

All Wave Length Changes Up-to-Date

Radio Digest

JULY 1928

JANUARY, 1928

TWENTY-FIVE CENTS



*Official
Call Book
and Log
Complete This Issue*

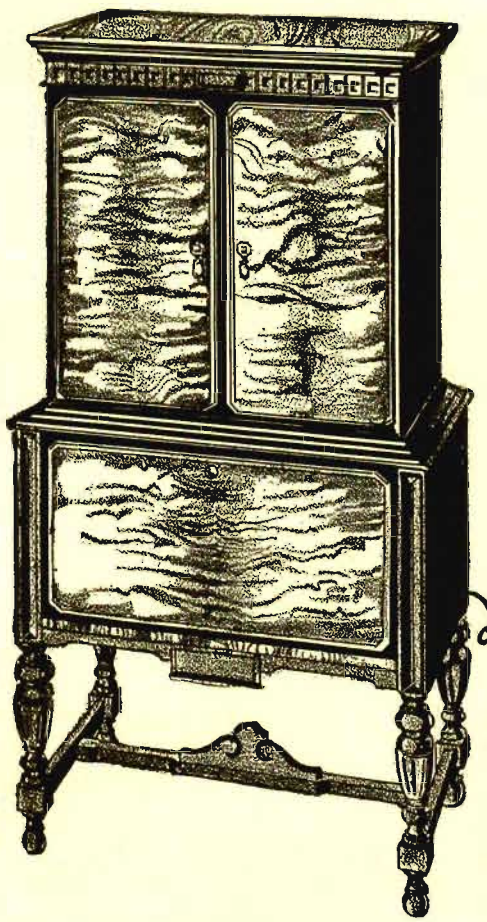
EDNICE JOHNSON - KOA

That Christmas Set; CKY Gets Its Man; Donald Morgan Announcing; Orchestra Ballot; Marconi Interviewed; Karas AC-Equamatic; SOS Rescues Miners; How of Broadcasting

no { acids
trouble
batteries
water
excuses
makeshifts

THE
ELECTRIC
RADIO

The cabinet of model G-5, illustrated here, is without a doubt one of the finest that ever housed a radio set. It is panelled entirely of the most carefully selected genuine burl Walnut. Contains a large cone-speaker of great volume and superb tone. Truly a masterpiece of the cabinet makers art.



This all electric Freshman Equaphase embodies many new features—

- four tuned circuits for selectivity.
- Equaphase system of stabilization prevents all oscillations.
- single drive—just one-control.
- drum type illuminated dial for beauty—calibrated in wavelengths for efficiency.

*Always Ready—
Always Right*

*Your light
socket supplies
all the power.*

\$250 Complete Ready to Operate

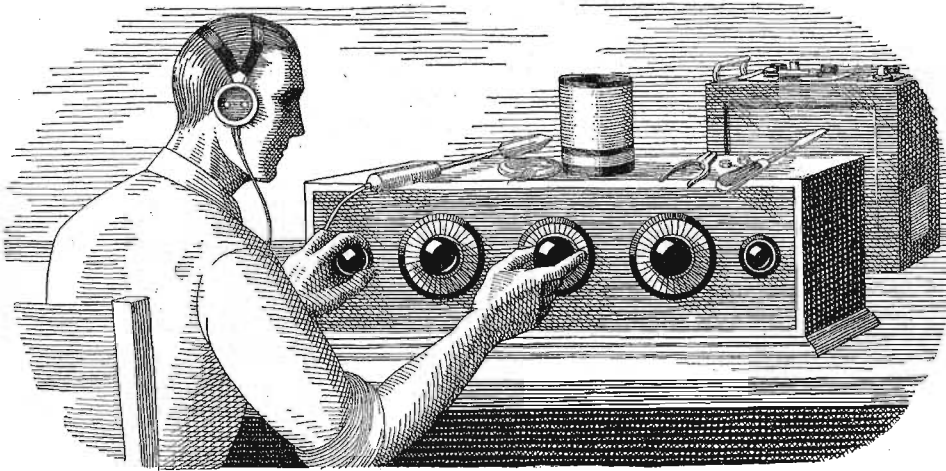
A Freshman development—licensed under patents; RCA—General Electric Co.—Westinghouse Electric & Mfg. Co. and American Tel. & Tel. Co.

FRESHMAN
EQUAPHASE

Sold on Convenient Terms

by Authorized Freshman Dealers Only

CHAS. FRESHMAN CO., INC., FRESHMAN BUILDING, NEW YORK
CHICAGO LOS ANGELES



If all the Radio sets I've "fooled" with in my time were piled on top of each other, they'd reach about halfway to Mars. The trouble with me was that I thought I knew so much about Radio that I really didn't know the first thing. I thought Radio was a plaything—that was all I could see in it for me.

I Thought Radio Was a Plaything

But Now My Eyes Are Opened, and I'm Making Over \$100 a Week!

\$50 a week! Man alive, just one year ago a salary that big would have been the height of my ambition.

Twelve months ago I was scrimping along on starvation wages, just barely making both ends meet. It was the same old story—a little job, a salary just as small as the job—while I myself had been dragging along in the rut so long I couldn't see over the sides.

If you'd told me a year ago that in twelve months' time I would be making \$100 and more every week in the Radio business—whew! I know I'd have thought you were crazy. But that's the sort of money I'm pulling down right now—and in the future I expect even more. Why only today—

But I'm getting ahead of my story. I was hard up a year ago because I was kidding myself, that's all—not because I had to be. I could have been holding then the same sort of job I'm holding now, if I'd only been wise to myself. If you've fooled around with Radio, but never thought of it as a serious business, maybe you're in just the same boat I was. If so, you'll want to read how my eyes were opened for me.

WHEN broadcasting first became the rage, several years ago, I first began my dabbling with the new art of Radio. I was "nuts" about the subject, like many thousands of other fellows all over the country. And no wonder! There's a fascination—something that grabs hold of a fellow—about twirling a little knob and suddenly listening to a voice speaking a thousand miles away! Twirling it a little more and listening to the mysterious dots and dashes of steamers far at sea. Even today I get a thrill from this strange force. In those days, many times I stayed up almost the whole night trying for DX. Many times I missed supper because I couldn't be dragged away from the latest circuit I was trying out.

I never seemed to get very far with it, though. I used to read the Radio magazines and occasionally

a Radio book, but I never understood the subject very clearly, and lots of things I didn't see through at all.

So, up to a year ago, I was just a dabbler—I thought Radio was a plaything. I never realized what an enormous, fast growing industry Radio had come to be—employing thousands and thousands of trained men. I usually stayed home in the evenings after work, because I didn't make enough money to go out very much. And generally during the evening I'd tinker up a little with Radio—a set of my own or some friend's. I even made a little spare change this way, which helped a lot, but I didn't know enough to go very far with such work.

And as for the idea that a splendid Radio job might be mine, if I made a little effort to prepare for it—such an idea never entered my mind. When a friend suggested it to me one year ago, I laughed at him.

"You're kidding me," I said.

"I'm not," he replied. "Take a look at this ad."

He pointed to a page ad in a magazine, an advertisement I'd seen many times but just passed up without thinking, never dreaming it applied to me. This time I read the ad carefully. It told of many 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. Well, it was a revelation to me. I read the book carefully, and when I finished it I made my decision.

What'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, manufactur-

ing, experimenting, sea operating, or any one of the score of lines they prepare you for. And to think that until that day I sent for their eye-opening book, I'd been wailing "I never had a chance!"

Now I'm making, as I told you before, over \$100 a week. And I know the future holds even more, for Radio is one of the most progressive, fastest-growing businesses in the world today. And it's work that I like—work a man can get interested in.

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. 1P, Washington, D. C.

**J. E. SMITH, President,
National Radio Institute,
Dept. 1P, Washington, D. C.**

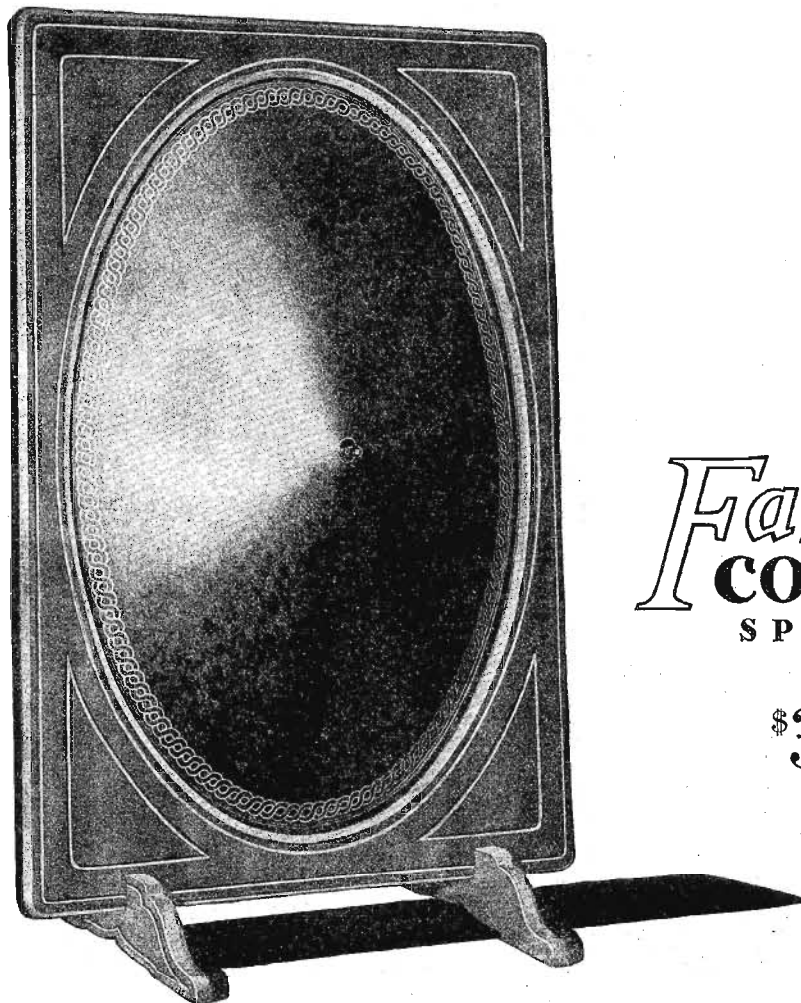
Dear Mr. Smith:

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 salesman will call on me.

