sandpaper the metal bright, and clean up ends of wire terminals.



Tighten Rheostat Terminal Nuts

### Cut Charger Rate

If your trickle charger is adjustable in any way, see if will not keep the battery up to maximum efficiency on a lower step or charging rate than you have been using. It will do both battery and charger a lot of good if you can. You can readily ascertain this in a few evenings. Put the hydrometer in the battery just before using it each evening and see if the kick hasn't been brought back to the same reading.

There are many sets out, using dry cells on either 199 or WD tubes. These dry cells do not have a particularly long life either in use or sitting idle. Owners of such sets probably have a voltmeter, but if they have not, can probably borrow one for a few days. Connect the meter across a cell just before starting the set, carefully noting the reading, and do the same just before turning the set off. Do this three nights straight. If there is any appreciable difference in the six readings, you need new batteries, as very soon they will begin to go down much further in a single evening, spoiling the program or causing it to quit altogether.

### Check "C" Battery

The same characteristics that are true of "A" dry cells apply to "C" batteries, as these latter are merely several small dry cells in a single case. Normally they should read 3 and 4½, or 1½, 2, 4½, 6 and 7½, depending on which type you have. Test yours with a meter toward the end of an evening's entertainment, noting the voltage you should get, from the voltage printed beside each terminal on the container. If it has fallen to 3½, when it should be 4½, get a new battery.

There are four types of "B" supply scattered among the millions of sets in use: Dry "B" batteries which come in blocks, wet batteries made up of rows of small glass jars filled with sulphuric acid solution, wet batteries consisting of rows of test tubes with alkali solution, and "B" power units using either glass jar rectifiers, Raytheon type tubes or filament rectifiers such as the UX-213. Each requires a different treatment to put it into first class shape.

"B" batteries, while they're convenient to handle and require no care, have the one objection that their voltage gradually goes down without possibility of replenishing to keep it even. The same test should be applied as to "C" batteries, but with a meter having a 50-volt scale. If any appreciable difference is noticed during three consecutive evenings, new ones should be put in.

### Noisy at 35

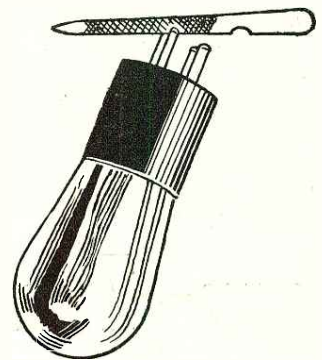
A 45-volt block will operate the set down to a reading of 30 at the end of the evening but begins to get noisy when readings show 35 or less. There will be tendencies toward slight distortion also between 40 and 35, although if the "C" battery has

gone down correspondingly, it may not be noticeable.

Wet "B" units of the lead-acid type are messy things although they have the quiet feature of the dry "B" with the possibility of recharging to keep the voltage consistent. I still have four banks of them for laboratory use. A perfect job would include emptying out the solution, scrubbing and re-filling with new solution but there are probably very few where such extreme measures are necessary; it's a dirty job. First carefully inspect the connectors between the terminals on all cells as one or two have probably corroded pretty thin; replace any that look suspicious.

Fill all jars up to proper level, using an eye dropper, hydrometer, special battery syringe or small funnel, and with distilled water only.

The chlorine put in city water these days is tough on batteries. Then, using an old tooth brush and a small stick covered with



Lightly File Tube Pins

soft cloth, clean the tops of cells and the terminals with ammonia water. Get everything dry, too. As in the schedule for "A" storage batteries, run the wet "B's" clear down, give them a stiff charge, run clear down and kick them up once more. After that you can follow the usual procedure of charging every few days when they've gone down just a few volts.

### Refill "B" Units

Wet "B" units filled with alkali should most certainly be emptied out and thoroughly cleaned. It is not so hard here as the electrodes are strung in pairs, one half of each pair in adjoining test tubes. The active material in the tube elements does get out through the fine openings, and quite a sediment will be found in the bottom. Note when taking out the pairs, just which way they go in; that is, perforated tubes to the left or perforated tubes to the right, in each row, so you can replace them correctly.

New solution can be made up as described in the direction sheet that came with the battery or, if that is lost, write to the maker. The wires leading to terminals may need replacing, due to the eating of the fumes and it is likely that binding posts need tightening. The nickel connecting ribbons connecting each pair of elements should be examined carefully while cleaning.

The discharging, kicking-up, discharging and again charging should be followed as with wet lead-acid "B" units.

### Examine Rectifiers

There is not a great deal that needs to be done with "B" power units, except those containing four or eight small jars used as rectifiers. Unscrew the cover on each jar and examine the electrodes to see if any are eaten away. If so, new ones can be had from the maker very cheaply. In some makes, one electrode in each jar is covered with a short length of rubber tubing. If this has gone bad, get new ones from the maker of the unit. If the solution in the jars has been there during a good many hours of use, it may have become discolored and thick, and should be thrown out, the elements within thoroughly cleaned and new solution put in.

In the case of tube rectifying "B" units, take out the tube, see that the springs in the socket are so bent as to make good contact and brighten up the ends of the pins in the tube with a nail file. Cleaning up that part of each binding post which contacts with the wires is an excellent idea, as is scrubbing bright the ends of each wire in the cable.

### Tubes Deteriorate

These tubes, either type, do go down in efficiency eventually but little data is available on how to determine when the tube has gone down. A high resistance voltmeter for every fan is out of the ques-

tion as they cost about \$30.00. However, nearly every dealer has one by now; perhaps you can borrow one from your dealer. The 45, 90, 135 and 180 volt terminals (some do not have this last) should all be tested and if they cannot be brought up to normal with the variable resistors all the way in, it would seem probable that a new tube is needed.

Going now to the set itself—first brighten up binding post metal surfaces and ends of cable. Then take out all the tubes, scratching a number on the bottom of each to indicate which socket you took it from. Then examine each socket and brighten up that part of the springs within which contacts with the pins.

### Corrosion, Not "Static"

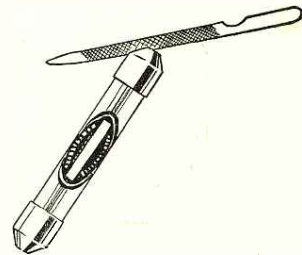
It's that light film of corrosion and gradual loss of tension in springs that makes much of the "static" which so annoys one—particularly if many trucks or street cars go by. Tighten any springs that look weak. If they're the flat kind, pull them up just a little with finger or pencil. Not much, just enough so you can feel a slight permanent bend being made. If of the squeeze kind, pull the two sides together ever so little with a pair of pliers. With a nail file, touch up either the bottoms or sides of the pins on the tubes, depending on the type of socket springs provided.

While you have the tubes out, clean up the sockets, especially on the flat portions of the bases between terminals. An orange wood stick or silver from a fruit crate, covered with a piece of cotton dipped in the solution of alcohol is good for this. The idea is to get all dust and soot off these flat surfaces so there will be no leakage path between terminals through which energy may go and "crackles" develop. Tighten up nuts on all four terminals of each socket. If your set is of the kind that has only the cylindrical portion of the socket protruding up through a shelf, clean off the shelf surface well between screw heads.

### Use Pipe Cleaners

Turn now to the variable condensers. No better device for cleaning these has been developed than pipe cleaners, first put to this use about four years ago. Personally, I bend them into a long loop with the ends in the hand, and dip them in alcohol solution. If it hurts you to use good alcohol in this way, use the kind you couldn't drink anyhow.

The plates of the condenser are turned



Touch Up Grid Leak Caps

clear out so one can shove the loop in and out of the fixed plates and between the rotor plates. This should be done carefully and with frequent changing of cleaners.

If your condensers have a friction contact at one end of the shaft, that is, a spring that presses against the shaft to connect the rotor plates into the circuit, slip a piece of thin cloth over a knife blade and press this under the spring. Hold it there and turn the rotor. It would be good to drop a little alcohol onto the cloth while doing this. If contact is made through a bearing and the bearing had oil in it, clean this out as well as you can with alcohol or gasoline and put in a drop or two of new oil.

Where a "pig-tail" (spiral spring) connector is used, this work is not necessary. Nearly all variable condensers have the stator plates supported on small bars of hard rubber or bakelite fastened fore and aft to end plates. All dust should very carefully be cleaned off these bars, as it is here that leakage and noises can become heavy.

### Reach Every Point

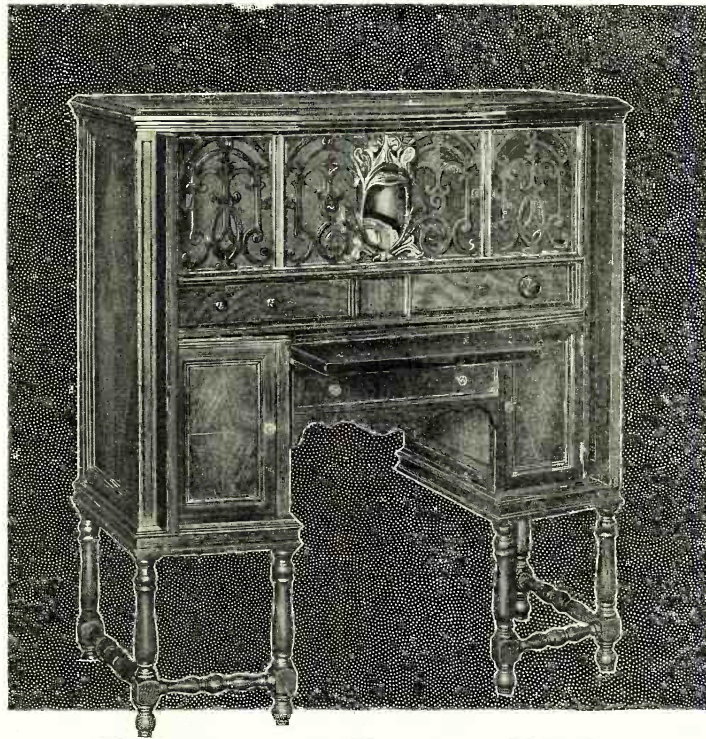
Now go to the main baseboard of the set and, with thin cloth slipped over the round end of a nail file and over orange wood sticks, reach every part you can. It is sometimes hard to get at certain portions because of wiring but a little ingenuity as to implements usually enables one to reach everywhere. The wiring itself should be well cleaned while you're at it. Wherever an instrument has two or more terminals protruding from the same flat surface (Continued on page 10)



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The famous Zenith ten-tube, all Electric chassis, in this beautiful example of English period furniture. Here is the high point of radio science and artistry. No batteries, loops, antennae or auxiliaries of any kind.

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Zenith Radio is first again!

The ten-tube *Electric Zenith* is the first receiver of this type to be produced on a commercial scale. The goal of radio design is reached by Zenith—*first as usual.*

Now you can have a self-contained, long distance radio set of truly remarkable performance. No batteries, no inside loop or outside aerial. Merely plug into a light socket and select the wanted station!

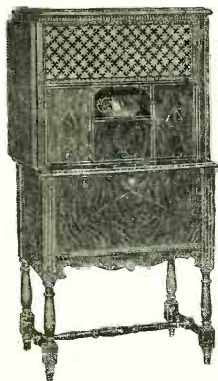
Hear this remarkable instrument. It is matchless in clarity and fidelity of tone. Here is fullness of power for the far station—and selectivity that tunes out the most powerful swirl of local broadcast.

Zenith has always challenged comparison with any make of radio. With the addition of the ten-tube *Electric* model, Zenith becomes the unquestioned leader of the radio field.

Hear a Zenith demonstration!

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\$100 to \$2500



*Zenith Model 14*

A sensitive, highly selective 6-tube receiver of remarkable tone quality and range. Beautiful cabinet made of walnut veneers with ornamental overlays and panels of beautifully figured maple. Model 14 will bring you all that is fine in radio.

Price, \$180.

Licensed only for radio amateur, experimental and broadcast reception  
Western United States Prices slightly higher



3620 IRON STREET • CHICAGO



# How to Stop Interference with a Filter

## Part III—Receiver Interference at Home

By J. E. Smith, President of National Radio Institute

**U**NDER this heading you will note that most of the household heating appliances are listed. Very little interference arises from this source, except when the circuit is made or broken. In some instances, a thermostatic attachment is used (see Figure 6), whereby the circuit is made or broken automatically and, of course, interference will arise, because, as previously stated, whenever an electric spark occurs, or when a circuit is made or broken, a disturbance will be created which will be manifested by a crackling sound in the headset or loud speaker. It is possible to reduce this class of interference to a minimum, and several experiments were performed in order to determine just how it could be eliminated, but the feasibility of installing some form of filter arrangement at every electric switch or plug is beyond the practical limits to which we expect to go. However, a diagram is given herewith in order to show just how this can be accomplished. See Figure 7.

Before installing any of the filters described herein it would be advisable to consult the local power company or a licensed electrician and enlist aid in making the installation. I believe the day will soon come when

every person owning a Radio receiving set will demand that filter arrangements of some kind be installed so as to prevent as much disturbance as possible from entering or leaving his house. When that day arrives we can expect very much better reproduction from our receiving sets, because we can then expect to enjoy Radio without having to listen to as much buzzing and crackling noise as we do at present.

Crosley has announced that every desirable improvement can go into the Bandbox set.

Other features in the Crosley line are three Musicones, one constructed like a tilt-top table, the table acting as a baffle board, giving the Musicone unusual tonal effect; and a Lowvave unit for adapting a set to reception of short wave broadcasts, which are becoming increasingly popular. WLW, the Crosley broadcasting station, sends out all its programs over a short wave of 52 meters as well as its regular wave length of 428.3, and recently broadcast a special program to Australia, from which a multitude of letters and logs were received from listeners in that country and in New Zealand.

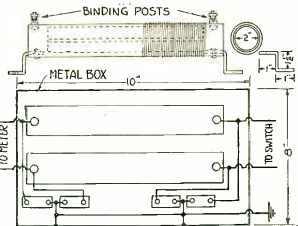


Figure 8A

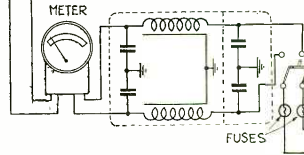


Figure 8B

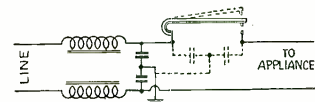


Figure 6

Typical Thermostatic Control Showing Filter and Anti-Sparking Condensers Installed

If someone will devise a switch which will cause less sparking at the points when the current is turned off a fortune probably awaits him, because when we stop to think of the thousands of electric lights and all the various forms of electrical household appliances that are turned on and off during an evening in the congested centers, it is little wonder that in some cases broadcast reception is marred to the extent that it is certainly not very pleasant to listen to.

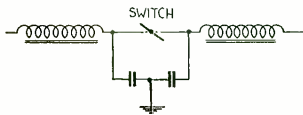


Figure 7

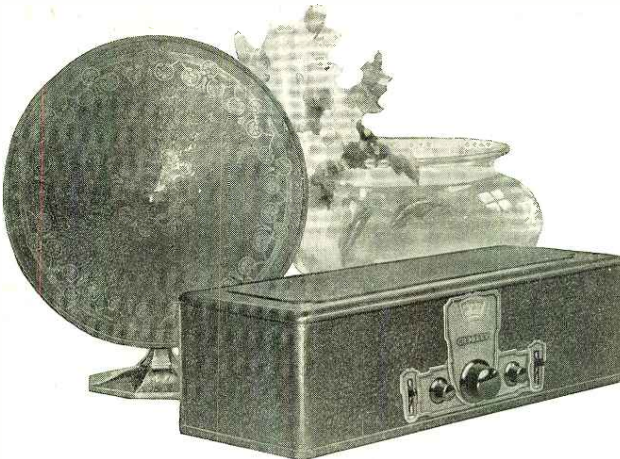
As explained earlier, the fundamental idea in reducing interference is to prevent the high frequency disturbances from entering the power lines and being radiated by them. Therefore, if by inserting a filter on all of the permanent installations, and by further trying to eliminate interference by inserting a meter near the meter, so as to prevent disturbances from coming in on the line, or from entering the outside lines, a great deal would be accomplished.

Such a filter is illustrated in Figures 8-A and B. The choke should consist of a total of 264 turns of No. 10 DCC wire on a tubing 2 inches inside diameter. The tubing should be bakelite or some non-combustible material. The wire should be wound in three layers of 88 turns each with two layers of Empire cloth between each layer of wire. After the winding is finished, the whole should be given a coat of insulating varnish. The winding form or tubing should be approximately 9 inches long and small feet are attached at each end so as to support it. The core can be formed by fastening a piece of ordinary black sheet iron approximately 6x8 inches and rolling it so that it will just fit on the inside of the form without the edges coming in contact and making a cylinder—that is, an air gap of 1/4 inch should be allowed between the edges as shown in the diagram. The condensers should have mica insulation, and they should have a rating of at least 1 mfd. capacity, and perhaps 2 mfd. would be better.

It would be well to use condensers having a rating of at least 1,000 volts, so as to prevent any short occurring in the line. The whole should be mounted in a steel cabinet, such as specified by the underwriters for switches, fuses, etc.

This filter will prevent to a certain extent any disturbances or interference which may arise within the house, due to any of the appliances, from entering the power lines and being radiated over a wide area, and it will also prevent, to a certain extent, any disturbances arising in the power lines from entering the house and being radiated by the house wiring system.

## NEW CROSLLEY BANDBOX USES POWER



**J**UDGING from the enthusiasm manifested throughout the country over the Bandbox, the new six-tube receiver of the Crosley Radio Corporation, following its introduction to the trade at the Chicago Radio show, the demand for this new product promises to test the facilities of the Crosley factories at Cincinnati. This, despite the fact that the House of Crosley is famous for its modern equipment and preparedness for large scale production. Production in August ran well ahead of the schedule for that month in any previous year, to keep pace with the demand that is beginning to be evident from all quarters.

The Bandbox, which is made in two types, for battery or lamp socket operation, already has attracted widespread attention. Samples were taken around the country in an airplane during the National Air Tour and exhibited at the airports of 24 cities, creating a vast amount of favorable comment. The corporation also conducted a "flying circus," which had nothing to do with aviation but consisted of a series of one-day hotel room exhibitions; the word "flying" being used because of the speed with which a large number of cities were covered in this way.

This compact receiving set has a number of unusual features which are receiving public approval wherever demonstrated. In the first place, it is an attractive addition to the furniture of a home. It is furnished in a metal cabinet with brown crystalline finish, which harmonizes beautifully with either mahogany or walnut furniture, as well as with either of the three Musicones produced by the Crosley corporation. Simplicity is one of its attractive features. It has a single dial control, the scale being visible through a window at the top of the escutcheon, the window being illuminated by a small bulb using an infinitesimal amount of current. This feature will make it unnecessary to keep bright lights burning in the home while receiving Radio programs, permitting such entertainment to be enjoyed in the intimacy of the family room.

The set possesses the further advantage of volume control, and of having accumulators to sharpen the circuits when bringing in distant stations where unusual sensitivity and selectivity are required. It has also a switch for cutting the current on and off.

The AC model Bandbox is said to be a real answer to the demand for a set that can be operated from the lamp socket. It uses the AC tubes recently perfected by the Radio Corporation of America. This set, except for a few necessary differences, is identical with the battery operated set. In connection with it, however, is used a small AC power converter, finished exactly like the set.

While standardizing on this one type of set and thus being enabled to produce it in large quantities at low cost, the Crosley Radio Corporation is offering to the public a varied line of receiving outfits. The Bandbox is so constructed that its chassis can be easily removed from its metal cabinet and inserted in a console or other piece of furniture. The corporation has approved three beautiful art furniture models which are furnished by Showers Bros. and the Wolf Manufacturing Co., but there are a wide variety of consoles and cabinets existent in which the set can be placed.

The mass production methods introduced into the Radio industry by Powel Crosley, Jr., are responsible for enabling him to announce this six-tube set at the astonishing retail price of \$55, battery operated, and \$65 for the AC set. Much new machinery has been installed in the Cincinnati factory for the production of this new equipment, which is expected to reach a schedule of 4,000 a day. A huge battery of die-casting machines, ten in number, was installed for the production of the variable condensers used in the sets. This is said to be the largest battery of die-casting machines in Cincinnati.

With licenses under the Radio Corporation of America, the Hazeltine corporation, and the Latour corporation, the Crosley Radio Corporation is in an unimpeachable position to produce perfect plates and

## The Star Antenna

A NEW type of antenna has been introduced by the Star Antenna Co., Elmhurst. It is made of cast aluminum in the shape of a star, ten inches across the tips and three-sixteenths of an inch thick.

The Star antenna is made to attach to a ten-foot length of electric conduit pipe. The coupling attached to the length is adaptable to the insulator bar furnished with the antenna. The pipe must be well guyed.

A binding post is mounted in the center of the Star, to which is attached the lead-in wire. As the aerial is non-directional, the setting of the points is optional.

## Yar True Tone Speaker

A NEW Radio speaker, known as the "Yar True Tone Speaker," has been announced by Yahr-Lange, Inc., Milwaukee, manufacturers and distributors of the Super-Ball Antenna. This speaker, which is a product of the Super-Ball engineers, has several new unique features. It is constructed of cast aluminum with a tone column of new design. The tone distributing chamber is scientifically designed to force a crossing of sound waves, and a divisional tone chamber of unique design which segregates the high and the low tones, reproducing both with equal facility. The cast aluminum construction is said to eliminate all artificial overtones and vibrations.

A special reproducing unit is used, which will not "blast" or oscillate under any volume—it will successfully handle any "B" voltage up to 200 volts.

The speaker is artistically designed and is made in three different color combinations, finished in crackled lacquer. It stands 41 inches high and is provided with twenty feet of power cord so that it may be placed almost anywhere in a room—wherever it harmonizes to the best advantage with other furnishings, or where the room acoustics are best. The "Yar True Tone Speaker" was first introduced to the Radio trade at the R. M. A. Trade Show, and met with an enthusiastic reception from dealers and distributors.

## Aerovox Filter Condenser

THE AEROVOX Filter Condenser, Type 600, as manufactured by the Aerovox Wireless Corp., Brooklyn, N. Y., is used

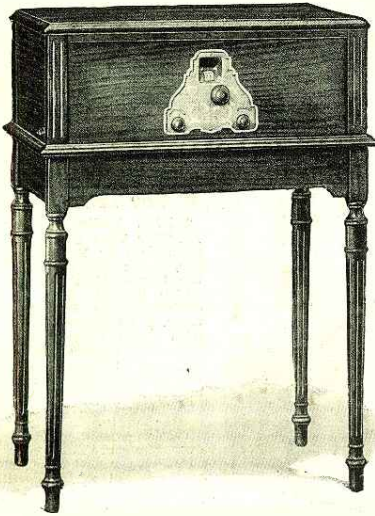


for high voltage "E" eliminators and power amplifiers with a continuous working voltage not in excess of 600 D. C. The insulation resistance of all Aerovox condensers exceeds R. M. A. standards, and eight layers of 100 per cent pure linc paper (four layers between plates) with a total thickness of four mills, are used. The R. M. A. retest voltage is 1,200 D. C. for 15 seconds.



# HOWARD RADIO

Electric!



**Model 135 AC**  
all complete, with nothing to add  
except the loud speaker—

**\$259<sup>50</sup>**



The tubes furnished with this receiver are the RCA Radiotrons, 4UX226, 1UX227, 1UX216B, and the UX 210 Power Tube used in the last stage—or the corresponding Cunningham tubes.

**A Single Switch ~  
A Single Control ~**

**~ Electrically Operated**

**A**LL this has been made possible by the latest development in radio, and it is ready for you NOW:

With the perfection of the new RCA and Cunningham Alternating Current tubes, the dream of the ideal receiver is now a REALITY.

Think of the convenience of using alternating current to heat the filaments of these tubes—no batteries, no acids or liquids, no chargers, nothing to watch, simple and compact—merely snap the switch and the receiver is ready to operate;

And the total cost of operating the HOWARD "REAL ELECTRIC" Receivers is approximately 45 cents per month if used five hours each day—or about 3-10 of a cent per hour.

The owner of a HOWARD radio receiver possesses not only an instrument of the finest mechanical construction and workmanship, but one which is rich, mellow and amazingly wonderful in tone reproduction. It becomes at once the proud possession of all music lovers and the eye as well as the ear is charmed by its beauty and marvelous performance.

Write us for our complete "AC" catalog which fully describes and illustrates Model 135AC, as well as several other Models ranging in price up to \$700.00.

**HOWARD RADIO COMPANY**  
451-469 East Ohio Street  
Chicago, U. S. A.

Howard Radio Receivers are licensed only for Radio Amateur, Experimental and Broadcast Reception. They are licensed under patent applications and patents of Radio Corporation of America and associated companies, General Electric Co., Westinghouse Electric & Manufacturing Co., American Telephone & Telegraph Co., and Hazeltine Corporation, owners of the Neutrodyne and Latour patents.



# AC-Super Operates from a Light Socket

## Part I—How It Was Developed

By John G. Ryan

It has been a long time since I've had an article in Radio Digest on the construction of a set; I thought that with the developing of the Simplest Possible super-heterodyne many months ago, and the series of sets that followed, that my days of designing and writing-up were over. Chiefly because nothing new came out to play around with. Subsequent super-her kits that came out were just variations of the same old thing, tubes came down in price but without change in design, and audio transformers have been improved to a marvelous degree but present nothing new in the way of problems to be solved.

Power supplies have come out, and were interesting to build, but the makers of the main units required, such as transformers, chokes and condensers, had done all the work and it was only necessary to hook in a few wires according to the printed folder and connect to the set. Fine for Radio's development along the lines

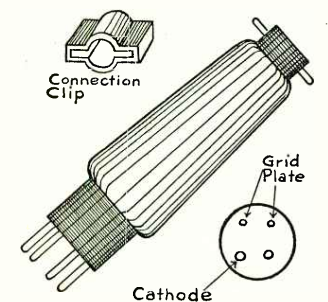


Figure 1—The Kellogg Tube

of consistently good reception, and convenience through elimination of battery troubles, but offering the set builder nothing exciting.

Now, however, we have AC tubes and I have a super-heterodyne built for use with them. What a world of interesting endeavor they're going to give us! All the regenerative, neutralized, compensated, deresnadyned and super sets have to be experimented with, adjusted and altered to permit of our incorporating this new wonder. And wonder it is—whether you use Kellogg, R. C. A., Marathon, Sovereign or any other kind of AC tube. It used to be that we couldn't permit alternating house lighting current to approach within yards of the set. Every squawk, squeal or hum was blamed onto the lighting wires that ran behind the plaster in the wall, or supported a drop light anywhere in the room.

But this year we bring the AC current not only into the set but into the tubes themselves. True, it's not at 110 volts any more but it is still very much AC. Due to their newness, not a great deal is as yet known about the application of these tubes to the average set but the engineering staffs of many laboratories are putting in endless hours learning the tricks and quirks. Several companies, such as Kellogg, R. C. A., Crosley and Walbert, have receivers on the market with these tubes as standard equipment, but, as far as you and I are concerned, we have much to learn about putting AC tubes into our home made receivers.

**Just Two Breeds**  
Now, getting right down to the tubes themselves, there are only two breeds which have succeeded in getting well-known and widely distributed. Kellogg has had its out as the "McCullough" tube for over a year, and engineers and editors are pretty familiar with them. The Radio Corporation have but recently announced theirs, but, being a product of R. C. A., these tubes will be a factor by the time this article gets on the stands.

The Kellogg tube is known as the "heater" type; that is, the two wires supplying "A" current do not connect to that metal within the tube which actually throws off electrons, but to a coil of resistance wire whose only purpose is to get good and hot and warm up an outer cylinder or cathode which does the electron emitting. This outer cathode is electrically insulated from the heater coil and "A" supply, and a wire comes from it to the base which gives one a "filament" connection in the circuits. In appearance these tubes are radically different from those to which you are accustomed; they have a standard four-prong base, with four pins—but at the top there is a smaller bakelite cylinder giving an upper "base." Or shall we call it a "cap"?

**Idea of Construction**  
On opposite sides of this cap are two short, stocky pins to which we make the

heater current connections. Connection is to be made through a bakelite clip which slips over the cap of the tube and to which we connect the wires themselves. At this point it is wise to bring in the fact that the full 110 volts pressure of the house lighting current is not shot into these tubes; not at all. Instead, a small and comparatively inexpensive transformer is used which will supply 10 tubes (if necessary) with one full ampere of current apiece and will hold the voltage at three. To connect a series of tubes to this transformer we must get away from the nice right-angle bus bar we have always used, or the concealed flexible cabling preferred by many, and use a heavy TWISTED "pair." Remember, that one must figure an ampere of current for each tube used and five to eight amperes of current require quite a heavy path. Personally, I have found that one of the cords supplied with, or for, an electric iron is almost perfect for this purpose, it being necessary only to remove the insulation at five, six or seven points along the cable for soldering to the tube clips.

Within the tube, an exceptionally heavy rugged construction is used but the usual grid and plate are found around the cathode, to form a three-element tube insofar as Radio current is concerned. The glass is silvered as usual by the chemical used for extreme evacuation. At the base, the two small pins are grid and plate connections as usual, but, of the larger "filament" pins only one is used. That nearest the grid pin and diagonally opposite the plate pin, is the cathode or "filament" contact. The other large pin is not used and no wires go to the socket contact for that pin.

**Two R. C. A. Tubes**  
The R. C. A. tubes, on the other hand, look just about like the 201-A. Two models are marketed, one being for amplification and the other for use as a detector. That intended for use as an amplifier, either Radio or audio, contains a heavy filament that requires but 1½ volts and draws 1.2 ampere of current. Of course, one cannot connect either grid returns or minus E leads to such a filament since the ends of this filament go to the filament pin and minus sixty times a second. A null-point is found by connecting a small fixed resistor across the filament terminals of each socket and connecting grid and plate circuit return wires to the exact center of the resistance.

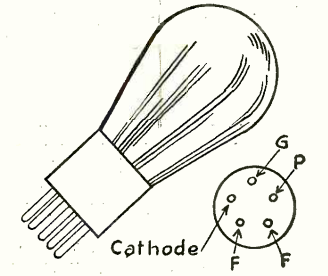


Figure 2—The RCA Detector

This plan was found to be O. K. for amplification but did not work well for detection. The tube designed for use as a detector has a base containing five pins, the usual G and P pins, two for heating current, and a fifth similar in purpose to the cathode connection of the Kellogg tube. For these detector tubes a special base must be used, several makes of which have already appeared on the market.

**Special Transformers Used**  
Transformers have made their appearance especially for lighting these tubes and contain the usual primary and a number of secondaries. A pair of output terminals for connection to the set provides 1½ volts for the amplifier tubes, 2½ volts for the detector, 5 volts, center tapped, for the filament of a stage of power audio, and a high voltage secondary for B and C supply.

So much for the tubes. The altering of the super-heterodyne for use with these tubes is the real problem involved and, since no one should attempt the construction of a super for use on AC tubes, without understanding of the problem and its solution, I'm going into this in detail right now, even though you may be anxious to get into actual construction at once. It was apparent from the mail which followed previous articles on set building that too many went into it without sufficient knowledge of even the elementary facts of Radio, and I'm going to hold out even a photo of this new outfit until those who really want to go after the successful building of such a set can learn something about it.

**The Three Element Tube**  
First of all, let us consider a three-element tube, whether it be equipped with a filament to be lighted with AC or a filament for operation from a battery. In Figure 3 we have a tube containing the three elements, grid, plate and an electron emitting part which has, heretofore, always been the filament. To these three parts we must connect circuits of coils,

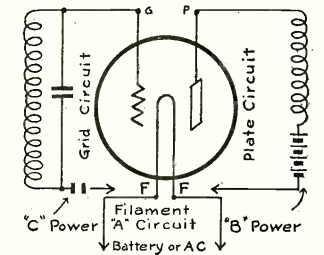


Figure 3

condensers and batteries for operation. That circuit, which is complete for Radio currents between the grid and the filament, is known as the grid circuit, that which is complete between plate and filament is the plate circuit, while that which

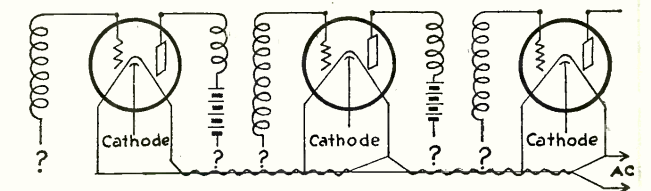


Figure 5—Here's the Problem!

go into what is called "oscillation," a condition in which reception is impossible.

**Fixed Grid Bias?**  
The negative terminal of either a B battery, or B power supply, has always been connected to either the plus or negative filament wiring. With a fixed "B" voltage, and a definite adjustment of filament voltage, the condition of the tube as to sensitivity could be adjusted by varying the grid bias through the potentiometer. It would be perfectly possible to alter this arrangement so that the grid bias would be fixed, the filament voltage be given a permanent value, and variation of the tube's condition secured through a high resistance in the B plus line to raise or lower the B voltage. Then again, a fixed grid bias could be used, and a fixed plate or B voltage, with variation of filament brilliancy as the controlling factor. However, it has been found best in actual practice, with the tubes and accessory equipment available, to use the varying grid bias method.

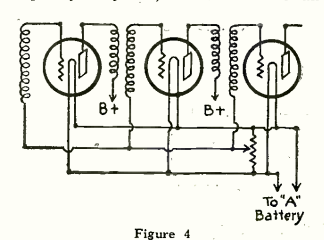


Figure 4

inductance or coil, and a capacity called a condenser. It is possible to get the capacity without winding the coil a certain way but this capacity is present regardless. A direct current voltage must be included in this circuit so that the

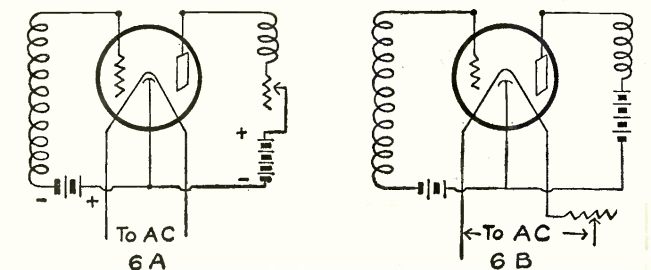


Figure 6—Two Methods of Control

grid has a "bias" and is kept at either a higher or lower voltage (pressure) in relation to the center point of the filament. This can be obtained in a battery operated tube by connecting the grid return wire to the filament circuit "below" a resistance instead of to the filament terminal on the socket direct. Or, it can be had by inserting a small battery, termed the "C" battery, in the circuit.

**Three Sources of Power**  
In the plate circuit we must have an inductance (coil) by which this circuit

can be coupled to the input circuit of the following tube, and a source of direct current power which is termed "B" current. Thus it will be seen that there are three sources of power connected with a tube, A, B and C. For best operation of the tube, these three voltages must be adjusted so that they bear a certain relation to each other. If any one of them is too high or too low, the efficiency will be low or distortion will occur. In laboratory set-ups of equipment, arrangements are usually made so that all three voltages can be varied in relation to each other for every tube, but in Radio receivers, as sold complete to users, two voltages are usually fixed and only one made adjustable. It is even practical, but not likely to be perfectly efficient, to present a receiver with all three fixed. With these points in mind we can go back to discussion of our set.

In Figure 4 there is shown the wiring diagram of the intermediate stages of the conventional super as it has long been connected. Regardless of whether three or four intermediate amplifier tubes are used, the potentiometer shown is to be found. It is always connected across the filament wiring so that its movable contact can be turned closer to either the plus or negative side of the line and thus put plus or negative "bias" (voltage) on the grid. Such an adjustment is required that the sensitivity of each stage may be brought up to maximum, which is just below the condition where the tube would

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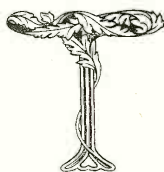
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(Continued on page 41)



# Columbia Broadcasting System



## *Radio Stations*

WOR,	L. Bamberger & Company, New York, (Newark)	WAIU,	American Insurance Union, Columbus
WEAN,	Shepard Stores, Providence	WKRC,	Kodel Radio Corporation, Cincinnati
WNAC,	Shepard Stores, Boston	WGHP,	George Harrison Phelps, Inc., Detroit
WFBL,	Onondaga Hotel, Syracuse	WMAQ,	Chicago Daily News, Chicago
WMAK,	Norton Laboratories, Inc., Lockport, (Buffalo)	KMOX,	(The Voice of St. Louis), St. Louis
WCAU,	Universal Broadcasting Company, Philadelphia	WCAO,	Monumental Radio Company, Baltimore
WJAS,	Pickering Stores, Pittsburgh	KOIL,	Mona Motor Oil Company, Council Bluffs, Iowa
WADC,	Allen Theatre, Times-Press, Akron	WOWO,	Main Auto Supply Company, Fort Wayne, Ind.



# How to Build New Vari-Phase Receiver

## Full Instructions with Templates

By Joseph Calcaterra

**A RECEIVER** that employs automatically controlled, variable coupling between the Radio-frequency stages to provide the maximum practical transfer of energy from stage to stage; and a phase shifting device in the plate circuit of each of the Radio-frequency amplifier tubes, for the purpose of preventing oscillation.

**THE** fundamental purpose of the coupling coils between Radio-frequency amplifier tubes of course is to permit the transfer of signal energy from one tube to the next. But there are many things to be considered in designing coupling units, other than the maximum energy transfer. One consideration that is perhaps most important to the average fan is that of selectivity. In order to obtain even a fair degree of selectivity it is necessary that the coupling between circuits be fairly loose whereas tight coupling, up to certain limits, provides the greatest energy transfer. The design of any coupling coil unit, therefore, involves a compromise between high energy transfer and high selectivity. Tight coupling also has other bad features but the explanation of these is hardly worth going into, inasmuch as they have no particular bearing on the Vari-Phase receiver which is discussed in this article.