Name.....

Address.....

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



Farrand
CONCERT
S P E A K E R.

\$35.00
*Slightly higher in
Far West and Canada*

An entirely NEW type
by FARRAND

The wanted BASS tones captured
as never before!

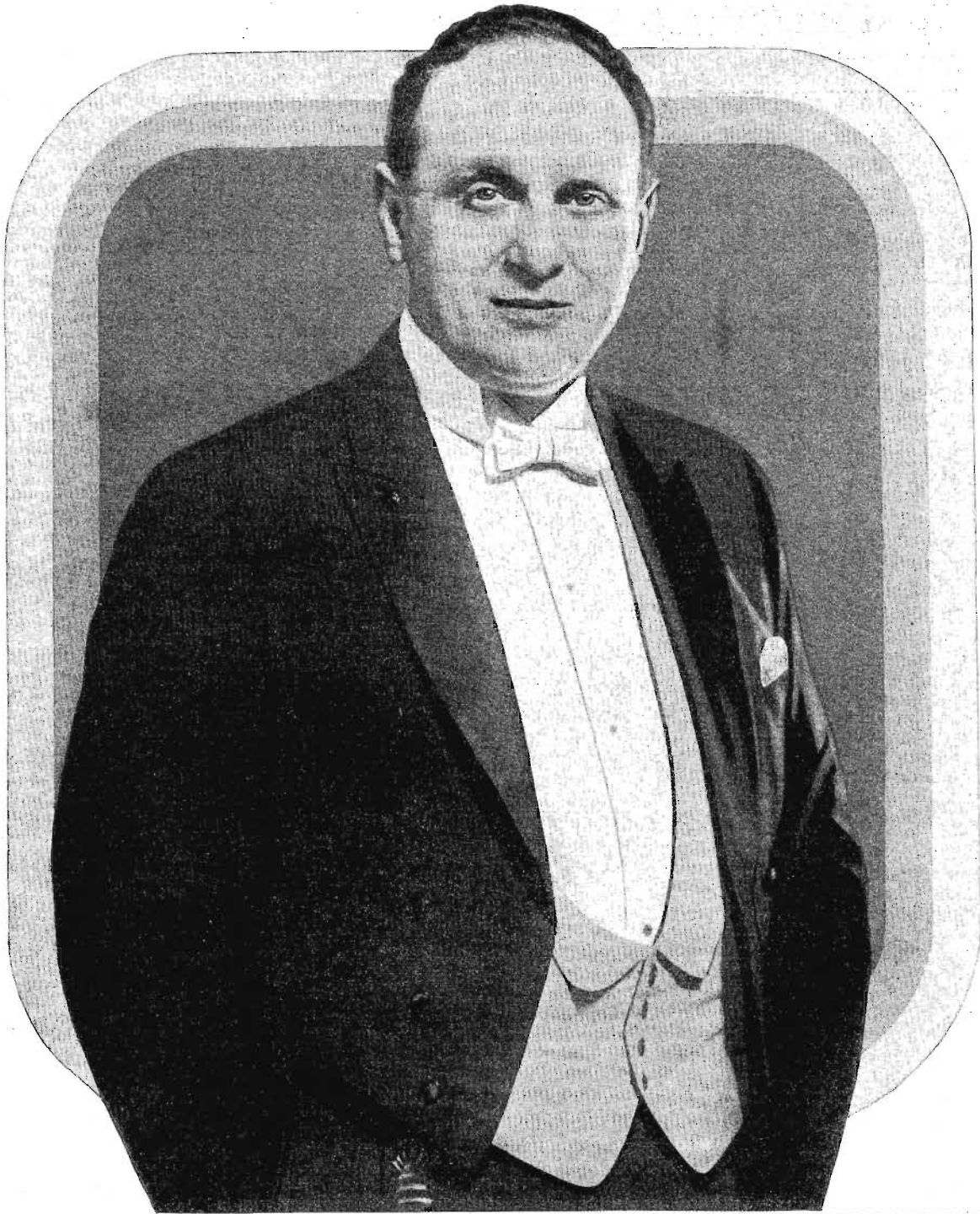
Another Farrand advancement—the Farrand *Concert* Speaker—attaining a new, deep-reaching tonal radius, with all the pleasing treble retained as heretofore—virtually *next year's* model presented *today!* See and hear it, at your dealer's—and be thrilled by its matchless, all-around performance.

The unusual outward beauty of the Farrand *Concert* Speaker, together with its superlative performance, will increase your desire to own one. Designed in the

manner of a fine portrait frame, exquisitely wrought of richly finished walnut veneer, its artistry offers instant appeal. Height, 22 inches, overall.

FARRAND MANUFACTURING CO., INC., LONG ISLAND CITY, NEW YORK

S. L. Rothafel—Leader of "Roxy's Gang"



WHEN the Radio made its appearance one of the greatest forces for good the world has ever known came into being. Probably no single medium of communication now holds so much significance as our invisible network of information, education and entertainment that covers every corner of the globe. In a very few years the Radio has developed from an experimental method of signaling—and for amateurs, a mere toy—into a public instrument of such limitless scope that a contemplation of its future makes you hold your breath in awe.

The foregoing paragraph may seem rather formal, but it is a statement of fact, and when we say the Radio future makes you hold your breath in awe we mean that you and I and whole communities are

going to be so linked up in it that perhaps even our very habits may be changed. This is no idle talk either. Even nations may be much affected by the Radio.

Indeed, already we hear of a case in Sweden. One section of the country is in a "blind spot" so that the natives cannot hear the Swedish stations. However, they can hear the English stations very well. As a result of this, the children as they grow up are learning the English language faster than they are their mother tongue. This is bound to have a

ROXY SAYS

profound influence on the youth of that district when they reach maturity.

This power of the Radio to play an important part in the lives of individuals and nations has been brought home to many of us very forcefully. It has seemed to me to be one of the very pleasantest activities one could imagine.

It seems funny to look back six years on the time when the thought first came to me of broadcasting my theater program. The idea was placed before Radio officials, with the added plan of giving a studio recital as well with members of the theater forces as soloists. They liked it, and almost before we knew it we were presenting a regular Radio feature.

(Continued on page 35)

NUMBER 3

COUPON BALLOT

World's Most Popular Orchestra Contest.

POPULAR ORCHESTRA Editor, Radio Digest,
510 North Dearborn Street, Chicago, Ill.

Please credit this ballot to:

..... of Station.....
 (Orchestra's Name) (Call Letters)
 Signed.....
 Address.....
 City..... State.....

Chicago Studios Cater to Farmer

National Midwest Net Planned for Rural Service and Chains Across Continent

WHEN the National Broadcasting company studios in Chicago are completed this month, Midwest United States will have its own Radio central switching point enabling programs originating in Chicago to be distributed to all parts of the Blue and Red chains. This does not mean that New York programs will be denied the Chicago stations. It merely means that more Chicago programs will be broadcast over the entire chain just as the Chicago Civic opera is being broadcast now.

The time element makes a Chicago studio a necessity for the National Broadcasting company. When the New York studios sign off the chain broadcasts at 10:30 p. m. Eastern time, it is only 9:30 p. m. Central time in Chicago and adjacent territory. With the completion of the Chicago studios the company will be able to give another hour of entertainment to listeners in the Central time belt.

With the New Year the National Broadcasting company plans to feature special daytime programs for the farmer. Such programs would find no listeners in the East because New York is in the industrial part of the country. Chicago, however, is in the center of the farm belt and the logical center for such broadcasts. This is one of the chief reasons for making Chicago the center of a midwest network.

Manager Is Farm Expert

The manager of the Chicago office, Frank E. Mullens, who is also the agricultural director of the National Broadcasting company, understands the Radio farm situation because he did pioneer agricultural broadcasting for three years at KDKA and was the first to realize what daily market reports would mean to the farmer. He instigated this service at the Pittsburgh station. For a short time Mr. Mullens represented the National Broadcasting company at KFXX, Hastings, Nebraska. In selecting Mr. Mullens as director of the Chicago office the company chose a man acquainted with this section of the United States. Mr. Mullens comes from the Middle-west and received his college degree from Iowa State college where he took agricultural journalism.

The two studios being completed in the Chicago office of the National Broadcasting company are to be built like those in New York. No occupant of this big building will ever hear a sound from either studio. In fact no one outside of the studios will hear a sound. The walls, ceilings and floors will float upon cushions of felt so that the inner visible surfaces of the studios are distinct and apart from the building structure itself. Even the plaster is treated acoustically. Each studio has a little observatory room overlooking it so that the control man will have a full view of the studio through a sound proofed observation window.

O. R. Hanson, manager of operations and engineering for the company is in charge of the construction. Mr. Hanson is a pioneer in constructing studios. He was with WEAF when it first began broadcasting and has been in charge of the engineering side of the Radio game since the National Broadcasting company began to operate.

Overseas Programs Soon?

PLANS and operations are said to be maturing rapidly for the rebroadcast of British programs. It is possible that the first experiments may be made by the early part of January. Relay stations are being established on both shores for short wave transmission. This reception will be carried over the usual chain land wires for rebroadcast from the NBC stations. Such a program may suddenly come over the air unannounced, should atmospheric and other conditions warrant.

KOA Claims Most Beautiful Artist

Eunice Johnson of Digest Cover Called Prettiest Entertainer to Be Heard on the Air

DENVER is simply overwhelmed with national Radio honors. That city's Miss Agnes Davis captured the national singing contest down at New York and now comes Freeman H. Talbot, director of KOA, demanding awards for the national beauty contest. That is, supposing there was one.

"So you want a beauty for your Radio Digest cover," he said as he solemnly stalked across the sanctum and halted in front of the editor's desk.

"Sure do, Mr. Talbot."

He pulled a carefully wrapped packet from a brief case and placed it on the desk. It revealed half a dozen poses of Miss Eunice Johnson, whose smile greeted you as you opened this January issue.

"I brought them here myself, and if she isn't the most beautiful young lady on the air today anywhere all this side of Kingdom Come then there isn't any such thing as beauty. That's my challenge. She came within one of being 'Miss Denver' for Atlantic City in the Rocky Mountain News contest, but one of the judges got faint when she stepped up and didn't vote."

Another beauty was in the process of engraving when Miss Johnson came tripping in on Mr. Talbot's toes. The editor didn't faint so he was able to present her to you this very January day. Do you agree with Mr. Talbot? Are there any other directors willing to take his challenge?

Miss Johnson is still in her teens, but she sings and talks to her audience like an old timer.

SHORT WAVES

By Marcella

Frank's Hobby Chickens; Eddie and Fannie Mystery Solvod; How WTAM Got Harold; Where is Harry Snodgrass; WOC Announcer Affects Hearts; Fat Prefers Mike to Kieft; Lights; Ford and Glenn Come Home; Chester Marries.

GRACIOUS! How the time does fly! Here it is 1928 and this ethereal world of ours is almost eight years old. Of course, most of us didn't turn out in such before 1924 or 1925, but WWJ did open in 1920. Just imagine! Wouldn't you miss not hearing your favorite announcer's voice on the air? Here's to a wonderful new Radio year!

My dears, I've got a terribly big piece of news. You never can guess it. Ford and Glenn are coming back to WLS. Of course, the first of the month they will take a little trip. But only a few days that pair to settle down long. They will visit WSB, WFAA and WMC. But they will be back.

Now here's the surprise of Marcella's life. You remember how Chester Gaylord gave me to understand he was heart-whole and fancy free and rather indifferent to girls? If it had not been for the kindness of "A Listener" I would still be believing it. But she sent me a picture of the girl Chester married last month. Her name is Olga E. Mitchell and she looks awfully sweet. Don't you hope they will be terribly happy?

After everybody had asked me about Frank Lane and I had written I can't tell you how many letters and had decided that Frank must be a cranky, retired, old bachelor of fifty winters or more, I received the loveliest letter from WOOD of Chattanooga and discovered that all my other letters are still circulating somewhere between KVOO and WDDO and never reached him at all.

How ever, let Frank speak for himself. "I am just a boy from the wide open spaces, claiming Oklahoma as my home. I have seen twenty-two summers and the same amount of winters. Went to work for KFRU at Bristol, Oklahoma, when that station opened in 1925 and stayed with them when the call letters changed to KVOO. Was with them two and one-half years. I came to WDDO at Chattanooga in June of this year as director and announcer. As far as my looks are concerned, I will let my picture speak for me, for it flatters me very much. My hobby is chickens; however, of the feathered variety, because I am promoting a fruit and poultry farm in Oklahoma, which so far has been mostly promotion." Doesn't he sound like a regular ho-man, Marion.



I just love to write to Matty of KYW. He always has a come-back of some sort or other. Here he claims that my letter to him asking all about Eddie and Fannie arrived on his birthday. Many happy returns, Matty dear. Here's his letter. You wanted to know about Eddie, Fannie. Bless their hearts. I am not sure that they wish the Radio audience to know it, but they are man and wife. Very much married. Eddie bows to the slightest wish of the frau and she in turn hies and tags along with her Beau Brummel Eddie where'er and anon he may go. Thus, where one is seen, a second glance locates the other—and so the story goes. I never was good at giving much detail about facial appearance. Anyway the easiest way home is the most direct—so—they look kindly. I have not examined their hair but presume it is all right. As for their eyes, they run rich in friendliness. Eddie and Fannie are pinch-hitters for Uncle Bob when the big Boy is stepping out amongst his Radio children." Thanks a lot, Matty.

Miss South Richmond certainly knows her Radio stars. This attractive young Harold Gallagher who announces midnight programs at WTAM is a witty, young man, of Irish extraction. That's why he says so many funny things. Did you ever notice how fast he talks sometimes? That certainly comes in handy for Harold when he is announcing a football game. He is only twenty-one years old and he is not married as yet, nor even interested. Oh, Harold! I can't believe that! He says he is just bound up in his work. It seems that Mr. Gallagher has been with three broadcasting stations and still has never changed stations. Doesn't that sound queer? Well he was with WJAX which turned into WEAR which now belongs to WTAM. There you are; the stations he works for change hands and call letters but they always throw in Harold with the rest of the works.



NOMINATION BLANK

World's Most Popular Orchestra Contest

POPULAR ORCHESTRA Editor, Radio Digest,
510 N. Dearborn St., Chicago, Ill.

I Nominate..... (Orchestra's Name)
 of Station..... (Call Letters)
 in the World's Most Popular Orchestra Contest.
 Signed.....
 Address.....
 City..... State.....

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Looking Ahead

What Was Accomplished by the International Radio Conference? A survey of what happened after the smoke (cigar) rolled away by an eye witness. Significant facts for peace of nations. The next Radio Digest.

Tune in Hawaii and Enjoy a Radio Hula Hula. Special pictures and story direct from islands of perpetual springtime, for the next Radio Digest.

How to Make and other Interesting Features for the Radio fan who likes wires and screws with his wireless.

World's Largest Gallery of Radio Artists and Personalities found in every issue of Radio Digest ILLUSTRATED. Two full pages of pictures besides the feature story pictures.

Watch the Developments of the World's Most Popular Orchestra contest. It's getting hot. Votes are coming by the thousands in every mail. Another one of Radio Digest's enterprises to bring the listeners and artist into closer relationship. Vote for your favorite. Ballots in every issue.

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

Newsstands Don't Always Have One Left

Every Month New Wave Changes in the Official

Radio Digest

Call Book and Log

BE SURE OF YOUR REGULAR COPY BY SUBSCRIBING NOW

SEND IN THE BLANK TODAY

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

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

Name.....
 Address.....
 City..... State.....

SEVEN ACES TOP ORCHESTRA DECK

"HAPPY NEW YEAR" PROSPECT FOR 1928

RADIO LEADERS BELIEVE NEW SURPRISES IN STORE

Scientific Discoveries Expected to Make Better Transmission and Clarify Reception

WHAT of the Radio year 1928? One, Two, Three, Four—the hand of time creeps around the twelve months of the year—and where will Radio be when it comes to rest on 1929?

Many active leaders of 1927 have already expressed the opinion that the new year will witness many important and surprising achievements. Some of our neighbors across the sea are particularly optimistic. Comments by Marconi and Ekersley are published on page 10 in this issue. Inventors, broadcasters, manufacturers, artists, and perhaps listeners are hoping for the new and wonderful surprises that Radio seems to release from an inexhaustible storehouse from time to time.

"I hope some of the cats and dogs that fight and wail on the hetrodyne fence will be exterminated for one thing," writes a weary fan from Virginia.

"It can't be done in a day," writes another contributor from Minnesota, "the commission tackled a giant and made as creditable an attack as could be expected. They have found out some things that cannot be done by peaceful overtures, perhaps in 1928 they will get a stronger grip and press a little harder."

Grappling With Giant

But while constituted authority is grappling with the Giant Chaos the manufacturer and the research man have been delving into the hidden mysteries, and bringing out new accessories, new controls and conveniences to protect the listener from the malign influences of weather and jangling waves.

"What does the manufacturer consider as an outstanding achievement of 1927, and what does he expect for 1928?" was asked of Mr. Powel Crosley, Jr.

"I think the outstanding achievement of 1927 was the development of the AC tube," he replied promptly. "It has brought the ordinary household alternating current right down to the householder's pet receiver. A small and convenient transformer now replaces storage battery, charger or trickle-charger to make the ordinary type vacuum tube do its duty. The AC tubes have more rugged filaments or heaters. Taken directly from the lamp socket they have greater emission, and greater ability to perform efficiently with broader latitude for volume without distortion. This is just one phase of many changes that will mean larger replacements and generally better reception in 1928."

Broadcast Public Service

"What do you consider as outstanding achievements of 1927 and the promise for 1928?" was asked of Miss Judith C. Waller, director of the Chicago Daily News station, WMAQ. She replied:

"As I look back the Mississippi flood stands out as a milestone of service on the part of WMAQ, and of course many other broadcasting stations throughout the nation. When we called on our listeners for aid for the sufferers the response was simply astounding. Within a month from the first appeal one hundred thousand dollars had poured into our station for relief. We had received \$114,000, considerably more than a tenth of the quota for the whole city of Chicago. Contributions from our listeners for various causes totaled \$150,000."

Miss Waller called attention to the fact that each week for some time one of the forty-eight state governors had given a Radioleague to WMAQ listeners, achieving a record visiting list of governors for its station album. Sports have received a great deal of attention, football and Major J. Andrew White's broadcast of the Tunny-Dempsey fight.

For the future permanent wires are being installed for the Columbia chain. They are expected to be ready for operation next month. She said this service is being established for all Columbia stations to afford twenty-four hour service throughout the year. Great plans are being made for the national presidential conventions.

Rural Radio Growth

"What does the turn of the year in Radio mean to the farmer?" was asked of Edgar L. Bill, director of WLS, a station founded primarily for service to the rural listener and a pioneer in that field of endeavor. To this Mr. Bill replied:

"Government estimates now six months old place the number of Radios on farms at 1,250,000. The number is doubtless

(Continued on page 21)

PAY \$1,000 A MINUTE FOR DODGE PROGRAM

A COST of \$1,000 per minute will probably mark the high water mark to date for Radio broadcasting when the inaugural program for the Dodge Bros. supplementary chain series takes the air for one hour the evening of January 4. In fact, it is expected the cost will exceed that amount. Will Rogers will act as master of ceremonies from Hollywood, Fred Stone will entertain from Chicago, Paul Whiteman's band will be heard from New York and Al Jolson, New Orleans.