There is one important point to be mentioned, however, and that is that a fixed degree of coupling which represents a happy compromise at one wave length is not equally satisfactory at other wave lengths; and, in fact, may be entirely unsatisfactory at another wave length further up or down in the broadcast wave band. A degree of coupling that provides good selectivity and good signal energy transfer when the circuits are tuned to 200 meters, for instance, will provide an unnecessary degree of selectivity but poor energy transfer when the circuits are tuned up to, say, 500 meters. Conversely, when a degree of coupling is provided that will combine good selectivity with good energy transfer at 500 meters, the selectivity will be all shot to pieces when the circuit is tuned to the lower wave lengths. At least such would be the case if there were no regeneration present. Actually the greater tendency toward oscillation at the lower wave lengths helps to sharpen up the low wave tuning somewhat.

### Close Fixed Coupling Fault

The question of regeneration brings up another coupling consideration. If the fixed coupling is too close it increases the tendency of the circuits toward oscillation and this presents another limiting factor, particularly as the tendency will be greater on the lower wave lengths.

From this it will be seen that the coupling, even at the low wave lengths must be rather loose and that this small degree of coupling is not adequate for the transfer of sufficient energy at the higher wave lengths to provide efficient reception from stations transmitting on wave lengths over 400 meters.

Fortunately there are ways of overcoming this coupling difficulty and the Vari-Phase receiver employs what is probably the simplest and most logical method that has yet been found. In this receiver the coupling between the primary and secondary of the coupling transformers is variable. The primary coils are designed to slide in and out of the secondaries thus producing tight and loose coupling respectively.

### Coupling Coils Are Automatic

If it were necessary to make these coupling adjustments by hand every time the receiver was tuned to a different wave length this scheme would not be worth considering. However, the beauty of this design lies in the fact that the movable coupling coils are geared to the rotor shafts of the variable tuning condensers so that when the condensers are tuned the coupling varies automatically with the wave length. This may sound rather complicated but actually the design of the coupling coil units has been so carefully worked out that the scheme is fool-proof, positive in action and simple to assemble.

That this system is highly practical is readily proven by laboratory measurements which were made and which showed that an even higher degree of amplification is obtained at the high wave lengths than at the lower wave lengths.

In addition to equalizing the transfer of energy throughout the entire broadcast wave band, this variable coupling permits the use of a certain amount of regeneration on all wave lengths. In the average receiver which employs fixed coupling, balancing, neutralizing or other schemes are usually resorted to prevent oscillation. These preventive measures are aimed at the condition at the lower wave lengths because there the tendency to oscillate is greatest.

As a rule only enough neutralization is used to just barely stop oscillation with

the result that at these low wave lengths there is still some regeneration but not enough to actually cause oscillation. Due to this regeneration these receivers are usually much more sensitive to low wave signals than signals at the higher wave. Remembering the bearing that coupling has on feed-back, it is easy to see that with variable coupling the benefits of regeneration can be obtained on all wave lengths.

### Avoids Oscillation

Instead of using a neutralizing or other critical method of decreasing the tendency toward oscillation the Vari-Phase receiver makes use of a comparatively new scheme which is non-critical in adjustment and, when once adjusted, requires no further attention. The theory of the method used is quite complicated as it has to do with phase shifting—a term which in itself is sufficient to inspire horror on the part of even professional Radio men. Fortunately, the actual device used for this purpose is extremely simple to install and adjust. One of them is included in the plate circuit of each of the two Radio-frequency tubes and they are indicated in the diagrams and photographs as P1 and P2.

### Audio Amplifier Omitted

In preparing the model of the Vari-Phase receiver which is described in this

Secondly, a receiver which includes an audio amplifier is rather bulky in size and requires a large, expensive cabinet when there is no good reason for the amplifier being in the cabinet at all. There are no variable controls on present-day audio amplifiers so they might just as well be placed in the bottom of the console with the batteries, or under the table.

### Allows Record Reproduction

Another argument for the separate amplifier—and an increasingly important one—is the possibility of using it for the reproduction of phonograph music. Even the oldest, cheapest phonograph records can be reproduced with the fine tonal qualities of the latest orthophonic models by connecting them to a good audio amplifier and loud speaker.

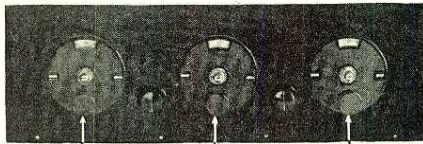


Figure J

There are numerous "pick-up" units now on the market at reasonable prices which serve as the connecting link between the phonograph and the amplifier. Their function is to change the mechanical impulses of the phonograph record into electrical impulses. These are fed into the input of the amplifier by means of an extension cord which comes with the "pick-up" unit. The installation of such a device is extremely simple. Some of them are slipped over the end of the tone arm of the phonograph in place of the needle holder. Others have an arm of their own and do

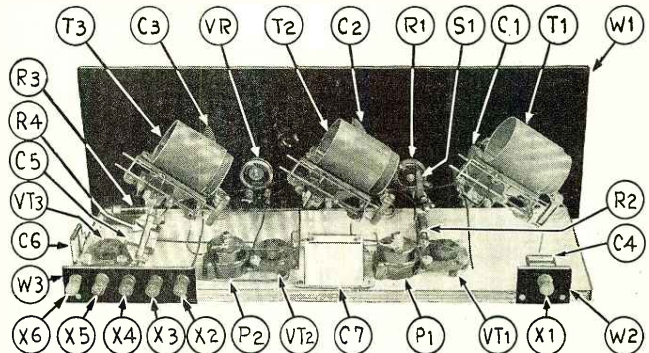


Figure K

article a new method was followed in that the receiver proper does not include an audio amplifier. This plan of building the receiver and the amplifier has much to recommend it.

In the first place, the hard-boiled Radio fan is not satisfied to build one receiver and use it indefinitely. Ever so often comes the itch to try out some new Radio-frequency or audio frequency circuit but in order to gratify this desire it is necessary to build an entire new receiver. Therefore, what is more logical than to build a separate amplifier that can be used with any Radio-frequency-detector combination; or vice-versa, a Radio-frequency and detector unit which can be used with any audio frequency amplifier.

not require any change in the phonograph at all. The only change required in the amplifier to switch over from Radio reception to phonograph reproduction is to disconnect the receiver output from binding posts X7 and X8 of the amplifier and connect the phonograph extension cord to these two binding posts.

### Photos Explain Receiver

As to the receiver itself, the photographs and diagrams tell most of the story. It consists of two stages of tuned Radio-frequency amplification and a detector. Tuning is accomplished by means of three vernier dials which control the three tuning condensers.

There are two smaller knobs provided on the panel. The one to the left is the vol-

ume control which permits gradual variation of the volume to any desired degree, from maximum to zero. This is a rheostat connected in series with the Amperite which controls the filaments of the two Radio-frequency tubes.

The use of the Amperite here takes all the worry out of the adjustment of the rheostat because even with the rheostat turned up full no more than the normal five volts can be applied to these filaments. The small knob at the right controls a variable high resistance for use where the receiver is to be operated from a "B" eliminator that has only one intermediate voltage tap, and which cannot therefore supply 90 volts to the first two audio tubes and 67 volts, which is the voltage really required by the Radio-frequency tubes; in addition to the detector and power tube voltages.

A 1 mfd. by-pass condenser is included in the receiver to by-pass the Radio-frequency currents around the resistance of this voltage control and the batteries.

### Good DX Receiver

The parts used in this receiver are all of high quality, and the receiver is one that will give excellent results, whether considered from the standpoint of sensitivity, selectivity or quality of output. The Radio Digest Shopping Service will purchase all or any of the parts to construct this set, at the prices listed, for those readers located in isolated communities or unable to obtain the parts from local dealers.

During summer evenings it was no trick at all to tune in stations up to a thousand miles distant, and with really good loud speaker volume. Chicago stations were received in New York City with so much volume as to make it necessary to cut down on the volume control when using the receiver in a room of ordinary size.

The tone quality of reproduction must necessarily depend on the quality of the amplifier and loud speaker used. The quality of the output of this receiver is of the highest grade and it will therefore provide an excellent quality of input to the amplifier.

The amplifier described is a fit running mate for the receiver. It provides clean-cut and lifelike reproduction over the entire musical range and much more than ample volume for any ordinary home use. This reserve volume is not without its advantages, however, especially in reception of programs from distant stations.

### Uses 371 Tube for Volume

The first stage of the amplifier is transformer coupled and this is followed by two impedance coupled stages. Tubes of the 301A are used in the first two stages but in the last stage a tube of the 371 type is recommended because of the large amount of volume this tube can handle without overloading.

The one objection to this power tube is its comparatively high "B" current consumption.

This is not objectionable where a "B" eliminator supplies this power but if "E" batteries are used some may prefer the 112 type power tube because of its lower plate current consumption. In this latter case the high "B" voltage should be reduced to 135 and the high "C" voltage to 9 volts.

An output filter has been included in the amplifier. This is a safeguard to keep the high current output of the loud speaker magnet winding. It also tends to improve the tone quality because it relieves the strain on the diaphragm of the speaker and permits greater freedom for vibration.

The first move in proceeding with the construction of the receiver is to prepare the baseboard, Y1, the front panel, W1, and the binding post strips, W2 and W3. While on this coarse work the baseboard, Y2, and binding post strip, W4, for the amplifier should also be prepared. The panel, W1, is a stock size and requires no cutting or finishing.

It may be set aside for the time being. The two baseboards should be cut from well seasoned stock. Oak was used for the baseboards of the model receiver. The dimensions are shown in Figures G and H.

After cutting to size they should be sandpapered, and the finish should be applied if any is to be used. A good finish can be obtained by applying a coat of oak varnish stain and then rubbing it off immediately with a dry cloth. This results in a sort of a light mission finish and has the advantage that no time has to be spent in allowing it to dry.

Next, the three binding post strips may be tackled. If a strip of bakelite or hard rubber can be obtained cut to a size of 13 inches by 1 1/2 inches the job will be simplified, as it will only be necessary to cut the strip into the desired lengths, as shown in Figures D, E and F. Otherwise a strip of this size may be cut from a standard 7x18-inch panel. The cutting is best accomplished with an ordinary hack saw;

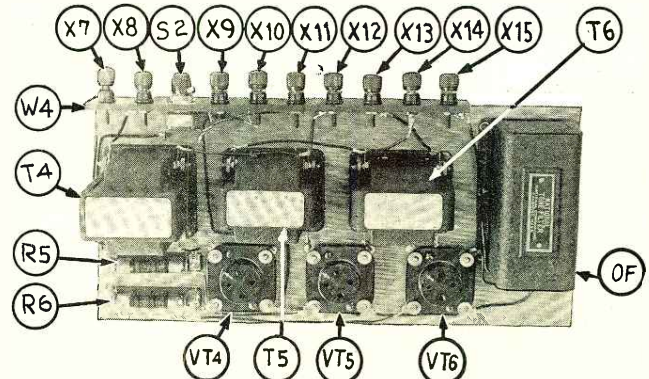


Figure L



although if hard rubber is used an ordinary wood saw will serve. After cutting, the edges should be smoothed off with a file.

To Prepare Panel

The next logical step is the laying out and drilling of the panel and binding post strips. The specifications are shown complete in Figures D, E and F for the binding post strips, and no further instructions are necessary. The drilling layout for the panel is shown in Figure C. All sizes are plainly marked.

It will be noted that the panel layout does not show holes for the mounting screws of the variable condensers or for the stop screws of the three dials. These have been purposely omitted because these instruments are equipped with templates

shaped bracket which accompanies the coil, to the back of the condenser frame with the ends pointing away from the condenser and the notched end pointing down.

The mounting hole is provided in the condenser frame and the notch in the bracket fits over the rib on the back of the frame. The screw used in mounting is one which accompanies the coil. The coil is mounted on the bracket by means of two more screws that accompany the coil. The end of the coil which bears the terminal strip should be directly behind the tips of the stationary plates of the condenser.

Finally the cam, which is the irregular shaped object which accompanies the coil assembly, should be mounted on the rear end of the condenser shaft by means of the

mounted on the baseboard of the receiver. It will be found more convenient to wait until part of the wiring is completed before this is done, so for the time being they should be left separate.

Wiring Scheme

Inasmuch as the wiring of the panel and baseboard will be done mostly from the rear, the terms "right" and "left" will mean the constructor's right or left, as he faces the receiver from the rear.

The wiring that is complete on the panel and the wiring that is complete on the baseboard should be finished first before the two are attached together. Starting with the panel wiring, connect a short wire to the two terminal lugs of the right hand coil that is nearest the condenser C1, and then continue this wire to the nearest end of the lug that is located at the back of the U-shaped condenser frame.

A similar connection is also made between VT2 and P2. Next the long top terminal of Phasatrol P1 should be connected to the nearest terminal of the by-pass condenser C7, and also to the top terminal of the other Phasatrol, P2.

The other side of the by-pass condenser can now be connected to the "GND" binding post on the strip W3, and continued on to the A Bat— binding post thus connecting these two together.

The plate terminal of the socket VT3 is next connected to the output binding post which is the one at the extreme left of the strip W3. Finally the fixed condenser, C6, is bridged across between the plate and left hand filament terminals of socket VT3, and soldered to soldering lugs placed under the nuts of these two terminals.

The panel may now be mounted on the baseboard by means of four wood screws in the holes provided at the bottom of the

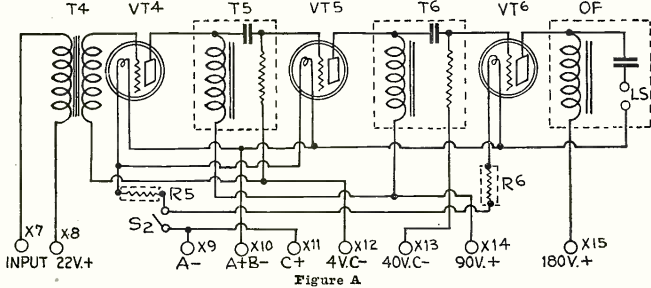


Figure A

and it will be easier for the constructor to locate the holes by means of these templates than from dimensions that might be given in the illustration.

Moreover, the templates which accompany the variable condensers provide the "sacred angle" at which the condensers are to be mounted on the panel.

It might be said here that great care should be exercised in laying out these mounting screw holes for the condensers because if an error is made here it will result in the condensers, and therefore the coils, being out of line. It is particularly important from an electrical standpoint that these coils be lined up correctly because it is only in this way that the interstage coupling can be reduced to a minimum.

Condenser Scheme

Assuming that the nine holes shown in Figure C have been drilled, the condenser mounting holes are located as follows: Place one of the condenser templates flat on the front of the panel, with its longest side parallel with the top of the panel, and the large hole exactly over one of the shaft holes in the panel.

The large blank portion of the template should be toward the left hand end of the panel. Now swing the blank end of the template down until the shortest side (the cut-off corner) of the template is exactly parallel with the bottom edge of the panel, meanwhile keeping the large hole exactly over the drill hole in the panel.

This is the correct position for the template, and the centers for the two small holes can now be punched at the centers of the small holes in the template. Repeat this operation for the other two condensers, then drill and countersink the mounting holes.

To locate the positions for the dial stop screws it is best to first mount the condenser in position on the panel and then slip the dial template over the condenser shaft on the front of the panel. The location of the screw hole can be punched through the small hole in the template. It should be directly beneath the condenser

large set screw. Before attaching this make sure that the condenser plates are fully meshed, then let the cam swing down until its curved edge just rests against the peg that is attached to the coil spring on the coil slider.

When the set screw is tightened it will be found that turning the condenser shaft causes the small coil to slide in and out of the larger coil. When the condenser plates are entirely meshed, the small coil will be entirely within the larger one, but when the plates are unmeshed the coils will move apart.

Mount Condenser-Coil Units

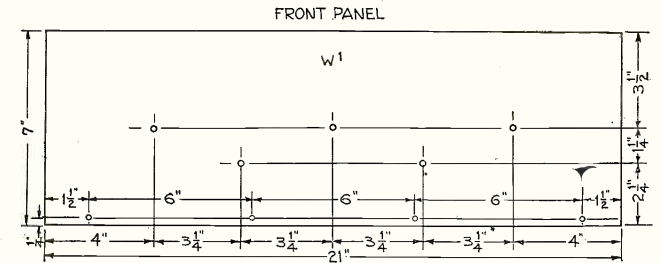
The condenser-coil units may now be mounted on the panel and the dials attached. The combination rheostat and switch (R1-S1) can then be mounted between the first and second condensers (C1 and C2). It should be turned slightly so that its terminals will clear the baseboard when the latter is attached later.

The variable high-resistance unit VR is then mounted in position between the second and third condensers (C2 and C3), with its terminals toward the bottom. When the knobs have been attached the panel assembly is complete and may be set aside.

The mounting of the instruments on the baseboard may be accomplished without further instructions as all specifications and dimensions are given in Figure G. This also applies to the amplifier instruments. Dimensions are given for this in Figure H.

The binding post strips may now be attached to the baseboards, after the binding posts have been mounted in position. The "ANT" binding post, X1, is mounted on strip W2 shown in Figure D, which is then mounted at the right hand end of the receiver baseboard as shown in Figure G.

The order of the binding posts on strip W3, reading from the right when looking at the receiver from the rear, should be GND; A Bat—; A+Bat B—; C Bat+; and output. This strip is mounted at the extreme left end of the baseboard. The



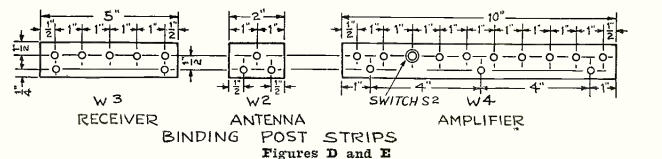
TEMPLATES ARE PROVIDED WITH CONDENSERS AND DIALS—FOR LOCATING MOUNTING HOLES.

Figure C

Then connect the other end of this condenser lug to the nearest end of the corresponding lug on the frame of condenser C2. Before soldering this latter wire in place bare a half inch of it at the point closest to the terminals of the second coil unit. Then solder the wire in place and are nearest condenser C2 by soldering a short wire across these two lugs and continuing it to the bared portion of the wire that connects C1 and C2. Now make sim-

ilar connections between the in-densers on the panel and the instruments on the baseboard are now to be made. Connect the terminal of S1 that is nearest the panel to the nearest end of the Amperite mounting R3. Then the lower terminal of the rheostat R1 is connected to the nearest end of the Amperite mounting R2.

The resistance VR is next connected into the circuit by running a wire from



Figures D and E

ilar connections between condensers C2, C3 and the terminals of coil T3. The connecting wire between C1 and C2 should also be connected to the terminal of the switch S1 that is farthest from the panel.

Grid Terminals Connected

The grid terminals of each of the three coil units should now be connected to the lugs on the stators of the corresponding condensers. That is, the terminal that is located under the middle of the large coil of T1 should be connected to the lug at the lower part of the left hand side of C1, etc. The panel may now be set aside.

On the baseboard, the left hand filament terminal of the tube socket VT1 should be soldered to the nearest end of the holder of Amperite R2 and the corresponding terminal of the socket VT3 should be connected to the nearest terminal of the Amperite R3.

The terminal of VT1 that was connected to R2 should also be connected to the corresponding terminal of the second socket, VT2. Now place soldering lugs under the right hand filament terminals of

Finish Coil Terminals

A connection is now made from the connection is run from the terminal that is farthest from the panel to one end of the fixed condenser C4 and the other end of this condenser is then soldered to the lug under the antenna binding post, X1. Then a wire is run from the stator terminal of condenser C1 to the grid terminal of socket "GND" binding post to the wire that connects the frames of C1 and C2. This leaves only the wiring of the remaining terminals of the coils. Starting with T1, VT1. The stator terminal of C2 is connected to the grid terminal of VT2 in this same way and the rear terminal of T2 is connected to the terminal of the Phasatrol P1 that is marked P2. The corresponding terminal of P2 is connected to the rear terminal of coil T3.

The last connection is that from the grid terminal of T3 to the grid condenser C5

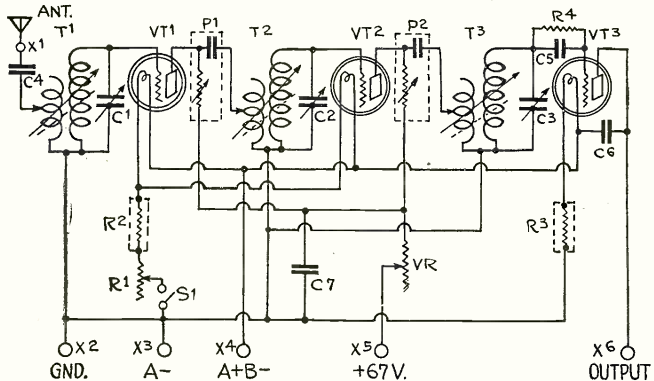


Figure B

shaft. The dial stop holes should not be countersunk.

To Mount Coils

The coils should be mounted on the backs of the condensers before the condensers are permanently mounted on the panel. Holding the condenser in one hand with the ends of the U-shaped frame pointing upward, attach the semi-circular

shaped front panel has not been

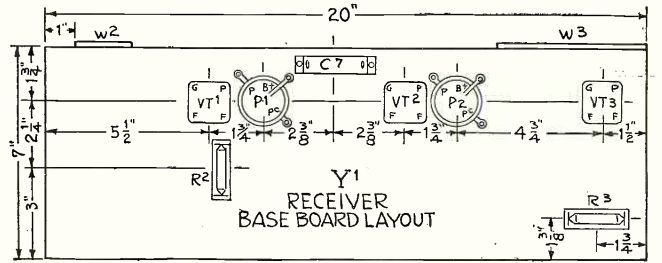


Figure G

the three sockets and connect these three together with a single wire and continue this wire from this terminal of socket VT3 back to the middle binding post (A+Bat B—) of the strip W3. The soldering lugs are used to keep this connecting wire away from the one that runs parallel and connects the other filament terminals of VT1 and VT2.

Plate Terminal Connection

The plate terminal of the first socket, VT1, should be connected to the nearest terminal (marked P) of the Phasatrol P1.

Wiring the Amplifier

The wiring of the amplifier shows up quite well in Figure L and the constructor will obtain considerable help by watching this



closely. In this description the terms right and left will mean when looking at the amplifier from the edge at which the tube sockets are mounted, which is the front edge.

The negative side of the filament circuits will be wired first. Starting at the A Bat—binding post, a connection is run to the nearest terminal of the switch S2.

battery of not less than 100 ampere hour capacity is required.

**Power Tube Depends**

The type and number of "B" batteries used will depend on what power tube is used in the last audio stage. The CX371 type of tube operates best with 180 volts or 4 of the 45-volt blocks. The current

speakers now on the market in both the cone and drum types and it is recommended that the best obtainable be used with this receiver.

No detailed description of the battery connections need be given as the diagram, figure (I), provides all this information in schematic form.

If the tubes all light as described, the next step is to determine the proper adjustment of the screw in the top of each of the Phasatrols, P1 and P2. As a starter these should be turned as far as they will go in an anti-clockwise direction, but without forcing them.

Then turn each one a quarter turn in a

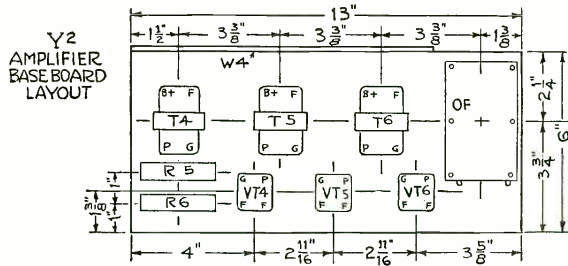


Figure H

The other side of the switch is connected to the left hand end of the two Amperites R5 and R6. The other end of R5 is connected by a single wire to the left hand filament terminals of the tube sockets VT4 and VT5.

The right hand end of R6 is connected to the left hand filament terminal of VT6. Going back to the binding post strip, the A+Bat B—binding post is connected to the right hand terminal of socket VT4 and this terminal is then connected to corresponding terminals of sockets VT5 and VT6. This finishes the filament circuits.

Starting with the audio transformer T4 the other units are wired up. The P terminal of T1 is connected to the input binding post X7 and the B+ terminal to the 22 volts+ binding post X8. The G terminal of this transformer is then connected to the G terminal of socket VT4 and the F terminal is connected to the P terminal of T5 and from there to the 4 volts C—binding post X12.

**Connecting Impedance**

The P terminal of the impedance unit T5 is connected to the plate terminal of VT4 and the G terminal to the grid terminal of VT5. The B+ terminal of T5 is connected to the B+ terminal of the unit T6 and then on to the 90 volts+ binding post X14. The P and G terminals of T6 are connected respectively to the plate terminal of VT5 and the grid terminal of VT6. The P terminal of T6 is then connected to the 40 volts C—binding post X13.

The P terminal of the tone filter is connected next, to the plate of VT6 and the 180 volts+ binding post X15 is connected to the B+ terminal of this filter. Before making this latter connection, however, the wire which is found connecting the two lower terminals of the tone filter should be removed entirely. This is important, because if it is left in place this wire will short circuit the "B" batteries. The lower right hand terminal (F) of the tone filter may then be connected to the right hand filament terminal of the tube socket VT6.

The last connection to be made is that from the A Bat—binding post X9 to the C Bat+ binding post X11 and the wiring of the amplifier is complete.

**Installing the Receiver**

The size of the receiver is such that it is an easy matter to obtain a stock cabinet to fit it, therefore no dimensions or instruction on building a cabinet need be given here.

The accessories required in the operation of the receiver consist of:

- Antenna**
- Ground connection**
- Storage "A" battery, 6-volt**
- 4-45-volt blocks of "B" battery or a "B" eliminator**
- 2-22½-volt "C" batteries**
- 5 UX201A or CX301A tubes**
- 1 UX112, CX312 or UX171 or CX371 tube**
- Load speaker**

The antenna may be almost any sort, indoor or outdoor. Operated in a location 10 miles out of New York City ample reception of New York stations was obtained with a 5-foot wire connected to the antenna binding post.

For best all-around results an outdoor antenna from 50 to 100 feet in length is recommended.

Such an antenna will provide plenty of distance reception with an overabundance of volume and ample selectivity. If an outdoor wire is undesirable 40 feet of wire stretched around the picture moulding will give good results. The ground connection may be any good direct metallic connection, such as a cold water pipe or a radiator.

**Small "A" Battery**

The storage battery may be a small one with a capacity of about 50 ampere-hours if it is to be kept constantly charged with a trickle charger. If it is necessary to take the battery to a service station for charging, or if a charger is used that has a charging rate of 2 or 5 amperes, then a

drain of this tube is higher than others and for that reason the heavy duty type of batteries is recommended as being the most economical.

After the batteries, antenna and ground have been connected, as shown in Figure (I), the loud speaker is connected by inserting the two tips on its extension cord

**The List of Parts Used in Vari-Phase**

- C1, C3, C3—Hammarlund Midline variable condensers, Type ML-17, .00035 mfd.
- C4—Dubilier fixed condenser, Type 601, .0005 mfd.
- C5—Dubilier fixed condenser with grid leak clips, Type 640, .00025 mfd.
- C6—Dubilier fixed condenser, Type 601, .002 mfd.
- C7—Dubilier by-pass condenser, Type 907, 1 mfd.
- CD1, CD2, CD3—Mar-Co 4 inch vernier dials, No. 192
- P1, P2—Electrad Phasatrols
- R1—Carter combination 10 ohm rheostat and switch, with knob, Type M-10-S
- R2—Amperite No. 112, ½ ampere, with mounting
- R3—Amperite No. 1A, ¼ ampere, with mounting
- R4—Durham metallized grid leak resistor, 2 megohms
- S1—See R1
- T1, T2, T3—Hammarlund Auto-couple coils with mounting brackets and cans, Type HQ-1
- VR—Carter "Hi-Ohm" volume control resistance, 50,000 ohms, with knob, No. L
- VT1, VT2, VT3—Benjamin sockets, No. 9040
- W1—Formica panel, 21"x7"x¼"
- W2, W3—Binding post strips (See Figures D, E, for dimensions)
- X1, X2, X3, X4, X5, X6—Eby Ensign engraved binding posts with markings as shown
- Y1—Wood baseboard (See Figure G for dimensions)
- 1 Acme Celastite 6-wire battery cable
- 1 package (35') Acme Celastite, flexible hook-up wire
- 1 package Kester radio solder
- 1 doz. soldering lugs

**List of Parts Used in Amplifier**

- OF—National tone filter
  - R5, R6 Amperites, No. 112, ½ ampere each, with mountings
  - S2—Carter "Imp" switch
  - T4—Rauland Lyric audio frequency transformer, Type R-500
  - T5—Rauland "Trio" impedance unit, Type R-300
  - T6—Rauland "Trio" impedance unit, Type R-310
  - VT4, VT5, VT6—Benjamin sockets, No. 9040
  - W4—Binding post strip (see Figure F for dimensions)
  - X7, X8, X9, X10, X11, X12, X13, X14, X15—Eby Ensign engraved binding posts with markings as shown
  - Y2—Wood baseboard (See Figure H for dimensions)
- (The Radio Digest Shopping Service will purchase all or any of the above specified parts, at the prices listed, for builders of the Vari-Phase Receiver who may be located in isolated communities or unable to obtain the parts from local dealers. Address: Shopping Service, Radio Digest, 510 N. Dearborn St., Chicago, and enclose express or postal money order covering total cost of parts ordered.)*

If a 112 type tube is used only 3 of the 45-volt blocks are required, and they may be either the standard or heavy duty size. Also, if a 112 tube is used the "C" battery requirements will be filled by two small 4½-volt blocks instead of the 22½-volt blocks shown in the diagram of battery connections, as the latter are for use only when the 371 type tube is used.

Any good "B" eliminator can be used with this receiver.

in the small jacks on the tone filter (OF) that are marked L and F. These are the two right hand jacks. The receiver is now in readiness for operation.

The two knobs on the front panel may each be turned on half way and the switch S2 of the amplifier should be turned "on." The action of turning the knob of the rheostat R1 turns on the filament current of the three tubes in the receiver, through the action of the switch which is incor-

clockwise direction, and leaving them that way for the moment, tune the three dials on the panel until a station is heard. This is a simple matter because for any given wave length the setting of the three dials will be almost exactly alike. When the first station is heard tune it in with maximum volume by slight readjustments of the three tuning dials and by turning the left hand lower knob (rheostat) all the way on, or as far as may be necessary for good loud signals.

**Adjust Phasatrols**

If any squeals or whistles are heard the phasatrols should be turned until the whistling stops. If none are heard, turn the Phasatrol screws further in a clockwise direction until a whistling is heard, then turn them back until the whistling stops. These screws can best be adjusted when a low wave station is tuned in at say somewhere around 20 on the tuning dials because this is where the tendency toward oscillation is greatest.

Where extreme sensitivity is desired it is well to set the phasatrols at a point where the receiver will oscillate slightly when the rheostat is turned up all the way (while a low wave station is tuned in). This permits the rheostat to function as an oscillation and therefore a sensitivity control, as well as a volume control. This arrangement will be found to give excellent results.

The right hand knob (VR) should be left at the half on position if the intermediate voltage is 90; that is, the voltage connected to binding post X5 of the receiver. If this voltage is 67½ this knob may be turned up all the way and left permanently in that position.

**Receiver Ready for Debut**

After the proper adjustment of the Phasatrols has been obtained there are no further adjustments to be made and the receiver is ready to be introduced to the family. From this time on the only operation controls are the three tuning dials and the volume control knob. The fact that there are three tuning dials does not offer any particular complication for two reasons. First, that the three dials have the same setting for any given station and, second because a station will always come in at the same place on the dials so if a "log" is made of the dial settings for different stations these stations can always be brought in again at will by setting the dials according to the "log" figures.

The three controls have the advantage that each of the three tuned circuits can be tuned exactly whereas in many single and two control receivers in which two or more circuits are tuned by a single control knob one of the circuits is frequently not in exact resonance.

This is recognized in many receivers and auxiliary control knobs are provided to provide the exact tuning for the different stages—which amounts to the same thing as providing individual controls for each stage.

**New Vogue in "B" Eliminators**

UNOBTRUSIVE beauty is ever coming to be a more prominent note in Radio receiver design. This necessarily means compactness and the elimination of all outside "gim-cracks."

Storage batteries, trickle chargers and "B" eliminators all must be hidden if the Radio installation is to keep its place in the same room with the good furniture. But everyone does not want to go to the expense of a console cabinet, for the table-type gives the same good music as its more elaborately housed family member. What to do with the power supply equipment then becomes a problem. The new Cloverleaf Lifetime "B" eliminator answers the question in part for it is a thin model eliminator, small and compact enough to slide in the back or end space of most any table-type cabinet.

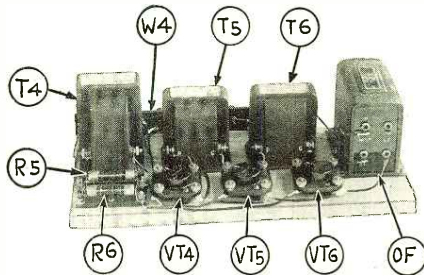


Figure M

The loud speaker is a decidedly important factor in the reproducing qualities of the installation. This receiver is capable of excellent tone quality and it should not be handicapped with a poor loud speaker. There are a number of high quality loud

speakers now on the market in both the cone and drum types and it is recommended that the best obtainable be used with this receiver. No detailed description of the battery connections need be given as the diagram, figure (I), provides all this information in schematic form.



# Radio Digest Illustrated

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Vol. XXII September, 1927 No. 2

## Big Doings in September

THE seventh season of broadcasting will open in September. It offers much to six million listeners-in. Receiving conditions will be the best since broadcasting started. The insistence of the Federal Radio Commission that broadcasting stations stay on their assigned wavelengths or have their license revoked will guarantee more stable reception than we have had in the past.

The event of the Columbia Broadcasting System chain on Sunday afternoon, September 18th, augurs much for the improvement of national programs this season. On the heels of the establishment of this new chain will be the Radio Industries Banquet on the evening of Wednesday, September 21st, which will be broadcast by the greatest number of stations that have yet been hooked up in one chain. Major J. Andrew White, the veteran sport announcer, who will act as Master of Ceremonies, promises the finest array of talent that has ever gone out over the air. The next night both the National Broadcasting Company's chain and the Columbia chain will broadcast the Tunney-Dempsey fight at Soldier Field in Chicago.

With these master broadcast offerings in prospect for September, it behooves all of us to get our receiving sets in order, so that we may get the maximum enjoyment from our Radio.

## Commission Scores Again

The Federal Radio Commission is to be complimented in its fearless action in refusing licenses to broadcasting stations who do not stay on their assigned wavelengths. The practice of stations in broadcasting on any old frequency has resulted in much of the chaos and interference in the air. The Radio Digest in 1925 called the attention of the broadcasting fraternity to the use of Piezo crystals. The Westinghouse Company then showed, after research, that the use of these crystals would have ended 95 per cent of the inter-station interference. The magic crystals have the power to hold transmitting stations to their exact assigned wavelengths.

We would have recommended that the Federal Radio Commission make it mandatory that every broadcasting station be equipped with Piezo crystals, calibrated by the Bureau of Standards. However, the ruling has been made indirect, as a broadcasting station can only meet the demands of the Commission in staying on their assigned wavelengths by the use of these crystals.

Score two for the Federal Radio Commission.

The announcers at the Peace Bridge opening at Buffalo read the program five different times. Reading matter must be scarce at Niagara.

Senator Robert B. Howell, of Nebraska, thinks too many chains would breed monopoly. The Senator has reverse English on his Radio stuff.

The Federal Radio Commission is going into retirement until October 4th. The Senate may soon make it permanent for two of the talkiest members.

The ennobling sweet qualities of woman. Man a little lower than the angels. Woman their equal, pulled down to man's level.

Leaving the heir: "My boy, remember, great men are made, not born."



## THE READER'S VIEW

### Opinion of a Virginian

BEING a great lover of the Radio Digest, and considering it a part of my set, it is with interest that I read your editorials.

After reading your editorial in the second June number of the Radio Digest, in regard to the Federal Radio Commission, it seems that this commission should be known as the National Broadcasting Commission or the RCA Commission. They surely showed to the Radio listeners on which side of the "fence" they stood, when they helped the TRUST.

I thought that when they met in Washington they were going to help the listener. But who did they help? No one but the TRUST CHAIN. It seems that as long as it is a federal commission that they would serve the public, and not a FAVORED FEW broadcasters. And you struck a "key note" when you said, "Let public interest, permanent freedom of the air, rule your decisions, rather than an apparent fear of the newspapers of the country and the big interests." This word fear should have been in capital letters. Will there be a time when the Radio listeners can pick the men who will serve on this commission?

I hope you will get another chance to throw a few more "Hot Shots" at this commission. And I want to thank you and the Radio Digest for the interest you have taken clearing the air and trying to stop the commission from "putting over" something on the Radio listeners. "Long Live the Radio Digest and Its Publisher."

Thanking you again for the stand you have taken, and wishing you greater success, I am—F. E. Kunz, 920 16th St., Lynchburg, Va.

### Hot Stuff from Mr. Snyder

Hardly an issue of the Radio Digest appears but what you have an article on the so-called Radio trust. In the issue of the second number of June you again rave about this trust, you go still further and take issue with the Federal Radio Commission for granting what you call favorable positions and for favoring the red, blue and orange network. It is true that these broadcasters enjoy favorable positions. Why should anything else have been issued to them? Every Radio fan knows full well that these stations who you seem to delight of accusing as a trust are the cream of the broadcasters of the country, and you can rest assured that considerable pressure upon the Radio Commission is largely responsible for the granting of good positions, and that pressure was from thousands of fans the country over. We, the listening public, defy anyone to try to suppress the stations you call the trust, yes our defy includes Mr. Baker of KINT, whom I personally have heard rave over the air about the misnamed trust.—Irvin P. Snyder, 33 Forty-first St., Irvington, N. J.

### Please Note, Mr. Bellows

We, out here in the midwest, have been anxious to test out the new wave lengths given out by the honorable Radio Commission in Washington.