HIRED HAND'S TEXAS STARS LEAD IN GOLD PLAQUE RACE

Last Hour Nominations Swell Total Candidates to 423—Maurie Sherman's Boys Nosed Out by P. Christensen, WHO

SNAPPY KDKA "ALL SOLOIST TRIO"



THEATERS may present all star casts, but it remains to KDKA to present an all soloist trio to the Radio audience. At the top is Miss Helen Bell Bush, brilliant soprano, whose debut in Italy brought a great deal of favorable comment. At left Viola Karlson Byggeson, contralto, and right Miss Virginia Kendrick, contralto, who won first place in National Federation of Music contest.

Bureau of Standards Experiments Continuously in Radio Development

DURING the past year the Bureau of Standards, Department of Commerce, spent approximately \$50,000 in Radio experiments, according to the annual report of Dr. George K. Burgess, director of the bureau. In connection with Radio frequency measurements and standards and Radio wave phenomena, Doctor Burgess says:

"The Radio work was largely concentrated on two main problems—the improvement of frequency measurements and the development of Radio aids to air navigation. The development of broadcasting and increased uses of Radio generally rendered imperative greater accuracy in the measurement of frequency or wave length.

"Experiments to improve Radio frequency standards were conducted, apparatus was tested, and standards were disseminated in such a way as to make them of most value in maintaining broadcasting and other stations on the correct frequencies. The piezo-oscillator received much attention.

"With the co-operation of other government departments and large electrical companies a program of research was be-

gun looking to the development of this apparatus and its standardization to the highest possible accuracy, the aim being to secure a very considerable improvement over the present attainable accuracy of about 0.01 per cent. Comparisons with all important Radio laboratories abroad showed that most of them were in agreement to the order of 0.01 per cent, but it is highly desirable to establish absolute frequency values with a certainty of 0.001 per cent, and to do so will require much more research and development.

The work on Radio wave phenomena has included studies of fading and its correlation with other natural phenomena, such as terrestrial magnetism and electrical conditions on the sun. A definite connection appears to exist between solar phenomena, such as the rotation of the sun and the sun-spot cycle and Radio conditions on the earth. Methods of measuring Radio field intensity have been developed, as well as means for calibrating apparatus for these measurements. This work is increasingly important in view of the close control exercised by the federal Radio commission over the power and interference production of broadcasting stations.

WORLD'S MOST POPULAR RADIO ORCHESTRAS

Leading America	
West	
Seven Aces, WBAP.....	4,494
By Districts	
No. 1 East, Vincent Lopez, WEAJ.....	2,173
No. 2 South, Chas. Dornberger, WTHS.....	1,033
No. 3 Midwest, Paul Christensen, WHO.....	3,537
No. 4 West, Royal Fontenelle, WOW.....	2,507
No. 5 Far West, Max Dehn, NBC.....	2,506
No. 6 Canada, Irvin Plumm, CNRW.....	1,600

SEVEN ACES, WBAP, take all. That's the story in five words of the third round of the Radio Digest ballot competition for the world's most popular orchestra.

December saw Maurie Sherman's WLS air squadron taking the national lead. But you never can tell what's going to happen when those long, lean Texas scrappers start out for an objective.

"We knew those Fort Worth Aces were right on our tail the minute we hit the ceiling," said Harold Sattord of the Sears Roebuck cohorts. "But we gave them a battle and we're really just getting warmed up. Why, we heard the Hired Hand right through all Chicago's sixty-odd station maelstrom (telling the South-west folks to get behind those WBAP Seven Aces. But we have lots of friends down in that territory too. They will have hard work holding that position when it comes to the final show-down."

Christensen Looms

While WLS is getting into position Paul Christensen's orchestra at WHO, Des Moines, plopped over a big barrage of votes that brought them within speaking distance of the Texas Biers—a total of 3,537—just 877 votes behind the 4,494 of the Hired Hand's stewards.

But Christensen's men have stirred up WOC's Little Symphony at Davenport. Analyzing the situation the Iowa City Press-Citizen says:

"We see a red hot race between Paul Christensen's WHO organization and WOC's Little Symphony orchestra. It would be hard to tell which has the most friends at this stage of the game. The contest promises to prove interesting to those who listen to both orchestras and it ought to help the quality of programs in general."

There's a strong aggregation behind the Royal Fontenelle orchestra at WOW, Omaha. It may be the Workmen of the World are backing these artists in a solid line.

It was Donald P. McIlvane, 902 W. Broadway, Fort Worth, who led the assault on the WLS supremacy in the North.

Watch WLS Chaps

"Can't let these Chicago chaps get away with anything that rightfully belongs to our boys, and everybody knows there couldn't be anything more popular than the WBAP Seven Aces. We just naturally want the rest of the world to know it, that's all."

Mr. McIlvane discussed the proposition with a few friends with the result that 3,500 votes came through the mail at one swoop.

Paul Christensen's friends were inspired with a similar idea as they gathered around in a circle in the lobby of the Fort Des Moines Hotel and discussed strategic operations. By mobilizing some of the units nearest to the WHO studio they scurried over the top for first place in the Third District with 2,500 votes in one smash. This move dethroned Maurie Sherman to second place in the district.

All along the line the many orchestras have their ardent supporters for the final honors. R. H. Roberts, program director of CNRW, writes from Winnipeg:

"A number of CNRW listeners have asked me to forward to you the enclosed 1,200 votes for Irvin Plumm and his enclosed Park Lodge orchestra. This orchestra broadcasts from the Fort Garry Hotel.

(Continued on page 12)

PICTURING BROADCAST ACTIVITIES



DOROTHY HEYWOOD REEDY and her piano classics put the polished touch in KVOO programs at Tulsa.



CHANCES are you have this Indian's face in your pocket right now. He is Chief Two Gun White Calf, original for the Indian nickel. He is with Charles H. Meester, WCBS, St. Nicholas hotel, Springfield, Ill.



ATYPICAL Bostonian is Ardan Redmond, announcer and singer at WBZ-WBZA, in the old New England Hub.



THAT spotted how tie denotes the true artist type found in Walter Johnson, chief announcer, WTIC, Hartford.



MAY and June, Ideal Home team of WCFL, Chicago, take brick, trowel and hammer in hand to do a little construction work at Lombard ceremonies. They gained their first renown at WLS, Sears Roebuck station.



PUT your finger down anywhere in California and you'll find a beauty. This is Annamae Morgan, KWTC, Santa Ana.



GOVERNOR A. HARRY MOORE of New Jersey frequently reaches his fellow citizens by aid of the microphone, as shown above.



"SWEET ADELINE" these are the exact words issuing from the lusty throats of this Super-Six of Twins at WJR, Detroit. From left: Rayovax, Russ Wilkey and Bill Sheehan; Lullabye, Ford and Glenn; Monomotroul, John Wolfe and Ned Tollinger.



CHARLES H. GABRIEL, JR., son of the famous gospel song writer, is program director for the Orange net of the NBC.

RADIO PERSONALITIES AND EVENTS



SO'S your Uncle Wip of WIP, Philadelphia; and after Santa Claus he's next for the little Pennsylvanians.



ON top of Chicago's premier movie palace, the Chicago, is a private theater called the "Little Chicago". Rehearsals and broadcasts are made from here through WMAQ. Two famous artists are Jules Buffano (left) and Leopold Spitalay.



ONE of the reasons for KFRC popularity in San Francisco is Helen O'Neill, who plays, sings and directs as occasion demands.



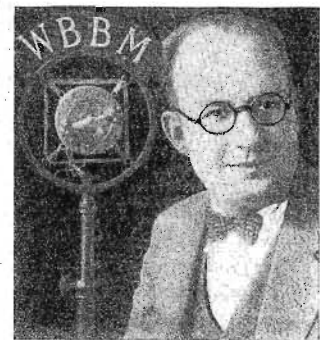
REMEMBER this lady's face? Of course you do—Irene Rich, one of the Warner Brothers KFVB stars.



IF you have wondered about the lady with the soft and fascinating voice on the Columbia chain, she's Miss Elizabeth Lennox, contralto.



PEARSON S. CLINE, 84; H. M. Cuyler, 90, and Wm. S. Burk, 84, Civil War veterans, were three venerable broadcasters to participate in ceremonies dedicating the new \$1,500,000 Scottish Rite Masonic temple in Philadelphia.



CHARLIE GARLAND is always a popular artist wherever he goes; just now he is being announced from WBBM.



THIS is Bobby Griffin, director-announcer of WJBT, Chicago, who made a reputation in France, Iowa and Oklahoma.



ALL set for a ziggy deal by Arnold's Seven Aces of WWNC, Asheville, N. C. "Aod they're the pick of the deck," said W. Arnold Summey, "when it comes to popular dance music". This Carolina station has forged to the very front of Eastern broadcasters.

FIRST LAP WON BY MAURIE'S PLAYERS



Maurie Sherman's WLS Victory Smile.



MAURIE SHERMAN and members of his orchestra are shown here in a specially posed picture for friends who put them over for the leaders in the first lap of the Radio Digest contest for world's most popular Radio orchestra. They hope to win back leadership that slipped slightly for January.

Phelps Practices Own Philosophy

KMTR Director Does His Stuff by Announcing While Confined With Leg in Cast

G. ALLISON PHELPS, manager and night announcer of KMTR, "Your Friend in Hollywood," has been known for nearly five years in Southern California as "The Radio Philosopher." He has delivered more than 100 original lectures in which he has admonished people never to permit discouragement to grip them, to always be cheerful and not allow circumstances or conditions to overcome them. Recently when an old injury to his right knee developed seriously and he was forced to go to bed with his entire leg in a plaster-of-paris cast he decided to put his own philosophy to work. He had the Los Angeles telephone company install a "loop" between his bedroom and KMTR, connected a Western Electric 13-C Amplifier to the lines and went on the air via remote control and declared a fellow might be knocked down but could never be knocked out until he, himself, permitted it. He invited people to send in jokes and wisecracks to write on his plaster leg and he has received hundreds of letters from every part of the United States and Canada.

Each night at 6:15 o'clock Mr. Phelps starts announcing the evening programs of KMTR from his bed. In a small lounging room adjoining the main studio of KMTR a loud-speaker has been installed through which the artists can hear Mr. Phelps announce. When he has concluded an announcement the operator in the operating room switches from Mr. Phelps' microphone to the microphones in the main studio of the station, miles away. Immediately the artists start playing. On a dresser near Mr. Phelps' bed is another loud-speaker through which he hears the program. As soon as a number is concluded the operator switches back to Mr.

Death of Two Radio Commissioners Changes Complex of Federal Board

Arduous Work in Effort to Straighten Wave Tangles Believed to Have Weakened Heart of Admiral Bullard, Who Died in Sleep—Lafount Takes Office

By L. M. Lamm

FATE seems to decree that the federal Radio commission shall not have all of its members sitting at one time. Rear Admiral W. H. G. Bullard, chairman of the commission died quite suddenly, leaving another vacancy on the commission, in addition to the filling of the vacancy left by the late Colonel John F. Dillon, by Harold A. Lafount, to represent the Fifth Zone. These changes have been made within one month.

Admiral Bullard, sometimes called the "father of Radio," and at any rate having had considerable to do with its development, left the commission one day, apparently in the best of health, and died that night in his sleep. It is supposed that he had an attack of heart disease.

Since taking office as a Radio commissioner, the Admiral worked extremely hard in trying to help bring order out of the chaos in the air. Just a day or so before his death Admiral Bullard appeared before the appropriation committee of the House urging adequate funds that the Radio Act

of 1927 might be properly administered. Admiral Bullard was a great friend of the amateur operators and he guarded their communication with religious care. To them he attributed much of the progress of Radio in the United States and he often expressed the belief that they would keep this country in the foreground of Radio development.

It was Admiral Bullard, among others, who suggested the organization of the Radio Corporation of America following the World War in an effort to keep certain Radio patents in the United States. President Wilson, at the request of officers of the Radio corporation, detached Admiral Bullard from his naval duties in order that he might sit on the board of directors of the new company for a time.

Despite the fact that Radio is among the newest of the sciences, Admiral Bullard had been actively connected with it for more than a quarter of a century. He had taken part in every step of its remarkable development from the days of its infancy in the late '90's until now. His text book on Radio communications, written in the early days of Radio, is still standard and is used at the Naval Academy.

Lafount Open Minded

Commissioner Lafount, who came here to fill the vacancy left by the death of Colonel Dillon, has just recently taken his oath of office. He is a business man of Salt Lake City, Utah, and is assuming his new office without any axes to grind.

While disclaiming any special technical knowledge about the Radio field, for years Mr. Lafount has been intensely interested in Radio and has watched its development with keen interest. He reports that Radio reception in the Pacific coast states has been materially improved during the administration of the Radio commission, although there are some rough spots to be ironed out in that section of the country.

At the present time Mr. Lafount has no new policies to lay before the commission. Generally speaking, he said, he is in full accord with the basic principles laid down so far designed to clear up interferences and to improve Radio reception as mapped out by the commission.

LA FOUNT ARRIVES AS COMMISSIONER



HAROLD A. LAFOUNT (above) has been welcomed at Washington, where he took the oath of office to fill chair for Fifth Zone, left vacant by the late Col. John F. Dillon of California. Commissioner Lafount is a Salt Lake City business man.

Rush for Lowest Wave Shocks Commissioners

"Give Us Watts on Any Old Cycle," They Plead

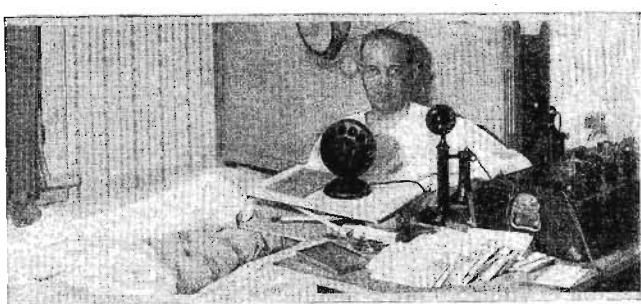
MEMBERS of the federal Radio commission received a distinct shock recently as the result of four different applications from broadcasters asking to be assigned the lowest waves in the band. Commissioner Caldwell of New York, who has been on the firing line of the battle of the "Kill O' Cycles" and "Kill O' Watts" since the first gun was fired, threw up his hands and called for help.

"Give us the Watts and we'll take care of the Cycles," said WTFF of Mount Vernon Hills, Va., the new Ku Klux Klan station. It has 1,480 kilocycles (292.6 meters), which seems quite all right if the commission will consent to power of 10,000 watts. The present assignment is 50 watts.

Practically the same proposition is submitted by WENB of Gainesville, Fla., willing to share time on 1,480 kilocycles if it can get 5,000 watts. This power has already been granted, as well as the permit to WTFF to build a 10,000-watt station. The latter is hoping later to get use of 50,000 watts on this wave.

The other two stations desiring the low wave are WGSB, Portland, Me., and WKBW of Buffalo willing to take anything from 1,400 to 1,500, but already operating on 1,380. The provision is made that both be assigned lower on condition they can raise their power to 5,000 watts each.

RADIO ANNOUNCER GIVES TOES AIR



"EVEN if old Shank's horse is stalled in a plaster cast there is much to be thankful for," G. Allison Phelps, announcer-philosopher at KMTR, declared as he pulled the microphone a little closer, "all five toes are out and getting a good look at the world. Ever realize how cooped up they are most of the time? It takes a stunt like this to get acquainted with them; hey, Little Feller? Little Feller nods, folks."

Phelps' microphone and he makes his next announcement. The system works so efficiently that no one listening would suspect that there was anything unusual about the broadcast unless they were told about it.

Can Live Philosophy

"If you have any spunk, and misfortune comes along, take the s out of spunk and put it in misfortune and you have 'Miss Fortune,'" declares Mr. Phelps. "I'm trying to demonstrate now that I can live my philosophy as well as preach it. After all, what is an arm or two, or an eye or two, or a leg or two? Those things don't count much. The things that count is spirit. If you have that no man or thing can beat you. There is just one drawback to my idea of broadcasting from my bedroom. Mrs. Phelps has disliked Radio because it has taken me away from herself and the three little girls nights. She thinks I should never have to leave the house again after dark. And as I glance down philosophically at my plaster-of-paris leg and think about that, I realize I have sorta 'put my foot in it.'"

QUIN TAGS FOUR BIG HITS FOR WGN



"O H, HUM," sighed Quin Ryan of WGN, Chicago, "wonder who would be a good feature for this day's program?" Just then in view Floyd Gibbons, war correspondent and author of "Red Knight" fame. Then he lined up Count Felix Von

Luckner, German sea raider during the war; Benny Friedman, All-American quarter-back, 1925, and Frank Willard, father of "Moon Mullins." L. to R., Benny, Von, Floyd, Quin and Frank. And then Quin called in the "photog."

CKY Pursues "Gorilla" to Trail's End

Radio Leads Greatest Man Hunt in Canadian History and Hands Woman Killer in Winnipeg Prison

By G. Carlyle Allison
Radio Editor, the Winnipeg Tribune

WELL, Radio Station CKY got its me and everybody along the Canadian border from the Great Lakes west is glad except the man.

You could scarcely call the creature who cowers in the murky cell at Winnipeg a "man" at that. He is known otherwise as the "Gorilla" or the "Strangler" for his many hideous crimes. He sits on his bench twisting his hard muscular hands and waiting for the footsteps of the hangman who will come shortly to lead him to the little door that drops with a clatter and lets a murderer out of this world to reckon with the next.

Dumbly he sits there, his hard gray flocked eyes peering about now and then as a caged animal seeking some small crevasse or flaw through which he can scrape a way of escape. It had been a simple matter for him to pick the locks and flee from the cell in the little jail that held him before they brought him to Winnipeg. The kinky hair and thick lips tell

door that clangs at the end of the corridor. A few more days and it will be January 13th. That will be the end of Earle Nelson, the Gorilla, the Strangler!

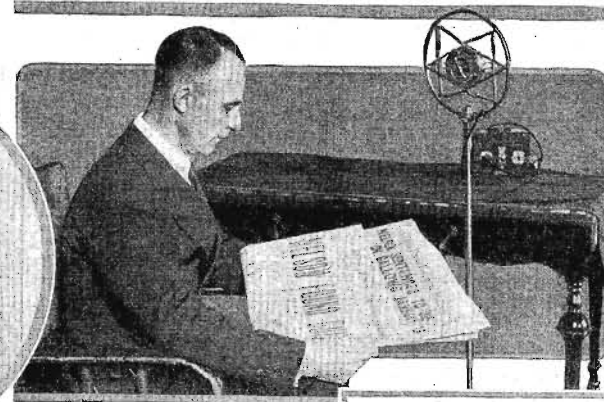
Rewards have been posted for his arrest across the United States and Canada. Scarcely a week passed but he left the strangled and broken body of an innocent woman or little girl along his ghastly trail, a predatory animal seeking the fairest to satisfy his lust and killing them with iron talons that closed about their throats. Twenty-two such deaths have been charged to him. There may have been many more. The last two were in Winnipeg—a young mother and a little school girl. At Winnipeg the powers of

denly a hymn of glory was interrupted by the quivering and somewhat passionate voice of their announcer.

Interrupts Church Service
"Forgive me for interrupting the service," he said, "but I must tell you of a terrible tragedy that has happened here in Winnipeg. A little girl has been strangled to death in a Smith street rooming house. Her naked body was found huddled under the bed of a man who is believed to be the Gorilla, strangler. He has fled. You must all help the authorities to find him. The police have a good description. I will give it to you and keep you informed day and night until we locate him."

Mrs. Morgan prepared a good meal for the fellow whose eyes shifted about a great deal. Morgan managed casually to slip out of the room for a moment and whispered his suspicions to his neighbor, Albert Dingwall, who promptly communicated with Constables Sewell and Gray at Killarney, 13 miles away. The Gorilla quickly finished his meal—he had seemed half famished and desperate—and mumbled a sort of thanks told his host he would have to be on his way. Dingwall watched him leave. It was only a few miles to the international border. The two Wakopa men followed him to a slough, two miles outside the town, where Nelson seemed inclined to hide for the night.