After two nights of testing, both nights during very heavy static conditions, we might summarize the results as follows:

Tone qualities much better.  
Interference, worse in some cases, better in others; for example, WOC unable to reach until close stations sign off; WGN much better but heterodyning, we believe, with San Antonio; WDAF much better, can now reach it in day time, which we could not do before the change; KYW much better; WOW and WHO much better.  
From 40 degrees down, however, the jumble is worse than ever, nothing but heterodyning.

We do wish that our honorable commission could or would come out here in the midwest (we are just about half way between east and west coast) and try out some of their theories as far as allocation of wave lengths is concerned. They would then see, or rather, hear for themselves, what a jumble we are suffering from. Personally I have one of the largest sets in the west and have been in the same (as a B. C. L.) for some six or seven years.

With our powerful sets, geographical locations mean nothing because a station in New York or Chicago of practically the same wave length as other stations in Los Angeles will interfere with each other, the same applying all over the states.

It seems to us that allocating wave lengths from Washington for the whole of the United States is theoretically perhaps correct, but practically far from so.

I believe that if the honorable commission would locate one of its engineers out in this country as I said before, about half way between the east coast and the west coast, allocating the wave lengths from this point, a better result would be realized for we suffering listeners in.

The stations are all putting on splendid programs and are worthy of the time given them from our point of view, but interference, heterodyning, etc. is still very, very bad.

It seems to me that to continue huddling stations close together between the narrow limits of the present broadcasting band, that we will never accomplish very much except to shift interference and heterodyning, now existing between a lot of stations, to other stations.

The only cure, I believe, is drastic, and that is, cut out a lot of the stations, and until the honorable commission can and will do this, God help we poor tried Westerners. Therefore, we say, come out here, you commissioners, and hear for yourself, then adjust the situation.

You have always, Mr. Editor, been frank in your editorials on this chaotic Radio situation, and we B. C. L.'s admire you for it, so I hope that this little light on our situation and condition (Radio speaking) may be of some assistance to you and the honorable commission.—Felix L. Cadou, Liberal, Kansas.

### Want Eastern Programs

I wish to suggest that the commission will find some way to let us who live West hear with some regularity the Eastern stations. We live twelve miles from Lincoln and when the nearby station goes going we lose all the programs from KDKA, WLW, WSAI, WEAP; in fact, all of the larger stations.—Mrs. I. H. Price, Rocu, Neb.

## Great Things Ahead



FOURTH ANNUAL RADIO INDUSTRIES BANQUET PROGRAM, BROADCAST OVER A 70 STATION CHAIN.



SEVERAL PEOPLE WILL LISTEN IN ON THE DEMPSEY-TUNNEY FIGHT WITH TICKETS AT \$40<sup>00</sup> EACH.

## RADIO INDI-GEST

Dear Indi: Here's an anonymous poem that's scrappy stuff for fighters. Read it over and pass it on to E. D. readers. It's full of pep and if it doesn't make you feel like stepping and kicking down four tall buildings read it again. Here's to the guy who wrote it, he deserves credit. Maybe you'll find him.  
—WENDELL HALL.

### "The Little Red God"

Here's a little red song to the god of gods,  
Who dwells in palaces, brothels, huts;  
The little red God with the crow of grit;  
The god who never learned how to quit;  
He is neither a fool with a frozen smile,  
Or a sad old toad in a cask of bile;  
He can dance with a shoe-nail in his heel  
And never a sign of his pain reveal;  
He can hold a mob with an empty gun  
And turn a tragedy into fun;  
Kill a man in a flash, a breath,  
Or snatch a friend from the claws of death;  
Swallow the pill of assured defeat  
And plan attack in his slow retreat;  
Spin the wheel till the numbers dance,  
And bite his thumb at the god of Chance;  
Drink straight water with whisky socks,  
Or call for liquor with temperance folks;  
Tearless stand at the graven stone,  
Yet weep in the silence of night, alone;  
Worship a sweet, white virgin's glove,  
Or teach a courtesan how to love;  
Dare the dullness of fireside bliss,  
Or stake his soul for a wanton's kiss;  
Blind his soul to a woman's eyes  
When she says she loves and he knows she lies;  
Shovel dung in the city mart  
To earn a crust for his chosen art;  
Swear where the builders' dream has failed;  
And sail the seas that no man has sailed;  
Run a tunnel or dam a stream,  
Or damn the man who financed the dream;  
Tell a pal what his work is worth,  
Though he lose his last, best friend on earth;  
Lend the critical monkey-elf  
A razor—hoping he'll kill himself;  
Wear the garments he likes to wear,  
Never dreaming that people stare;  
Go to church if his conscience will,  
Or find his own—in the far, blue hills.  
He is kind and gentle, or harsh and gruff;  
He is tender as love—or he's rawhide tough;  
A rough-necked rider in spurs and chaps,  
Or well-groomed son of the town—perhaps;  
And this is the little Red God I sing,  
Who cares not a wallop for anything  
That walks or gallops, that crawls or struts,  
No matter how clothed—if it hasn't guts.

YES, SUH! Why, only the other day a perspiring expressman came grunting up to our door, dragging something across the floor. He came in with his eyes bulging and mouth dripping.

"I got one galvanized washtub for you," he said. "Is that all, where is it from?" we asked. "No, that ain't all. I comes from Fort Worth, Texas."

"Well, well, bring it in."  
The washtub was pulled in by a hook. Nesting in a bed of straw was one mammoth, old he watermelon—biggest we ever saw, bar none. It was the way the Hired Hand had of making good on his previous announcement that they raise melons in Texas that spell names in the way they have their seeds arranged inside. Thanks, H. H., and we'll never let it delivered the goods. We don't care how the seeds spell "Indi."

Haven't heard a whisper from Art Gillam, the Whispering Pianist, since he pulled freight for points east—and he was going to send us gobs of notes about folks he rubs elbows with in the course of his travels.

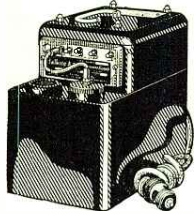
Dear Indi: Is it true as stated in Editor and Publisher that all the press agents of the Radio companies write only piffle? Can it be that all of those wonderful stories about picking up stations 5,000 miles away on one tube sets are false? What's low down, the way down low down on this scandal?  
Verne Ier.

Verne, believe it or not, we have waste baskets on both sides of the desk and the janitor takes 'em out twice a day!

INDI



# Balkite has pioneered— but not at public expense



**Balkite "A"** Contains no battery. The same as Balkite "AB," but for the "A" circuit only. Not a battery charger but a perfected light socket "A" power supply. One of the most remarkable developments in the entire radio field. Price \$32.50.



**Balkite "B"** Has the longest life in radio. The accepted tried and proved light socket "B" power supply. 300,000 units in use show that it lasts longer than any other device in radio. Three models: "B"-W, 67-90 volts, \$22.50; "B"-135, 135 volts, \$32.50; "B"-180, 180 volts, \$39.50. Balkite now costs no more than the ordinary "B" eliminator.



## Balkite Chargers

Standard for "A" batteries. Noiseless. Can be used during reception. Prices drastically reduced. Model "J," rates 2.5 and .5 amperes, for both rapid and trickle charging, \$17.50. Model "N"\* Trickle Charger, rate .5 and .8 amperes, \$9.50. Model "K" Trickle Charger, \$7.50.

\*Special models for 25-40 cycles at slightly higher prices.

Prices are slightly higher West of the Rockies and in Canada.

*The great improvements in radio power have been made by Balkite.*

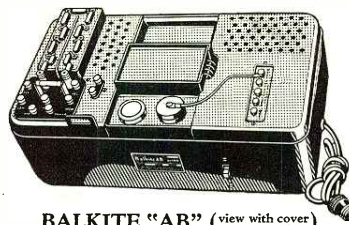
First noiseless battery charging. Then successful light socket "B" power. Then trickle charging. And today, most important of all, Balkite "AB," a complete unit containing no battery in any form, supplying both "A" and "B" power directly from the light socket, and operating only while set is in use.

This pioneering has been important yet alone it would never have made Balkite one of the best known names in radio. Balkite is today the established leader because of Balkite performance in the hands of its owners. Because with 2,000,000 units in the field Balkite has a record of long life and freedom from

trouble seldom equalled in any industry. Because the first Balkite "B," purchased 5 years ago, is still in use and will be for years to come. Because to your radio dealer Balkite is a synonym for quality. Because the electrolytic rectification developed and used by Balkite is so reliable that today it is standard on the signal systems of most American as well as European and Oriental railroads. Because Balkite is permanent equipment. Balkite has pioneered—but not at the expense of the public.

Today, whatever type of set you own, whatever type of power equipment you want, whatever you want to pay for it, Balkite has it. And production is so enormous that prices are astonishingly low.

Your dealer will recommend the Balkite equipment you need for your set.



**BALKITE "AB"** (view with cover removed)  
Contains no battery. A complete unit, replacing both "A" and "B" batteries and supplying "A" and "B" current directly from the light socket. Contains no battery in any form. Operates only while the set is in use. Two models; "AB" 6-135\* 135 volts "B" current, \$59.50; "AB" 6-180, 180 volts, \$67.50.

**FANSTEEL PRODUCTS COMPANY, Inc.**  
North Chicago, Illinois

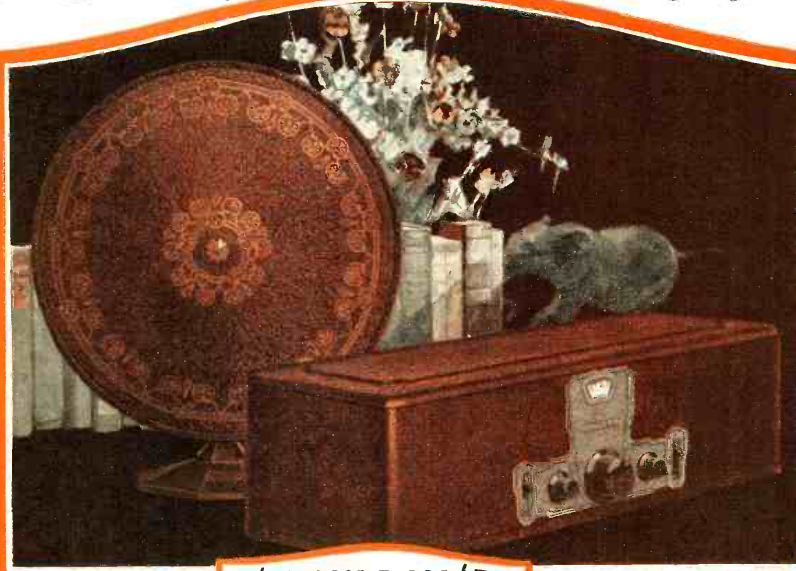
FANSTEEL  
**Balkite**  
Radio Power Units



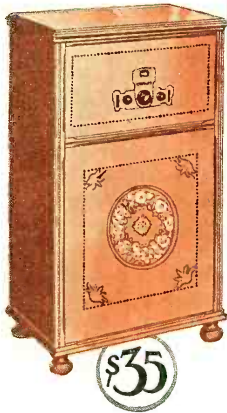
When the  
**Greatest**  
 Show *in*  
 History thrills  
 the World



# 'You're there



Prices slightly higher  
 west of the Rocky Mountains



\$35

*The BANDBOX* \$55  
 A 6 tube Receiver  
 Brown frosted Crystalline finish—  
 Bronze Escutcheon.

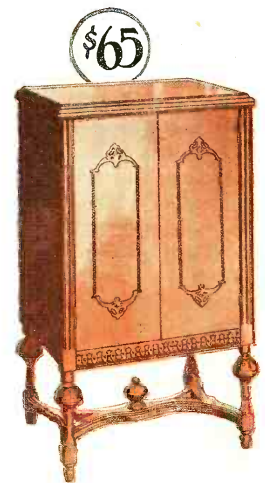
These approved cabinets have been selected by Powel Crosley, Jr., as ideal consoles, acoustically and mechanically, for the installation of the Crosley "BANDBOX". Genuine Musicones built in. Crosley dealers secure them from their jobbers through

H. T. ROBERTS CO.,  
 914 S. Michigan Ave., Chicago, Ill.

Sales Agents for Approved Console Factories:  
 SHOWERS BROTHERS COMPANY  
 THE WOLF MFG. INDUSTRIES



\$85



\$65

**IMPROVED MUSICONES**

Although Musicones improve the reception of any radio set, they are perfect affinities in finish, beauty and reproductive effectiveness for Crosley Radios. A new model, built in the form of a Colonial Tilt-Table with brown mahogany finish, stands 3 feet high. Price \$27.50.

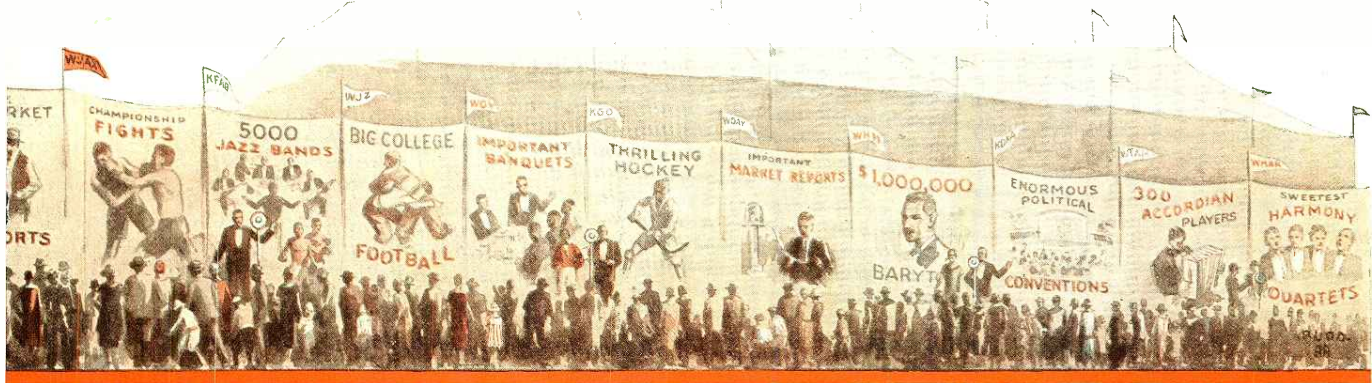
16-Inch Super Musicone (As pictured with Bandbox) \$12.75

12-Inch Ultra Musicone \$9.75



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# with a Crosley

## the "BANDBOX"—a phenomenal Crosley radio receiver for the complete enjoyment of the 1927-28 Radio Season!

Recent court decisions which clarified the radio patent situation have paved the way for still greater Crosley triumphs.

—completely available to Crosley—and amplifying Crosley supremacy in fullest measure, are the enormous resources, great discoveries and embodied in patents of The Crosley Radio Corporation, The Radio Corp. of America, The Westinghouse Co., The General Electric Co., The American Telephone & Telegraph Co., The Hazeltine Corporation, The Latour Corporation.

—the manufacturer in which Crosley is now licensed.

—the seven big things which present radio's greatest advancement, brought together by Crosley combined with the experience, production method and leadership of the Crosley organization. —wonder a waiting radio world announces the "Bandbox" at the record price of \$55, Crosley's mount achievement.

### Bandbox is Shielded

Radio coils are surrounded by magnetic fields similar in every respect to the magnetic field around the earth that moves the needle of a compass, but radio coils these fields make themselves by feeding on each other. Heretofore it has been customary to use inefficient coils in inefficient fields to prevent such feeding back. The Crosley Bandbox incorporates shields around each coil to prevent such feeding back. The shields consequently can be made and



are very much more efficient. The amplification of the receiver is, therefore, much higher—the sensitivity is greatly increased. Condensers are also completely shielded from each other in separate metal compartments. Hitherto, only high priced sets have enjoyed this super radio advantage.



### There Is No Oscillation

The Bandbox employs completely balanced or neutralized radio frequency stages to prevent oscillation, instead of the common form of lossy method. More costly, to be sure, but extremely necessary in achieving such results as are obtained by this marvel of radio reception.

### For Sharpness—The Acuminators

"Bandbox" acuminators enable "fishers" for distant stations to bring them in loud and clear. As powerful telescopes magnify distant scenes, acuminators increase the volume of far-away signals so they seem like local programs.



### Volume Control

This is another big "Bandbox" feature which permits full brass band power for those who want their dance notes strong and loud. For others, it cuts volume down to a soft and gentle murmur, without distortion.

### Illuminated Dial

A Master Station Selector has an illuminated dial for easy reading in shadowy corners. A single knob

permits full tuning for ordinary reception of local, near-by and super-powered stations.

### Installation Simplified

A woven cable, containing vari-colored rubber covered leads, makes installation and hook-up easy for the veriest novice. No waiting for the radio service man, should the batteries be changed.

### Easily Adapted to Consoles

Simply remove screws in escutcheon and in base of set. Lift off metal case. Chassis now stands ready for installation in console cabinet. Opening in console cabinet permits control shafts to protrude. Escutcheon screws in place and—Presto! the console radio is complete.

**For A C Operation** a special Bandbox is available at \$65, wired specially for use with the Crosley Power Converter at \$60. This special Bandbox utilizes the new R.C.A. A C tubes which have made the operation of radio receivers direct from house current so simple, efficient and dependable. The first three tubes employed in the A C model are UX 226. These go into the radio frequency sockets. The detector tube is UY 227, with



indirectly heated emitter. Another UX 226 is used in the first audio stage. Raw A C current heats the filaments of all UX 226 tubes. Power tube UX 171 is in the

last audio socket. This makes the "dog houses" rumble sonorously and the bass drums deeply boom.

### The Power Converter

The power converter which smooths the alternating current is a marvel of engineering ingenuity. Only half the size of an ordinary "A" storage battery,

it supplies the required A, B and C currents, without hum. Finished in brown frosted crystalline.

There are models for 25 and 60 cycle current. A snap switch shuts down the set and power converter completely.

### Price of Power Converter—\$60

You owe it to yourself to see the "Bandbox" and listen to its remarkable performance. If you cannot easily locate the nearest Crosley dealer, his name and address will be supplied on request. Write Dept. 49.



# CROSLEY RADIO

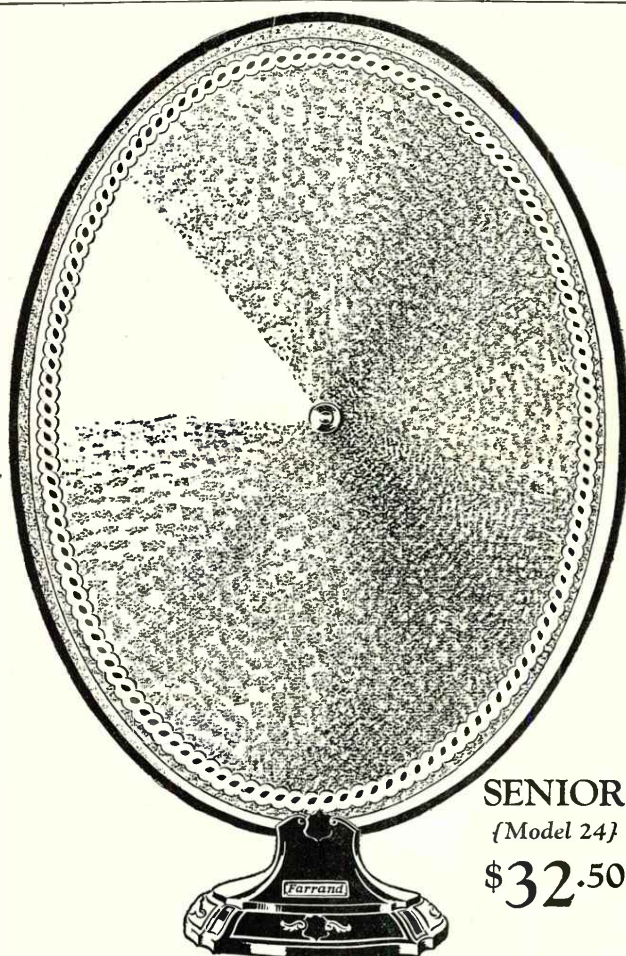
Crosley Radio is licensed only for Radio Amateur, Experimental and Broadcast Reception.



THE CROSLEY RADIO CORPORATION  
Powell Crosley, Jr., Pres.  
CINCINNATI, O.



Announcing  
the *New*  
**OVAL**  
**Farrand**  
**SPEAKER**



SENIOR  
{Model 24}  
\$32.50

*Most startling development since Farrand  
gave Radio its first cone speaker*

ONCE again, from the laboratories that gave Radio its first cone speaker, comes another startling development—the Farrand OVAL Speaker. Revolutionary in design and construction, this latest Farrand achievement sets entirely new standards of tonal reproduction, volume-acceptance, and artistry of appearance. It surpasses even its predecessor—hailed heretofore as the finest speaker ever produced—by the same wide margin as did the first Farrand cone excel the old-fashioned horn.

The famous Farrand *unlimited tone radius* is now even further

accentuated through employment of the new  
**LAMINATED DRIVING UNIT—**

a Farrand engineering advancement which, in combination with the oval-shaped cone, produces hitherto unattained tonal purity—even at maximum volume.

You'll enthuse over its remarkable performance—and over its outward beauty, too. And you'll wonder at its small cost, likewise. For despite all these vast improvements, the new Farrand OVAL is as modestly priced as the Farrand Speakers of former seasons.

### Four Models

The Farrand OVAL Speaker is made in four different models:

SENIOR (illustrated) . . . . at \$32.50  
JUNIOR . . . . . at \$16.50  
WALL (for hanging) . . . . . at \$45  
PEDESTAL (tip-table effect) . . . at \$60

Slightly higher in Far West

Go now to your dealer and ask for a demonstration of this greater-than-ever Farrand Speaker. See. Hear. Compare!

FARRAND MANUFACTURING CO., INC., LONG ISLAND CITY, N. Y.

Manufacturers of Cone Speakers and "B" Battery Eliminators



# RADIO INDUSTRIES BANQUET ON THREE CHAINS

Eva Garcia, below, is a member of the Wharry Lewis quintet which frequently visits KGO, Oakland, Miss Garcia, besides playing for the quintet, is well known to the broadcasting world as a soloist.



When Carson J. Robinson of Kansas City and Wendell Hall, the famous Music Maker, get together it surely "Aint Goin' to Rain No Mo'." This picture shows the famous melody pair broadcasting from WJZ. They will probably wander back there again this month and give the fans a sample of their new music hits.

WSMB has more pretty girls broadcasting than perhaps any other station but that is, perhaps, because it is so far south. Ada Bives, below, is the well known organist of this broadcaster. She is always glad to play request numbers.



## THURSDAY, SEPTEMBER 14

**Headliners**

Atlantic Eastern Central Mountain Pacific  
 7 p. m. 6 6 4 4  
 WJZ (454.2m-600c) WBZ, WRC, Bill Whipple  
 7:30 6:30 5:30 4:30 3:30  
 WZZ (454.2m-600c) Joseph Springs, Hawaiian  
 guitar; Geo. Ellsworth, ukulele.  
 8 8 8 8  
 WFAE (491.5m-610c) WEEL, WIAR, WGR,  
 WFI, WRC, WWJ, WSAI, KSD, WTMJ.  
 National light opera concert.  
 WFL (454.2m-600c) The 14th Infantry band.  
 WIP (454.2m-600c) R. C. A. Radiators, WBZ,  
 KDKA, WEHL.  
 WVIC (535.4m-560c) Ross Reeves, Jenny Lee.  
 8:15 7:15 6:15 5:15  
 WMAQ (447.5m-670c) Mida Anderson, soprano;  
 Betty Muchinger, harpist.  
 8 8 8 8  
 WFAE (491.5m-610c) and chain, WEEL, WIAR,  
 WTAG, WGR, WFI, WRC, WCHS, WCAE,  
 WWJ, WGN, WGY, WDAF, Cigarot Club Esqui-  
 mo.  
 WJZ (454.2m-600c) Elks' male quartet  
 WLV (426m-700c) Gipsy's mandolin quartet.  
 9:30 8:30 7:30 6:30 5:30  
 KSD (227.1m-1200c) Band concert.  
 WBAP (499.7m-600c) Loyde Dean, contralto;  
 Beulah Bates, mandolinist.  
 WIZ (454.2m-600c) and chain, WHAM, WTMJ,  
 WOC, Our Musical United States.  
 WMAQ (447.5m-670c) Nella B. Erickson, soprano.  
 WSAI (361.2m-830c) Earl Wintersohle, Wilbur  
 Puckham.  
 8:50 7:50 6:50 5:50  
 WSAI (361.2m-830c) John Drury, Hortense Rose.  
 10 9 8 7  
 WCDD (344.5m-870c) mixed quartet, organ, clarinet,  
 trio.  
 WDAF (370.2m-810c) Band concert broadcast  
 from the Concourse.  
 WFAE (491.5m-610c) and chain, WGR, WFI,  
 WRC, WWJ, WSAI, Old Bill and His Work-  
 shop.  
 WIP (508.2m-590c) Jack Wieland, baritone;  
 Flora Ripka, accompanist.  
 WYWC (296.5m-1010c) Grove Park Inn organ.  
 10:30 9:30 8:30 7:30 6:30  
 WHO (535.4m-560c) Gwen Howard, soprano;  
 Earl Johnson, baritone.  
 10:45 9:45 8:45 7:45 6:45  
 WFLA (365.6m-820c) Dance program, Radio  
 Ramblers.  
 11:30 10:30 9:30 8:30 7:30  
 KTHS (384.4m-780c) Lena Iatone, pianist.  
 WBAP (499.7m-600c) Sam S. Losh, baritone.  
 12 mid 11 10 9 8  
 WBBM (389.4m-770c) Hank and His Gang.  
 WLAC (225.4m-1330c) Melody Kings, orchestra.  
 WSAI (361.2m-830c) Florence & Missouri Kin-  
 ney, Eddie Lee.  
 12:30 a. m. 11:30 10:30 9:30 8:30  
 WSM (349.7m-880c) Pipe organ concert by F.  
 Arthur Henkel.  
 11 10 9 8  
 KFI (468.3m-640c), KGO (384.4m-780c), KPO  
 (422.3m-710c), KGW (491.5m-610c), KOMO  
 (305.5m-980c) "The Sorcerer."

## Regular Thursday Features

Atlantic or Eastern Daylight Saving Time Stations

WBZ Springfield, Mass. (532.1m-600c) 6 p. m. dinner music; 7, WJZ; 7:30, musical; 8, WJZ.  
 WCAE Pittsburh, Pa. (516.9m-580c) 6 p. m. dinner concert; 9:30, musical chef; 10, band and songs; 10:30, Piccadilly orchestra.  
 WEAF New York, N. Y. (491.5m-610c) 6 p. m. dinner music; WEEL, WRC, WCAE; 7:30, Comfort hour; WEEL, WIAR, WTAG, WCHS, WVIC; 8, light opera; WEEL, WIAR, WGR, WFI, WRC, WWJ, WSAI, KSD, WTMJ; 9:30, supper; WEEL, WIAR, WTAG, WGR, WFI, WRC, WCHS, WCAE, WWJ, WGN, WGY, WDAF; 10, Our Government; WEEL, WIAR, WTAG, WGR, WFI, WRC, WCHS, WCAE; 10:10, Old Bill and His Work-shop; WGR, WFI, WRC, WWJ, WSAI; 10:40, orchestra; WFI, WRC, WWJ, WGY, WSAI; 11:30, orchestra; WGY, WSAI; 11:50, WFAE; 12:30, musical; 9, WFAE; 10, WFAE; 11:30, orchestra; WFI Philadelphia, Pa. (405.2m-740c) 8 p. m. WFAE; 9, WFAE; 10, WFAE; 11:30, orchestra; 8:50, program; 7:30, dance orchestra; WGR Buffalo, N. Y. (302.8m-990c) 8:9 p. m. ensemble; 9:30, concert; 11:05, supper music.

## HIGH LIGHTS OF THE AIR

RADIO listeners are getting through NAA, Washington, D. C., an opportunity to hear music composed by our Central American neighbors. Friday, September 9, Alfonso Zelaya, pianist, will play compositions based on the Mayan motifs of his native land. The Mayan people reached a high state of civilization and music played an important part in their religious festivals. Senora Milla Ybarra de Dominguez, soprano, will sing some new selections from the Latin American countries.

Thursday, September 8, Friday, the 9th, and Saturday at 2:30 p. m. WIP will experiment announcing the Davis Cup Tennis matches. These will be broadcast direct from the Germantown Cricket club. Chris W. Graham, tennis expert and announcer of this Philadelphia station, will describe among others the smashing game of the world champion, Tilden, and the crafty well-placed shots of the famous Frenchmen, Lacoste. Mr. Graham will

also describe well known people attending the matches.

The village parson, Si Perkins, Abner Slocum, Lizzie Green and all the other villagers will climb in the old backboard Monday night, September 12, and take a ride to KOA. For the mile high station in Denver is going to give a Country Skule entertainment from 8:15 to 10 p. m.

No Radio fan whether he lives, north, east, south or west needs to miss the two big events of the month, the Radio Industries banquet and the Tunney-Dempsey fight. Three chains, the Red and Blue networks and the Columbia chain will make it almost impossible for any listener to miss through static any feature of these two headliners. September 21 the Radio Industries banquet will be on the air with the best known Radio artists ready to entertain. On September 22, the great fight will be broadcast with Graham McNamee and Major White presiding as they did last year.

WHAR Atlantic City, N. J. (272.6m-1100c) 7:45 p. m. talk; 7:55, trio.  
 WHN New York, N. Y. (394.5m-760c) 6:20-12 mid. program; 12, Cotton club orchestra.  
 WIP Philadelphia, Pa. (508.2m-590c) 8 p. m. program; 11:05, orchestra.  
 WJZ New York, N. Y. (454.2m-600c) 7 p. m. Bill Whipple of Sweet Meadows, WBZ, WRC; 7:15, orchestra; 8, R. C. A. Radiators, WBZ, KDKA, WEHL; Elks' male quartet; 9:30, Our Musical United States, WHAM, WTMJ, WOC; 10:30, time.  
 WMAK Buffalo, N. Y. (545.1m-550c) 6:30 p. m. dinner music; 10:30, musical.  
 WBCA New York, N. Y. (370.2m-810c) 6:30 p. m. orchestra; 12, Broadway nite.  
 WOR Newark, N. J. (422.3m-710c) 6:15 p. m. ensemble; 10:55, news; 11, orchestra.  
 WPG Atlantic City, N. J. (272.6m-1100c) 8:15 p. m. program; 9:30, Breaking the Waves; 10, Movie broadcast; 11, orchestra; 11:30, dance orchestra.  
 WTAC Worcester, Mass. (516.9m-580c) 8 p. m. travel talk; 9, WFAE; 10, WE; 6:30 p. m.

**Eastern Standard or Central Daylight Saving Time Stations**

KDKA Pittsburh, Pa. (516.9m-580c), 7:30, sketch; WJZ; 9, WJZ.  
 KYW Chicago, Ill. (526m-570c) 7-8 p. m. program; 9:30, program; 10:32, Congress Carnival.  
 WBAL Baltimore, Md. (285.5m-1050c) 8:30 p. m. dinner; orchestra; 7:30, musical; 8, WJZ; 9, dance orchestra.  
 WBBM Chicago, Ill. (389.4m-770c) 7-12 mid. program.  
 WBCN Chicago, Ill. (288.3m-1040c) 7 p. m. program.  
 WCFL Chicago, Ill. (483.6m-620c) 6 p. m. labor hour; trio; 8, classical music; 8:12, popular hour; WCHS Portland, Me. (503.2m-830c), 6:30 p. m. WFAE.  
 WCFB Detroit, Mich. (440.9m-680c) 6 p. m. dinner concert; 8, musical.  
 WDBO Orlando, Fla. (288.3m-1040c) 9:30 p. m. dance program.  
 WBBH Chicago, Ill. (365.6m-820c) 8 p. m. program.  
 WENR Chicago, Ill. (288.3m-1040c) 8, orchestra.  
 WFLA Clearwater, Fla. (365.6m-820c) 8:30 p. m. program; 9:45, dance program.  
 WGHF Detroit, Mich. (319m-840c) 8 p. m. orchestra.  
 WGN Chicago, Ill. (305.9m-980c) 6:10 p. m. Punch and Judy; 6:50, old fashioned almshouse; 8, WFAE; 10, Sam 'n' Henry; 10:10, Music Box; 10:20, songs; Correll and Gosden; 10:25, songs.  
 WGY Schenectady, N. Y. (370.5m-790c) 6:45 p. m. musical; 8, WFAE; 9, musical; 9:30, news; 10, WFAE.  
 WHK Cleveland, Ohio (265.5m-1130c) 6:30 p. m. dinner orchestra; 7:30, I. B. S. A. program; 9:45, banjoists; 10, program.

WHT Chicago, Ill. (416.4m-720c) 8-10 p. m., 11-1 p. m.  
 WIBO Chicago, Ill. (416.4m-720c) 6:15-6:30 p. m., WJAX Jacksonville, Fla. (336.9m-890c) 8 p. m. markets.  
 WJAZ Chicago, Ill. (263m-1140c) 7:30 p. m. orchestra; 8:15, studio program; 9, program.  
 WJJD Chicago, Ill. (365.6m-820c) 8:9 p. m. children's hour; 11-12, Victrolas; 12-1, Knights of the Burning Castle.  
 WRK Detroit, Mich. (440.9m-680c) 6:30 p. m. Petite symphony; 8, WJZ.  
 WLIB Chicago, Ill. (305.9m-980c) 7 p. m. ensemble; 11:15, a. m. organ.  
 WLS Chicago, Ill. (344.6m-870c) 7:45 p. m. WLS players; 8, verse and music.  
 WLV Cincinnati, Ohio (426.5m-700c) 7 p. m. orchestra; 10, Crosby Sockacts; 11, Tommy and Irene; 11:15, Castle Farm.  
 WMAQ Chicago, Ill. (447.5m-670c) 8, orchestra; 9, program; 12, popular program.  
 WNCB Chicago, Ill. (447.5m-670c) 11:10 p. m. orchestra.  
 WWS Washington, D. C. (468.5m-640c) 6 p. m. WJZ; 7-9, WFAE; 9, program; 10-11, Meyer Davis; 12, Paradis band.  
 WRVA Richmond, Va. (254.1m-1180c) 8 p. m. program; 11:30, Carry Me Back to Old Virginia.  
 WSAI Cincinnati, Ohio (361.2m-830c) 7 p. m. WFAE; 8:01, studio program.  
 WSCB Chicago, Ill. (232.4m-1290c) 5-7 p. m., artists; concert; 8, musical; 9, program.  
 WSEA Norfolk, Va. (263m-1140c) 7 p. m. dinner music; 8:30, studio recital; 10, orchestra.  
 WTV Hartford, Conn. (535.4m-560c) 6:30 p. m. WFAE; 7, organ; 7:30, Mary and Ted; 8:30, orchestra.  
 WWT Detroit, Mich. (374.8m-800c) 6 p. m. dinner concert; 8:30, musical; 9:15, program.  
 WWC Asheville, N. C. (296.9m-1010c) 7 p. m. m. dinner concert; 9:30, talk; 9:51, program.

**Central Standard Time Stations**

KMA Shenandoah, Ia. (394.5m-760c) 9-11 p. m. Parrham trio, classical program.  
 KMMJ Clay Center, Neb. (378.5m-790c) 6 p. m. ensemble; 8, musical; 9, organ.  
 KOC Council Bluffs, Ia. (277.6m-1080c) 6:30 p. m. Omaha Motor Oil orchestra; 6:30, organ recital; 7:30, program; 11, orchestra.  
 KPRF Houston, Tex. (296.9m-1010c) 7:30-9:30 p. m. studio concert.  
 KSD St. Louis, Mo. (345.1m-550c) 6 p. m. WFAE; 7:30, organ; 8:30, feature program; 9:45, WFAE.  
 WFAE Ft. Worth, Tex. (499.7m-600c) 7:30-8:30 p. m. musical; 9:30-11, musical comedy program; 11-12, John Joseph, organist.

WCBD Zion, Ill. (344.6m-870c) 8 p. m. Cornet quintet; vocal solos, trio.  
 WCCO Minneapolis-St. Paul, Minn. (405.2m-740c) 6 p. m. dinner concert; 7, WFAE; 9, program; 10, musical.  
 WDAF Kansas City, Mo. (370.2m-810c) 7, WFAE; 9, program; 11:45-1, Nighthawk Trio.  
 WFAA Dallas, Tex. (499.7m-600c) 6:30 p. m. musical; 8:30-9:30, musical.  
 WHAS Louisville, Ky. (461.3m-650c) 7:30 p. m. studio concert.  
 WHB Kansas City, Mo. (336.9m-890c) 7 p. m. dinner hour organ; 8, evening concert.  
 WHO Des Moines, Ia. (535.4m-560c) 6:30 p. m. dinner concert; 8:30, classical music; 9, drama.  
 WLAC Nashville, Tenn. (268m-1330c) 8 p. m. program; 10-11, orchestra.  
 WQAI San Antonio, Tex. (302.8m-990c) 8:30-9:30, R. C. A. hour.  
 WOCavenport, Ia. (352.7m-850c) 8 p. m. WFAE; 9, program.  
 WOW Omaha, Neb. (508.2m-590c) 6:30 p. m. recited instruments, Francis Flötter; 9, classical.  
 WSB Atlanta, Ga. (475.5m-630c) 8 p. m. musical; 10:45, organ.  
 WSM Nashville, Tenn. (340.7m-890c) 7:15 p. m. program; 8, studio program; 10:30, pipe organ.  
 WSMW New Orleans, La. (322.4m-920c) 8:30-10:30, pipe program.  
 WTMJ Milwaukee, Wis. (293.9m-1010c) 7:30 p. m. WJZ; 8:30, program; 9:30-12, frolic.  
 WYCA New York, N. Y. (491.5m-610c) 7:30 p. m. program.

## Mountain Standard Time Stations

CFAC Calgary, Can. (434.8m-690c) 9:30 p. m. orchestra.