The constables had informed Winnipeg and broke all records driving from Killarney to Wakopa. Morgan and Dingwall directed them to the slough. The Gorilla was surrounded and surrendered without a fight. Better go along easy, he figured; it wouldn't be hard to slip these country jailers, and, over the boundary,



At left: "Gorilla" Nelson takes last look at daylight, his strangling hands manacled, as he leaves for cell, where he sits waiting—waiting—as shown below. Center: Franklin Rutland, who followed him with detailed Radio descriptions as he fled. Extreme right, L. H. Morgan, Wakopa storekeeper who recognized Nelson by Rutland's description, and Albert Dingwall who aided in capture. Both received \$300 rewards.



the strain of the degenerate Negro in his blood. He wandered out, from the old Barbary coast underworld of San Francisco less than a year ago. Perhaps in his solitary musings he wonders how he came to be caught, why it was that he seemed to be recognized and regarded with fear by the people he met. His flight had become a nightmare of terror. He evaded railway lines and took to the highways. Motorists scanned his features when he asked for a lift, they noted his cap, his tie, the color of his clothes, his shoes, even though he changed them time and again.

Recognized Everywhere

He instinctively felt that they knew him, his terrible crimes, his very thoughts, though they said little. He saw cheeks blanch at sight of him. Women and children peered at him from behind drawn blinds as he found farmhouse doors unanswered and bolted against him. He knew they were there and he ran for fear the man of the house was stealing up on him in the darkness with a loaded shotgun.

Perhaps he does not yet know how his approach seemed to be heralded from every house—yes literally every house top. For a bit of shining wire from house gable to barn gable or in the near vicinity had picked up the voice of Franklin E. Rutland, announcer at CKY, Winnipeg, detailing every bit of information received from the roadways and villages and towns where the dreaded Gorilla had last been seen.

How hungry he had been! Rarely did he find conditions favorable for a back door hand-out. The towns bristled with danger. He foraged tender corn from the fields. Occasionally a berry patch or outlying vegetable garden furnished him with food. Once he snared a young chicken from a hole he had dug into the side of a field stack. Before he could wring its neck with his expert fingers it squawked and a dog barked at the farmhouse a little distance away. He dropped the chicken and fled through a grove of maple trees toward a road he knew not of, but which he surmised must cross his way sooner or later.

Waste No Sympathy

However, waste no sympathy on this creature. He does not know the meaning of the word in his own behavior. He would show you no atom of pity were your conditions reversed, and you an innocent human. Anyway he is making up now for the meals he lost. He is gorging himself and putting on fat for that last short walk he will take to the scaffold and the little

Radio broadcasting were put upon his trail to bring his career to a speedy end.

It was the tenth of last June that William Patterson came home from his work and found the house open but no cheery little wife to meet him. At first he was only slightly concerned. He called her name a few times then inquired about her from the neighbors. She had not been seen. Patterson became alarmed. He had read about the Gorilla in other towns. Being a devout man he was in the habit of taking his troubles to his God. So he knelt at his bedside and asked for Divine guidance. As he started to rise his glance caught a bit of fabric he knew belonged to his wife's gown beneath the bed. He jerked at the bed covering that concealed it. In a moment he had uncovered the dead body and distorted features of his wife. She had been profaned and tortured—the work of the Gorilla!

Gorilla Rents Room

Earle Nelson had arrived in Winnipeg. Perhaps an hour before this shocking crime had been discovered he had appeared at a Smith street rooming house. There may have been something suspicious in his manner or appearance to make the housekeeper glance at him hesitatingly. But he immediately became affable and smiled with a pious smirk.

"I want a room," he said, "where I will not be disturbed in my religious reflections."
She gave him a room that seemed to fill the requirement. It would seem that the Gorilla immediately set forth for another victim whom he could torture at his leisure. His eye fell on little Lola Cowan, 14 year old flower girl who was finding a great market for her luscious June roses and a few flowers she gathered from the wildwood, which she visited with the larks early in the morning.

Three days passed in the frantic search for little Lola Cowan. The Gorilla became nervous and did not return to his lodging on Smith street that Sunday afternoon.

Rutland had already announced the evening devotionals. Bible reading, worship and song were floating out over the city and country side from the CKY antenna. Good folks who enjoy these services in their own homes, folks who live far from church, feeble old folks, sick folks in the hospitals were thus in the midst of their communion with Providence when sud-

Those may not be the exact words with which he put all within range of CKY on guard and alert for the fugitive, but it is the essence of his message. He described the clothing, issued warning to admit no stranger and to summon police to investigate every vagrant answering the description of the Gorilla. Like baying bloodhounds in every direction the messages swept with speed faster than lightning through every street, highway and lane.

It was the greatest man hunt in the history of Canada. Every farmhouse was armed and ready to capture or kill. Chief of Police Chris H. Newton, Detective Chief George Smith and Inspector Phillip Stark kept Rutland posted with every good tip that came in from all sections of the province.

Hides by Day

When Rutland announced that the Strangler seemed to be making his way in a certain direction from cumulative reports every person in that vicinity kept in touch with the local peace officers. But the Strangler hid by day and sneaked through the corridors by night until he reached the outskirts of Regina, Saskatchewan, 365 miles distant. From that point he doubled back, a tortuous stubborn trail.

Rutland was hot after him down through western Manitoba. At Wakopa, close to the boundary, L. H. Morgan was about to close up his general store for the night when a shabby man peered through a moment through the door and then stalked in. Little pouches sagged under his eyes. A yellow pallor survived the roughening effect of a long tramp in the open. His hands, big and nervous, hung ape-like at his sides.

"What's the chances for a bite to eat?" he asked Morgan, glancing past the country storekeeper and making a general shifty survey of the store.

Something clicked in Morgan's memory, something that brought to mind the voice of Rutland the announcer and a description of a shabby man with big hands, shifty eyes, thick lips and kinky hair—the Gorilla! But he concealed all this successfully and told the man he thought he could fix him up.

their powers would end. Sullenly he submitted to their commands and they put him behind bars with a double lock on the door.

Jailer Alone with Gorilla

Morgan and Dingwall went away satisfied they had accomplished a big night's work. The jailer was alone with his only prisoner. It was a big day for him too. The biggest man hunt in Canada had driven the quarry to his balliwick. He'd sit up all night and watch him. He'd smoke his pipe and—matches, he was out of matches. Not a match in the whole jail. It would take but a minute to go out and get some. So the Gorilla had the jail to himself for five minutes.

Five minutes was all he wanted for that jail. The strangling fingers manipulated a nail file against the cell door lock. It pushed open. When the jailer came back the Gorilla was gone.

A few minutes later the whole community was aroused. People had begun to come into town anyway from hearing Rutland's message over the air. Soon an army of citizens swarmed through the community, but the fugitive could not be found. There was one place they had missed. That was the dark hole under the railroad station platform.

In the morning a train with a special carload of police approached from Winnipeg. A furious mob had assembled, eager for the blood of the Gorilla; but there was no Gorilla. He had crawled like a snake into a pile of brush close to the tracks. The police train drew near. Ignorant of its nature the man sprang from his hiding place and ran for the step.

Captured by Renton

Constable W. A. Renton of the border patrol saw him first and started in pursuit. As the mob caught sight of the murderer they began to yell "Kill him! Kill him!" But Nelson was collared and yanked onto the train before he could be dealt with summarily by the angry civilians.

The trial was a clean cut case. The Gorilla had been so graphically described that E. P. Gibson of the Winnipeg Tribune staff had drawn a picture of the man, which proved almost as accurately done as it could have been had the man actually posed.

One week from next Friday little Lola Cowan, Mrs. William Patterson and a score of other women will be avenged by the law of Manitoba. The Gorilla will be no more. His fate was broadcast to the CKY listeners as the doom had been pronounced by the judge. CKY got its man, living up to the traditions of Canada's famous mounted police.

"Radio Still in Swaddling Clothes," Says Marconi in Visualizing Future

Deplores Neglect of Short Wave Development Recently Discovered to Have Unsuspected Qualities for Distance Transmission Great Field Open for Future Experimentation

DURING his recent visit to the International Radio conference at Washington Guglielmo Marconi, "father of Radio," responded to a number of interviewers which indicated his continued intense activity along the lines that brought him deathless fame. He regretted that he did not have more time than there are hours in the day to carry on his endeavors to perfect long distance transmission, especially the development of the short wave. He scorned the tendency of many who "let down" after a certain measure of success, and give up the idea of hard and persistent work. He revealed many personal characteristics of America's own electrical genius, Thomas A. Edison.

What is Marconi doing today? Let us go over what he has just said.—EDITOR.



Senator Marconi and Bride in America

By Guglielmo Marconi

ONLY the feeble-minded or the prematurely old stop and abandon their life's interest for the sake of idleness. I have laboratories wherever I go, and wherever I go I work. I have workshops in Italy, in England, and now the Radio Corporation of America has put at my disposal its plants for any experiments I may want to make. In addition when I require special concentration, removed from the calls that are always made upon me on land, I have my yacht, the *Electra*, which is completely equipped with apparatus for my researches.

These last few years have been for me a period of intense research activity, scarcely ever equaled before, to perfect beam transmission by short waves. I have succeeded. I have encircled the globe, and today England can communicate with any of her dominions by direct-beam telegraphy.

I have contrived to send 500 words a minute by beam telegraph. I now aim to raise this figure as much as possible and also to apply the beam principle to Radio-telephony. In the near future it must be possible to speak easily by telephone with the antipodes.

American Progress Inspiring

In the United States research work is being carried on with an audacity of views and a scientific spirit which is inspiring. American installations are magnificent and the improvements since my last visit to this country are startling.