## Pacific Standard Time Stations

KFI Los Angeles, Calif. (468.5m-640c) 7 p. m. old-timers' program; 8, drama hour; 8:30, program; 9:10, musical; 10, musical; 11, orchestra.  
 KFOA Seattle, Wash. (447.5m-670c) 7:30-8, program; 9:10, chain program.  
 KFWB Hollywood, Calif. (361.2m-830c) 6:7 p. m. dinner concert; 7:50, news; 8:9, features; 9:10, program; 11:1, frolic.  
 KGO Oakland, Calif. (384.4m-780c) 6:55-7 p. m. Stanislaus Ben's Little symphony; 8, drama hour; 9:10, orange network.  
 KGW Portland, Ore. (491.5m-610c) 6-7 p. m. dinner concert; 8:45, lecture; 8:9, vaudeville; 9:12, National Broadcasting company; 10:12, dance band.  
 KHJ Los Angeles, Calif. (405.2m-740c) 6:30-7:30, Varsity Four.  
 KJR Seattle, Wash. (348.6m-860c) 6:30 p. m. dinner concert; 8:30, news; 9:10, features; 9:10, program; 11:1, frolic.  
 KNX Hollywood, Calif. (336.9m-890c) 7 p. m. records; 8, program; 9:10, features; 11, Hotel Ambassador.  
 KPO San Francisco, Calif. (422.3m-710c) 6:30-7 p. m. States Restaurant orchestra; 7:30-8, Rudy Seiger's Fairmont hotel concert orchestra; 8:9, program; 9:10, music; 10-11, music.

## FRIDAY, SEPTEMBER 15

**Headliners**

Atlantic Eastern Central Mountain Pacific  
 6 p. m. 6 6 4 4  
 WFAE (491.5m-610c) and chain, WEEL, WVIC, WSAI, WLBB, KSD, WOC, WDAF, WGY, KVOD, WFAA, Cities Service concert  
 WJZ (454.2m-600c) and chain, KDKA, KVV, KVV, Philco hour.  
 8:30 7:30 6:30 5:30 4:30  
 WFLA (365.6m-820c) and chain, WFAE, WEEL, WVIC, WSAI, WSAI; 10:40, orchestra; WFI, WRC, WWJ, WGY, WSAI; 11:30, orchestra; WGY, WSAI; 11:50, WFAE; 12:30, musical; 9, WFAE; 10, WFAE; 11:30, orchestra; 8:50, program; 7:30, dance orchestra; WGR Buffalo, N. Y. (302.8m-990c) 8:9 p. m. ensemble; 9:30, concert; 11:05, supper music.



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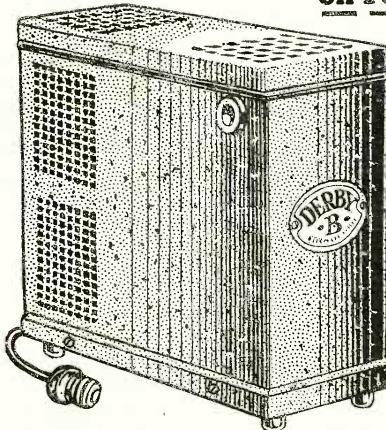
Atlantic Eastern Central Mountain Pacific  
10:00 p. m. 9:00 8:30 7:00 6:00  
WFAF (491.5m-610kc) and chain, WWJ, Moon  
Magic.  
KFI (245.8m-1220kc) Magdelaine Bryan, enter-  
tainer.  
WJZ (454.2m-660kc) Around the Piano.  
10:15 9:15 8:15 7:15 6:15  
KFI (245.8m-1220kc) Fimmie White and How-  
ard Fordham, the Singing Sevenstars.  
10:30 9:30 8:30 7:30 6:30  
KOB (394.5m-760kc) KOB orchestra.  
WCOA (249.9m-1200kc) Frances Keene Villar,  
Lilting Melody girl.

Atlantic Eastern Central Mountain Pacific  
11:00 p. m. 10:00 9:00 8:00 7:00  
KFI (468.5m-640kc) violin duets, Paul Roberts,  
Harold Mulhollen.  
KOA (325.9m-920kc) KOA flies to England to  
broadcast a program of English music.  
WCOA (249.9m-1200kc) Elizabeth Moreno, piano  
recital.  
11:15 10:15 9:15 8:15 7:15  
WBBM (389.4m-770kc) Gus C. Edwards' orches-  
tra and Charley Straight's orchestra.  
11:30 10:30 9:30 8:30 7:30  
KTHS (384.4m-780kc) Clyde Foley's dance indic.  
WBAP (499.7m-600kc) Aylene Hoffman, pianist.  
12 mid. 11 10 9 8  
KGO (384.4m-780kc) Concert, Mme. Bertie  
Baret, French violinist; Eva Garcia, piano.  
1 p. m. 12 11 10 9  
KFI (468.5m-640kc) Dresden Girls trio.

**Regular Friday Features**  
**Atlantic or Eastern Daylight Saving Time Stations**  
WBZ Springfield, Mass. (333.1m-800kc) 6:15 p. m. orchestra; 7, baseball; 7:30, time; 8:30, WJZ; 9, WJZ; 10, orchestra.  
WCAE Pittsburgh, Pa. (516.9m-880kc) 6 p. m. dinner concert; 8, WFAF; 10, program; 11, orchestra; 12, night club.  
WCAU Philadelphia, Pa. (336.9m-880kc) 7 p. m. orchestra; 10, Architects; 11, orchestra.  
WEAF New York, N. Y. (491.5m-610kc) 8 p. m. Cities Service concert orchestra, WEAF; WFL, WGR, WLIT, WRC, WCAE, WTAM, WWJ, WSAI, WLIR, KSD, WOC, WCCO, WDAF, WGY, KVGO, WTAA; 9, correct time WEEI, WLIR, WLIT, WRC, WCAE, WTAM, WWJ, WSAI, KSD.

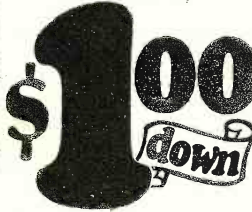
WOC, WGY, WDAF; 9, Musical Miniatures, WTAG, WLIT, WRC, WOC, KSD, WVIC; 9:30, La France orchestra.  
WTAM, WWJ, WOC, WDAF, WEHL; 10, Moon Magic, WWJ; 10:30, orchestra, WGY, WWJ; 11:30, orchestra, WRC.  
WEEI Boston, Mass. (447.5m-670kc) 7:30 p. m. Merry Melodians; 8, WEAF; 9, Neapolitan Dutch Girls; 9:30, musicale; 10, cruising the air; 10:10, news; 10:15, organ.  
WGBS New York, N. Y. (348.6m-880kc) 6:30-7 p. m. orchestra.  
WGR Buffalo, N. Y. (302.8m-980kc) 6:30-7:30 p. m. dance orchestra; 8-11:30, WEAF.  
WHAR Atlantic City, N. J. (272.6m-1100kc) 7:45 p. m. sport talk; 8, evening concert.  
WIP Philadelphia, Pa. (508.2m-590kc) 7 p. m. bed-time story.  
WJZZ New York, N. Y. (454.2m-660kc) 7 p. m. orchestra; 8, Yesterhats, KDXA, KYW, WJR; 8:30,

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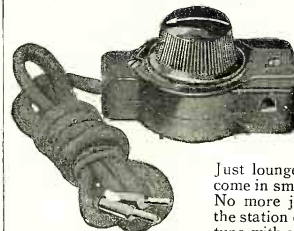
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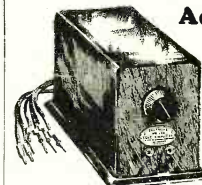
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# TUNNEY-DEMPSEY SCRAP ON AIR SEPTEMBER 22

Royal Stenographers, WBZ, KDKA, KYW, WBAL, WJR; 9, Philco hour, WBZ, KDKA, KYW; 10, Time, WBZ, KDKA, KYW; 10, Around the piano; 10:30, orchestra, WRC.

WLIT Philadelphia, Pa. (405.2m-740kc) 8 p. m. WEAF; 9:30, WEAF; 11, orchestra.

WMAK Buffalo, N. Y. (545.1m-550kc) 6:30 p. m. dinner music; 7:15, news; 9:30, music; 10:30, studio program.

WMC New York, N. Y. (370.2m-810kc) 6:30 p. m. orchestra; 10, music; 11, Faraday club.

WOO Philadelphia, Pa. (508.2m-590kc) 7:30 p. m. WOO trio; 8:30, talk on the stars; 9, modern program.

WOR Newark, N. J. (422.3m-710kc) 6:15 p. m. songs; 10:30, artists; 11, orchestra.

WTAG Worcester, Mass. (516.3m-580kc) 8:30 p. m. music; 9, WEAF; 9:30, music; 10, news.

**Eastern Standard or Central Daylight Saving Time Stations**

KDKA Pittsburgh, Pa. (315.6m-950kc) 8, WJZ; 8:30, WJZ; 11:30, Pittsburgh Post-Judge program.

KYW Chicago, Ill. (528m-570kc) 7-9 p. m. WJZ; 9:10-30, concert; 10:30-11:55, music.

WBAL Baltimore, Md. (285.5m-1050kc) 7:30-8 p. m. WJZ; 8-9, ensemble; 9, municipal band.

WBBM Chicago, Ill. (389.4m-770kc) 7-11 p. m. music; 12, organ.

WBCN Chicago, Ill. (283.3m-1040kc) 7 p. m. popular program.

WCFL Chicago, Ill. (483.6m-620kc) 6 p. m. labor hour; 7, 10:15-12, mtg. stage show.

WCSH Portland, Me. (361.2m-830kc) 8 p. m. Chipman hour; 8, Treasure Hunter.

WEHI Chicago, Ill. (365.6m-820kc) 7-8 p. m. artists; 9-11, orchestra.

WENR Chicago, Ill. (263.3m-1040kc) 6 p. m. organ; 8, classical program; 9:30, studio program.

WFLA Clearwater, Fla. (365.6m-820kc) 8:30 p. m. organ and artists; 9:45, dance program.

WGN Chicago, Ill. (305.5m-980kc) 6:50 p. m. Old Fashioned Almanack; 8:30, Paul Ash; 9:30, bartender; 10, Sam n. Henry; 10:10, Music Box; 10:20, songs; Tommy Coates; 10:40, Pepper Party.

WGY Schenectady, N. Y. (378.5m-790kc) 6:30 p. m. music; 7, music; 8, play; 9:30, WEAF.

WHK Cleveland, Ohio (265.3m-1130kc) 6:30 p. m. program; 10, program; 11, 01, dance music.

WHT Chicago, Ill. (416.4m-720kc) 8-10, 11-12.

WIBO Chicago, Ill. (416.4m-720kc) 6:3 p. m.

WJAX Jacksonville, Fla. (336.9m-890kc) 7:45 p. m. children's program; 8, popular program.

WIJZ Chicago, Ill. (263m-1140kc) 7:30 p. m. orchestra; 8:15, classical; 9, diversified program.

WJDD Chicago, Ill. (365.6m-820kc) 8-9 p. m. music hour; 11-12.

WJR Detroit, Mich. (440.3m-680kc) 7 p. m. WJZ; 8, freeze flowers.

WLIB Chicago, Ill. (305.9m-980kc) 7 p. m. WEAF.

WLS Chicago, Ill. (344.6m-870kc) 7:20 p. m. May and June; 7:30, orchestra; 8, silhouette hour; 9:15, WLS players; 10-12, Showboat.

WMAQ Chicago, Ill. (447.5m-870kc) 6 p. m. chimes; 6:15, Wide-Awake club; 8, WEAF; 9, music; 12, popular program.

WQJ Chicago, Ill. (447.5m-870kc) 10 p. m. orchestra.

WRC Washington, D. C. (468.5m-610kc) 6:30 p. m. orchestra; 7, WEAF; 8, WEAF; 9, Lord Calvert ensemble; 9:30, orchestra; 10:30, WEAF.

WRVA Richmond, Va. (254.7m-1180kc) 7 p. m. program.

WSAI Cincinnati, Ohio (361.2m-830kc) 7 p. m. WEAF; 10, orchestra.

WSBC Chicago, Ill. (232.4m-1290kc) 6-8 p. m. Hugh Swift and his Serenaders; dinner concert; 9-1, popular program.

WSEA Norfolk, Va. (263m-1140kc) 7 p. m. dinner concert; 9, orchestra; 10, Colonial night club.

WTAM Cleveland, Ohio (399.8m-750kc) 6 p. m. orchestra; 7, WEAF; 8, program; 11, orchestra.

WTC Hartford, Conn. (535.4m-560kc) 7 p. m. WEAF; 9:30, music; 11, orchestra.

WWJ Detroit, Mich. (374.8m-800kc) 7 p. m. WEAF; 8, music; 8:30-10, WEAF.

**Central Standard Time Stations**

KFAB Lincoln, Neb. (309.1m-970kc) 5:30-6:30 p. m. Hotel Lincoln orchestra; 8:30-10, program; 11-1, frolic.

KFVE St. Louis, Mo. (234.2m-1280kc) 7, orchestra; 8:30, Baldwin; 9, Movie Club.

KMA Shenandoah, Ia. (394.5m-760kc) 9-11 p. m. organ.

KSD St. Louis, Mo. (545.1m-550kc) 6 p. m. WEAF; 8:30, dance music; 11, orchestra.

KTHS Hot Springs National Park, Ark. (384.4m-780kc) 8:30-9:30 p. m. novelties; 9:30-10:15, orchestra.

WBAF Ft. Worth, Tex. (499.7m-600kc) 7:30-8:30, music; 9:30-12, concert.

WCCO Minneapolis-St. Paul, Minn. (405.2m-740kc) 6 p. m. WEAF; 7, dinner concert; 8:30-10, musical program; 10, Linnet Long's dance orchestra.

WCOA Pensacola, Fla. (249.8m-1200kc) 8 p. m. program.

WDAF Kansas City, Mo. (370.2m-810kc) 7:30, WEAF; 8, dance program; 9, popular program; 11:45-1 a. m. Nighthawk frolic.

WOOD Chattanooga, Tenn. (245.8m-1220kc) 8 p. m. classical concert.

WFAA Dallas, Tex. (499.7m-600kc) 6:30-7:30 p. m. program; 8:30, program.

WHAS Louisville, Ky. (461.3m-650kc) 7:30-9 p. m. studio concert.

WIB Kansas City, Mo. (336.9m-890kc) 7-8 p. m. talk.

WHIO Des Moines, Ia. (535.4m-560kc) 6:30 p. m. orchestra; 8:30, string trio.

WDOI San Antonio, Tex. (302.8m-990kc) 8:30 p. m. program.

WOC Davenport, Ia. (352.7m-850kc) 6 p. m. WEAF; 7, music; 7:30, WEAF; 8, program.

WOW Omaha, Neb. (508.2m-590kc) 6 p. m. Hugo Heyn, marimba; Emil Horstman, pianist; 9, classical; 10, Ortho-song hour.

WSB Atlanta, Ga. (475.8m-630kc) 8 p. m. program; 10:45, concert.

WTMJ Milwaukee, Wis. (293.5m-1020kc) 7 p. m. classical program; 8:45, to be announced; 9:30, piano.

**Mountain Standard Time Stations**

KOA Denver, Colo. (325.3m-920kc) 7:30 p. m. S. S. lesson; 8, studio program.

KOB State College, N. M. (394.4m-760kc) 7:30 p. m. orchestra.

**Pacific Standard Time Stations**

KFI Los Angeles, Calif. (468.5m-640kc) 7 p. m. organ; 8, program; 9, orange network; 10, music.

KFOA Seattle, Wash. (447.5m-670kc) 9-10, chain program; 10:30-12, KGW.

KFWB Hollywood, Calif. (361.2m-830kc) 7 p. m. orchestra; 7:50, News; 8-11, program.



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**KGO Oakland, Calif.** (384.4m-780kc) 6-6:55 p. m. Stanislas Bem's Little symphony; 8-9, feature; 9-10, National Broadcasting company orchestra; 10, orchestra.

**KGW Portland, Ore.** (491.5m-810kc) 6-7 p. m. dinner concert; 8-9, concert; 9, National Broadcasting company; 10, Jubilee players; 10:30, Hoot Owls C.M.O. K.P.O.A. K.H.G.

**KFI Los Angeles, Calif.** (405.2m-740kc) 6:30-7:30, CHAU's hour; 8-10, popular program; 9, talks.

**KJR Seattle, Wash.** (345.6m-860kc) 6:30 p. m. dinner hour; 8-10, program.

**KLX Oakland, Calif.** (508.2m-590kc) 8 p. m. special program; 9-10:30, Athens Philharmonic orchestra.

**KNX Hollywood, Calif.** (336.9m-890kc) 7 p. m. feature; 8, 9, 10, features; 11, Hotel Ambassador.

**KPO San Francisco, Calif.** (422.2m-710kc) 6:30 p. m. States Restaurant orchestra; 8-9, orchestra; 9, orange chain; 10-11, orchestra.

Friday, silent night for: C.F.C.A. CKAC. CKCL. CKNC. K.L.D.S. K.P.R.C. K.P.S.N. W.C.B.D. W.F.I. W.P. WLAC. WLIT. WLW. W.P.C. W.S.M. W.S.M.B.

**SATURDAY, SEPTEMBER 3**  
**Headliners**

Atlantic	Eastern	Central	Mountain	Pacific
7:30 p. m. 6:30	5:30	4:30	3:30	3:30
W.M.A.K. (585.1m-550kc) Program from Shea's Buffalo Theater.				
K.T.H.S. (384.4m-780kc) Earl Thurston's organist.				
W.B.M. (389.4m-770kc) W.B.M. string trio. "Chocolate Soldier Selections."				
W.E.A.F. (491.5m-810kc) and chain. W.R.C. W.E.I. W.G.R. W.C.A.E. W.J.A.R. W.T.M.J. Week-Enders.				
W.P.F. (508.2m-590kc) Keystone Male Quartet.				
W.L.V. (428m-700kc) Johanna Grosse on "Mona Motor Hour. Part One: Favorite Classics."				
8:15 7:15 6:15 5:15	4:15			
W.P. (508.2m-590kc) Simon Gutman, pianist.				
8:30 7:30 6:30 5:30	4:30			
W.J.Z. (454.2m-690kc) W.H.A.M. Mediterranean dance band.				
9 8 7 6 5 4 3 2 1				
W.P. (508.2m-590kc) Philadelphia College of Music string ensemble.				
W.M.B. (625m-1130kc) Walter Duffy, Popular program.				
8:01 7:01 6:01 5:01				
W.S.A.I. (361.2m-830kc) Bicycle Playing Card sextet.				
8:15 7:15 6:15 5:15				
W.L.V. (428m-700kc) Cincinnati Zoo orchestra.				
9 8 7 6 5 4 3 2 1				
W.B.A.P. (499.7m-600kc) King Sisters.				
W.P. (508.2m-590kc) Edward Muka, violinist; Teddy Zandora, accordion.				
W.J.Z. (454.2m-690kc) Keystone duo and Balladeers.				
W.L.A.C. (225.4m-1330kc) Dr. Merrill Davis, clarinet.				
10:20 9:20 8:20 7:20 6:20				
W.P. (508.2m-590kc) Hawaiian Knights.				
10:45 9:45 8:45 7:45 6:45				
K.T.H.S. (384.4m-780kc) Helen Lockwood, soprano.				
11 10 9 8 7 6 5 4 3 2 1				
K.O.A. (325.9m-920kc) Chief Gonzales and his Bartolomeans playing at El Patio ballroom.				
11:30 10:30 9:30 8:30 7:30				
K.F.I. (468.5m-640kc) Edna Clark Muir, Pianist.				
W.D.A.F. (370.2m-810kc) The Great Western Chops.				
12 mid. 11 9 8 7 6 5 4 3 2 1				
K.F.I. (468.5m-640kc), K.G.O. (348.4m-780kc), K.P.O. (422.2m-710kc), K.G.W. (491.5m-810kc), K.O.M.O. (305.9m-980kc) Saturday night revue.				
12:30 a. m. 11:30 10:30 9:30				
W.S.A.I. (361.2m-830kc) Dan Dugan and his orchestra.				
12 11 10 9 8 7 6 5 4 3 2 1				
W.B.M. (389.4m-770kc) Jambouree of Syncopean.				
1:30 12:30 11:30 10:30 9:30				
W.E.A. (499.7m-600kc) Palace Theater features on playhouse stage.				

**Regular Saturday Features**  
**Atlantic or Eastern Daylight Saving Time Stations**

**WBZ Springfield, Mass.** (338.1m-800kc) 6 p. m. orchestra; 6:45, pianist; 8, musical; 10, orchestra.

**WCAE Pittsburgh, Pa.** (516.3m-580kc) 6 p. m. dinner concert; 8:30, W.E.A.F. (491.5m-810kc) 6:30 p. m. orchestra; 8:45, architects; 10, orchestra; 10:30, Pizzardi orchestra.

**WEAF New York, N. Y.** (491.5m-810kc) 7 p. m. orchestra; 8:30, quintet; 9, Week-Enders, W.R.C. W.E.I. W.G.R. W.C.A.E. W.J.A.R. W.T.M.J. 9, time WEEL WJAR WCAE WTAM WWJ WSAI WGY 9, Week-Enders, W.R.C. W.E.I. W.G.R. WCAE WJAR W.T.M.J. 9:30, variety concert; WEEL WCAE WGY W.T.M.J.; 10, orchestra, WRC WGY WSAI 11, orchestra.

**WEEI Boston, Mass.** (447.5m-670kc) 8:30 p. m. WEAF; 10:15 p. m. cruising the air.

**WFL Philadelphia, Pa.** (408.2m-740kc) 8 p. m. topics; 8:15, musical; 10, musical; 10:30, orchestra.

**WGR Buffalo, N. Y.** (303m-990kc) 8 p. m. WEAF; 9:30, WEAF; 11:05, supper.

**WHAR Atlantic City, N. J.** (272.6m-1100kc) 8 p. m.

**WIP Philadelphia, Pa.** (508.2m-590kc) 7 p. m. bedtime story; 8, recital; 9, concert; 10, orchestra; 11:05.

**WJZ New York, N. Y.** (454.2m-690kc) 7 p. m. Hotel Astor orchestra; 8:30, Mediterranean dance band; WHAM; 10, time, WBZ; 10, Keystone duo; 10:30, orchestra.

**W.M.A.K. Buffalo, N. Y.** (545.1m-550kc) 7:30 p. m. Musical; 8:30, program; 9:30, musical.

**W.M.C.A. New York, N. Y.** (370.2m-810kc) 6:30 p. m. orchestra; 8, musical extravaganza; 9, boxing bouts; 11, entertainers.

**WOR New York, N. Y.** (422.2m-710kc) 6:15 p. m. ensemble; 9:30, orchestra; 10:55, news; 11, orchestra.

**WPG Atlantic City, N. J.** (672.6m-1100kc) 7:05 p. m. dinner music; 10, studio program; 11:30, dance orchestra; 12, orchestra.

**WTAC Worcester, Mass.** (516.3m-580kc) 8 p. m. orchestra; 10, orchestra.

**Eastern Standard or Central Daylight Saving Time Stations**

**KDKA Pittsburgh, Pa.** (315.6m-950kc) 7:30 p. m. concert.

**KYW Chicago, Ill.** (526m-570kc) 7-8 p. m. melody hour; 9-10, classical concert; 11:55, carnival.

**W.B.M. Chicago, Ill.** (389.4m-770kc) 7 p. m. orchestra; 10, studio program; 12, jazz program.

**W.B.C.N. Chicago, Ill.** (428.5m-1040kc) 9 p. m. classical program.

**W.B.H. Chicago, Ill.** (365.6m-820kc) 7-8 p. m. hotel orchestra; 10-12, orchestra.

**WENR Chicago, Ill.** (288m-1040kc) 6 p. m. organ; 8, classical program; 9:30, popular program.

**WGN Chicago, Ill.** (305.9m-980kc) 6:10 p. m. Punch and Judy; 6:35, ensemble; 6:50, Old Fashioned Almanack; 8:30, Saletros; 9:30, Over the Hills and Far Away; 10, Sam 'n' Henry; 10:10, music box; 10:50, musical.

**WGY Schenectady, N. Y.** (379.5m-790kc) 6:30 p. m. musical; 7:30, WHAM; 8:30, musical; 9:15 WEAF; 10, dance music.

**WHK Cleveland, Ohio** (265.3m-1130kc) 8 p. m. program; 11, Rubenack male quartet.

**WHT Chicago, Ill.** (418.4m-720kc) 8 p. m. program.

**WIBO Chicago, Ill.** (416.4m-720kc) 6-8 p. m., 10-11.

**WJAX Jacksonville, Fla.** (330.9m-800kc) 8 p. m. recital; 8:30, program; 9, dance orchestra.

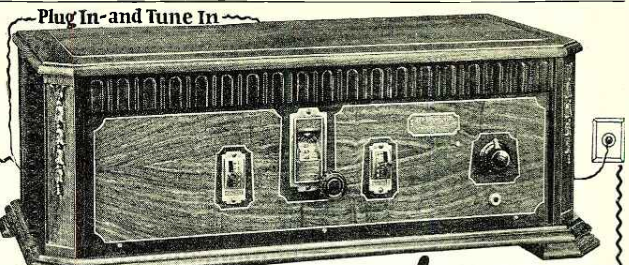
**WJZ Chicago, Ill.** (468m-1140kc) 7:30 p. m. orchestra; 8:15, radio program; 9, program.

**WJJD Chicago, Ill.** (365.6m-820kc) 8-9 p. m. director hour; 9-10, harmony hour; 12, Palmer House program.

**WJR Detroit, Mich.** (440.3m-680kc) 7 p. m. good will ensemble; 11:30, Pontiac Tribe.

**WLS Chicago, Ill.** (344.6m-870kc) 7:10-11, barn dance.

**WLW Cincinnati, Ohio** (428.3m-700kc) 7 p. m. organ; 9, Castle Farm; 9:40, Castle Farm.



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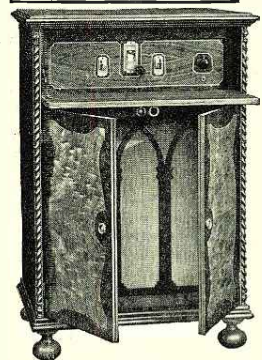
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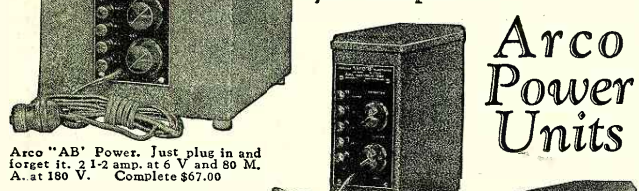
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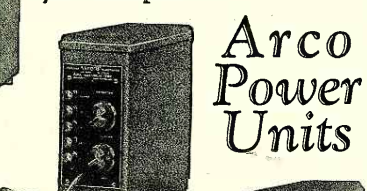
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WHB Kansas City, Mo. (336.9m-890kc) 7-8 p. m. music; 8-9, 10-11, 12-13, 14-15, 16-17, 18-19, 20-21, 22-23, 24-25, 26-27, 28-29, 30-31, 32-33, 34-35, 36-37, 38-39, 40-41, 42-43, 44-45, 46-47, 48-49, 50-51, 52-53, 54-55, 56-57, 58-59, 60-61, 62-63, 64-65, 66-67, 68-69, 70-71, 72-73, 74-75, 76-77, 78-79, 80-81, 82-83, 84-85, 86-87, 88-89, 90-91, 92-93, 94-95, 96-97, 98-99, 100-101, 102-103, 104-105, 106-107, 108-109, 110-111, 112-113, 114-115, 116-117, 118-119, 120-121, 122-123, 124-125, 126-127, 128-129, 130-131, 132-133, 134-135, 136-137, 138-139, 140-141, 142-143, 144-145, 146-147, 148-149, 150-151, 152-153, 154-155, 156-157, 158-159, 160-161, 162-163, 164-165, 166-167, 168-169, 170-171, 172-173, 174-175, 176-177, 178-179, 180-181, 182-183, 184-185, 186-187, 188-189, 190-191, 192-193, 194-195, 196-197, 198-199, 200-201, 202-203, 204-205, 206-207, 208-209, 210-211, 212-213, 214-215, 216-217, 218-219, 220-221, 222-223, 224-225, 226-227, 228-229, 230-231, 232-233, 234-235, 236-237, 238-239, 240-241, 242-243, 244-245, 246-247, 248-249, 250-251, 252-253, 254-255, 256-257, 258-259, 260-261, 262-263, 264-265, 266-267, 268-269, 270-271, 272-273, 274-275, 276-277, 278-279, 280-281, 282-283, 284-285, 286-287, 288-289, 290-291, 292-293, 294-295, 296-297, 298-299, 300-301, 302-303, 304-305, 306-307, 308-309, 310-311, 312-313, 314-315, 316-317, 318-319, 320-321, 322-323, 324-325, 326-327, 328-329, 330-331, 332-333, 334-335, 336-337, 338-339, 340-341, 342-343, 344-345, 346-347, 348-349, 350-351, 352-353, 354-355, 356-357, 358-359, 360-361, 362-363, 364-365, 366-367, 368-369, 370-371, 372-373, 374-375, 376-377, 378-379, 380-381, 382-383, 384-385, 386-387, 388-389, 390-391, 392-393, 394-395, 396-397, 398-399, 400-401, 402-403, 404-405, 406-407, 408-409, 410-411, 412-413, 414-415, 416-417, 418-419, 420-421, 422-423, 424-425, 426-427, 428-429, 430-431, 432-433, 434-435, 436-437, 438-439, 440-441, 442-443, 444-445, 446-447, 448-449, 450-451, 452-453, 454-455, 456-457, 458-459, 460-461, 462-463, 464-465, 466-467, 468-469, 470-471, 472-473, 474-475, 476-477, 478-479, 480-481, 482-483, 484-485, 486-487, 488-489, 490-491, 492-493, 494-495, 496-497, 498-499, 500-501, 502-503, 504-505, 506-507, 508-509, 510-511, 512-513, 514-515, 516-517, 518-519, 520-521, 522-523, 524-525, 526-527, 528-529, 530-531, 532-533, 534-535, 536-537, 538-539, 540-541, 542-543, 544-545, 546-547, 548-549, 550-551, 552-553, 554-555, 556-557, 558-559, 560-561, 562-563, 564-565, 566-567, 568-569, 570-571, 572-573, 574-575, 576-577, 578-579, 580-581, 582-583, 584-585, 586-587, 588-589, 590-591, 592-593, 594-595, 596-597, 598-599, 600-601, 602-603, 604-605, 606-607, 608-609, 610-611, 612-613, 614-615, 616-617, 618-619, 620-621, 622-623, 624-625, 626-627, 628-629, 630-631, 632-633, 634-635, 636-637, 638-639, 640-641, 642-643, 644-645, 646-647, 648-649, 650-651, 652-653, 654-655, 656-657, 658-659, 660-661, 662-663, 664-665, 666-667, 668-669, 670-671, 672-673, 674-675, 676-677, 678-679, 680-681, 682-683, 684-685, 686-687, 688-689, 690-691, 692-693, 694-695, 696-697, 698-699, 700-701, 702-703, 704-705, 706-707, 708-709, 710-711, 712-713, 714-715, 716-717, 718-719, 720-721, 722-723, 724-725, 726-727, 728-729, 730-731, 732-733, 734-735, 736-737, 738-739, 740-741, 742-743, 744-745, 746-747, 748-749, 750-751, 752-753, 754-755, 756-757, 758-759, 760-761, 762-763, 764-765, 766-767, 768-769, 770-771, 772-773, 774-775, 776-777, 778-779, 780-781, 782-783, 784-785, 786-787, 788-789, 790-791, 792-793, 794-795, 796-797, 798-799, 800-801, 802-803, 804-805, 806-807, 808-809, 810-811, 812-813, 814-815, 816-817, 818-819, 820-821, 822-823, 824-825, 826-827, 828-829, 830-831, 832-833, 834-835, 836-837, 838-839, 840-841, 842-843, 844-845, 846-847, 848-849, 850-851, 852-853, 854-855, 856-857, 858-859, 860-861, 862-863, 864-865, 866-867, 868-869, 870-871, 872-873, 874-875, 876-877, 878-879, 880-881, 882-883, 884-885, 886-887, 888-889, 890-891, 892-893, 894-895, 896-897, 898-899, 900-901, 902-903, 904-905, 906-907, 908-909, 910-911, 912-913, 914-915, 916-917, 918-919, 920-921, 922-923, 924-925, 926-927, 928-929, 930-931, 932-933, 934-935, 936-937, 938-939, 940-941, 942-943, 944-945, 946-947, 948-949, 950-951, 952-953, 954-955, 956-957, 958-959, 960-961, 962-963, 964-965, 966-967, 968-969, 970-971, 972-973, 974-975, 976-977, 978-979, 980-981, 982-983, 984-985, 986-987, 988-989, 990-991, 992-993, 994-995, 996-997, 998-999, 1000-1001, 1002-1003, 1004-1005, 1006-1007, 1008-1009, 1010-1011, 1012-1013, 1014-1015, 1016-1017, 1018-1019, 1020-1021, 1022-1023, 1024-1025, 1026-1027, 1028-1029, 1030-1031, 1032-1033, 1034-1035, 1036-1037, 1038-1039, 1040-1041, 1042-1043, 1044-1045, 1046-1047, 1048-1049, 1050-1051, 1052-1053, 1054-1055, 1056-1057, 1058-1059, 1060-1061, 1062-1063, 1064-1065, 1066-1067, 1068-1069, 1070-1071, 1072-1073, 1074-1075, 1076-1077, 1078-1079, 1080-1081, 1082-1083, 1084-1085, 1086-1087, 1088-1089, 1090-1091, 1092-1093, 1094-1095, 1096-1097, 1098-1099, 1100-1101, 1102-1103, 1104-1105, 1106-1107, 1108-1109, 1110-1111, 1112-1113, 1114-1115, 1116-1117, 1118-1119, 1120-1121, 1122-1123, 1124-1125, 1126-1127, 1128-1129, 1130-1131, 1132-1133, 1134-1135, 1136-1137, 1138-1139, 1140-1141, 1142-1143, 1144-1145, 1146-1147, 1148-1149, 1150-1151, 1152-1153, 1154-1155, 1156-1157, 1158-1159, 1160-1161, 1162-1163, 1164-1165, 1166-1167, 1168-1169, 1170-1171, 1172-1173, 1174-1175, 1176-1177, 1178-1179, 1180-1181, 1182-1183, 1184-1185, 1186-1187, 1188-1189, 1190-1191, 1192-1193, 1194-1195, 1196-1197, 1198-1199, 1200-1201, 1202-1203, 1204-1205, 1206-1207, 1208-1209, 1210-1211, 1212-1213, 1214-1215, 1216-1217, 1218-1219, 1220-1221, 1222-1223, 1224-1225, 1226-1227, 1228-1229, 1230-1231, 1232-1233, 1234-1235, 1236-1237, 1238-1239, 1240-1241, 1242-1243, 1244-1245, 1246-1247, 1248-1249, 1250-1251, 1252-1253, 1254-1255, 1256-1257, 1258-1259, 1260-1261, 1262-1263, 1264-1265, 1266-1267, 1268-1269, 1270-1271, 1272-1273, 1274-1275, 1276-1277, 1278-1279, 1280-1281, 1282-1283, 1284-1285, 1286-1287, 1288-1289, 1290-1291, 1292-1293, 1294-1295, 1296-1297, 1298-1299, 1300-1301, 1302-1303, 1304-1305, 1306-1307, 1308-1309, 1310-1311, 1312-1313, 1314-1315, 1316-1317, 1318-1319, 1320-1321, 1322-1323, 1324-1325, 1326-1327, 1328-1329, 1330-1331, 1332-1333, 1334-1335, 1336-1337, 1338-1339, 1340-1341, 1342-1343, 1344-1345, 1346-1347, 1348-1349, 1350-1351, 1352-1353, 1354-1355, 1356-1357, 1358-1359, 1360-1361, 1362-1363, 1364-1365, 1366-1367, 1368-1369, 1370-1371, 1372-1373, 1374-1375, 1376-1377, 1378-1379, 1380-1381, 1382-1383, 1384-1385, 1386-1387, 1388-1389, 1390-1391, 1392-1393, 1394-1395, 1396-1397, 1398-1399, 1400-1401, 1402-1403, 1404-1405, 1406-1407, 1408-1409, 1410-1411, 1412-1413, 1414-1415, 1416-1417, 1418-1419, 1420-1421, 1422-1423, 1424-1425, 1426-1427, 1428-1429, 1430-1431, 1432-1433, 1434-1435, 1436-1437, 1438-1439, 1440-1441, 1442-1443, 1444-1445, 1446-1447, 1448-1449, 1450-1451, 1452-1453, 1454-1455, 1456-1457, 1458-1459, 1460-1461, 1462-1463, 1464-1465, 1466-1467, 1468-1469, 1470-1471, 1472-1473, 1474-1475, 1476-1477, 1478-1479, 1480-1481, 1482-1483, 1484-1485, 1486-1487, 1488-1489, 1490-1491, 1492-1493, 1494-1495, 1496-1497, 1498-1499, 1500-1501, 1502-1503, 1504-1505, 1506-1507, 1508-1509, 1510-1511, 1512-1513, 1514-1515, 1516-1517, 1518-1519, 1520-1521, 1522-1523, 1524-1525, 1526-1527, 1528-1529, 1530-1531, 1532-1533, 1534-1535, 1536-1537, 1538-1539, 1540-1541, 1542-1543, 1544-1545, 1546-1547, 1548-1549, 1550-1551, 1552-1553, 1554-1555, 1556-1557, 1558-1559, 1560-1561, 1562-1563, 1564-1565, 1566-1567, 1568-1569, 1570-1571, 1572-1573, 1574-1575, 1576-1577, 1578-1579, 1580-1581, 1582-1583, 1584-1585, 1586-1587, 1588-1589, 1590-1591, 1592-1593, 1594-1595, 1596-1597, 1598-1599, 1600-1601, 1602-1603, 1604-1605, 1606-1607, 1608-1609, 1610-1611, 1612-1613, 1614-1615, 1616-1617, 1618-1619, 1620-1621, 1622-1623, 1624-1625, 1626-1627, 1628-1629, 1630-1631, 1632-1633, 1634-1635, 1636-1637, 1638-1639, 1640-1641, 1642-1643, 1644-1645, 1646-1647, 1648-1649, 1650-1651, 1652-1653, 1654-1655, 1656-1657, 1658-1659, 1660-1661, 1662-1663, 1664-1665, 1666-1667, 1668-1669, 1670-1671, 1672-1673, 1674-1675, 1676-1677, 1678-1679, 1680-1681, 1682-1683, 1684-1685, 1686-1687, 1688-1689, 1690-1691, 1692-1693, 1694-1695, 1696-1697, 1698-1699, 1700-1701, 1702-1703, 1704-1705, 1706-1707, 1708-1709, 1710-1711, 1712-1713, 1714-1715, 1716-1717, 1718-1719, 1720-1721, 1722-1723, 1724-1725, 1726-1727, 1728-1729, 1730-1731, 1732-1733, 1734-1735, 1736-1737, 1738-1739, 1740-1741, 1742-1743, 1744-1745, 1746-1747, 1748-1749, 1750-1751, 1752-1753, 1754-1755, 1756-1757, 1758-1759, 1760-1761, 1762-1763, 1764-1765, 1766-1767, 1768-1769, 1770-1771, 1772-1773, 1774-1775, 1776-1777, 1778-1779, 1780-1781, 1782-1783, 1784-1785, 1786-1787, 1788-1789, 1790-1791, 1792-1793, 1794-1795, 1796-1797, 1798-1799, 1800-1801, 1802-1803, 1804-1805, 1806-1807, 1808-1809, 1810-1811, 1812-1813, 1814-1815, 1816-1817, 1818-1819, 1820-1821, 1822-1823, 1824-1825, 1826-1827, 1828-1829, 1830-1831, 1832-1833, 1834-1835, 1836-1837, 1838-1839, 1840-1841, 1842-1843, 1844-1845, 1846-1847, 1848-1849, 1850-1851, 1852-1853, 1854-1855, 1856-1857, 1858-1859, 1860-1861, 1862-1863, 1864-1865, 1866-1867, 1868-1869, 1870-1871, 1872-1873, 1874-1875, 1876-1877, 1878-1879, 1880-1881, 1882-1883, 1884-1885, 1886-1887, 1888-1889, 1890-1891, 1892-1893, 1894-1895, 1896-1897, 1898-1899, 1900-1901, 1902-1903, 1904-1905, 1906-1907, 1908-1909, 1910-1911, 1912-1913, 1914-1915, 1916-1917, 1918-1919, 1920-1921, 1922-1923, 1924-1925, 1926-1927, 1928-1929, 1930-1931, 1932-1933, 1934-1935, 1936-1937, 1938-1939, 1940-1941, 1942-1943, 1944-1945, 1946-1947, 1948-1949, 1950-1951, 1952-1953, 1954-1955, 1956-1957, 1958-1959, 1960-1961, 1962-1963, 1964-1965, 1966-1967, 1968-1969, 1970-1971, 1972-1973, 1974-1975, 1976-1977, 1978-1979, 1980-1981, 1982-1983, 1984-1985, 1986-1987, 1988-1989, 1990-1991, 1992-1993, 1994-1995, 1996-1997, 1998-1999, 2000-2001, 2002-2003, 2004-2005, 2006-2007, 2008-2009, 2010-2011, 2012-2013, 2014-2015, 2016-2017, 2018-2019, 2020-2021, 2022-2023, 2024-2025, 2026-2027, 2028-2029, 2030-2031, 2032-2033, 2034-2035, 2036-2037, 2038-2039, 2040-2041, 2042-2043, 2044-2045, 2046-2047, 2048-2049, 2050-2051, 2052-2053, 2054-2055, 2056-2057, 2058-2059, 2060-2061, 2062-2063, 2064-2065, 2066-2067, 2068-2069, 2070-2071, 2072-2073, 2074-2075, 2076-2077, 2078-2079, 2080-2081, 2082-2083, 2084-2085, 2086-2087, 2088-2089, 2090-2091, 2092-2093, 2094-2095, 2096-2097, 2098-2099, 2100-2101, 2102-2103, 2104-2105, 2106-2107, 2108-2109, 2110-2111, 2112-2113, 2114-2115, 2116-2117, 2118-2119, 2120-2121, 2122-2123, 2124-2125, 2126-2127, 2128-2129, 2130-2131, 2132-2133, 2134-2135, 2136-2137, 2138-2139, 2140-2141, 2142-2143, 2144-2145, 2146-2147, 2148-2149, 2150-2151, 2152-2153, 2154-2155, 2156-2157, 2158-2159, 2160-2161, 2162-2163, 2164-2165, 2166-2167, 2168-2169, 2170-2171, 2172-2173, 2174-2175, 2176-2177, 2178-2179, 2180-2181, 2182-2183, 2184-2185, 2186-2187, 2188-2189, 2190-2191, 2192-2193, 2194-2195, 2196-2197, 2198-2199, 2200-2201, 2202-2203, 2204-2205, 2206-2207, 2208-2209, 2210-2211, 2212-2213, 2214-2215, 2216-2217, 2218-2219, 2220-2221, 2222-2223, 2224-2225, 2226-2227, 2228-2229, 2230-2231, 2232-2233, 2234-2235, 2236-2237, 2238-2239, 2240-2241, 2242-2243, 2244-2245, 2246-2247, 2248-2249, 2250-2251, 2252-2253, 2254-2255, 2256-2257, 2258-2259, 2260-2261, 2262-2263, 2264-2265, 2266-2267, 2268-2269, 2270-2271, 2272-2273, 2274-2275, 2276-2277, 2278-2279, 2280-2281, 2282-2283, 2284-2285, 2286-2287, 2288-2289, 2290-2291, 2292-2293, 2294-2295, 2296-2297, 2298-2299, 2300-2301, 2302-2303, 2304-2305, 2306-2307, 2308-2309, 2310-2311, 2312-2313, 2314-2315, 2316-2317, 2318-2319, 2320-2321, 2322-2323, 2324-2325, 2326-2327, 2328-2329, 2330-2331, 2332-2333, 2334-2335, 2336-2337, 2338-2339, 2340-2341, 2342-2343, 2344-2345, 2346-2347, 2348-2349, 2350-2351, 2352-2353, 2354-2355, 2356-2357, 2358-2359, 2360-2361, 2362-2363, 2364-2365, 2366-2367, 2368-2369, 2370-2371, 2372-2373, 2374-2375, 2376-2377, 2378-2379, 2380-2381, 2382-2383, 2384-2385, 2386-2387, 2388-2389, 2390-2391, 2392-2393, 2394-2395, 2396-2397, 2398-2399, 2400-2401, 2402-2403, 2404-2405, 2406-2407, 2408-2409, 2410-2411, 2412-2413, 2414-2415, 2416-2417, 2418-2419, 2420-2421, 2422-2423, 24







Swift and his Serenaders; dinner concert: 9:30-10, popular program.  
**WSEA Norfolk, Va.** (263m-1140kc) 7 p. m. dinner concert; 10, dance music.  
**WTAM Cleveland, O.** (399.8m-750kc) 6 p. m. orchestra; 7, talks; 8, studio recital; 8:30, WEAF; 10:30, studio program; 11, orchestra.  
**WTC Hartford, Conn.** (535.4m-560kc) 7:10 p. m. program.  
**WVJ Detroit, Mich.** (374.8m-800kc) 6 p. m. dinner concert; 7:30, music; 8, WEAF; 9, WEAF.  
**WVNC Asheville, N. C.** (286.9m-1010kc) 7 p. m. dinner music.

Central Standard Time Stations

**KFAB Lincoln, Neb.** (309.1m-970kc) 5:30-6:30 p. m. dinner concert; 8:30-11, orchestra.  
**KPHC Houston, Tex.** (266.9m-1010kc) 7:30 p. m. Jack Willrich's dance orchestra.  
**KSD St. Louis, Mo.** (545.1m-550kc) 7 p. m. WEAF; 8, chamber music; 9:30, folk.  
**WCCO Minneapolis-St. Paul, Minn.** (405.2m-740kc) 7 p. m. WEAF; 8:30, musical program; 10, musical program.  
**WCOA Pensacola, Fla.** (249.9m-1200kc) 8 p. m. program.  
**WVAF Kansas City, Mo.** (370.2m-810kc) 7:30-8:30 p. m. WEAF; 9:30, musical; 9:30-10, Cavaliers; 11-12:15 a. m. Nighthawk radio.  
**WHAS Louisville, Ky.** (461.3m-650kc) 7-8 p. m. WEAF; 8:30, program.  
**WHO Kansas City, Mo.** (336.3m-890kc) 7-8 p. m. singing trio.  
**WHO Des Moines, Ia.** (535.4m-560kc) 6:30 p. m. Little symphony; 8:30, Harmony; 9:30, orchestra.  
**WLAC Nashville, Tenn.** (226m-1300kc) 7 p. m. classical program; 8, popular music.  
**WQAT San Antonio, Tex.** (402.8m-990kc) 8:30-9:30 p. m. Kevintort hour.  
**WVPC Davenport, Ia.** (352.7m-850kc) 7:30 p. m. WEAF; 8:30, musical.  
**WSM Atlanta, Ga.** (475.9m-630kc) 7:30 p. m. WEAF; 8:30, program.  
**WSM Nashville, Tenn.** (340.7m-880kc) 6:15 p. m. dinner concert; Andrew Jackson hotel orchestra; 7, WEAF; 8, studio program.  
**WSMB New Orleans, La.** (322.4m-930kc) 8:10-10:30 p. m. Public School of the Air program; features.  
**WTMJ Milwaukee, Wis.** (293.9m-1020kc) 7 p. m. WJZ; 8, band; 10, trio; 10:30, dance music.

Mountain Standard Time Stations

**KOA Denver, Colo.** (325.3m-820kc) 8 p. m. Scheurman's Colorado orchestra; 8:15, studio program.

Pacific Standard Time Stations

**KFI Los Angeles, Calif.** (468.5m-640kc) 7:30 p. m. Nick Harris; 8:30, program, California Petroleum corp.; 9, orange network; 10, classic music.  
**KFWB Hollywood, Calif.** (361.2m-830kc) 6:57 p. m. dinner hour; 7:50, news; 8:59, features; 9:10, orchestra; 10:11, Rainbo orchestra.  
**KGO Oakland, Calif.** (354.4m-780kc) 6:55 p. m. Stanley's Little Symphony; 8, vacation program; 9, National Broadcasting company; 10, orchestra.  
**KGW Portland, Ore.** (491.5m-610kc) 8:30 p. m. concert; 9:10, national broadcasting company.  
**KRL Los Angeles, Calif.** (405.2m-740kc) 6:30-7:30 p. m. children's hour; 8:15-10, musical.  
**KJR Seattle, Wash.** (545.1m-550kc) 6:30 p. m. dinner concert; 8:10, studio program.  
**KLX Oakland, Calif.** (508.2m-890kc) 6:30-7 p. m. Athens Athletic club orchestra; 8:30, educational program; 9-10, program.  
**KNX Hollywood, Calif.** (336.9m-890kc) 7-10 p. m. features; 11, Hotel.  
**KPO San Francisco, Calif.** (422.3m-710kc) 6:30-7 p. m. States Restaurant orchestra; 7:30, Rudy Seiger's Fairmont hotel concert orchestra; 8:10, Arwater Kent artists; 9-10, orange network; 10-11, States Restaurant orchestra.  
 Wednesday, silent night for: **CKAC, CKCL, KFDM, KFLS, KMMJ, KPNS, WVAF, WCOB, WFAA, WFI, WGBF, WGBS, WHAR, WIP, WWR.**

THURSDAY, SEPTEMBER 8 Headliners

Atlantic	Eastern	Central	Mountain	Pacific
7:30 p. m.	6:30	8:30	4:30	3:30
WGY (439.5m-790kc) Part XXIX.	WYAK (545.1m-550kc) 6, Novena from St. Theresa's church.	KFI (468.5m-640kc) Pastel trio.	WKRC (333.1m-900kc) Marlin Four male quartet.	WLV (428m-700kc) Charles Mandolin quartet.
9:01	8:01	7:01	6:01	5:01
WSAI (361.2m-830kc) Gladys H. Partington, ecclesiastical soloist.	7:30	6:30	5:30	4:30
WBAP (499.7m-600kc) (Gwendolyn Isabel, pianist, music company).	WFLA (365.6m-820kc) Lucile Moon.	WSB (475.9m-630kc) Mae Quartet. Celestial Belts.	WVAF (370.2m-810kc) band concert.	WIP (508.2m-590kc) C. D. of A. string ensemble.
10:30	9:30	8:30	7:30	6:30
WFAA (499.7m-600kc) Boss Graham, basso.	WFAA (499.7m-600kc) Grand selections by orchestra and singers.	WFO (535.4m-560kc) Gwen Howard, soprano; Earl Johnson, baritone. Drama under direction of E. Brown.	WLV (428m-700kc) Zoo Russian dance music.	WLCN (225.4m-1330kc) Marcus Whitaker, orchestra.
11	10	9	8	7
12	11	10	9	8
10:30	9:30	8:30	7:30	6:30
WVAF (499.7m-600kc) Sam S. Losh, baritone.	WVAF (428m-700kc) Cecie Falkenstein, pianist.	WLCN (225.4m-1330kc) Rembrandt Trio.	WLCN (225.4m-1330kc) Marcus Whitaker, orchestra.	WNAI (361.2m-830kc) Florence & Missouri Kinney, Eddie, sym.
11:30	10:30	9:30	8:30	7:30
WSM (340.7m-880kc) Pipe organ concert.	1 p. m.	12	11	10
KGO (384.4m-780kc) KFI (468.5m-640kc), KPO (422.3m-710kc), KGW (491.5m-610kc), KOAO (365.9m-890kc), musical comedy.	2	1	10	9
12	11	10	9	8
KFI (468.5m-640kc) modern music, Purcell Mayer, violinist.	KGO (384.4m-780kc) Treblecor Sisters.	For Regular Features See Thursday, September 1.		

FRIDAY, SEPTEMBER 9 Headliners Today

Atlantic	Eastern	Central	Mountain	Pacific
7:30 p. m.	6:30	8:30	4:30	3:30
WGY (439.5m-790kc) Musical program, Eastman theatre.	7:30	6:30	5:30	4:30
WOO (508.2m-590kc) Dr. A. Clyde Shock of Central High School, "Stars of the September Sky."	8	7	6	5
NAA (434.5m-690kc) Alfonso Zelazka, Central American pianist.	WVAF (370.2m-810kc) Senora Milla Ybarra de Dominguez, soprano.	WFAA (499.7m-600kc) Wm. S. Lemly, Jr., tenor.	WGY (379.5m-790kc) Instrumental music.	WOO (508.2m-590kc) WOO orchestra, Rolt. E. Golden, director.
8:30	7:30	6:30	5:30	4:30
WSP (475.9m-630kc) Mrs. Gertrude L. Johnson.	WTC (535.4m-560kc) Musical miniatures, Harold Sanford.	8:30	7:30	6:30
9:30	8:30	7:30	6:30	5:30
KFI (468.5m-640kc) Eugene Biscailuz program.	WFLA (365.6m-820kc) Organ and artists recital from Peace Memorial church.	For Regular Features See Friday, September 2.		

Atlantic Eastern Central Mountain Pacific

Atlantic	Eastern	Central	Mountain	Pacific
9:30 p. m.	8:30	7:30	6:30	5:30
WHAS (461.3m-650kc) Studio concert, auspices of University of Louisville.	WRO (535.4m-560kc) Royal American Saxophone sextette.	WVIC (535.4m-560kc) Marguerite and Marie Cagliari, Sopranos.	10	9
10	9	8	7	6
WCOA (249.9m-1200kc) A. Morley Darby, baritone.	WDAF (370.2m-810kc) Ike and Mike.	10:15	9:15	8:15
10:15	9:15	8:15	7:15	6:15
KPH (249.9m-1200kc) Jimmie White and Howard Footman, the Singing Serenaders.	10:30	9:30	8:30	7:30
10:30	9:30	8:30	7:30	6:30
WCOA (249.9m-1200kc) Mrs. J. Wallace Lamar, violinist.	WHAF (370.2m-810kc) Sleepy Hall and his orchestra.	WFAA (499.7m-600kc) Schubert Choral Club recital.	9:35	8:35
9:35	8:35	7:35	6:35	5:35
WGBP (236m-1270kc) Troubadours.	10	9	8	7
10	9	8	7	6
WCOA (249.9m-1200kc) Mrs. Carol C. Welsh, vocalist.	WVAF (370.2m-810kc) Ivanhoe band.	11:15	10:15	9:15
11:15	10:15	9:15	8:15	7:15
WGPL (483.6m-620kc) Granada Theatre Stage Opera spirituals.	12 mid.	11	10	9
12 mid.	11	10	9	8
KGO (384.4m-780kc) Mme. Berthe Baret, French violinist; Eva Garcia, piano.	For Regular Features See Friday, September 2.			

SATURDAY, SEPTEMBER 10 Headliners

Atlantic	Eastern	Central	Mountain	Pacific
7:30 p. m.	6:30	8:30	4:30	3:30
WMAK (545.1m-550kc) Shea's Buffalo theater program.	8:10	7:10	6:10	5:10
8:10	7:10	6:10	5:10	4:10
WIP (508.2m-590kc) Kathryn Rose Burr, contralto.	8:40	7:40	6:40	5:40
8:40	7:40	6:40	5:40	4:40
WIP (508.2m-590kc) Berlin Centenary male quartet.	9	8	7	6
9	8	7	6	5
WVCF (483.6m-620kc) Ann Boehm, Joe Warner, Helen Kath.	9:01	8:01	7:01	6:01
9:01	8:01	7:01	6:01	5:01
WSAI (361.2m-830kc) Bicycle Playn' Card sextet.	9:30	8:30	7:30	6:30
9:30	8:30	7:30	6:30	5:30
KFI (468.5m-640kc) Strangers' social club.	WVAF (370.2m-810kc) Eddie Kuhn's Kansas City Athletic club orchestra.	WIP (508.2m-590kc) Wharton mixed quartet.	WKRC (333.1m-900kc) Jule Vigon, Chubby Leo-leop, popular songs.	WLAC (225.4m-1330kc) The Crystal quartet.
10	9	8	7	6
10	9	8	7	6
WLV (428m-700kc) Landos' dance music.	10:30	9:30	8:30	7:30
10:30	9:30	8:30	7:30	6:30
KPH (249.9m-1200kc) Jimmy Conley, banjo.	WVAF (370.2m-810kc) Horner conservatory.	WFAA (499.7m-600kc) R. C. Chynn, Harry Richmond and Don Crittenden, harmonious; vaudeville show.	11	10
11	10	9	8	7
WGY (379.5m-790kc) dance program.	11	10	9	8
11	10	9	8	7
WHAF (370.2m-810kc) Clyde and Florence Mas-sengale.	WSPA (263m-1140kc) Parisian night club.	2 a. m.	1	10
2 a. m.	1	12	11	10
KGO (384.4m-780kc) Witt Guenzendorfer's Hotel Whittcomb band.	For Regular Features See Saturday, September 3.			

SUNDAY, SEPTEMBER 11 Headliners

Atlantic	Eastern	Central	Mountain	Pacific
9 p. m.	8	7	6	5
WKRC (333.1m-900kc) Frederick Meyer, baritone.	9:15	8:15	7:15	6:15
9:15	8:15	7:15	6:15	5:15
WFAE (491.5m-610kc) and chain, WEEI, WGR, WRC, WCAE, WVJ, WSAI, WGN, KSD, WOC, WCOG, GY, Elsie Baker, contralto.	WSB (475.9m-630kc) Alexander Seewald. Program.	8:30	7:30	6:30
8:30	7:30	6:30	5:30	4:30
WLV (428m-700kc) Crosby concert orchestra.	WSEA (263m-1140kc) Variety concert. Seaside Park.	9:45	8:45	7:45
9:45	8:45	7:45	6:45	5:45
WSAI (361.2m-830kc) Congress musical quartet.	11	10	9	8
11	10	9	8	7
WLAC (225.4m-1330kc) Male quartet. Sacred program.	11:30	10:30	9:30	8:30
11:30	10:30	9:30	8:30	7:30
WVAF (499.7m-600kc) Wm. Foster, organist.	10:40 a. m.	11	10	9
10:40 a. m.	11	10	9	8
WFAA (499.7m-600kc) Dick Richardson's orchestra.	For Regular Features See Sunday, September 4.			

MONDAY, SEPTEMBER 12 Headliners

Atlantic	Eastern	Central	Mountain	Pacific
9 p. m.	8	7	6	5
WLAF (379.5m-790kc) Fifth anniversary program.	WVIC (535.4m-560kc) New Departure orchestra.	8:40	7:40	6:40
8:40	7:40	6:40	5:40	4:40
WLV (428m-700kc) Theatrical review, Hotel Gibson program.	WFLA (365.6m-820kc) Mrs. H. R. Detamore, soprano. Frederick Charlton, novelty band saw selections.	9:45	8:45	7:45
9:45	8:45	7:45	6:45	5:45
KPH (249.9m-1200kc) Lyceum male quartet.	WVCOA (249.9m-1200kc) Frank Ormsbee, basso soloist.	10:30	9:30	8:30
10:30	9:30	8:30	7:30	6:30
WCOA (249.9m-1200kc) Mrs. Lewis Iger, pianist.	WSP (491.5m-610kc) Tom, Joe and Jack, WSP minstrel boys.	10:45	9:45	8:45
10:45	9:45	8:45	7:45	6:45
WMAK (545.1m-550kc) Laneska trio.	WVAF (370.2m-810kc) Mrs. Ben's young ladies chorus, ensemble.	11:15	10:15	9:15
11:15	10:15	9:15	8:15	7:15
KOA (325.9m-920kc) Country Skule entertainment.	11:30	10:30	9:30	8:30
11:30	10:30	9:30	8:30	7:30
WHAF (499.7m-600kc) L14 Fire Hall string band.	WVCOA (249.9m-1200kc) Hole & Honkus. Preter string duo.	12:45 a. m.	11:45	10:45
12:45 a. m.	11:45	10:45	9:45	8:45
WVCOA (249.9m-1200kc) Hole & Honkus. Preter string duo.	12	11	10	9
12	11	10	9	8
WIOD (245.8m-1220kc) Arrowhead hour.	12:45 a. m.	11:45	10:45	9:45
12:45 a. m.	11:45	10:45	9:45	8:45
WGBP (236m-1270kc) Troubadours.	11:15	10:15	9:15	8:15
11:15	10:15	9:15	8:15	7:15
WSUL (422.3m-710kc) Pastime theatre program.	For Regular Features See Monday, September 5.			

TUESDAY, SEPTEMBER 13 Headliners

Atlantic	Eastern	Central	Mountain	Pacific
7 p. m.	6	5	4	3
WVIC (535.4m-560kc) Madeline D'Agostino, pianist.	For Regular Features See Tuesday, September 6.			



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Eastern	Central	Mountain	Pacific
KRLD (461.3m-650kc)	Leland Johnson, baritone.		
WCFL (483.6m-620kc)	Joe Warner, Ann Post, Maurice Cheres.		
9:45	8:45	7:45	6:45
WFLA (365.6m-820kc)	Dance program, Radio Remblers.		
10:30	9:30	8:30	7:30
KRLD (461.3m-650kc)	Velma Dean, girl tenor.		
WJW (428m-700kc)	Cecile Falkenstein, pianist.		
11	10	9	8
WRM (389.4m-770kc)	Hank and his gang.		
WSEA (263m-1140kc)	Low's theater organ.		
11:30	10:30	9:30	8:30
WMM (340.7m-890kc)	Pipe organ concert, P. Arthur Henkel.		
12:30 a.m.	11:30	10:30	9:30
WJAP (499.7m-600kc)	John Josev, organist.		
12	11	10	9
WOK (252m-1190kc)	Bob Bennett, popular program.		

For Regular Features See Thursday, September 1.

FRIDAY, SEPTEMBER 30

Eastern	Central	Mountain	Pacific
8:15 p. m.	7:15	6:15	5:15
WTIC (535.4m-560kc)	Laura G. Gaudet, pianist.		
WVNC (296.9m-1010kc)	Dinner music, George Vanderbilt hotel.		
8:30	7:30	6:30	5:30
WOO (508.2m-590kc)	WOO trio.		
8:50	7:50	6:50	5:50
WFLA (365.6m-820kc)	Organ and artists recital from Peace Memorial church.		
9	8	7	6
WGOA (249.9m-1200kc)	Harry Davis, tenor.		
9:15	8:15	7:15	6:15
WVNC (296.9m-1010kc)	Sally, Irene and Mary.		
9:30	8:30	7:30	6:30
WCOA (249.9m-1200kc)	Mesdames Calhoun and Hoffer, vocal duets and piano selections.		
10	9	8	7
WCOA (249.9m-1200kc)	Mt. Zion Jubilee Singers, Negro spirituals.		
10:30	9:30	8:30	7:30
KRLD (461.3m-650kc)	Alexander Skavenna, Russian violinist.		
WJAP (499.7m-600kc)	Aylene Hoffman, pianist.		
WCOA (249.9m-1200kc)	The Merry Maids, singing invoguito.		
11	10	9	8
WJHO (416.4m-720kc)	The Christensen brothers, harmony duo.		
WSEA (263m-1140kc)	Parisian night club.		

For Regular Features See Friday, September 2.

TO CLEAN OLD RECEIVER

(Continued from page 15)

face so that dust could collect between terminals, clean it extra well.

Proceeding now to the front of the set, if you have flat dials rotating on the surface of the panel, they should be cleaned out under the dial. Most of these dials have a small set screw in the part to be gripped which can readily be loosened and the dial removed. Before doing this, however, note exactly the number and fraction of degree, at the indicator mark on panel, and slip the dial off very gently being careful not to rotate the condenser. Now clean the surface of the panel and the back face of the dial to get out grit, and, if the condenser bearing comes through the panel, put in a drop of oil. Now slip back the dial and tighten set screw.

If you were not careful, the readings for various stations will be different all along the line. This can, of course, be corrected if you did lose the spot, by tuning in a station exactly, and resetting the dial to the exact spot where this station came in previously.

**6 TUBE RADIO**  
ONE DIAL Latest advanced circuit. All steel chassis totally shielded. Balanced parts of best quality. Marvelous power and reception. Gets the long range stations as clear as a bell. One-dial simple controls. An unsurpassed value—just one of our many mighty bargains.

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**Yale GROUND HOG**  
POWER AND DISTANCE  
DOUBLES

Marvelous newly invented ground gives 100% improved reception. Doubles power and distance. Stops leakage. Reduces static. Stops jangling even in midsummer. Results never before equaled, users say. Satisfaction guaranteed.

Proven absolutely essential to clear, powerful distance reception. Draws and holds moisture indefinitely. Highly sensitive to radio energy.

**SEND NO MONEY**

To introduce, we offer to those who act at once, regular \$5.00 size for only \$2.95. Send name today and pay \$2.95 plus postage on delivery. Or send only \$2.95 with order and save postage.

**FREE** Full description of Ground Hog and amazing special low priced battery offered on request—write today.

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3838 Main St., Kansas City Mo.

DEALERS: Write for Our Attractive Proposition and Prices

If you cannot take the dials off, or do not care to, cleaning can be done with a calling or business card the edge of which has been dipped in alcohol or water and the card carefully pushed between the dial and panel front. Hold it there in several positions while revolving the dial.

If your set has grid leak cartridges set in clips, or filament resistors set in clips, slip out the cartridges and clean both the clips and the rounded caps on the ends of the cartridges until good and shiny. Old grid leaks should be replaced with those of a newer type, being sure to get new ones of the same value as the old. Grid leaks are made much better now than they were two seasons ago, and much better than set makers were putting in as standard equipment even one year ago.

**Blow the Dust**

Radio frequency coils cannot be touched very much but you can blow a lot of dust out of them and flip, considerable dirt off of them with the corner of a light cloth. If yours is a super-heterodyne, give special attention to the surfaces of the intermediate units and the oscillator coil between terminals, in the way of cleaning, and tighten all terminals. While tightening terminals, look at those on the rheostats and audio transformers as these will work loose, giving rise to too much "static." If you will look carefully for loose connections and unsoldered joints when cleaning I think some will be found on seven out of ten home made sets and one out of four manufactured receivers. They will happen sooner or later, it seems.

The aerial and ground connections I'm not going into thoroughly but will let your conscience be your guide, and your desire for good reception.

Central Downtown Location

**Hotel Brevort**  
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Distinguished for quality of service at moderate cost. Near the big downtown stores and theaters. Quick transportation to parks, beaches, summer gardens, golf grounds. Garage nearby extends special courtesies to Brevort guests. Cars called for and delivered.

Rooms: Single, \$2.50 to \$5 a day  
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**YAR True-Tone SPEAKER**

THE Yar True-Tone Speaker is as different from all other speakers as the cone-type speaker is different from the horn. Its cast aluminum construction, divisional tone chamber, 27-inch tone column, and special reproducing unit are features that establish new standards of speaker reception. And it's a home ornament, as well! Supplied with 20 ft. of power cord—may be placed wherever desired—in living room, sun parlor, etc. Price, complete, \$35.

Write for descriptive folder and ask your dealer about this revolutionary speaker.

DEALERS: Order a sample Yar True-Tone Speaker from your jobber.

**YAHRLANGE**  
MILWAUKEE INCORPORATED WISCONSIN

**Aerial and Ground**

This should be stated emphatically however—they will not hold good without attention, more than one season. If yours went through last season and this past summer, the insulators of the antenna should be cleaned or replaced. If you merely wrapped the lead-in wire around the antenna proper, and covered it with tape, the joint should be remade and recovered. You've heard many times before that this joint should be soldered, but possibly you cannot do this.

The ground connection is almost sure to have corroded, even if a clamp with sharp point was used. If the flat band type of clamp was put in, either clean a new band around the pipe and the inside of the clamp strip, or replace with one of the type that has a sharp pointed screw that digs into the pipe slightly. If the sharp point type was used, loosen it, file up the point and replace in a new spot. On either type of clamp, loosen the connecting wire, clean the terminal and wire end and tighten down hard on wire.

**Efforts Worth While**

We're through! If you have made sure that good clean connections exist throughout your installation—in antenna circuit, power supply circuits and in receiver; if

**'B' BATTERY ELIMINATOR**

Only \$1.95

**MONEY-BACK GUARANTEE**

No more worry with "B" Batteries! Hook up a Roll-O "B" Battery Eliminator and forget battery troubles forever. This wonderful new invention means better reception, sharper tuning. Gives you more real pleasure from your set. Completely Equipped—No "Extras" to Buy. Operates on direct or alternating current, giving up to 90 volts current, and using the full wave of the power supply. Simple directions enclosed—anyone can plug it in to any kind of set up to six tubes. Constant voltage and great increase in power. Costs no more than set of good "B" Batteries. Solidly built in beautifully finished metal case with genuine Bakelite trim.

**SEND YOUR ORDER NOW**

Don't blame your set because run down "B" Batteries won't let it work right. Order your Eliminator NOW. Write name and address on a piece of paper, plus a dollar bill to send and mail it TODAY. Pay postman balance (\$6.50 plus a few cents postage) when he delivers your Eliminator. It'll fit ten days. If not, return it unopened. Ref, return it and get your money back.

THE ROLL-O RADIO CO.  
Dept. Z-36 & Sycamore, Cincinnati, O.

you know that all dust and grease have been removed between terminals, and tubes make good contact at every pin—then when you next sit down to your receiver you yourself will notice the difference. There will be a sure, rounded characteristic to the music and a new freedom from crackles. There will be an ease of tuning and zip and power in the music that everyone will appreciate. You will not regret the evening, or two evenings, it took to overhaul and you'll get nine months of better reception of programs.

Splitdorf Corp'n Will Expand Foreign Trade

NEWARK.—Splitdorf Radio Corporation recently has expanded its foreign distribution connections to include India, England, Czechoslovakia, Egypt, Brazil, Argentina, Japan and Cuba. New Zealand and Australia distribution is made through the Arkell and Douglas company. Each employe of the company has been given a free life and accident policy with the Equitable Life Assurance Society to the amount of \$1,000.

**"Hitch Your Radio to a Star"**

Provides an effective Antenna. Well constructed of Aluminum. Size, 10 inches. Better distance and volume guaranteed. Less interference, easily installed. Meets all tests, both winter and summer. Shipped complete with kit at \$6.50, postpaid. Literature on request.

**\$5.00**

Jobs—Write now for exclusive territory and proposition.

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Elkhart, Indiana, U. S. A.

**The Radio Listener's Red-Book**

Do You Know Where on Your Dials You Will Find Your Favorite Stations

**FALL 1927 Issue Now Ready**

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Practically all of our dealers are reordering the Fall issue.

**This is the big seller**

50 or less 40% discount (15c each)  
100 or more, 44% discount (14c each)  
Special Quantity Prices

now that over 85% of them, including almost all of the largest ones, have changed frequencies and corresponding wave lengths since last radio season.

THE RADIO LISTENER'S RED-BOOK tells you in few, easily understood words how you can quickly locate on your dials any station your set will reach.

Information regarding each station is obtained direct from RADIO COMMISSION at Washington, D. C., and is in effect after August 15, 1927.

All stations in the United States, Canada, Mexico and Cuba listed three separate ways, by frequencies (kilocycles) and corresponding wave lengths (meters), by call letters, and by locations (city) and owners, together with a copyrighted method of ready-reference cross indexing which makes only one looking section necessary for all three lists.

Stations in each of the broadcasting "chains" shown in separate list in addition to being so indicated in three regular lists.

Contains large broadcasting station map in two colors showing time zones, direction and distances, and a two-page "Radio Doctor" giving trouble information and remedies and telling about "interference."

If your radio or news dealer can't supply you, a copy will be mailed postpaid on receipt of twenty-five cents.

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Large room, private bath for one—Four Dollars • For Two Five Dollars (serving pantry optional) ~ ~ ~ Restaurant CURTIS A. HALE, Managing Director BOOKLET FREE



### Science Vindicates Dr. Rogers Static Theory

OBSERVED by an army of scientists of all nations and relentlessly pursued by the navies of the world Old King Static seems, at the beginning of this autumn season, to be tottering on his throne.

The maritime world has been most persistent in eliminating this ancient foe of good Radio. The United States navy has made especially notable progress, according to latest reports. Sun spots now are believed to have a definite relation to static disturbance. Dr. L. W. Austin of the bureau of standards has been awarded the Medal of Honor by the Institute of Radio Engineers for his discoveries in this regard.

But the most practical line of attack for the everyday listener seems to have been unearthed—rather earthed—by Dr. J. Harris Rogers, who conceived the idea of burying the antenna in the ground. His method was described in a signed article in Radio Digest in January of last year. Reports from various parts of the country since then indicate that the underground aerial continues to hold the palm for the most successful bafflement of static.

"The best results are obtained in moist earth," declared Dr. Rogers, "or when laid in fresh water, or when buried to the depth of water earth. Signal strength increases in proportion to the depth to which these are placed below the surface of the earth, and static correspondingly reduced."

Commander A. Hoyt Taylor and Lieutenant A. Crossley of the Navy made extensive reports to the institute commending the "submerged or subterranean wires." In these early experiences stress was placed on the directional results of the underground antenna. These experimental stages of the buried aerial have been greatly refined during the past year, and standardized to a commercial basis.

A practical and simple device of this kind, adaptable to any home receiver, is the patented Subantenna made by the Cloverleaf manufacturing company of Chicago. All the first heavy and cumbersome apparatus for installation has been eliminated in the Subantenna, which may be put into service by thirty minutes work. The results are also reported to be even more satisfactory than those achieved by the first elaborately worked out processes.

### Centralab Tone Amplifier

POWER amplification produces for the listener those wonderful effects brought out by the most expensive loud speaker—that rich mellow tone so evident in the recent improvement of phonographic reproduction, and gives the listener the feeling that he actually sees the artists he is listening to.

You can have this same highly perfected reception with your present set by adding the new Centralab Tone Amplifier, a distinctive and individual power amplifier which gives you an extra stage of audio amplification, increasing the volume of all stations tuned in to the point that develops the best tone quality. This increase in volume afforded by the Tone Amplifier is especially important for true harmonious reproduction of signals broadcast by out of town stations.

The vast reservoir of power built up by the Tone Amplifier will reproduce in the speaker the exact tone values that are broadcast. The tone quality is so greatly improved that the full range of the musical scale, particularly the lower bass notes, are reproduced well rounded and in true harmonic balance. The individual instruments of orchestra can be clearly distinguished and readily identified.

The Centralab Tone Amplifier supplies an additional audio stage coupled to your set by resistance, and is designed to use UX 171 power tube to carry the greater current necessary to obtain undistorted tone quality in greater volume. This tube in itself does not amplify as much as the regular tubes in the audio stages, and, in fact, if it were substituted for the tube in the last audio stage of your present receiver, would decrease the volume. Its chief purpose is to clarify the audio signals to improve tone quality. The combination of the natural amplification of your set and the use of this tube in an additional audio stage, provided by the Tone Amplifier, will obtain a quality of tone and volume which cannot be achieved by simply substituting a power tube in the last audio stage.

Because of the B current needed to operate this tube at its maximum efficiency, the Tone Amplifier is provided with a tone filter. This filter prevents any damage to the speaker by keeping the heavy direct current out of it and provides a balance between the speaker and the output impedance of the tube. This arrangement permits the speaker to reproduce in true resonance the signals amplified

in the tube. The greater volume produced by the Tone Amplifier is smoothly controlled from a whisper to maximum by the knob located on the front of the instrument.

The amplifier is encased in a walnut finished cabinet and will harmonize with most receiving sets. Efficient operation of the Tone Amplifier is not in any way hindered by its location. It can be placed alongside, on top or hidden away with the batteries. It is very easily attached to any set by anyone in a few minutes without tools, tearing down or rebuilding. Phone cord and battery cables are furnished and so marked that it is a very simple matter to make the proper connections.