Great Britain, with its very populous dominions and colonies at the earth's end from it, has felt the need for Radio connection with them. In the case of the United States this urge has not been so strong. For Radio traffic with the Philippines and Hawaii is not heavy enough to warrant special installations such as now tie together the British empire by beam wireless.

The study of what are now termed short waves can be said to date from the time of the discovery of electric waves themselves, that is, from the time of the classical experiments of Hertz and his contemporaries nearly forty years ago, for Hertz used short waves in his laboratory when

he first conclusively proved that electrical waves existed, and that they were subject to the same laws as the waves of light in regard to reflection, refraction, diffraction, interference and speed of propagation.

I might also, perhaps, recall the fact that in my own earliest experiments, thirty-one years ago, I was able to demonstrate the transmission and reception of intelligible signals through space over a distance of one and three-fourths miles by means of a directive system employing waves of only about one meter in length, whereas at that time, by means of the antenna or elevated wire system employing much longer waves, I could only, curiously enough, get signals over a distance of about one mile and a half.

The progress which has, however, been made subsequently with the long-wave system was so rapid and so spectacular in regard to distance, and the results available so easily applicable to the urgent needs of shipping, that it diverted all research from short waves, especially as it appeared, as indeed was proved, that by efficiently utilizing waves longer, and longer than those of about 150 meters—which were the first to be employed for any considerable distance—the ranges over which it was possible to communicate were steadily increased and the absorption caused by the effect of sunlight decreased and later, by the use of the longest waves, finally overcome.

Regret Long Neglect

This neglect of short waves was, I think, regrettable, for, notwithstanding the intense Radio research that has been carried out in most countries for the last twenty-five years at least, it has been left to us only recently to discover that these waves possess most valuable and unsuspected qualities in regard to world-wide transmission, and that they are capable of results unobtainable by the lower frequency system which, up to almost the present day, has held the field for all long-distance Radio communication.

Since my early experiments carried out in 1898-99 and for a very long period of years afterward, no serious research work was carried out, or at least published, so

CANADA HOPES FOR SHORT WAVE RELAY

EXORBITANT charges on the part of long distance telephone lines has greatly hampered the growth of chain broadcasting in Canada, according to Sam J. Ellis, Radio supervisor in Ontario. But relief during the year 1928 is anticipated by the Marconi improvements in the use of the short wave.

"For the recent British hook-up, which was received in Montreal by Marconi beam," said Mr. Ellis, "the telephone company demanded \$480 for use of the line from Montreal to Toronto for the two hours service. It is only 120 miles from Buffalo to Toronto but even that short stretch calls for a toll of \$200 an hour.

"We are very much interested in the progress being made in many American stations by the use of the short wave in conjunction with their regular broadcasts," continued Mr. Ellis. "A number of the leading stations in the Dominion are making plans to pick up these programs through short wave receivers and rebroadcast on their regular waves. The cost of the new installations will be insignificant compared to the toll costs."

far as I can ascertain, in regard to the application of very short waves to Radio purposes.

Research along such lines did not appear promising—short waves were not easy to produce or to detect with the means then at our disposal, and up to recent times the power that could be put into them was small. This, together with the erroneous but general belief of the high attenuation of the waves over even short distances, deterred experimenters from entering this new field of research.

Some years ago, during the great war, I could not help feeling that we had perhaps got into a rut by confining all our researches and all our tests to long waves; that is, to waves of hundreds of thousands of meters in length, especially as I realized that, in accordance with theory, it would be practically possible only by the use of short waves to project the radiation in narrow beams in any desired direction instead of allowing it, as has always been done, to spread and dissipate in every direction.

An Age of Radio

This is a Radio age. The world is coming more and more to doing everything by Radio. So far it is only communication and amusing by it. I will soon be educating its people and regulating all its life by it.

Radio will, furthermore, acquire a larger and larger share in the life of all people as it will become more and more widely appreciated that as a science it is yet in its swaddling clothes. The utilization and properties of short waves is still practically unknown—at least compared to what I believe we will finally be able to discover as to how to bend them to our will.

In the enlightenment of the world as to the possibilities of this medium I will continue to do my part. Radio is by now my second nature, and I sometimes regret that other duties are often placed upon me, which I cannot, nor indeed would not evade, which curtail the available time for research.

Land SOS Saves Alaska Gold Diggers in Blast

Life and Comfort in Northland Depend on Radio

AS YOU lean back in your comfortable chair and listen to the pick of the air coming to you dreamily from your well modulated loud speaker think for a moment of what Radio means to your fellow citizens in Alaska.

It's quite a different picture up there according to reports recently received from the signal corps' outposts and filed in the archives at Washington. Terrific cold, sharp mountain ledges, buried trails and a multitude of handicaps make communication and travel difficult and often impossible. For example, not long ago two miners were blasting for gold across the Brooks mountains, with the thermometer 40 below. Fingers, numb with the cold, fumbled a charge and there was a premature explosion. One man was crippled, the other crippled and blinded. Only a faithful malamute dog remained able-bodied. He carried a scribbled note over a 3,000-foot pass and came scratching at his master's door in Little Squaw.

It was 2:30 in the morning. Oscar Ottersonz tumbled out of his bunk and called the dog in. "He took the bit of paper to a candle. 'Come. Both seriously injured by explosion,' he read. 'Uncle Sam's signal corps maintains a Radio station at this point, 90 miles above the Arctic circle. The message was relayed to Fairbanks and from there an airplane was dispatched to the rescue."

ECKERSLEY THINKS BEAM NEXT "SUPER"

GIANT CENTRAL STATION TO CIRCLE GLOBE

English Engineer Foresees New "Spaced" Aerial System as Answer to Fading and Distance

ANOTHER British expert with strong faith in the future of beam Radio is Captain P. P. Eckersley, chief engineer of the British Broadcasting company. In a recent interview with the *New York Times* he pointed out that the beam has not only achieved distance records but also overcome much of the atmospheric conditions that have hindered heretofore.

By using spaced aerials in a new station being erected at Chelmsford he said the problem of fading seems in a fair way of solution. The spaced aerials make it possible to tune in a number of receivers of corresponding aerial lengths which receive the same transmission simultaneously and by combining the reproduction compensate for signals that fade.

A digest of the *Times* interview states: "I visualize the time when a giant station somewhere in the heart of England will broadcast to the empire," he said. "Beams will radiate to Canada, South Africa, India and Australia, there to be received by spaced aerial systems spread over miles of territory. Local stations will then relay to listeners in the Dominions, and empire broadcasting will be an accomplished fact."

"But," he added with a twinkle in his eye, "do not quote me as saying that this dream is possible at once. Our present efforts at an empire service may end in complete failure for a year or two. Britain's experiments toward empire broadcasting have materialized in the erection of a 20-kilowatt station at Chelmsford to work on 24 meters in conjunction with American short-wave stations."

International Tests

"While in America I was in close touch with Dr. A. N. Goldsmith of the Radio Corporation of America, and specific reciprocal tests have been arranged across the Atlantic both in transmission and reception. It should be explained that 55V at Chelmsford is not a beam station. It



Capt. P. P. Eckersley

has been erected for the purpose of collecting data on the subject of reception from both America and the Dominions.

"A spaced aerial system is also being built at Chelmsford, and when results in reception demonstrate a definite advance international programs will be relayed to British listeners through the British stations. The Americans have a different scheme for improving reception, a more complicated one, but Britain is at present pinning her faith to the spaced aerial."

"In the meantime the British Broadcasting Corporation is carrying out a series of tests from 2FC Sydney, Australia, using the orthodox methods, and a considerable measure of success has been achieved. The relays usually take place on Sunday between 5 P. M. and 7 P. M., Greenwich Time, and one of the most amusing features is that British listeners have to realize that it is the following morning in Australia."

ENGLISH WANT MORE

WHILE American listeners are complaining that there are too many stations, our English cousins complain that they should have more stations in order to afford a wider selection of programs. There are 2,000,000 Radio listeners on the British Isles. An advisory committee of listeners unanimously declared in favor of a greater number of stations. Only one station may be heard in any single territory. But crystal sets are still used.

AMERICAN STATION BEST—E. A. DAVIES

WIP DIRECTOR WRITES OF EUROPEAN TOUR

Judges Popularity by Comparing Antennas He Saw on Homes in Various Nations

By Edward A. Davies
Director of WIP

AND now, about my little trip to Europe. I traveled through France, Germany, Holland, Belgium and Switzerland, and flew from Paris to London. To say that I had a great thrill would be putting it mild. I had an excellent opportunity of studying Radio conditions of each individual country. The most progressive, to my way of thinking, was Germany. On or about September 1st they opened one of the most powerful transmitting stations in the world. I was given to understand that it has a maximum capacity of one hundred fifty thousand watts. The type of apparatus used in the building of this station was absolutely foreign to me. It was entirely different from anything I have been used to seeing in America. Their towers are considerably over five hundred feet from the ground. They were using the usual L shaped antenna. From what I could learn they are figuring on using all the great musical centers throughout Germany to feed the concerts through this super-power key station.

France apparently has not as yet awakened to the possibilities of Radio. The most remarkable condition I found in Paris was that in my eight-day sojourn I saw only two shops that dealt in anything pertaining to Radio, and both these shops sold their Radio apparatus in conjunction with talking machine records and apparatus.

Reminded of Home

Various cities throughout Holland made one think of our own American cities, in so far as the Radio antenna was concerned. Amsterdam, Rotterdam and the Hague all showed the tremendous interest evidenced in Radio by the row upon row of house tops crowned with the inevitable Radio antenna. The station in Amsterdam broadcast some very beautiful concerts.

Belgium is taking to Radio very fast. I found great interest in Antwerp, but particularly in Brussels. Switzerland is taking Radio rather matter of fact, seeming to be perfectly satisfied picking up the concerts from Germany and England.

The French broadcasting, as I stated, does not amount to a great deal. They spend a lot of time on news items, government reports, etc. The musical programs seem to be entirely secondary. Another great contrast that was decidedly marked was the difference between the interest in Radio exhibited by the rural Frenchmen and, for instance, the rural German. Everywhere throughout rural Germany one saw antenna strung from the house to trees, haystacks and what not. In France one rides for hundreds of miles through the rural sections without seeing anything in the nature of an antenna.