The Centralab Tone Amplifier is made in two models, one for use with the CX 371 or UX 171 and the other for use with CX 220 or UX 120 tubes, and is manufactured by the Central Radio Laboratories, Milwaukee.

### New Walbert Receiver Is Worthy Fall Model

AMONG the new fall models the Walbert 26 stands out conspicuously as an attractive and efficient example of the latest and best in practical Radio reception. Descriptive literature underscores fourteen points regarding its construction that should satisfy any prospective buyer.

The circuit, Isofarad, is the all capacity bridge type, extending general efficiency without oscillation. Tubes are 5 A. C. (Kellogg or McCullough) connected in parallel, and one 171 or 371 power tube in the last audio stage with current rectified by 233, 313 or 230 tubes.

The scale is calibrated in kilocycles and illuminated. There is the modern shielding of copper and double precision condensers. The front panel is heavy embossed bronze, cabinet finish in fancy grain walnut.

As it stands complete the set presents the appearance of compactness and artistic beauty, worthy of a place in the most luxurious surroundings.

### DEVELOPS AC SUPER

(Continued from page 19)  
In Figure 6, I have taken the first stage and shown the two methods of solution

which naturally occur to the experimenter. They naturally occurred to me and have been tried. In Figure 8a, we have a fixed grid bias of, let us say, 4½ volts which should be about correct with normal heating current and approximately 90 volts of B on the plates. In the wire connecting B plus to the plate we have inserted a variable resistor by which we should be able to reduce the B voltage to any point below 90 that we may find desirable to secure maximum sensitivity—that is, regeneration without quite getting into oscillation.

#### Second Method Shown

The second method is depicted in Figure 6b, where a fixed grid bias is used, and a fixed plate voltage. The variable element was introduced into the filament circuit with the hope that, by trying grid voltages of 1½, 3, 4½ and 6 until a balance with the 90 volts B was found, the third point of balance, that the filament temperature, could be found. Unfortunately, these tubes do not lend themselves to changes in filament heat with any degree of success. They prefer to be kept at three volts, that supplied by the transformers on the market, and function peculiarly if this is reduced by an amount sufficient to control regeneration.

#### Brush Up on Theory

We have now looked into the tubes themselves, into the circuits and into the problem involved in revamping a super-heterodyne for use with these tubes. Between issues, think the matter over occasionally, and, if you are not thoroughly familiar with super-heterodyne theory and construction, refresh your mind on it. During the past three years every Radio writer has told the super story many times. You can find it either in back issues of Radio publications or any one of several good books on the market. The manuals issued by makers of super parts also have the story. When we get to actual construction, there may be several places where you'll have to do a little trying around of voltages yourselves and it will save much time and grief, if you know a little of what we are trying to accomplish—and why.

In the next issue, Mr. Ryan goes into the construction of his AC powered super in detail. His solving of the various problems is most interesting and shows how a true experimenter develops new ideas to advance radio.

# Announcing

## The Wonder Tube

# ARCTURUS

A. C. Radio Vacuum Tube

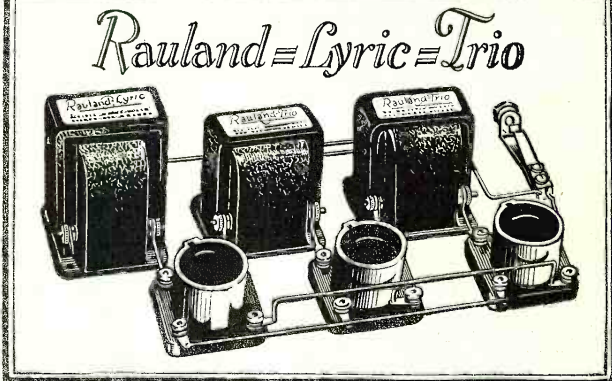
- Power Directly From the Electric Light Socket.
- The Only AC Tube having a Standard UX 4prong Base.
- Applicable to any Storage Battery receiver with simple wiring change. Dealers can convert DC sets into Modern AC Models.

**The Arcturus Radio Co.**  
255 Sherman Avenue  
NEWARK, N. J.

See Demonstration of this tube at ARCTURUS Booth, New York Radio Show

Write Direct for Details and Circular Matter

## Rauland = Lyric = Trio



### A remarkable improvement in audio amplification

New unit perfected by All-American Engineers gives you the full, pure, natural tone you have always sought

YOU have always wanted the ideal result in audio amplification—pure, natural tone with good volume. The laboratories of All-American Radio Corporation have developed a new method of audio amplification and now bring to you this long sought ideal result in the—

#### Rauland-Lyric-Trio

You know the Rauland-Lyric transformer. Its exceptional tone perfection has made it the largest selling quality transformer in the world. The Rauland-Lyric is now used in combination with the new Rauland-Trio (impedance units) to produce the Rauland-Lyric-Trio amplifier—the highest known perfection in three stage audio amplification.

It is well known that any system of amplification using instruments of similar characteristics has inherent disadvantages. Rauland-Lyric-Trio successfully combines the two leading systems—trans-

former and impedance coupling—coordinated to retain the advantages of both and to eliminate their weaknesses.

This new method consists of a Rauland-Lyric transformer for the first stage, a Rauland-Trio Type R-300 impedance for the second stage, and a Rauland-Trio Type R-310 impedance for the third stage.

#### Rauland-Trio

This is a triple feature instrument containing an inductance, a capacity and a resistance in one compact impedance unit. Through laboratory tests of utmost precision, absolutely correct balance is maintained between these important factors.

You secure full advantage of impedance amplification and overcome the common variance of commercial types of condensers and resistances. Rauland-Lyric-Trio is the last word in audio amplification.

A free book, "Modern Audio Amplification," tells more about this interesting new development. Write for handbook B-90.



**ALL-AMERICAN RADIO CORPORATION**  
4251 BELMONT AVE. CHICAGO, U. S. A.



# An Evening at Home With the Listener In

## IN EASTERN TIME

## IN CENTRAL TIME

Call	Location	Met.	Kc.	Watts	Saturday	Sunday	Monday	Tuesday	Wed.	Thursday	Friday	Call	Met.	Kc.	Watts	Saturday	Sunday	Monday	Tuesday	Wed.	Thursday	Friday		
CFCM	Toronto	356.9	840	500	Silent	7:00-9:15	6:15-8:15	Silent	7:00-11:45	6:25-9:30	Silent	CFCM	356.9	840	500	Silent	6:00-8:15	5:15-7:15	Silent	7:00-10:45	5:25-8:30	Silent	7:30-10:00	
CJRM	Moosejaw	296.9	1010	500	12:30-1:30	Silent	8:30-11:00	Silent	7:00-11:45	6:25-9:30	Silent	CJRM	296.9	1010	500	Silent	6:00-8:15	5:15-7:15	Silent	7:00-10:45	5:25-8:30	Silent	7:30-10:00	
CKAC	Montreal	410.7	730	750	7:15-12:30	2:45-5:45	Silent	7:15-11:30	Silent	8:30-9:30	Silent	CKAC	410.7	730	750	6:15-11:00	1:45-4:45	Silent	6:15-10:30	Silent	6:15-10:30	Silent	7:30-8:30	Silent
CKNC	Toronto	356.9	840	500	Silent	7:00-8:00	6:00-8:00	Silent	7:00-11:45	6:25-9:30	Silent	CKNC	356.9	840	500	Silent	6:00-8:15	5:15-7:15	Silent	7:00-10:45	5:25-8:30	Silent	7:30-10:00	
CKY	Winnipeg	384.4	780	500	8:30-11:30	7:30-10:00	Silent	7:00-11:45	6:25-9:30	8:30-11:00	Silent	CKY	384.4	780	500	7:30-10:30	6:00-9:00	Silent	6:00-9:00	Silent	6:00-9:00	Silent	7:30-9:00	Silent
CNRO	Ottawa	434.5	690	500	Silent	7:00-8:00	6:00-8:00	Silent	7:00-11:45	6:25-9:30	Silent	CNRO	434.5	690	500	Silent	6:00-8:15	5:15-7:15	Silent	7:00-10:45	5:25-8:30	Silent	7:30-10:00	
CYH	Monterey	311	964	250	10:30-12:00	Silent	10:30-12:00	Silent	10:30-12:30	10:30-11:30	Silent	CYH	311	964	250	Silent	9:30-11:00	Silent	Silent	9:30-11:00	Silent	9:30-10:30	Silent	
CYJ	Mexico City	400	920	1000	10:30-12:00	Silent	10:30-12:00	Silent	10:30-12:30	10:30-11:00	Silent	CYJ	400	920	1000	9:00-10:00	Silent	Silent	9:00-10:00	Silent	9:00-10:00	Silent	9:00-10:00	
KDKA	Pittsburgh	315.6	950	3000	6:20-10:00	5:30-9:30	6:00-10:00	6:00-11:30	6:20-11:30	6:20-10:00	Silent	KDKA	315.6	950	3000	5:20-9:00	4:30-8:30	5:00-9:00	5:00-10:30	5:20-10:00	5:20-10:00	5:20-10:00	5:20-10:00	5:20-10:00
KFAB	Lincoln	309.1	970	200	10:00-11:00	10:00-11:00	9:00-11:15	9:00-11:15	9:00-11:30	9:00-11:30	Silent	KFAB	309.1	970	200	8:30-10:00	9:00-10:00	8:30-10:15	8:05-10:30	8:05-10:30	8:05-10:30	8:05-10:30	8:05-10:30	
KFDM	Beaumont	374.8	800	500	9:00-10:00	9:00-10:00	Silent	9:00-11:00	Silent	9:00-11:00	Silent	KFDM	374.8	800	500	Silent	8:00-9:00	8:00-10:00	8:00-10:00	8:00-10:00	8:00-10:00	8:00-10:00	8:00-10:00	
KFIA	Richland	385	1220	500	8:00-9:00	8:00-9:00	6:30-9:00	6:30-9:00	6:30-9:00	6:30-9:00	Silent	KFIA	385	1220	500	Silent	7:30-8:30	7:30-8:30	7:30-8:30	7:30-8:30	7:30-8:30	7:30-8:30	7:30-8:30	
KFI	Los Angeles	468.5	640	500	9:30-3:00	9:00-1:00	9:15-2:00	9:15-2:00	9:15-2:00	9:15-2:00	Silent	KFI	468.5	640	500	8:30-2:00	8:00-12:00	8:15-1:00	8:15-1:00	8:15-1:00	8:15-1:00	8:15-1:00	8:15-1:00	
KFPF	Oklahoma City	272.6	1100	750	8:15-3:00	2:30-10:00	8:15-9:30	8:15-9:30	8:15-9:30	8:15-9:30	Silent	KFPF	272.6	1100	750	7:15-2:00	1:30-9:00	7:15-8:30	7:15-8:30	7:15-8:30	7:15-8:30	7:15-8:30	7:15-8:30	
KFPA	Seattle	445.7	870	1000	9:00-10:00	9:00-10:00	9:00-10:00	9:00-10:00	9:00-10:00	9:00-10:00	Silent	KFPA	445.7	870	1000	Silent	8:00-9:00	8:00-9:00	8:00-9:00	8:00-9:00	8:00-9:00	8:00-9:00	8:00-9:00	
KFON	Long Beach	241.8	1240	500	9:00-3:00	9:00-3:00	9:00-3:00	9:00-3:00	9:00-3:00	9:00-3:00	Silent	KFON	241.8	1240	500	8:00-2:00	8:00-2:00	8:00-2:00	8:00-2:00	8:00-2:00	8:00-2:00	8:00-2:00	8:00-2:00	
KFLA	Columbia	243.9	1200	500	9:00-10:00	9:00-10:00	7:15-8:15	7:15-8:15	7:15-8:15	7:15-8:15	Silent	KFLA	243.9	1200	500	Silent	6:15-7:15	6:15-7:15	6:15-7:15	6:15-7:15	6:15-7:15	6:15-7:15	6:15-7:15	
KFSD	San Diego	440.9	680	500	7:00-11:00	7:00-11:00	7:00-10:00	7:00-10:00	7:00-10:00	7:00-10:00	Silent	KFSD	440.9	680	500	6:00-12:00	2:00-9:00	6:00-9:00	6:00-9:00	6:00-9:00	6:00-9:00	6:00-9:00	6:00-9:00	
KFUB	St. Louis	545.1	550	500	8:15-9:15	10:15-11:15	9:00-10:00	9:00-10:00	9:00-10:00	9:00-10:00	Silent	KFUB	545.1	550	500	7:15-8:15	9:15-10:15	8:00-9:00	8:00-9:00	8:00-9:00	8:00-9:00	8:00-9:00	8:00-9:00	
KFV	St. Louis	234.2	1200	1000	7:45-1:00	8:00-1:00	8:00-1:00	8:00-1:00	8:00-1:00	8:00-1:00	Silent	KFV	234.2	1200	1000	6:45-12:00	7:00-10:30	7:00-12:00	7:00-12:00	7:00-12:00	7:00-12:00	7:00-12:00	7:00-12:00	
KFWB	Hollywood	361.2	830	500	9:00-2:00	11:30-2:00	9:00-2:00	9:00-2:00	9:00-2:00	9:00-2:00	Silent	KFWB	361.2	830	500	8:00-2:00	10:30-10:00	8:00-2:00	8:00-2:00	8:00-2:00	8:00-2:00	8:00-2:00	8:00-2:00	
KFWI	San Francisco	287.7	1120	500	9:00-10:00	9:00-10:00	9:00-10:00	9:00-10:00	9:00-10:00	9:00-10:00	Silent	KFWI	287.7	1120	500	8:00-2:00	8:00-2:00	8:00-2:00	8:00-2:00	8:00-2:00	8:00-2:00	8:00-2:00	8:00-2:00	
KGA	Spokane	280.7	1150	200	Silent	10:30-12:30	9:00-12:00	9:00-12:00	9:00-12:00	9:00-12:00	Silent	KGA	280.7	1150	200	Silent	9:30-11:30	8:00-11:00	8:00-11:00	8:00-11:00	8:00-11:00	8:00-11:00	8:00-11:00	
KGO	Portland	384.7	840	500	11:00-1:00	9:00-1:00	9:00-1:00	9:00-1:00	9:00-1:00	9:00-1:00	Silent	KGO	384.7	840	500	10:00-3:00	8:30-12:00	8:00-8:55	8:00-9:00	8:00-9:00	8:00-9:00	8:00-9:00	8:00-9:00	
KGW	Spokane	491.5	610	500	9:00-3:00	9:00-3:00	9:00-3:00	9:00-3:00	9:00-3:00	9:00-3:00	Silent	KGW	491.5	610	500	8:00-2:00	8:00-2:00	8:00-2:00	8:00-2:00	8:00-2:00	8:00-2:00	8:00-2:00	8:00-2:00	
KHJ	Los Angeles	405.2	740	500	11:00-1:00	10:00-1:00	Silent	11:00-2:00	11:00-2:00	11:00-2:00	Silent	KHJ	405.2	740	500	10:00-1:00	10:00-1:00	10:00-1:00	10:00-1:00	10:00-1:00	10:00-1:00	10:00-1:00	10:00-1:00	
KLAF	San Francisco	408.2	860	500	9:00-10:00	9:00-10:00	9:00-10:00	9:00-10:00	9:00-10:00	9:00-10:00	Silent	KLAF	408.2	860	500	Silent	8:00-9:00	8:00-9:00	8:00-9:00	8:00-9:00	8:00-9:00	8:00-9:00	8:00-9:00	
KJR	Seattle	348.6	860	500	9:00-1:00	9:00-2:00	9:00-1:00	9:00-1:00	9:00-1:00	9:00-1:00	Silent	KJR	348.6	860	500	8:00-1:00	9:15-12:45	8:00-12:00	8:00-12:00	8:00-12:00	8:00-12:00	8:00-12:00	8:00-12:00	
KLDS	Independence	270.1	1110	1500	Silent	10:15-11:15	9:00-10:00	9:00-10:00	9:00-10:00	9:00-10:00	Silent	KLDS	270.1	1110	1500	Silent	9:15-10:15	8:00-9:00	8:00-9:00	8:00-9:00	8:00-9:00	8:00-9:00	8:00-9:00	
KLX	Oakland	508.2	590	500	Silent	10:00-1:00	9:00-1:00	9:00-1:00	9:00-1:00	9:00-1:00	Silent	KLX	508.2	590	500	Silent	9:00-12:00	8:00-12:00	8:00-12:00	8:00-12:00	8:00-12:00	8:00-12:00		
KMA	Shenandoah	100.0	1000	500	10:00-11:00	10:00-11:00	9:00-11:00	9:00-11:00	9:00-11:00	9:00-11:00	Silent	KMA	100.0	1000	500	9:00-11:00	9:00-11:00	9:00-11:00	9:00-11:00	9:00-11:00	9:00-11:00	9:00-11:00	9:00-11:00	
KMMJ	Clay Center	229.1	1310	500	9:00-10:00	9:45-10:45	9:00-10:00	9:00-10:00	9:00-10:00	9:00-10:00	Silent	KMMJ	229.1	1310	500	8:00-9:00	8:45-9:45	8:00-9:00	8:00-9:00	8:00-9:00	8:00-9:00	8:00-9:00	8:00-9:00	
KNX	Hollywood	336.9	890	500	10:00-11:00	7:30-1:00	10:00-2:00	10:00-2:00	10:00-2:00	10:00-2:00	Silent	KNX	336.9	890	500	9:00-2:00	6:30-12:00	9:00-1:00	9:00-1:00	9:00-1:00	9:00-1:00	9:00-1:00	9:00-1:00	
KOR	Denver	427.1	1320	500	12:00-1:00	9:00-1:00	7:00-10:00	7:00-10:00	7:00-10:00	7:00-10:00	Silent	KOR	427.1	1320	500	11:00-1:00	11:00-1:00	11:00-1:00	11:00-1:00	11:00-1:00	11:00-1:00	11:00-1:00	11:00-1:00	
KOIL	Concordia	277.6	1080	200	Silent	7:00-1:00	7:00-1:00	7:00-1:00	7:00-1:00	7:00-1:00	Silent	KOIL	277.6	1080	200	Silent	6:00-12:00	6:00-12:00	6:00-12:00	6:00-12:00	6:00-12:00	6:00-12:00		
KOIN	Portland	319	940	1000	Silent	9:00-1:00	9:00-2:30	9:00-2:30	9:00-2:30	9:00-2:30	Silent	KOIN	319	940	1000	Silent	8:00-12:00	8:00-12:00	8:00-12:00	8:00-12:00	8:00-12:00	8:00-12:00		
KOMO	Seattle	305.9	980	1000	9:00-3:30	10:00-1:00	9:00-3:30	9:00-3:30	9:00-3:30	9:00-3:30	Silent	KOMO	305.9	980	1000	8:00-2:30	9:00-12:00	8:00-2:30	8:00-2:30	8:00-2:30	8:00-2:30	8:00-2:30		
KPD	Portland	305.9	980	1000	9:00-3:30	10:00-1:00	9:00-3:30	9:00-3:30	9:00-3:30	9:00-3:30	Silent	KPD	305.9	980	1000	8:00-2:30	9:00-12:00	8:00-2:30	8:00-2:30	8:00-2:30	8:00-2:30	8:00-2:30		
KPRC	Seattle	305.9	980	1000	9:00-3:30	10:00-1:00	9:00-3:30	9:00-3:30	9:00-3:30	9:00-3:30	Silent	KPRC	305.9	980	1000	8:00-2:30	9:00-12:00	8:00-2:30	8:00-2:30	8:00-2:30	8:00-2:30	8:00-2:30		
KPSN	Portland	315.6	950	1000	11:00-12:30	11:00-12:30	11:00-12:30	11:00-12:30	11:00-12:30	11:00-12:30	Silent	KPSN	315.6	950	1000	10:00-11:00	8:00-9:00	8:00-11:15	8:00-11:15	8:00-11:15	8:00			











WBRE

Wilkes-Barre, Pa. 249.9m-1200kc. 100 watts. Announcer, Louis G. Baltmore. Wed. Fri. Sun. 8:30-11 pm. Sun. 9-12 mid. Eastern.

WBRL

Tilton, N. H. 232.4m-1200kc. 500 watts. Booth Radio Laboratories, Tues, Thurs, Sat. 8 pm. Wed. 8:30-10 pm. Sun. 10-12 pm. Eastern daylight.

WBRS

Brooklyn, N. Y. 211.1m-1420kc. 100 watts. North American Broadcasting Corp. Announcer, Edward McMahon. Mon. 8:30-12 mid. Eastern daylight.

WBSO

Wellesley Hills, Mass. 384.4m-780kc. 100 watts. Babson's Statistical organization.

WBT

Charlotte, N. C. 258.5m-1160kc. 100 watts. C. C. Coddington, Inc. Announcer, H. W. Burwell. Daily ex Sun. 12-30 pm. Sun. 2-20 pm. 6:30. WEAF; 8. Tues. 3:50 pm. baseball. Wed. 3:50 pm. baseball. Thurs. 3:50 pm. Sat. 3:50 pm. Sun. 10:55 am. service; 8 pm. service; 6:20. WRC. Eastern.

WBZ

Springfield, Mass. 333.1m-900kc. 1500 watts. Westinghouse Electric Co. Announcer, Aidan Redmond. Daily ex Sun. 10:30 am. organ; 10:45. household hints; 11:20. weather; 6:27 pm. baseball; 6. organ; 6:30-10:30. 10:30. basehall. weather. Sun. 2 pm. WJZ; 7:30. basehall. weather; 7:45. music; 10:30. weather. Installed Sept. 19, 1921. Eastern daylight.

WBZA

Boston, Mass. 333.1m-900kc. 500 watts. Westinghouse Elec. & Mfg. Co. Same programs as WBZ.

WCAC

Mansfield, Conn. 275.1m-1090kc. 500 watts. Connecticut Agricultural College, Announcer, Daniel E. Noble. Slogan, "From the Farming State." Mon. 8-9 pm. Eastern.

WCAD

Canton, N. Y. 365.6m-820kc. 500-1000 watts. St. Lawrence University, Announcer, Ward C. Slogon. "The Voice of the North Country." Daily 12:30 pm. weather, reports, talks, music, time. Wed. 8 am. Eastern.

WCAE

Pittsburgh, Pa. 516.9m-580kc. 500 watts. Pittsburgh Press. Daily ex Sun. 6:45-8 am. exercises; 8:15, 9:15, 10:15, 12:15, 2:15 pm. 5:15, 7:30, 3:40 pm. news; 2:30 pm. organ; 6. dinner. music. Sun. 6:15-10:15. music; 5:30, 7:30. Uncle Kay. Bee; 8:10. Sun. 6 pm. 7:15-10. WEAF. Eastern daylight.

WCAH

Columbus, Ohio. 535.4m-560kc. 250 watts. Entertain. Elec. Co. Tues. 8:30-30 pm. Sun. 10:30 am. 12 n. 7:30-9 pm. Every other Sun. 4 pm. Eastern.

WCAJ

University Place, Neb. 379.5m-790kc. 500 watts. Nebraska Wesleyan University, Announcer, J. C. Jensen. Daily. 4:30 pm. weather, news. Mon. Wed. Fri. 10 am. services; Tues. Fri. 12 n. organ. Tues. 7:30 pm. Bible study; Wed. 9 pm. music. Sun. 11 am. 7:30 pm. services. Founded Oct. 1921. Central.

WCAL

Northfield, Minn. 236.1m-1270kc. 500 watts. Dept. of Physics, St. Olaf College, Announcer, Lester Skitter. Slogan, "The Voice of the North Country." Daily ex Sun. 9:45 am. Mon. 7 pm; 8:15. Sun. 8:30-9:30 am. 3-4 pm. Central.

WCAM

Camden, N. J. 223.7m-1340kc. 500 watts. City of Camden, Announcer, J. A. Howell.

WCAO

Baltimore, Md. 384.4m-780kc. 250 watts. Monumental Radio, Inc. Announcer, Wm. L. Atkinson. Mon. Wed. Fri. 7-11 pm. Wed. 14:30 pm. Sun. 11-12 n. 8:40 pm. Eastern.

WCAT

Rapid City, S. D. 247.8m-1210kc. 100 watts. South Dakota State School of Mines, Announcer, J. O. Kammernann. Daily ex Sun. 9:30 am. 10:30 am. weather, reports, news, 7:30 pm. concert. Mountain.

WCAU

Philadelphia, Pa. 336.9m-890kc. 500 watts. Universal Broadcasting Co. Announcer, J. Mon. 6:11-30 pm. Tues. 6:55 pm. weather, basehall; 7:11-30 pm. Wed. 5:30 pm. 5:35-11:30 pm. Thurs. 6:25 am. basehall, stocks, weather; 6:30-11:30. Fri. 6 pm. weather, basehall; 6:05-11. Sat. 7:15-11 pm. Sun. 7:15-11 pm. Eastern daylight.

WCAX

Burlington, Vt. 254.1m-1180kc. 100 watts. University of Vermont, Slogan, "The Voice of the Green Mountains." Fri. 7-8 pm. Eastern.

WCAY

Carthage, Ill. 340.7m-880kc. 50 watts. Carthage College.

WCBA

Allentown, Pa. 222.1m-1350kc. 100 watts. Queen City Radio station, Wed. 8:15-11 pm. Fri. 7:30-10:30 pm. Sat. 10-11 pm. dance music. Sun. 10 am. 5:30 pm. 7. church service. Eastern.

WCBD

Zion, Ill. 344.6m-870kc. 5000 watts. Wilbur, Glenn Volvy, Announcer, J. H. DePew. Slogan, "Where God Rules, Man Progresses." Tues. Thurs. 9:10-30 pm. concert. Wed. 1:30-2 pm. organ. Thurs. 2:30-3:45 pm. service. Sun. 9:40-45 am. Bible school; 2:30-6 pm. church services; 9:11-30 pm. Founded May, 1923. Central.

WCBE

New Orleans, La. 227.1m-1320kc. 5 watts. Uhalt Brothers Radio, Paul Johnson, Slogan, "Service to the Northwest." Daily ex Sun. 8:45 am. 9:35. news; 9:45. weather, markets; 10:30. markets; 11:30. markets; 12. farm hour; 1. weather, markets; 2. markets; 4. readers; 5:45. livestock. Mon. 6:15 pm. music; 7:30. farm talk; 8. program; 10. weather; 11. dance program; 11:45. organ. Tues. 7 pm. New York; 9:30. music; 10. weather. Wed. 6:45 pm. 7:30. farm talk; 8. WEAF; 9:30. program.

WCBF

Oxford, Miss. 241.8m-1240kc. 100 watts. University of Mississippi, Announcer, C. H. McCrae. Slogan, "The Voice of Old Miss." Wed. 8:30-9:30 pm. Central.

WCBM

Baltimore, Md. 384.4m-780kc. 100 watts. Hotel Chateau, Announcer, Harry J. Dobe. Mon. Wed. Sat. 10:12 mid. Eastern. 9:45 pm. Eastern.

WCBR

Providence, R. I. 201.2m-1490kc. 100 watts. Charles H. Messer.

WCBS

Springfield, Ill. 209.7m-1430kc. 250 watts. Harold L. Deving. Charles H. Messer. (Portable).

WCCO

Minneapolis-St. Paul, Minn. 405.2m-740kc. 7500. 6 am-6 pm. 5000 watts. Washburn-Crosby Co. Announcer, Paul Johnson. Slogan, "Service to the Northwest." Daily ex Sun. 8:45 am. 9:35. news; 9:45. weather, markets; 10:30. markets; 11:30. markets; 12. farm hour; 1. weather, markets; 2. markets; 4. readers; 5:45. livestock. Mon. 6:15 pm. music; 7:30. farm talk; 8. program; 10. weather; 11. dance program; 11:45. organ. Tues. 7 pm. New York; 9:30. music; 10. weather. Wed. 6:45 pm. 7:30. farm talk; 8. WEAF; 9:30. program.

WCDL

Wilmingon, Del. 265.2m-1130kc. 100 watts. Wilmington Electric & Supply Co. Announcer, Harvey Miller. Slogan, "The First Broadcasting Station of the First City of the First State." Tues, Thurs, Sat. 8:11 pm. Sun. 10:12 mid. Eastern.

WCEA

Chicago, Ill. 483.6m-620kc. 1500 watts. Chicago Federation of Labor, Announcer, Maurice Wetzel. Slogan, "The Voice of Labor." Daily ex Sun. 4-12 pm. Central daylight.

WCGU

Coney Island, N. J. 218.8m-1370kc. 500 watts. Charles G. Unger. Daily ex Sun. 1 pm. Wed. Fri. Sun. 11 am. Eastern daylight.

WCLO

Camp Lake, Wis. 227.1m-1330kc. 100 watts. C. E. Whitmore. Slogan, "The Playland of the Lake Region." Daily ex Tues, Thurs, 11:30 am. 2:30-5:30. 7-12 mid. Central.

WCLS

Joliet, Ill. 215.7m-1390kc. 150 watts. M. A. Fellman. Slogan, "Will County's Largest Store." Tues, Wed, Thurs, Fri, Sat. 8-11 pm. Sun. 9:30-12 pm. Central.

WCMA

Culver, Ind. 258.5m-1160kc. 250 watts. Culver Military Academy, Announcer, C. McKimney. Daily ex Sun. 12 n. public service hour. Mon. 8:10-10:30 pm. Wed. 8:10-10:30 pm. Sun. 11-12:30 pm. chapel service. Founded 1925. Central.

WCOA

Pensacola, Fla. 249.9m-1200kc. 500 watts. Municipal Broadcasting Station, Announcer, John E. French. Slogan, "Wonderful City of Advantages." Daily ex Sun. 10:30 am. 12:30 pm. Mon. Wed, Fri. 9 pm. Sun. 11 am. 12:30, 7:45 pm. Central.

WCOC

Columbus, Miss. 230.6m-1300kc. 100 watts. Crystal.

WCOD

Manchester, N. H. 238m-1260kc. 100 watts. 172nd Field Artillery Headquarters.

WCOT

Olneyville, R. I. 225.4m-1330kc. 50 watts. Jacob Conn.

WCOW

Chicago, Ill. 223.7m-1340kc. 500 watts. Clinton White, Announcer, Dixie Zelus. Slogan, "For Your Entertainment."

WCPS

Portland, Me. 361.2m-830kc. 500 watts. Congress Square Hotel, Announcer, L. T. Pitman, H. C. Wink. Daily ex Sat. Sun. 9-10 am. housewives. Mon. 12:12-30 pm. stocks, weather; 2.3. music; 2-8. stocks, sports. Mon. 11:45 am. Civilians' club; 2.3. music. Tues. 8 pm. theater; 3.4. WEAF; 4. Wed. 8:30. WEAF; Thurs. 6:30 pm. WEAF. Fri. 7:30 pm. concert; 8. Treasure Hunters. Founded 1923. Eastern.

WCSC

Springfield, Ohio. 256.3m-1170kc. 500 watts. Wittenberg College, Announcer, Lester Crowl. Fri. 8-9 pm. Central.

WCWK

Fort Wayne, Ind. 228.9m-1310kc. 500 watts. Chesley W. Keen. Slogan, "The Home Sweet Home Station." Daily 11-12 n. 5:30-6 pm. Tues. Fri. 7-11 pm. Founded 1924. Central.

WCWS

Danbury, Conn. 214.2m-1400kc. 100 watts. Bridge Broadcasting Station. Founded Aug. 2, 1926.

WCX

Pontiac, Mich. 440.9m-680kc. 5000 watts. The Detroit Free Press, Announcer, C. D. Tomy. Club, "Red Apple Club." Daily ex Sun. 4 pm. music. 4:15-5:15 pm. markets, weather; 5:45-6:45. music. Eyes blue chain. Tues, 10-2 am. club. Eastern.

WCYD

Nashville, Tenn. 225.4m-1330kc. 500 watts. Dad's Auto Accessories, Inc. Announcer, F. E. Egan. Slogan, "The Athens of the South." Mon. 8 pm. Sat. 11:45 am. 12:45, 3-4 pm. 9:40. Tues. Fri. 6:45 am. 12:45, 3-4 pm. Sun. 3-4:30 pm. 11:30 pm. Central.

WCDA

Tampa, Fla. 267.7m-1120kc. 500 watts. Tampa Daily Times, Announcer, Bruce Lunn. Daily ex Sun. 8:15 mid. Sun. 7:30-9:30 pm. Eastern.

WCDF

Kansas City, Mo. 370.2m-810kc. 1000 watts. Kansas City Star, Announcer, H. Dean Fitzer. Club, "Night Hawks." Daily ex Sun. 8:30 am. 9:30, 10:30, 11:30, 12:15 pm. 2:45. organ; 3:45. music. Sun. 3 pm. 3:30, 4, 4:30, 5, 6. basehall. Daily ex Sun. 8 am. Bible lesson; 10:10-15. Melody Vay Day; 12:1 pm. on the town; 3:4. matinee; 5:30. 6. story period; 6:7. school of the air; 7:10. music; 11:45-1. Nighthawk frolic. Sun. 3 pm. 4, 5, 1922. Central.

WCDA

Amarillo, Tex. 263m-1140kc. 250 watts. J. Laufer & Martin.

WDAA

El Paso, Tex. 267.7m-1120kc. 100 watts. Trinity Methodist church, Announcer, Louis Gemets. Wed. 7:30-10 pm. Sun. 9:30-12 n. 7:30-9 pm. Mountain.

WDAY

Fargo, N. D. 361.2m-830kc. 250 watts. Radio Equipment Corporation, Announcer, Earl Renck. Slogan, "The Biggest Little City in the World." Daily ex Sun. 10 am. markets, weather, news; 11:30. markets; 11:55. clearing house; 12 n. markets; 12:05. "The Bug and Janitor" 12:30. music; 1. markets; 2. story; 3:40. story; 4:45. news; 6. music; 7:30. N. D. A. C. Sun. 10:30 am. service; 1 pm. service; 2. service; 4. music; 5. music. Central.

WDBB

Roanoke, Va. 230.6m-1300kc. 250 watts. Richardson Wayland Elec. Corp. Announcer, J. W. John; son. Slogan, "Roanoke Down in Old Virginia." Daily ex Sun. 12-1 pm. music. 5:30-6:45. music, news, weather. Mon. 8-9 pm. Wed. Sat. 9 pm. Sun. 11-12 pm. church. Eastern.

WDBK

Akron, Ohio. 227m-1320kc. 250 watts. W. F. Jones.

WDBO

Orlando, Fla. 288.3m-1040kc. 1000 watts. 6 am-6 pm. 500 watts. Orlando Broadcasting Co. Announcer, Harold Danforth. Slogan, "The Voice of Central Florida." Daily ex Sun. 7:30-10:30 pm. Sun. 10:45 am. 4 pm. 7:30. Founded 1921. Eastern.

WDBZ

Kingston, N. Y. 215.7m-1390kc. 50 watts. Kingston Radio Club, Announcer, J. P. Beichert.

WDEL

Wilmingon, Del. 265.2m-1130kc. 100 watts. Wilmington Electric & Supply Co. Announcer, Harvey Miller. Slogan, "The First Broadcasting Station of the First City of the First State." Tues, Thurs, Sat. 8:11 pm. Sun. 10:12 mid. Eastern.

WDFJ

Washington, D. C. 340.7m-880kc. 500 watts. First National Radio Co. Inc. Announcer, Arthur P. Edges. Slogan, "The Voice of the Nation." Daily ex Sun. 12:1 pm. 5 pm. Mon. Wed, Fri. 8:30-11:30 pm. Tues. 9-11 pm. Sun. 12 n. concert; 8-10. city band; 10:15-12 mid. organ.

WDFK

Beloit, Wis. 258.5m-1160kc. 500 watts. Beloit College, Announcer, Arthur Weiner. Sun. 4:30 pm. Central.

WDFL

Chicago, Ill. 241.8m-1240kc. 500 watts. Emil Demark, Broad Station, Slogan, "It Won't Be Long Now." Announcer, Dave Edelson. Daily. 2:30-4 pm. 6:7-30. 9:30-11:30. Daily ex Sun. 6:30-7:30 pm. Jewish hour. Fri. 6:30-7:30 pm. Bohemian hour. Central daylight.

WDFM

Boston, Mass. 447.5m-670kc. 500 watts. Edison Broadcasting Co. Announcer, Arthur P. Edges. Slogan, "The Friendly Voice." Daily ex Sun. 6:45 am. exercises; 7:45. watch. Mon. 4 pm. 5:30. 6:30. Daily ex Sun. 10:30. Tues. 3 pm. 4. 6:30-10. 10. Wed. 4 pm. 6:30-10. 10. Thurs. 4 pm. 6:30-10. 10. Fri. 9:20. Eastern daylight.

WDFN

Evansville, Ind. 236.1m-1270kc. 500 watts. The Evansville Post-Examiner, Announcer, Earl Renck. Slogan, "The Gateway to the South." Daily ex Sun. 7:15 am. 12:10 pm. markets; 12:15. weather; 12:20. farm talk; 12:30. organ; news. Mon. 6:55 pm. basehall; 7:11:15. Tues. 1:15 pm. 7. Wed. 4:30 pm. Fri. 1:15 pm. 8:30. Sun. 9 am. Central.

WDFP

Scranton, Pa. 230.6m-1300kc. 250 watts. Scranton Broadcasting Co.

WDFQ

Lancaster, Pa. 252m-1190kc. 15 watts. Lancaster Elec. Supply & Construction Co. Announcer, Charles W. Feagley. Slogan, "Orville's Gardens at Lancaster." Tues, Thurs, Sat. 7:40-30 pm. Sun. 11 am. Eastern.

WDFR

Freeport, N. Y. 245.8m-1220kc. 400 watts. Harry H. Carman. Mon. 7-8 pm. Wed. Fri. 7-11 pm. Sun. 10:40-12:30 pm. 4:5-20. Eastern.

WDFG

Memphis, Tenn. 277.6m-1080kc. 15 watts. First Baptist church, Announcer, A. L. Cowles. Sun. 9:30 am. 8 pm. Central.

WDFH

Evansville, Ind. 236.1m-1270kc. 500 watts. The Evansville Post-Examiner, Announcer, Earl Renck. Slogan, "The Gateway to the South." Daily ex Sun. 7:15 am. 12:10 pm. markets; 12:15. weather; 12:20. farm talk; 12:30. organ; news. Mon. 6:55 pm. basehall; 7:11:15. Tues. 1:15 pm. 7. Wed. 4:30 pm. Fri. 1:15 pm. 8:30. Sun. 9 am. Central.

WDFI

Scranton, Pa. 230.6m-1300kc. 250 watts. Scranton Broadcasting Co.

WDFJ

Lancaster, Pa. 252m-1190kc. 15 watts. Lancaster Elec. Supply & Construction Co. Announcer, Charles W. Feagley. Slogan, "Orville's Gardens at Lancaster." Tues, Thurs, Sat. 7:40-30 pm. Sun. 11 am. Eastern.

WDFK

Beloit, Wis. 258.5m-1160kc. 500 watts. Beloit College, Announcer, Arthur Weiner. Sun. 4:30 pm. Central.

WDFL

Chicago, Ill. 241.8m-1240kc. 500 watts. Emil Demark, Broad Station, Slogan, "It Won't Be Long Now." Announcer, Dave Edelson. Daily. 2:30-4 pm. 6:7-30. 9:30-11:30. Daily ex Sun. 6:30-7:30 pm. Jewish hour. Fri. 6:30-7:30 pm. Bohemian hour. Central daylight.

WDFM

Boston, Mass. 447.5m-670kc. 500 watts. Edison Broadcasting Co. Announcer, Arthur P. Edges. Slogan, "The Friendly Voice." Daily ex Sun. 6:45 am. exercises; 7:45. watch. Mon. 4 pm. 5:30. 6:30. Daily ex Sun. 10:30. Tues. 3 pm. 4. 6:30-10. 10. Wed. 4 pm. 6:30-10. 10. Thurs. 4 pm. 6:30-10. 10. Fri. 9:20. Eastern daylight.

WDFN

Evansville, Ind. 236.1m-1270kc. 500 watts. The Evansville Post-Examiner, Announcer, Earl Renck. Slogan, "The Gateway to the South." Daily ex Sun. 7:15 am. 12:10 pm. markets; 12:15. weather; 12:20. farm talk; 12:30. organ; news. Mon. 6:55 pm. basehall; 7:11:15. Tues. 1:15 pm. 7. Wed. 4:30 pm. Fri. 1:15 pm. 8:30. Sun. 9 am. Central.

WDFO

Scranton, Pa. 230.6m-1300kc. 250 watts. Scranton Broadcasting Co.

WDFP

Memphis, Tenn. 277.6m-1080kc. 15 watts. First Baptist church, Announcer, A. L. Cowles. Sun. 9:30 am. 8 pm. Central.

WDFQ

Lancaster, Pa. 252m-1190kc. 15 watts. Lancaster Elec. Supply & Construction Co. Announcer, Charles W. Feagley. Slogan, "Orville's Gardens at Lancaster." Tues, Thurs, Sat. 7:40-30 pm. Sun. 11 am. Eastern.

WDFR

Freeport, N. Y. 245.8m-1220kc. 400 watts. Harry H. Carman. Mon. 7-8 pm. Wed. Fri. 7-11 pm. Sun. 10:40-12:30 pm. 4:5-20. Eastern.

WDFG

Memphis, Tenn. 277.6m-1080kc. 15 watts. First Baptist church, Announcer, A. L. Cowles. Sun. 9:30 am. 8 pm. Central.

WDFH

Evansville, Ind. 236.1m-1270kc. 500 watts. The Evansville Post-Examiner, Announcer, Earl Renck. Slogan



WGM

Jeanette, Pa. 208.2m-1440kc. 50 watts. Vern & Elton Spencer. Announcer, Vern Spencer. Slogan, "Voice from Glass City." Mon, Tues, Thurs, Fri, 7:30-9 pm. Sun, 1:30-4 pm. Eastern.

WGMU

New York, N. Y. 201.2m-1490kc. 100 watts. Atlantic Broadcasting Co.

WGN

Elgin, Ill. 305.9m-980kc. 500 watts. Chicago Tribune. Announcers, Bill Hay, Quin Ryan, Frank Dahm, J. R. Tyson, Tommy Coates. Daily, ex Sun, 9:10 am, news; 11:11-11:30, music; 11:30-12:57, house-hold hints; 1:57-12:01, time; 12:40-2:55 pm, music; 2:55, baseball; 5:57-5:59, music; 5:59-6:01, time; 6:01-6:10, stocks and bonds; 6:10-6:35, Punch and Judy; 6:35-6:50, music; 6:50-7, Almanack. Daily, ex Sun, Mon, 8:11 pm. Sun, 12:11 pm. Uncle Waltz 1-2, organ; 2-3, music; 3, baseball; 6:10-6:45, Punch and Judy; 6:45-11:25, music. Central daylight.

WGR

Buffalo, N. Y. 302.8m-990kc. 750 watts. Federal Radio Corp. Announcer, Kenneth Fickett. Daily, ex Sun, 6:45-8 am. Daily, ex Sun, 12 n, 12 n, stocks; 1 pm, 2:30-4:30, Thurs, Thurs, 8:11 pm, Mon, Wed, Fri, 8-12 mid. Sun, 10:45-12 n, 8-9, 9:15-10. Eastern daylight. Founded May 21, 1922.

WGS

Atlanta, Ga. 270.1m-1110kc. 500 watts. Georgia School of Technology. Announcer, Walter W. Merkle. Slogan, "The Southern Technical School with National Reputation." Founded Jan., 1924.

WGWB

Milwaukee, Wis. 218.6m-1370kc. 500 watts. Radio-east Corp. of Wisconsin. Announcer, John Sullivan. Slogan, "Make Milwaukee Mightier." Daily, ex Sun, 6:30-7:30 pm. Wed, 9-12:30 am. Sat, 9-12 mid. Central.

WGY

Schenectady, N. Y. 379.5m-790kc. 30,000 watts. General Electric Company. Announcer, Kolin Hager. Slogan, "Good Evening." Daily, ex Sun, 5:45-7 am, exercises; 7, talk; 11:55 am, time; 12:01, weather; 12:02, produce; 12:06, weather; 1 pm, music; 1:30, orchestra; 2, baseball. Tues, 6:30-10:30 pm. Wed, 5:30-10 pm. Thurs, 6:30-10:30 pm. Fri, 5:30-10:30 pm. Sat, 6:30-11 pm. Sun, 10 am, 1-2 pm, 6:20, WEAJ; 8:15, time; 8:15, WEAJ; 8:45, WEAJ. Daily, ex Sun, 2XAD, 22.02m. Eastern. Founded, 1922.

WHA

Madison, Wis. 319m-940kc. 750 watts. Univ. of Wis. Mon, 7:30-10 pm. Wed, Fri, 8-9 pm. Central.

WHAD

Milwaukee, Wis. 293.9m-1020kc. 500 watts. Marquette University.

WHAM

Rochester, N. Y. 277.6m-1080kc. 500 watts. Univ. of Rochester. Slogan, "The Heart of America." Daily, ex Sun, 2:30-3:30 pm, 5:45-7:58, Wed, 8-10 pm, Thurs, 10-12 mid, Fri, 8-9:30 pm. Sat, 11-12 mid. Sun, 3-5 pm. Eastern.

WHAP

New York, N. Y. 236.1m-1270kc. 1000 watts. Defenders of Truth Society, Inc.

WHAR

Atlantic City, N. J. 272.6m-1100kc. 1000 watts. Seaside Hotel. Slogan, "The Heart of America." Daily, ex Sun, Wed, 2:15-3:15 pm, 7:45-9 pm, Sun, 10:45 am, 2:15-3:10 pm, 7:30-9. Founded, 1922. Eastern daylight.

WHAS

Louisville, Ky. 461.3m-650kc. 500 watts. Courier-Journal and Louisville Times Co. Announcer, D. H. Ives. Daily, ex Sun, 2:15-5 pm, 7-9, 12 pm, 10 am, service; 5:20, WEAJ. Mon night, silent. Founded July, 1922. Central.

WHAZ

Troy, N. Y. 379.5m-790kc. 500 watts. Rensselaer Polytechnic Inst. Announcer, Euterford Haver. Slogan, "Transcendental and International Broadcasting Station Located at the Oldest College of Science and Engineering in America." Club, R. P. I. students. Mon, 8-12 midnight, concert, educational talks, orchestra, features. Founded June 22, Eastern.

WHB

Kansas City, Mo. 336.9m-890kc. 500 watts. Sweeney Auto & Electrical School. Announcer, John F. Schilling. Slogan, "The Heart of America." Daily, ex Sun, 8:25 am, 9:25, 9:30, 9:35, 10:25, 10:30, 10:35, 11:20, 11:30, 11:35, 11:55, 12 noon, market reports, 2-4, ladies' hour. Daily, ex Sun, Sat, 12:15 pm, 12:30, 1:25, 1:40, stocks, Daily, 7-8 pm, Mon, 8-9 pm, Tues, Thurs, 8-10 pm, Wed, 12:05 pm, 12:30, 1:25, markets, 8-10 pm, Sun, 9:45-10:45 am, service; 7:45; 11:15-1 am, organ. Central.

WHBA

Oil City, Pa. 260.7m-1150kc. 10 watts. Shaffer Music House.

WHBC

Canton, Ohio. 236.1m-1270kc. 10 watts. Rev. E. F. Graham. Slogan, "Ignorence Is Our Greatest Foe." Mon, 8-8:30 pm. Central.

WHBD

Belleville, Ohio. 222.1m-1350kc. 100 watts. Chamber of Commerce. Announcer, D. A. Young. Slogan, "Ohio's Highest Point." Daily, ex Sun, Sat, 6:30-7:30 pm. Sun, 10:30-12 mid. Eastern.

WHBF

Rock Island, Ill. 222.1m-1350kc. 100 watts. Readers-Electrical Company. Announcer, C. L. Hardsley. Slogan, "Where Historic Blackhawk Fought." Mon, Wed, 9-11 pm. Sat, 2-4 pm, 7-9. Central.

WHBL

Chicago, Ill. 204m-1470kc. 100 watts. James H. Siusser. (Portable).

WHBM

Chicago, Ill. 201.2m-1490kc. 100 watts. C. L. Carroll. (Portable).

WHBN

Gainesville, Fla. 296.9m-1010kc. 10 watts. U. of Florida.

WHBP

Johnstown, Pa. 228.9m-1310kc. 250-500 watts. Johnstown Automobile Co. Announcer, J. C. Tully. Slogan, "The Voice of the Friendly City." Daily, ex Sun, 1:15 pm. Mon, 11 pm, Thurs, 10 pm. Sat, 10 pm. Eastern.

WHBO

Memphis, Tenn. 232.4m-1290kc. 100 watts. Broadcasting Station WHBO, Inc. Announcer, W. F. McElroy. Daily, ex Sun, 7-8 pm. Sun, 10:45 am. Central.

WHBU

Anderson, Ind. 220.4m-1360kc. 15 watts. Citizen's Bank.

WHBW

Philadelphia, Pa. 220.4m-1360kc. 100 watts. D. R. Klemp. Mon, Wed, Sat, Sun, evenings.

WHBY

West De Pere, Wis. 249.9m-1200kc. 50 watts. St. Norbert's College. Green Bay De Pere Broadcasting Station. Daily, 5 pm, weather; 5:45, market. Wed, Fri, Sat, Sun, 5-6 pm. Mon, Fri, 8-10 pm. Central.

WHDI

Minneapolis, Minn. 245.8m-1220kc. 500 watts. Wm. Hood Dunwoody Industrial Institute. Announcer, M. E. Bass. Slogan, "The Northwest Leading Trade School." Mon, 8-9 pm. Wed, 8:30 pm. Fri, 9-10 pm. Daily, ex Sun, 6:57-9:30 am, time. Central.

WHCC

Rochester, N. Y. 254.1m-1180kc. 100 watts. Hickson Electric company, Inc. Announcer, Milton Hall. Slogan, "The City of Vibrated Industries." Announcer, Edward H. Troat. Daily, ex Sun, 12-3 pm, 6:30-9. Thurs, Fri, 10-11 pm. Sun, 10:30-12 n, Eastern.

WHFC

Chicago, Ill. 215.7m-1390kc. 200 watts. Woodson & Wilson, Inc. Daily, ex Mon, 8-12 mid. Central daylight.

WHK

Cleveland, Ohio. 265.3m-1130kc. 1,000 watts. Radio Air Service Corp. Slogan, "Cleveland Pioneer Broadcasting Station. Daily, 12 n, 12:45, farm fashions; 2:30, housekeepers' chat; 5, 5:15, 9, 10, 12, Sat, 12 n, 3:30 pm; 5, 5:15, 6, 8-9, 9:12 mid, 3:30 am, 5 pm, 5:15, 6, 7:30, 8:15. Eastern.

WHN

New York, N. Y. 394.5m-760kc. 500 watts. Loew's State Broadcasting Station. Slogan, "The Voice of the Great White Way." Daily, ex Sun, 12:30-1 pm, 2:15-3:15, 3:45-5:30, 6:30-12 mid. Sun, 12:30-6:50; 9:30-12. Eastern.

WHO

Des Moines, Ia. 535.4m-560kc. 500 watts. Bankers Life Co. Announcer, N. Dean Cole. Daily, ex Sun, 4:45 am, 12 n, 2:15 pm, markets, weather. Mon, Tues, Thurs, Fri, 6:30-9:30, Wed, 6:30-10:30 pm. Sun, 6:30-12:30 pm. Founded 1924. Central.

WHYP

New York, N. Y. 206.8m-1450kc. 10 watts. WHYP.

WHT

Deerfield, Ill. 416.4m-720kc. 5000 watts. Wrigley Field. Announcer, Patrick Henry Barnes. Slogan, "Write Home Tonight." Daily, ex Mon, 11 am, 1 pm, 2:15, 7-10. Tues, Thurs, 11-1 am. Central daylight.

WIAD

Philadelphia, Pa. 220.4m-1360kc. 100 watts. Howard R. Miller. Slogan, "The Voice from the Birthplace of Liberty." Tues, Fri, 9 pm. Eastern.

WIAS

Burlington, Ia. 475.9m-630kc. 100 watts. Home Brothers. Announcer, Frank B. Orf. Slogan, "Burlington on the Mississippi." Wed, 8 pm. Mon, Fri, 8 pm. Sat, 10:30 pm. Sun, 10:30 am. Central.

WIBA

Madison, Wis. 239.9m-1250kc. 100 watts. The Madison Times Star. Announcer, Kegan F. Schmitt. Slogan, "Four Lakes City." Mon, 7-11 pm, Wed, 8-10 pm, Fri, 6:15-7 pm, Sat, 7-8 pm, Sun, 12-1 pm. Central.

WIBG

Elkins Park, Pa. 440.9m-680kc. 50 watts. St. Paul's Protestant Episcopal church. Announcer, Donald P. Gullette. Sun, 11 am, 9:45 pm. Eastern.

WIBI

Flushing, N. Y. 267.7m-1120kc. 100 watts. Frederick B. Zittel, Jr.

WIBJ

Chicago, Ill. 201.2m-1490kc. 100 watts. C. L. Carroll. (Portable).

WIBM

Chicago, Ill. 201.2m-1490kc. 100 watts. C. L. Carroll. (Portable).

WIBO

Chicago, Ill. 416.4m-720kc. 500 watts. Nelson Brothers Bond and Mfg. Co. Announcer, Walter Preston. Daily, ex Sun, 2:30-4:30. Daily, ex Sun, Mon, 6-7 pm, Tues, Thurs, 10-11 pm. Wed, Fri, 10-11 pm. Sat, 9-10 pm. Sun, 9:45-10 pm. Central daylight.

WIBR

Steubenville, Ohio. 249.9m-1200kc. 50 watts. Daily, ex Sun, 6:30-7:30 pm. Wed, 11:15-12:45 am. Mon, Fri, 8-10 pm. Sun, 4-5 pm. Eastern.

WIBS

Elizabeth, N. J. 204m-1470kc. 150 watts. New Jersey National Guard.

WIBU

Poyntette, Wis. 217.3m-1380kc. 20 watts. The Electric Farm. Wisconsin State Journal. Mon, 9 pm. Sun, 2 pm, 4. Central.

WIBW

Chicago, Ill. 204m-1470kc. 100 watts. C. L. Carroll. (Portable) Chicago.

WIBX

Utica, N. Y. 238m-1260kc. 150 watts. Hotel Utica. Announcer, J. B. Hyland. Mon, Tues, Thurs, Sat, Sun, services.

WIBZ

Montgomery, Ala. 230.6m-1300kc. 15 watts. A. D. Trum.

WICC

Bridgewater, Conn. 214.2m-1400kc. 250 watts. The Bridgewater Broadcasting Station. Announcer, Charles W. Selen. Slogan, "The Industrial Capitol of Connecticut." Daily, ex Sat, Sun, 7-10 pm. Sun, 2-4 pm. Sat, Eastern.

WIL

St. Louis, Mo. 258.5m-1160kc. 250 watts. Benson Broadcasting Co. Announcer, Billy Knight. Daily, ex Sun, 9:30-11:30 am, 2:45-5 pm. Daily, ex Thurs, 8-11 pm. Central.

WIOD

Miami Beach, Fla. 247.8m-1210kc. 1000 watts. Carl G. Fisher. Announcer, Jesse H. Jay. Slogan, "Wonderful Isle of Dreams."

WIP

Philadelphia, Pa. 508.2m-590kc. 500 watts. Gimbel Bros. Announcer, E. A. Davies. Slogan, "Watch Its Progress." Daily, ex Sun, 6 pm, weather; 6:05, baseball; 6:10, dinner music; 6:45, markets; 7, Uncle WIP. Tues, Sat, 1 pm, organ; 1:30, weather. Thurs, Thurs, Sat, 8-12 mid. Sun, 7:15 pm. Eastern daylight.

WJAD

Waco, Texas. 447.5m-670kc. 500 watts. Hotel Raleigh. Mon, Tues, Thurs, 6:30-7:30 pm. Mon, Tues, Thurs, Fri, 8:30-10 pm. 1st and 3rd Wed, 8:30-9 pm. Central.

WJAG

Norfolk, Nehr. 285.5m-1050kc. 250-500 watts. Norfolk Daily News. Announcer, New Star. Slogan, "The World's Greatest Country Daily, and Home of Printer David." Daily, ex Sun, 7-10 pm. Sun, 10-12 pm. Sat, 6:30-7:30 pm. orchestra, Sun, 3 pm. Central.

WJAK

Kokomo, Ind. 234.2m-1280kc. 50 watts. Kokomo Radio, Inc. Daily, ex Sun, 11:45 am, chapel. 7:30 pm. Founded Sept., 1921. Central.

WJAM

Cedar Rapids, Iowa. 384.4m-780kc. 100 watts. D. M. Parkman. Tues, Thurs, Sat, 7-10 pm. Sun, 4 pm, vesper service. Central.

WJAR

Providence, R. I. 483.6m-620kc. 500 watts. The Outlet Co. Announcer, J. A. Reilly. Slogan, "The Southern Gateway of New England." Daily, ex Sun, 1:05-2 pm, weather, reports, music. Mon, Wed, Fri, 10 am, household hints. Mon, 8-11 pm, Tues, 8-10 pm, Wed, 7:30-11 pm, Thurs, 8-11 pm, Fri, 8-10:30 pm. Sat, 8-9 pm. Sun, 7:20-10:15 pm. Eastern daylight.

WJAS

Pittsburgh, Pa. 270.1m-1110kc. 500 watts. Pittsburgh Supply House. Pickering's Studio. Announcer, Brian McDonald. Slogan, "World's Jolliest Radio Station." Daily, ex Sun, 12 n, 12:45-7:30, 8:15, 9:30, 10:30. Sun, 11 am, 2 pm. Eastern daylight.

WJAX

Jacksonville, Fla. 336.9m-890kc. 1000 watts. City of Jacksonville. Daily, ex Sun, 12:45, 9-10, 11. Daily, ex Sun, Thurs, 7:30-11 pm. Sun, 11 am, 6:30-7:30 pm, 8-9. Eastern.

WJAY

Cleveland, Ohio. 227.1m-1320kc. 500 watts. Cleveland Radio Broadcasting Corp. Announcer, Charles L. Burns. Slogan, "On the Holidays." Daily, ex Sun, 12, organ; 12:45, ex Sun, 12 n, 12:45-7:30, 8:15, 9:30, 10:30. Sun, 11 pm, 11 time. Central.

WJAZ

Mt. Prospect, Ill. 263m-1140kc. 5000 watts. Zenith Radio Corp. Announcer, George G. Smith. Daily, ex Sun, Mon, Thurs, 7-8 pm, 9-11, Thurs, 9-12 pm. Sun, 7-9 pm. Founded 1922. Central daylight.

WJBA

Joliet, Ill. 322.4m-930kc. 50 watts. D. H. Lentz, Jr. Tues, Thurs, Fri, Sat, 7-12 mid. Central.

WJBB

Tampa, Fla. 344.6m-870kc. 250 watts. Financial Press Institute. Daily, ex Sun, 11:12-10:05 pm. Eastern daylight.

WJBC

St. Louis, Ill. 227.1m-1320kc. 100 watts. Hummer Furniture Co. Announcer, LeRoy Stremlau. Slogan, "Better Home Today." Daily, ex Sun, 12:30-1:30 pm, Mon, Thurs, 7-8 pm, 9-11, Thurs, 9-12 pm, 11:30 am, 3:30-4:45 pm, 7:30-9:30 pm. Sun, 10:45-11:30 am, 3:30-4:45 pm. Eastern daylight.

WJBI

Red Bank, N. J. 263m-1140kc. 150 watts. Robert S. Johnson. Mon, 12, organ; 12:45, ex Sun, 12 n, 12:45-7:30, 8:15, 9:30, 10:30. Sun, 11 pm, 11 time. Central.

WJBK

Ann Arbor, Mich. 220.4m-1360kc. 15 watts. Ernest Goodwin. Announcer, H. T. Augustus. Mon, 9-11 pm, Thurs, 10-12 mid. Sat, 11-12 n. Central.

WJBL

Decatur, Ill. 212.6m-1410kc. 250 watts. William Gushard Dry Goods Co. Announcer, H. W. Winters. Mon, 9-10:30 pm, 10:30-11:30. Wed, 9-11 pm, 11-1:30. Sat, 9-11:30 pm. Sun, 10:35-12:15 pm, 3-7 pm. Eastern.

WJBO

New Orleans, La. 263m-1140kc. 100 watts. Valdemar Jensen. Founded 1922.

WJBR

Omro, Wis. 227.1m-1320kc. 100 watts. Gensch and Stearns. Announcer, C. W. Stearns. Slogan, "The Center of the Heart of the Keystone State." Mon, 8-10:30 pm. Sun, 2:20-4 pm, 8-10:30. Central.

WJBT

Chicago, Ill. 389.4m-770kc. 500 watts. John S. Boyd.

WJBU

Lewisburg, Pa. 214.2m-1400kc. 100 watts. Buckle up! Announcer, Geo. A. Irland. Slogan, "The Heart of the Keystone State." Thurs, 8 pm. Eastern.

WJBW

New Orleans, La. 238m-1260kc. 30 watts. C. Carlisle, Jr. Tues, Fri, 7-8 pm. Sun, 9-10 pm. Central.

WJBY

Gadsden, Ala. 234.2m-1280kc. 50 watts. Electric Construction Co. Mon, Wed, Fri, 8-9 pm. Central.

WJBZ

Chicago Heights, Ill. 208.2m-1440kc. 100 watts. Roland G. Felmer. Anthony Coppotelli.

WJDD

Moehrshead, Ill. 365.6m-820kc. 1000 watts. Loyal Order of Moose station. Palmer House. Herald Examiner. Announcer, Gene Rouse. Slogan, "The Call of the Moose." Daily, ex Sun, 10 am, news; 10:55, 11-12 n, Prudence Penny; 12, music; 4 pm, piano reveries; 4:45, Palmer house soloists; 8:45, music; 6, symphony; 6:15, talk. Wed, Thurs, 11-12 mid, Sat, 9-10 pm, 12-2 am. Sun, 7:30-10:30 am, services; 1:30-2 pm, music; 2-4, Bible classes; studio program; 10, news. Central daylight.

WJKS

San Juan, P.R. 232.4m-1290kc. 500 watts. Johnson Kennedy Radio Corp.

WJPW

Astribula, Ohio. 208.2m-1440kc. 30 watts. J. P. Wilson.

WJR

Pontiac, Mich. 440.9m-680kc. 5000 watts. The Richards-Oakland Co. Slogan, "Where Joy Reigns." Announcers, Leo Fitzpatrick, John F. Patt. Daily, ex Sun, 11:42 n, 11:42 n, Prudence Penny; 12, Wed, 10-12 mid, Sat, 11:30-1 pm. Mon, Wed, Fri, 10 am. Sun, 10 am, 11:30 am, 12:30 pm, service; 2:30, symphony; 6-7, twilight; 10-10:30, song service. Eastern.

WJZ

Bound Brook, N. J. 454.3m-660kc. 30,000 watts. R. C. A. Managed by National Broadcasting Co















# State and City Index Continued

## Texas (Continued)

Fort Worth	KFJZ	249.9	1,200	50
	KFOR	1,350	2,000	50
Galveston	WBAP	499.7	600	150
	KFLX	270.1	1,110	100
Greenville	KKFM	230.6	1,300	14
Hartlingen	KHLM	236.8	1,270	100
Houston	KFVI	238	1,260	250
	KPRC	239.9	1,020	500
	KTUE	212.6	1,410	5
San Angelo	KGFI	220.4	1,360	15
San Antonio	KGCI	220.4	1,360	15
	KGCB	220.6	1,480	100
	KGRC	220.4	1,360	50
	KTAP	228.9	1,310	20
	KTSA	265.3	1,130	2,000
	WOAI	302.8	990	5,000
Waco	WJAD	418.5	870	500

## Utah

Ogden	KFUR	225.4	1,330	50
Salt Lake C.	KDVL	258.5	1,160	100
	KFUL	499.7	600	50
	KSL	302.8	990	1,000

## Vermont

Burlington	WCAX	254.1	1,180	100
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## Virginia

Arlington	NAA	434.5	690	1,000
Norfolk	WBWB	236.1	1,270	50
Portsmouth	WBEL	209.7	1,430	50
Petersburg	WTAR	265.1	1,140	50
Richmond	KBG	242.2	1,600	500
	WBBL	247.8	1,210	100
	WMBG	220.4	1,380	15
	WRVA	254	1,190	1,000
Roanoke	WDBJ	230.6	1,300	250
Va. Beach	WSEA	468	1,140	500

## Washington

Aberdeen	KXRO	227.1	1,320	50
Everett	KFBL	223.7	1,340	50
Lacey	WV	243.8	1,230	50
Pullman	KWSC	394.5	760	500
Seattle	KFOA	447.5	670	1,000
	KFW	419.3	1,380	100
	KGES	202.6	1,480	100
	KGSL	230.6	1,300	50

## Washington (Continued)

KJR	348.6	960	2,500	
KKP	265.3	1,155	100	
KOMO	305.9	950	1,000	
KPCB	230.6	1,300	50	
KRC	211.1	1,420	50	
KVOS	209.7	1,430	50	
KTCL	277.6	1,060	50	
KTW	394.5	760	1,000	
KUJ	199.9	1,500	10	
KFIO	245.8	1,220	100	
KFPY	245.8	1,220	250	
KGA	260.7	1,150	2,000	
KHQ	370.2	810	1,000	
KVI	234.2	1,280	50	
KMO	254.1	1,180	250	
Walla Walla	KOWW	299.9	1,000	500
Yakima	KFIQ	208.2	1,440	100

## West Virginia

Charleston	WBOU	267.7	1,120	50
Huntington	WSAZ	241.8	1,240	100
Wheeling	WVVA	389.4	770	100

## Wisconsin

Beloit	WEBW	252.5	1,160	500
Camp Lake	WCLO	227.1	1,330	100
East Claire	WTAG	254.1	1,180	500
Fond du Lac	KFJZ	267.7	1,120	100
Kenosha	WKDR	322.4	930	15
La Crosse	WKBI	220.4	1,360	500
Madison	WIBA	239.9	1,160	100
Manitowoc	WOMT	222.1	1,350	50
Milwaukee	WGVW	218.9	1,300	500
	WHAD	293.9	1,020	500
	WSOE	270.1	1,110	500
	WTMJ	293.9	1,020	1,000
Omro	WJBR	227.1	1,320	100
Poyntelle	WIBU	217.3	1,380	50
Reine	WRRS	322.3	930	50
Sishi	WBAR	270.1	1,110	500
Stevens Point	WLR	319	940	1,000
Superior	WBOC	241.8	1,240	250
W. De Pere	WHBY	249.9	1,200	50

## Wyoming

Laramie	KFBU	428.3	700	500
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## Alaska

Anchorage	KFQD	344.6	870	100
Juneau	KFJU	225.4	1,330	50
Ketchikan	KGBU	228.9	1,310	500

## Hawaii

Honolulu	KGU	270.1	1,110	600
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## Philippines

Manila	KZBI	269.9	1,200	20
	KZRM	413	725.1	500
	KZRQ	409	750	500

## Porto Rico

San Juan	WKAQ	340.7	880	500
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## Canada

Bowmanville	CKCW	312.3	960	5,000
Brantford	CFGC	296.9	1,010	50
Burketon	Jk.CK.CW	323.5	910	5,000
Calgary	CFAC	434.5	690	750
	CFCA	434.5	690	1,800
	CJCF	434.5	690	250
	CJCB	434.5	690	250
Charlottetown	CNRC	389.4	690	500
Cobalt	CFCA	312.3	960	100
Edmonton	CKMC	247.8	1,210	5
	CHMA	516.9	580	250
	CNRE	516.9	580	500
	CKUA	516.9	580	500
	CFRE	516.9	580	500
Edward Park	CHCY	516.9	580	250
Fredericton	CFNB	247.8	1,210	25
Halifax	CFBC	322.4	930	100
Hamilton	CHCS	340.7	880	10
	CKOC	340.7	880	50
	CFCH	499.7	690	250
Iroquois Falls	CFCH	267.7	1,120	15
Kmsloops	CFJC	267.7	1,120	15
King	CFRB	291.1	1,030	1,000
	CICQ	410.7	730	10
Kingston	CFMC	267.7	1,120	20
	CFRC	267.7	1,120	500
London	CJGC	323.5	910	500
Midland	CKPR	267.7	1,120	50
Mississauga	CJCU	247.8	1,210	5
Moncton	CNRA	322.4	930	800
Montreal	CFMT	410.7	730	1,650
	CHYC	410.7	730	750
	CKAC	410.7	730	1,200
	CNRM	410.7	730	1,000

## Canada (Continued)

Moose Jaw	CJRM	296.9	1,010	50
Burnaby	CFYC	410.7	730	500
Ottawa	CFGC	410.7	730	500
	CNRO	434.5	690	500
	CFCL	269.9	1,010	50
Preston	CKPC	247.8	1,210	7/4
Quebec	CHRC	340.7	880	5
	CFGL	340.7	880	22 1/2
	CKCV	340.7	880	50
	CNRO	340.7	880	500
Red Deer	CKLK	356.9	840	1,000
Resina	CHWC	312.3	960	15
	CJBR	312.3	960	500
	CKCK	312.3	960	500
	CNRR	312.3	960	500
Saskatoon	CFGC	323.5	910	500
	CHUC	323.5	910	500
	CJWC	323.5	910	250
	CNRS	323.5	910	500
Scarboro	CJYC	291.1	1,030	500
	CFJC	291.1	1,030	500
Sea Island	CJOR	291.1	1,030	50
St. Hyacinthe	CKSH	312.3	960	50
Summerside	CHGS	267.7	1,120	25
Toronto	CFCA	356.9	840	500
	CHIC	356.9	840	500
	CHNC	356.9	840	500
	CJSC	356.9	840	500
	CFCA	356.9	840	500
	CKCL	356.9	840	500
	CKNC	356.9	840	500
	CKSM	291.1	1,030	1,000
	CNRT	356.9	840	500
Unity	CHSC	267.7	1,120	50
Vancouver	CFQO	410.7	730	10
	CFBC	410.7	730	5
	CKCD	410.7	730	1,000
	CKCF	410.7	730	50
	CKWV	410.7	730	10
	CNRY	291.1	1,030	500
Victoria	CFCT	323.5	910	500
Winnipeg	CKY	384.4	780	500
	CNRC	384.4	780	500
Yorkton	CJGX	475.9	630	500

## Canada (Continued from page 48)

<b>CNRC</b>	Calgary, Alta. Can. 434.5m-690kc. 500 watts. Canadian National Railways. Thurs, 7 pm. bedtime store; 9-11. Mountain.
<b>CNRE</b>	Edmonton, Alta. Can. 516.9m-580kc. 500 watts. Canadian National Railways. Wed, 11-12:30 am. Sat, 10-12 mid. Mountain.
<b>CNRM</b>	Montreal, Que., Can. 410.7m-730kc. 1,000-1,650 watts. Canadian National Railways. Announcer, J. S. McArthur. Thurs, 8:45 pm. Eastern daylight.
<b>CNRO</b>	Ottawa, Can. 434.5m-690kc. 500 watts. Canadian National Railways. Announcer, A. W. Ryan. Mon, 8:35-9 pm, 11-12 Thurs, 8:35-9 pm, 10-11, 11-12. Eastern daylight.
<b>CNRQ</b>	Quebec City, Can. 340.7m-880kc. C. N. R.
<b>CNRR</b>	Regina, Sask. Can. 312.3m-960kc. 500 watts. Canadian National Railways. Tues, 8-10 pm. Mountain.
<b>CNRS</b>	Saskatoon, Sask. Can. 323.5m-910kc. 500 watts. Canadian National Railways. Daily, 2:30-3:30 pm. Mountain.
<b>CNRT</b>	Toronto, Ont., Can. 356.9m-840kc. 500 watts. Canadian National Railways. Announcer, E. W. Jackson. Fri, 9-11 pm. Eastern daylight.
<b>CNRV</b>	Vancouver, Can. 291.1m-1,030kc. 500 watts. Canadian National Railways. Announcer, G. A. Wright.
<b>CNRW</b>	Winnipeg, Man., Can. 384.4m-780kc. 500 watts. Canadian National Railways. Wed, Sat, 10 pm. Sun, 9 pm. Central.

## Cuba

<b>PWX</b>	Havana, Cuba. 400m-750kc. 500 watts. Cuban Telephone Co. International Tel. and Teleg. Corp. Mon, Tues, Sat, 8:30-11 pm. Wed, Sun, 8-10 pm. music. Eastern.
<b>2CT</b>	Havana, Cuba. 350m-855kc. 50 watts. Casimiro Pinales.
<b>2FG</b>	Hershey, Cuba. 200m-999.4kc. 20 watts. Alberto A. Ferrera.
<b>3GF</b>	Havana, Cuba. 192m-1540kc. 5 watts. Francisco Williams.
<b>4HP</b>	Havana, Cuba. 205m-1460kc. 200 watts. Cristina V. Vda. Cruet.
<b>5IF</b>	Camaguey, Cuba. 245m-1220kc. 5 watts. Jose L. Cironi.
<b>6IT</b>	Havana, Cuba. 46m-650kc. 5 watts. Jose A. Terry.
<b>7IL</b>	Havana, Cuba. 294m-1020kc. 5 watts. Jose Leiro.
<b>8IA</b>	Havana, Cuba. 305m-980kc. 50 watts. Modesto Alvarez.
<b>9MF</b>	Matanzas, Cuba. 100m-299kc. Moises Fernandez.
<b>10IG</b>	Havana, Cuba. 284m-1055kc. 20 watts. Manuel Y. Salas Music Store. Announcer, Roger Salas. Daily 3-4 pm. music. One day each week, except Sun, 8-10 pm. Eastern.
<b>11IR</b>	Havana, Cuba. 100 watts. R. V. Ulpiano.
<b>12IS</b>	Havana, Cuba. 100 watts. R. V. Ulpiano.
<b>13IT</b>	Havana, Cuba. 100 watts. R. V. Ulpiano.
<b>14IU</b>	Havana, Cuba. 100 watts. R. V. Ulpiano.
<b>15IV</b>	Havana, Cuba. 100 watts. R. V. Ulpiano.
<b>16IW</b>	Havana, Cuba. 100 watts. R. V. Ulpiano.
<b>17IX</b>	Havana, Cuba. 100 watts. R. V. Ulpiano.
<b>18IY</b>	Havana, Cuba. 100 watts. R. V. Ulpiano.
<b>19IZ</b>	Havana, Cuba. 100 watts. R. V. Ulpiano.
<b>20JA</b>	Havana, Cuba. 100 watts. R. V. Ulpiano.
<b>21JB</b>	Havana, Cuba. 100 watts. R. V. Ulpiano.
<b>22JC</b>	Havana, Cuba. 100 watts. R. V. Ulpiano.
<b>23JD</b>	Havana, Cuba. 100 watts. R. V. Ulpiano.
<b>24JE</b>	Havana, Cuba. 100 watts. R. V. Ulpiano.
<b>25JF</b>	Havana, Cuba. 100 watts. R. V. Ulpiano.
<b>26JG</b>	Havana, Cuba. 100 watts. R. V. Ulpiano.
<b>27JH</b>	Havana, Cuba. 100 watts. R. V. Ulpiano.
<b>28JI</b>	Havana, Cuba. 100 watts. R. V. Ulpiano.
<b>29JJ</b>	Havana, Cuba. 100 watts. R. V. Ulpiano.
<b>30JK</b>	Havana, Cuba. 100 watts. R. V. Ulpiano.
<b>31JL</b>	Havana, Cuba. 100 watts. R. V. Ulpiano.
<b>32JM</b>	Havana, Cuba. 100 watts. R. V. Ulpiano.
<b>33JN</b>	Havana, Cuba. 100 watts. R. V. Ulpiano.
<b>34JO</b>	Havana, Cuba. 100 watts. R. V. Ulpiano.
<b>35JP</b>	Havana, Cuba. 100 watts. R. V. Ulpiano.
<b>36JQ</b>	Havana, Cuba. 100 watts. R. V. Ulpiano.
<b>37JR</b>	Havana, Cuba. 100 watts. R. V. Ulpiano.
<b>38JS</b>	Havana, Cuba. 100 watts. R. V. Ulpiano.
<b>39JT</b>	Havana, Cuba. 100 watts. R. V. Ulpiano.
<b>40JU</b>	Havana, Cuba. 100 watts. R. V. Ulpiano.
<b>41JV</b>	Havana, Cuba. 100 watts. R. V. Ulpiano.
<b>42JW</b>	Havana, Cuba. 100 watts. R. V. Ulpiano.
<b>43JX</b>	Havana, Cuba. 100 watts. R. V. Ulpiano.
<b>44JY</b>	Havana, Cuba. 100 watts. R. V. Ulpiano.
<b>45JZ</b>	Havana, Cuba. 100 watts. R. V. Ulpiano.
<b>46KA</b>	Havana, Cuba. 100 watts. R. V. Ulpiano.
<b>47KB</b>	Havana, Cuba. 100 watts. R. V. Ulpiano.
<b>48KC</b>	Havana, Cuba. 100 watts. R. V. Ulpiano.
<b>49KD</b>	Havana, Cuba. 100 watts. R. V. Ulpiano.
<b>50KE</b>	Havana, Cuba. 100 watts. R. V. Ulpiano.

## 2TW

Havana, Cuba. 270m-1110kc. 20 watts. Roberto E. Ramirez.

## 2UF

Havana, Cuba. 355m-844kc. 20 watts. Roberto E. Ramirez.

## 2XA

Havana, Cuba. 230m-1300kc. Lecuona Music Co.

## 2XX

Havana, Cuba. 225m-1333kc. 5 watts. Antonio A. Ginsard.

## 5DW

Matanzas, Cuba. 270m-1110kc. 100 watts. Ramon Sainza Calderon.

## 5EV

Colon, Cuba



# Official Wave Lengths Table

Wave length	Frequency (kilocycles)	Power (watts)	Call signal	Location	Wave length	Frequency (kilocycles)	Power (watts)	Call signal	Location	Wave length	Frequency (kilocycles)	Power (watts)	Call signal	Location	Wave length	Frequency (kilocycles)	Power (watts)	Call signal	Location				
199.9	1,500	15	KGFN Aneta, N. D.	10	KFDZ Mania, Minn.	232.4	1,290	10	KEEY Kellogg, Idaho	750	1,020	250	KGCH Houston, Neb.	250	1,000	WRVA Richmond, Va.	250	WTAE E. Crle, Wis.	250	KGCH Houston, Neb.			
		5	KOLO Durango, Colo.	250	KFJX Edgew'g, Colo.			250	KFPR Los A., Calif.	1,000		500	KFRC Houston, Tex.	1,000		WGL Scarsdale, N. Y.	500	WHDH Milw., Wis.	1,000	WGL Scarsdale, N. Y.			
		15	KUJ Seattle, Wash.	50	KKCB Okla. C., Okla.	100	KFQZ Ft. Worth, Tex.	100	KFQZ Ft. Worth, Tex.	100		500	WLBW Oil City, Pa.	1,000		WJAD Wash., D. C.	1,000	WTMJ Milw., Wis.	1,000	WLBW Oil City, Pa.			
		15	KWBS Portland, Ore.	100	KCLR Long B. Cal.	500	KLIT Austin, Tex.	100	WBLT Tilton, N. H.	256.3	1,170	50	KFUS Oakland, Calif.	100		1,000	WBSA Va. Bch., Va.	500	WBEJ N. Y., N. Y.	296.9	1,010	500	KOW S. Jose, Calif.
		15	WKBY B'ham, Ala.	250	KGFG Okla. C., Okla.	250	KRLO Los Ang., Cal.	100	WBRM Memphis, Tenn.			1,000	KRTE Berkeley, Calif.	1,000		500	KLOA Ft. Stevie, Ark.	500	WADC Akron, Ohio	500	WADC Akron, Ohio		
		15	WNBL B'ham, Ala.	250	KRLO Los Ang., Cal.	250	WAGS Lexington, Mass.	100	WJKS Gary, Ind.			1,000	WBRB R'ville, N. Y.	1,000		500	WPEE Lake Plac., Fla.	100	WPCS Cloucer, Mass.	1,000	WPCS Cloucer, Mass.		
		250	WRAH Prvde, R. I.	100	WCLJ Joliet, Ill.	100	WDBZ Kinest'n, N.Y.	100	WLBH F'rmdale, N.Y.			500	WCSO Springfield, O.	1,000		2,000	WMAK Haverh., N.Y.	250	WSMK Dayton, O.	1,000	WMAK Haverh., N.Y.		
		100	WGMU N. Y., N. Y.	100	WDBZ Kinest'n, N.Y.	100	WEHS Evanston, Ill.	200	WMBJ Monaca, Pa.			1,000	WBT Charlotte, N. C.	1,000		500	WVAC Wash., D. C.	1,000	WVAC Wash., D. C.	299.8	1,000	250	KFWO Avalon, Calif.
		100	WHEM Chicago, Ill.	100	WDFC Chicago, Ill.	150	WDFC Chicago, Ill.	150	WQOO Waukegan, Ill.			1,000	WVAC Wash., D. C.	1,000		500	WVAC Wash., D. C.	1,000	WVAC Wash., D. C.	299.8	1,000	500	KMOX Wash., D. C.
		100	WIBJ Chicago, Ill.	100	WDFC Chicago, Ill.	150	WDFC Chicago, Ill.	150	WQOO Waukegan, Ill.			1,000	WVAC Wash., D. C.	1,000		500	WVAC Wash., D. C.	1,000	WVAC Wash., D. C.	299.8	1,000	500	KMOX Wash., D. C.
		100	WIBM Chicago, Ill.	100	WDFC Chicago, Ill.	150	WDFC Chicago, Ill.	150	WQOO Waukegan, Ill.			1,000	WVAC Wash., D. C.	1,000		500	WVAC Wash., D. C.	1,000	WVAC Wash., D. C.	299.8	1,000	500	KMOX Wash., D. C.
		100	WKBG Boston, Mass.	100	WDFC Chicago, Ill.	150	WDFC Chicago, Ill.	150	WQOO Waukegan, Ill.			1,000	WVAC Wash., D. C.	1,000		500	WVAC Wash., D. C.	1,000	WVAC Wash., D. C.	299.8	1,000	500	KMOX Wash., D. C.
		100	WRMU N. Y., N. Y.	100	WDFC Chicago, Ill.	150	WDFC Chicago, Ill.	150	WQOO Waukegan, Ill.			1,000	WVAC Wash., D. C.	1,000		500	WVAC Wash., D. C.	1,000	WVAC Wash., D. C.	299.8	1,000	500	KMOX Wash., D. C.
		100	WRMU N. Y., N. Y.	100	WDFC Chicago, Ill.	150	WDFC Chicago, Ill.	150	WQOO Waukegan, Ill.			1,000	WVAC Wash., D. C.	1,000		500	WVAC Wash., D. C.	1,000	WVAC Wash., D. C.	299.8	1,000	500	KMOX Wash., D. C.
		100	WRMU N. Y., N. Y.	100	WDFC Chicago, Ill.	150	WDFC Chicago, Ill.	150	WQOO Waukegan, Ill.			1,000	WVAC Wash., D. C.	1,000		500	WVAC Wash., D. C.	1,000	WVAC Wash., D. C.	299.8	1,000	500	KMOX Wash., D. C.
		100	WRMU N. Y., N. Y.	100	WDFC Chicago, Ill.	150	WDFC Chicago, Ill.	150	WQOO Waukegan, Ill.			1,000	WVAC Wash., D. C.	1,000		500	WVAC Wash., D. C.	1,000	WVAC Wash., D. C.	299.8	1,000	500	KMOX Wash., D. C.
		100	WRMU N. Y., N. Y.	100	WDFC Chicago, Ill.	150	WDFC Chicago, Ill.	150	WQOO Waukegan, Ill.			1,000	WVAC Wash., D. C.	1,000		500	WVAC Wash., D. C.	1,000	WVAC Wash., D. C.	299.8	1,000	500	KMOX Wash., D. C.
		100	WRMU N. Y., N. Y.	100	WDFC Chicago, Ill.	150	WDFC Chicago, Ill.	150	WQOO Waukegan, Ill.			1,000	WVAC Wash., D. C.	1,000		500	WVAC Wash., D. C.	1,000	WVAC Wash., D. C.	299.8	1,000	500	KMOX Wash., D. C.
		100	WRMU N. Y., N. Y.	100	WDFC Chicago, Ill.	150	WDFC Chicago, Ill.	150	WQOO Waukegan, Ill.			1,000	WVAC Wash., D. C.	1,000		500	WVAC Wash., D. C.	1,000	WVAC Wash., D. C.	299.8	1,000	500	KMOX Wash., D. C.
		100	WRMU N. Y., N. Y.	100	WDFC Chicago, Ill.	150	WDFC Chicago, Ill.	150	WQOO Waukegan, Ill.			1,000	WVAC Wash., D. C.	1,000		500	WVAC Wash., D. C.	1,000	WVAC Wash., D. C.	299.8	1,000	500	KMOX Wash., D. C.
		100	WRMU N. Y., N. Y.	100	WDFC Chicago, Ill.	150	WDFC Chicago, Ill.	150	WQOO Waukegan, Ill.			1,000	WVAC Wash., D. C.	1,000		500	WVAC Wash., D. C.	1,000	WVAC Wash., D. C.	299.8	1,000	500	KMOX Wash., D. C.
		100	WRMU N. Y., N. Y.	100	WDFC Chicago, Ill.	150	WDFC Chicago, Ill.	150	WQOO Waukegan, Ill.			1,000	WVAC Wash., D. C.	1,000		500	WVAC Wash., D. C.	1,000	WVAC Wash., D. C.	299.8	1,000	500	KMOX Wash., D. C.
		100	WRMU N. Y., N. Y.	100	WDFC Chicago, Ill.	150	WDFC Chicago, Ill.	150	WQOO Waukegan, Ill.			1,000	WVAC Wash., D. C.	1,000		500	WVAC Wash., D. C.	1,000	WVAC Wash., D. C.	299.8	1,000	500	KMOX Wash., D. C.
		100	WRMU N. Y., N. Y.	100	WDFC Chicago, Ill.	150	WDFC Chicago, Ill.	150	WQOO Waukegan, Ill.			1,000	WVAC Wash., D. C.	1,000		500	WVAC Wash., D. C.	1,000	WVAC Wash., D. C.	299.8	1,000	500	KMOX Wash., D. C.
		100	WRMU N. Y., N. Y.	100	WDFC Chicago, Ill.	150	WDFC Chicago, Ill.	150	WQOO Waukegan, Ill.			1,000	WVAC Wash., D. C.	1,000		500	WVAC Wash., D. C.	1,000	WVAC Wash., D. C.	299.8	1,000	500	KMOX Wash., D. C.
		100	WRMU N. Y., N. Y.	100	WDFC Chicago, Ill.	150	WDFC Chicago, Ill.	150	WQOO Waukegan, Ill.			1,000	WVAC Wash., D. C.	1,000		500	WVAC Wash., D. C.	1,000	WVAC Wash., D. C.	299.8	1,000	500	KMOX Wash., D. C.
		100	WRMU N. Y., N. Y.	100	WDFC Chicago, Ill.	150	WDFC Chicago, Ill.	150	WQOO Waukegan, Ill.			1,000	WVAC Wash., D. C.	1,000		500	WVAC Wash., D. C.	1,000	WVAC Wash., D. C.	299.8	1,000	500	KMOX Wash., D. C.
		100	WRMU N. Y., N. Y.	100	WDFC Chicago, Ill.	150	WDFC Chicago, Ill.	150	WQOO Waukegan, Ill.			1,000	WVAC Wash., D. C.	1,000		500	WVAC Wash., D. C.	1,000	WVAC Wash., D. C.	299.8	1,000	500	KMOX Wash., D. C.
		100	WRMU N. Y., N. Y.	100	WDFC Chicago, Ill.	150	WDFC Chicago, Ill.	150	WQOO Waukegan, Ill.			1,000	WVAC Wash., D. C.	1,000		500	WVAC Wash., D. C.	1,000	WVAC Wash., D. C.	299.8	1,000	500	KMOX Wash., D. C.
		100	WRMU N. Y., N. Y.	100	WDFC Chicago, Ill.	150	WDFC Chicago, Ill.	150	WQOO Waukegan, Ill.			1,000	WVAC Wash., D. C.	1,000		500	WVAC Wash., D. C.	1,000	WVAC Wash., D. C.	299.8	1,000	500	KMOX Wash., D. C.
		100	WRMU N. Y., N. Y.	100	WDFC Chicago, Ill.	150	WDFC Chicago, Ill.	150	WQOO Waukegan, Ill.			1,000	WVAC Wash., D. C.	1,000		500	WVAC Wash., D. C.	1,000	WVAC Wash., D. C.	299.8	1,000	500	KMOX Wash., D. C.
		100	WRMU N. Y., N. Y.	100	WDFC Chicago, Ill.	150	WDFC Chicago, Ill.	150	WQOO Waukegan, Ill.			1,000	WVAC Wash., D. C.	1,000		500	WVAC Wash., D. C.	1,000	WVAC Wash., D. C.	299.8	1,000	500	KMOX Wash., D. C.
		100	WRMU N. Y., N. Y.	100	WDFC Chicago, Ill.	150	WDFC Chicago, Ill.	150	WQOO Waukegan, Ill.			1,000	WVAC Wash., D. C.	1,000		500	WVAC Wash., D. C.	1,000	WVAC Wash., D. C.	299.8	1,000	500	KMOX Wash., D. C.
		100	WRMU N. Y., N. Y.	100	WDFC Chicago, Ill.	150	WDFC Chicago, Ill.	150	WQOO Waukegan, Ill.			1,000	WVAC Wash., D. C.	1,000		500	WVAC Wash., D. C.	1,000	WVAC Wash., D. C.	299.8	1,000	500	KMOX Wash., D. C.
		100	WRMU N. Y., N. Y.	100	WDFC Chicago, Ill.	150	WDFC Chicago, Ill.	150	WQOO Waukegan, Ill.			1,000	WVAC Wash., D. C.	1,000		500	WVAC Wash., D. C.	1,000	WVAC Wash., D. C.	299.8	1,000	500	KMOX Wash., D. C.
		100	WRMU N. Y., N. Y.	100	WDFC Chicago, Ill.	150	WDFC Chicago, Ill.	150	WQOO Waukegan, Ill.			1,000	WVAC Wash., D. C.	1,000		500	WVAC Wash., D. C.	1,000	WVAC Wash., D. C.	299.8	1,000	500	KMOX Wash., D. C.
		100	WRMU N. Y., N. Y.	100	WDFC Chicago, Ill.	150	WDFC Chicago, Ill.	150	WQOO Waukegan, Ill.			1,000	WVAC Wash., D. C.	1,000		500	WVAC Wash., D. C.	1,000	WVAC Wash., D. C.	299.8	1,000	500	KMOX Wash., D. C.
		100	WRMU N. Y., N. Y.	100	WDFC Chicago, Ill.	150	WDFC Chicago, Ill.	150	WQOO Waukegan, Ill.			1,000	WVAC Wash., D. C.	1,000		500	WVAC Wash., D. C.	1,000	WVAC Wash., D. C.	299.8	1,000	500	KMOX Wash., D. C.
		100	WRMU N. Y., N. Y.	100	WDFC Chicago, Ill.	150	WDFC Chicago, Ill.	150	WQOO Waukegan, Ill.			1,000	WVAC Wash., D. C.	1,000		500	WVAC Wash., D. C.	1,000	WVAC Wash., D. C.	299.8	1,000	500	KMOX Wash., D. C.
		100	WRMU N. Y., N. Y.	100	WDFC Chicago, Ill.	150	WDFC Chicago, Ill.	150	WQOO Waukegan, Ill.			1,000	WVAC Wash., D. C.	1,000		500	WVAC Wash., D. C.	1,000	WVAC Wash., D. C.	299.8	1,000	500	KMOX Wash., D. C.
		100	WRMU N. Y., N. Y.	100	WDFC Chicago, Ill.	150	WDFC Chicago, Ill.	150	WQOO Waukegan, Ill.			1,000	WVAC Wash., D. C.	1,000		500	WVAC Wash., D. C.	1,000	WVAC Wash., D. C.	299.8	1,000	500	KMOX Wash., D. C.
		100	WRMU N. Y., N. Y.	100	WDFC Chicago, Ill.	150	WDFC Chicago, Ill.	150	WQOO Waukegan, Ill.			1,000	WVAC Wash., D. C.	1,000		500	WVAC Wash., D. C.	1,000	WVAC Wash., D. C.	299.8	1,000	500	KMOX Wash., D. C.
		100	WRMU N. Y., N. Y.	100	WDFC Chicago, Ill.	150	WDFC Chicago, Ill.	150	WQOO Waukegan, Ill.			1,000	WVAC Wash., D. C.	1,000		500	WVAC Wash., D. C.	1,000	WVAC Wash., D. C.	299.8	1,000	500	KMOX Wash., D. C.
		100	WRMU N. Y., N. Y.	100	WDFC Chicago, Ill.	150	WDFC Chicago, Ill.	150	WQOO Waukegan, Ill.			1,000	WVAC Wash., D. C.	1,000		500	WVAC Wash., D. C.	1,000	WVAC Wash., D. C.	299.8	1,000	500	KMOX Wash., D. C.
		100	WRMU N. Y., N. Y.	100	WDFC Chicago, Ill.	150	WDFC Chicago, Ill.	150	WQOO Waukegan, Ill.			1,000	WVAC Wash., D. C.	1,000		500	WVAC Wash., D. C.	1,000	WVAC Wash., D. C.	299.8	1,000	500	KMOX Wash., D. C.
		100	WRMU N. Y., N. Y.	100	WDFC Chicago, Ill.	150	WDFC Chicago, Ill.	150	WQOO Waukegan, Ill.			1,000	WVAC Wash., D. C.	1,000		500	WVAC Wash., D. C.	1,000	WVAC Wash., D. C.	299.8	1,000	500	KMOX Wash., D. C.
		100	WRMU N. Y., N. Y.	100	WDFC Chicago, Ill.	150	WDFC Chicago, Ill.	150	WQOO Waukegan, Ill.			1,000	WVAC Wash., D. C.	1,000		500	WVAC Wash., D. C.	1,000	WVAC Wash., D. C.	299.8	1,000	500	KMOX Wash., D. C.
		100	WRMU N. Y., N. Y.	100	WDFC Chicago, Ill.	150	WDFC Chicago, Ill.	150	WQOO Waukegan, Ill.			1,000	WVAC Wash., D. C.	1,000		500	WVAC Wash., D. C.	1,000	WVAC Wash., D. C.	299.8	1,000	500	KMOX Wash., D. C.
		100	WRMU N. Y., N. Y.	100	WDFC Chicago, Ill.	150	WDFC Chicago, Ill.	150	WQOO Waukegan, Ill.			1,000	WVAC Wash., D. C.	1,000		500	WVAC Wash., D. C.	1,000					



Wave length	Frequency (kilocycles)	Power (watts)	Call signal	Location	Wave length	Frequency (kilocycles)	Power (watts)	Call signal	Location	Wave length	Frequency (kilocycles)	Power (watts)	Call signal	Location	Wave length	Frequency (kilocycles)	Power (watts)	Call signal	Location																																																										
379.5	790	750 500 30,000	KMMJ C'y. Cen. Neb. WCAJ Unl. Pl. Neb. WJAS Schem. N. Y. WHAZ Troy, N. Y.	500 500 500	KWSC Pulm'n. Wb. WNY N. York, N. J. WPAP C'P's'd. N. J. WQAO C'P's'd. N. J.	428.3	700	500 5,000 500	KFBU Laram. Wyo. WLW Harrison, O. WMAF S. Dart, Mass.	468.5	640	5,000 500 1,000	KFI Los Angeles, Cal. WOS Jef. City, Mo. WRC Washing'n, D.C.	508.2	590	500 500 1,000	KLX Oakland, Cal. WIP Philadelphia, Pa. WOO Phila., Pa. WOW Omaha, Neb.	384.4	780	5,000 1,000 250 250 100 100 500 100	KGO Oakland, Calif. KTMH H. Spgs, Ark. KWCR Ce. Rap. Ia. WB50 W.H.S., Mass. W2AO Btmo, Md. WCBM Btmo, Md. WJAM C'd R'ps., Ia. WMBF Mi. Beh., Fla. WSRO Midtown, O.	399.8	750	200 1,000 3,500	KFKA Gre'nly, Colo. WEAR Cl'v'd, O. WTAM Cl'v'd, O.	440.9	680	100 500 500 500	KFJY Ft. Dodge, Ia. KFMR So. C'y, Ia. KSD S. Diego, Cal. WIBG Elk's Pk., Pa. WJR-WCX Ph. Mich. WSBF St. Louis, Mo.	475.9	630	250 100 1,000	KOW Denver, Col. WIAS Burlington, Ia. WSB Atlanta, Ga.	516.9	580	500 500 500	WCAE Pitts'gh, Pa. WMC Memphis, Tenn. WTR Wrcstr., Mass.	389.4	770	500 1,000 1,000 500 100	WAAF Chicago, Ill. WABI Bangor, Me. WOB St. Col. N. Me. WJBT Chicago, Ill. WVVA Wbl., W. V.	413	726	500	KZRM Manila, P. I.	447.5	670	1,000 500 500 1,000 500	KFOA Seal., Wash. WEEI Boston, Mass. WJAD Waco, Tex. WJAO Chicago, Ill. WQJ Chicago, Ill.	483.6	620	250 1,500 250 1,000 1,000	KUSD Vermillion, S.D. WFL Chicago, Ill. WEAL Ithaca, N. Y. WEMC B'n's, Mich. WJAR Providence, R.I. WLTS Chicago, Ill.	526	570	2,500 2,500 500	KFKX Hastings, Neb. WFW Chicago, Ill. KMTR Los Ang's, Cal.	394.5	760	500 5,000 1,000 1,000	KFDY B'k's, S. Dak. KMA Shenandoah, Ia. KOB St. Col. N. Me. KTW Seattle, Wash. KWKH Shrevep't, La.	422.3	710	1,000 500	KPO San Fran., Cal. WOR Newk'n, N. J. WSUI Iowa City, Ia.	461.3	650	2,000 100	KFNF Shenand'h, Ia. KICK Anita, Ia.	493.7	600	50 1,500	KFUT S. L. City, U. WBAP Ft. Worth, Tx.	545.1	550	500 500 750	KFUO St. Louis, Mo. KSD St. Louis, Mo. WMAK Lockport, N.Y.
389.4	770	500 1,000 1,000 500 100	WAAF Chicago, Ill. WABI Bangor, Me. WOB St. Col. N. Me. WJBT Chicago, Ill. WVVA Wbl., W. V.	413	726	500	KZRM Manila, P. I.	447.5	670	1,000 500 500 1,000 500	KFOA Seal., Wash. WEEI Boston, Mass. WJAD Waco, Tex. WJAO Chicago, Ill. WQJ Chicago, Ill.	483.6	620	250 1,500 250 1,000 1,000	KUSD Vermillion, S.D. WFL Chicago, Ill. WEAL Ithaca, N. Y. WEMC B'n's, Mich. WJAR Providence, R.I. WLTS Chicago, Ill.	526	570	2,500 2,500 500	KFKX Hastings, Neb. WFW Chicago, Ill. KMTR Los Ang's, Cal.	394.5	760	500 5,000 1,000 1,000	KFDY B'k's, S. Dak. KMA Shenandoah, Ia. KOB St. Col. N. Me. KTW Seattle, Wash. KWKH Shrevep't, La.	422.3	710	1,000 500	KPO San Fran., Cal. WOR Newk'n, N. J. WSUI Iowa City, Ia.	461.3	650	2,000 100	KFNF Shenand'h, Ia. KICK Anita, Ia.	493.7	600	50 1,500	KFUT S. L. City, U. WBAP Ft. Worth, Tx.	545.1	550	500 500 750	KFUO St. Louis, Mo. KSD St. Louis, Mo. WMAK Lockport, N.Y.																																						
394.5	760	500 5,000 1,000 1,000	KFDY B'k's, S. Dak. KMA Shenandoah, Ia. KOB St. Col. N. Me. KTW Seattle, Wash. KWKH Shrevep't, La.	422.3	710	1,000 500	KPO San Fran., Cal. WOR Newk'n, N. J. WSUI Iowa City, Ia.	461.3	650	2,000 100	KFNF Shenand'h, Ia. KICK Anita, Ia.	493.7	600	50 1,500	KFUT S. L. City, U. WBAP Ft. Worth, Tx.	545.1	550	500 500 750	KFUO St. Louis, Mo. KSD St. Louis, Mo. WMAK Lockport, N.Y.																																																										

### CLASSIFIED ADVERTISEMENTS

**H**OW about that new set you want to buy? What are you going to do with the old one? A Radio Digest classified advertisement will sell it for you. Rates are twenty cents a word for each insertion. Five per cent discount for four insertions, 10 per cent discount for six insertions, 15 per cent discount for twelve insertions, 20 per cent discount for twenty-four insertions (each issue for 1 year). Name and address are counted. Two initials count one word. Cash must accompany order. Minimum of ten words. Objectionable and misleading advertisements not accepted.

### Business Opportunities

**LAND FREE** if planted to bananas. Bananas bear a full crop the second year. \$5.00 monthly will plant five acres, which should pay \$1,500 profit annually. Reliable Companies will cultivate and market your bananas for 1/3. Bananas ripen every day and you get your check every 30 days. For particulars write: Jantha Plantations Co., Empire Building, Block 978, Pittsburgh, Pa.

### Employment

**Agents**  
**RADIO AGENTS—Make Big Money—Easy!** Selling Marvelous New Sets and accessories. Buy from factory at lowest prices. Get New Catalog with thousands of nationally advertised bargains. FREE Call Book. Write today. American Auto and Radio Co., Dept. 118, American Radio Bldg., Kansas City, Mo.

**WE PAY \$48 a week, furnish auto and expenses to introduce our Soap and Washing Powder.** Buss-Beach Company, Dept. A186, Chippewa Falls, Wis.

**Male Help**  
Government Forest Rangers, Meat Inspectors, Patrol Guards, Special Agents, Mail Clerks, Chauffeur-Carriers, needed often. \$125-\$250 month. "How to Qualify" mailed Free. Write, Ozment, 206, St. Louis, Mo.

**Situation Wanted**  
**PUBLICITY DIRECTOR** middle western radio station, newspaper and house organ experience, desires affiliation east of the Mississippi. Box 100, Radio Digest.

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**New Radio Maps.** We are now able to supply our readers with new radio maps, showing location of stations, list of all stations by call letters. Come folded in cover, but may be used for pasting on cardboard. Size 3x3 1/4". Send 25 cents stamps or coin to Shopping Service, Radio Digest, 510 N. Dearborn St., Chicago, Ill.

**Miscellaneous**  
**The new and improved Proof of Reception Cards** are the most practical and convenient proof of reception of those distant stations. Contains spaces for complete reception record, dial settings, call letters, stamps and signature of announcer. Handy size, 3x5 inches, 150 for \$1 or send 25 cents (stamps or coin) for sample packages. Shopping Service, Radio Digest, 510 North Dearborn St., Chicago, Ill.

**Patent Attorneys**  
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**BODINE DELUXE LOOP**

**Radio's Most Beautiful Loop!**  
*and the most efficient too!*

A piece of fine solid wire, whose striking beauty of line and finish is the most outstanding feature—until you have used one on a radio set. You will then marvel at the remarkable pickup ability of a loop so small and compact, its keen directional qualities and the convenience of its exclusive plug and jack mounting which eliminates trailing and entangling connecting wires.

The Bodine Deluxe Loop gives best results on all superheterodynes, and can be used on many other sets. Made in two sizes: Standard for superheterodynes and set tuning with .0025 m.f. condensers, and Special— for set tuning with .00125 m.f. condensers. Both at \$12.00—write your dealer or sent postpaid upon receipt of price. **BODINE ELECTRIC CO., 2260 W. Ohio St., Chicago, Ill.**

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**SATISFACTION GUARANTEED**

Charges any type of storage A or B battery, using a few cents worth of ordinary household current, either alternating or direct. Cannot injure battery set, complete directions enclosed. Anyone can operate it. No expensive "extra" to buy. Why pay \$10.00 to \$15.00 for a charger when you can get this splendid GUARANTEED R. B. Charger by mailing us two dollars (bills, money order, check or stamps) plus ten cents in stamps or coin to pay mailing costs. Charger will be sent postpaid. If you are not satisfied, return within five days and we will refund your money. Order at once—**TODAY.**

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Tune out a poor program and bring in a good one—without leaving your easy chair. Only tuning unit of its kind.

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Easily attached to any single disc receiver with removable dial by removing old dial and attaching Remote Control adapter plate.

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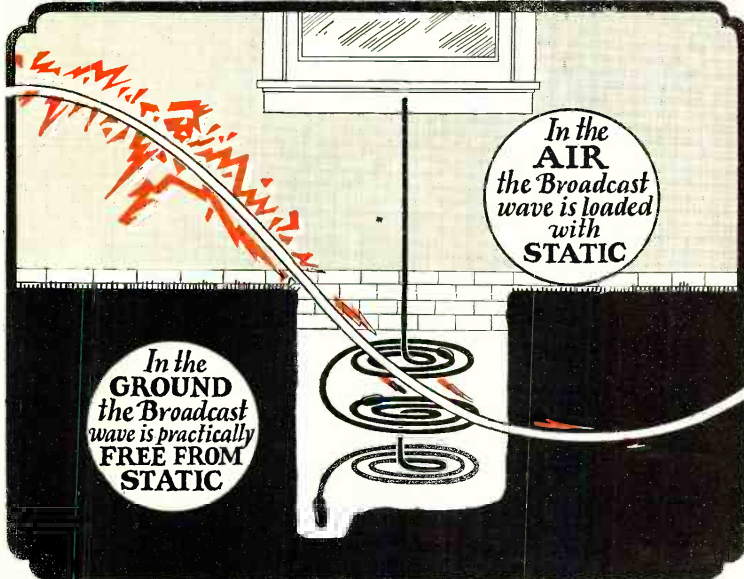
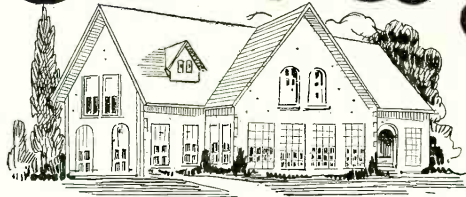
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# are roof and loop aerials doomed?

Why, when modern radio sets are built to reproduce music in all its original beauty, should you tolerate static and other foreign noises which the air is filled? That's why we ask, "are roof and loop aerials doomed?" Because you no longer need to put up with noisy reception from the air. Clear, loud, static-free, noise-free reception from the GROUND is now possible with your present set. All you need is a Subantenna.



## SUBANTENNA

- does away with **STATIC** nuisance
- gives crystal **CLARITY**  
*Summer and Winter*
- increases **DISTANCE**
- improves **SELECTIVITY**

Testing laboratories find, and users testify that SUBANTENNA is, beyond all doubt, the greatest means of improving radio reception yet placed within the reach of listeners. Freedom from static nuisance in all seasons and weathers—greater distance—better selectivity—all are made possible by this great, new underground antenna.

### Thousands know the joy of Radio with Subantenna

"I get plenty of stations with my Subantenna, on the loud speaker, that I have never been able to reach with my outside aerial. It absolutely cuts down interference to the minimum.

**cuts static out too—not just partly out—but ALL out.**

H. S. M., North Carolina.

#### Results—Almost Unbelievable!

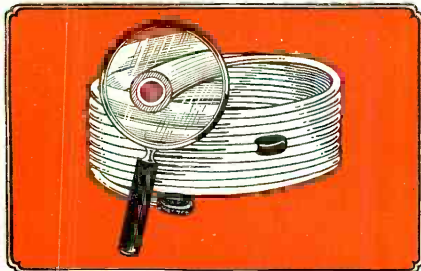
"After 4 years of testing aerials I at last found the master in the Subantenna. The first night I used it was a very hot summer night. Static was very bad on my outdoor aerial. I connected my Subantenna and one could hardly believe the results. It was wonderful."—F. L. C., Mass.

#### Better Than Music from the Air

"We have the Subantenna installed and it is all you claim it to be. It works fine, we enjoy it very much. We would not want to go back on the high-in-the-air aerial again as we get so much better reception on Subantenna."—A. J. L., Maine.

#### Surprised and Satisfied!

"I received the Subantenna and installed it the same night and believe me I was surprised with the result for I was quite suspicious about it. I am well satisfied."—R. E. G., Canada.



### Uses Static-Free Ground Waves

The same radio wave you have always taken out of the air, also travels through the ground. Only, in the ground, the wave is practically static-free! Subantenna intercepts the broadcast wave while it is in the ground, and brings it to your set unadulterated as when broadcasted. Think what this means to you! Loud, clear distance summer and winter, regardless of how much static or noise there is in the air. No wonder thousands of fans have taken advantage of our FREE TRIAL OFFER, then permanently changed to Subantenna.

#### Does Away with the Unsightly Cluttering-Up of Roof Tops

The same device which will make radio a thousand fold greater pleasure for you, will also alleviate the need for cluttering up your roof top with a tangle of wires, posts and cross sticks. Only a short lead-in comes out of the ground from Subantenna up to your set—a wire so small it cannot be noticed. Quite a contrast to the long, dangling lead-in the roof-type aerial requires—and what a joy to be rid of the sprawling, ungainly looking loop. If Subantenna did nothing more than merely do away with the roof and loop types of aerials it would be worth its price many times over

#### Very Easy to Install

No climbing around on slippery roofs to install Subantenna. No frames to build—no insulators to fool with. Just dig a 3-foot hole in your basement or outside your house, bury Subantenna, connect it to your set, and the job is done. Anyone can do it, with assurance

of the same kind of perfect results fans are constantly writing us about. And, when once installed, Subantenna

#### Never Needs Attention

Day in, day out, year after year Subantenna provides the same loud, clear reception. Never needs cleaning or repairing like an aerial does, and of course, it can't blow down. In fact, Subantenna improves with time. The harder the earth becomes packed around it, the louder Subantenna brings the stations in.

**TRY IT ON YOUR SET FREE**

Install Subantenna. Leave your old aerial up. Select a bad night when DX is almost impossible with the ordinary aerial. Make a comparison station for station, connecting first your aerial, then Subantenna. If, from stations that are just a mess of jumbled noise with the old aerial, you don't get reception that rivals local in sweetness and clarity the instant you switch to Subantenna, this test won't cost you even a single penny. Obtain a Subantenna from your dealer or send coupon at once for scientific explanation of Subantenna and for particulars of GUARANTEE and FREE TRIAL OFFER. SEND COUPON NOW!

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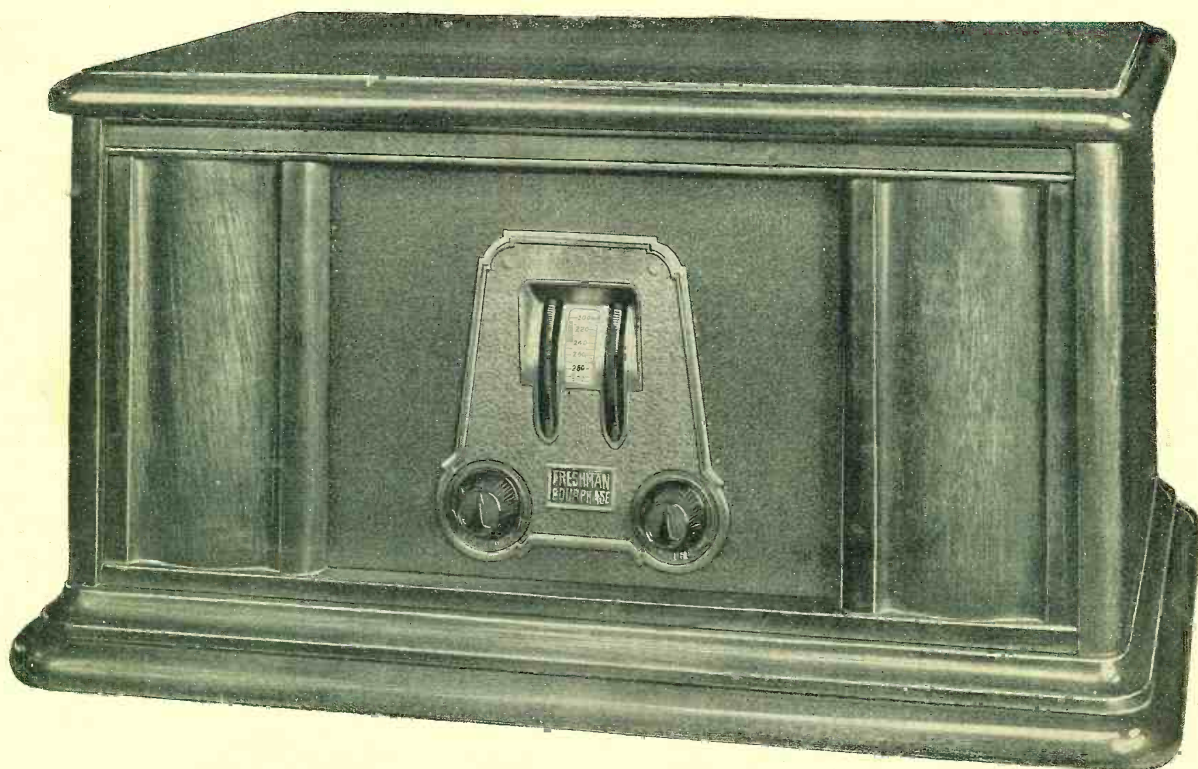
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