England has her Radio entirely stabilized, being under government control, and each concert under entire government (Continued on page 12)

"Jenny Lind," WRVA



A MODERN Jenny Lind, is Miss Mary Bowe Sims, coloratura soprano, who has been adjudged by Radio listeners the best singer in Virginia. She appears at WRVA, Richmond, in a series of Jenny Lind programs, and by the time you read this you may have heard her over one of the New York stations.

Michigan Enacts Radio Law

Through legislative action Michigan authorized the state public utilities commission to regulate Radio operation in the peninsular state. Listener organizations throughout the commonwealth were invited to the capitol to consider phases of the proposed bill to be enacted. Although the blooping nuisance has been largely abated, the bill provides legal basis for its suppression. The commission expects to have one man whose sole duties will be to advise on public Radio problems.

It was stated as the aim of the new control law to cooperate with the federal commission and assist in enforcing regulations calculated to be of greatest good.

LET "OFFICIAL" CALL BOOK BE YOUR GUIDE

DID you read about MacDonald in California logging 616 stations? He's scientific, and you can bet he doesn't just go about it blindly to make such a record. He knows what he is going after and he's doing it according to Hoyle—as you might say in this game, "according to the Official Call Book." Radio Digest publishes each month a complete, corrected-to-date directory of broadcasting stations. It comes with the magazine—nothing extra.

MAID OF COEUR DE ALENE THRILLS LISTENERS WITH SPIRIT OF VIOLIN



ONE of the most beautiful places in America is Coeur de Alene, Idaho, a limpid mountain lake with mammoth trees to the very edge, a typical little western town struggling between the modern and the primitive; this was the home of Mary Chainey (above) heard over the Red Net-

work on the Sunday evening classical programs. She made her debut in New York a year ago and was at once accepted as an artist with unusual ability. Perhaps her violin has become imbued with the spirit of Nature's beauty as found at Coeur de Alene.

Delights KGO Fans



WHEN the Hearsts at San Simeon or the Barkleys at Hamilton want to tune in an especially good singer from San Francisco they look up the hour when Miss Gail Taylor is to be heard at KGO.

Fame Passes But KFKX Carries On

No Longer DX Goal Hastings Station Moves to KYW Home and Serves Farmers by Daylight

OLD KFKX, at one time the most popular DX station in America, has moved from Hastings, Nebr., to Chicago and settled down on the roof of the Congress hotel, where it nestles alongside its more elegant sister, KYW, of the Westinghouse family.

For a time this old stalwart with faded glory seemed to be lost, but KYW needed someone to share that 526m-570kc allocation—someone within the family. So KFKX picked up its tubes, antenna, "mike" and other paraphernalia and moved into the Chicago Westinghouse Radio residence. It's down Michigan boulevard just a little way from Bill Hay of WGN, whose voice used to be the KFKX voice everybody tried to hear.

In those early days KFKX was the passion of the DX fiends. Every man made his own set. Ruby Holmes in Chicago would invite his friend George Ayer over to hear the new neodyne he had put together. Smith, up stairs, had a regenerative set that blooped like sin, but between bloop Holmes got KFKX, and Radio certainly was wonderful.

Don't worry, KFKX won't interfere with any of the swell chain programs KYW broadcasts at night. But the farmers always were her best friends. At 9:30 in the morning she swings off to the blue with her farmer's program and service information. Back to Nebraska and other states west of the Mississippi she goes with live stock reports from Omaha, Kansas City, East St. Louis, St. Joseph, Chicago, Sioux City, St. Paul and a few points East. At 5:30 the final summary is given and then she leaves a clear track for KYW and her dinner dances, fancy studio doings and the opera.

Kiley Backs Davies in U.S. Radio Superiority

Bigger Selection and Better Quality of Programs Here—N. Y. Has 2,500 Hours Monthly

MORE than twenty-five hundred hours of entertainment were offered Radio listeners in New York City by stations in New York during the recent autumn, according to a statement by George H. Kiley, vice president of the Farland Manufacturing Company and an authority of Radio conditions.

American listeners are particularly fortunate in comparison with listeners in England and other countries, Mr. Kiley explained, pointing out that the majority of British Radio listeners, for example had only two or three broadcasting station programs to choose from, while listeners in New York City had from ten to thirteen stations on the air at the same time, all within the range of their receivers, exclusive of stations out of town that cannot be brought through the locals on most receiving sets.

American listeners have more than five times as much program material offered them than do listeners in any other country, with the quality of the programs



FOR some reason or other the Radio daddies down at Washington have taken a stern and disagreeable attitude toward the very popular Chicago station, WHT. At least that is what these little folks think as they swarm about Pat Barnes, winner of the Radio Digest popularity

as they once did. For almost every special occasion, Christmas or Halloween, Pat throws a party for his small friends and they fill the studio in the big Wrigley building to overflowing. That's Pat himself, in the center of the group. Pat's an author now, too. He has published a

POPULAR ORCHESTRAS

(Continued from 5)

Winnipeg, during the winter months, and goes to the famous Canadian National Railways summer resort, Jasper, during the summer months. Besides to the regular listeners they play especially for passengers aboard the Radio-equipped Transcontinental Limited, and the National.

Following are the standings of the orchestras December 15th:

DISTRICT NO. 1—EAST

Table listing orchestras in District No. 1—East, including names like Tom Timothy's Frivolity Club, Irving Sectors Rhode Islanders, and various local ensembles with their respective vote counts.

POLAR BEARS IN ARCTIC FROLIC



THERE'S A frosty tingle and sleigh bell jingle when the WNAC Polar Bears come rumping down from the Boston Shepard street antenna. They were nominated in the orchestra contest, but in spite of a handicap start have scored 311 votes to date.

Table listing orchestras in District No. 2—South, including names like Tom Timothy's Frivolity Club, Irving Sectors Rhode Islanders, and various local ensembles with their respective vote counts.

Table listing orchestras in District No. 3—Middle West, including names like Jean Hammond's Elks Club Tune, Tinkers, WTAM, and various local ensembles with their respective vote counts.

U. S. STATIONS BEST

(Continued from page 11)

supervision. It seems almost incomprehensible that seven hundred stations could operate successfully at one time, that they could be accommodated in the limited number of bands that we have, and the great amazement of all was expressed in the fact that we had enough artists to supply the tremendous demands of this number of stations.

Simple Explanation of Broadcasting

Part II—How a Station Creates Radio Waves and Sound Rides Them Over Land and Sea



THAT you will not have to dig up your last month's copy of Radio Digest, in case you have mislaid it, let me recall to your mind that we first took up the creation of a voice wave in the singer's throat, explained how it traveled forward with part of it reaching the microphone, then considered the speech amplifier which increased the power of the electrical impulses set up and, finally, followed the impulses through several speech amplifier units. We were then ready to put our created solo into the transmitter.

casting on a frequency of 700 kilocycles by order of the Federal Radio Commission." It is the purpose of one of the two groups of equipment at WLW to create and send forth a steady stream of Radio waves in which 700,000 waves will be sent rippling after one another every second.

Or, if the deep-voiced, slow speaking announcer at KPT advises that, by the same authority, they are using "a fre-

into action. To the right of the 5 watt oscillator is shown the first amplifier, a larger tube rated at 50 watts capacity. This causes the Energy to swing outward and upward yet further, up to a certain point, and then a tube of 250 watts capacity takes up the job.

Giving Energy Push.

The power now stored up in the swing of Energy has become pretty strong. In 1923 and 1924, a station that finished the series of amplifiers with two 250 watt tubes working together and putting their power into the antenna, was considered a first class station. Now such tubes are merely a stage of power amplifier and, farthest to the right in Figure 4, we have two huge tubes of 10,000 watts each working together to give Energy its final push. This would give a 20 kilowatt station—yet WGY has used tubes in banks or groups to create a final push of 50,000 watts.

The question might well be asked, "Why start with the little tube and work up through the intermediate sizes to the big ones? Why not cause the largest size to create currents at Radio frequencies and be done with it?" That's a fair question—and that's the way it used to be done. It was found, however, that when this was done, the frequency had a tendency to vary, that is to increase a few thousand or decrease a few thousand per second. The result was that, when one got nicely tuned to receive the program, it faded in and out or, what was worse, became too close in frequency to that of another station, and created a steady whistle.

To stop this, a little device was perfected called a Piezo crystal control. The heart of this unit is a Piezo crystal, which is made up of much the same material as sand. The substance is called quartz, and chunks can be obtained large enough to grind flat crystals from, much as opticians grind down a lens for one's glasses or a lens for a kodak. These crystals are most interesting. Naturally they have a grain just as wood or glass or ice does. The thin flat plates must be cut through at a certain angle to the grain and the surfaces must be ground down very carefully and delicately.

Crystals Control Frequency

Every so often they must be removed from the grinding holder and tested as to what frequency they possess at that stage. The amateur can buy crystals for his transmitter, that are reasonably close to the desired frequency for us low as \$15.00.

that it will cause the tube to create only the frequency for which the crystal was ground. This cannot vary. We come now to Figure 5. At the left we have the two 10,000 watt tubes swinging energy with the little Piezo crystal holding up its hand for them to slow down a little as they are swinging Energy too fast. These huge tubes would merely laugh at the little crystal, run right over it and destroy it. At the right, however, the crystal has tackled the little 5 watt tube which is no larger or more powerful than it is and this tube must obey.

That is the reason for the series of amplifier tubes. We can accurately control the little fellow and then build up its output through larger ones, each of which must swing Energy at the rate of the tube ahead. Next? It most certainly is. Now please don't misunderstand and get the impression that every large broadcaster uses tubes in just the capacities mentioned. Those sizes are merely named for illustration. The Bellmore station of the National Broadcasting Company uses a 7½ watt tube followed by another one, then a 50 watt, two of 50 watts capacity, one of 1,000 watts, one of 20,000 watts operating at about 5,000 and, finally, a

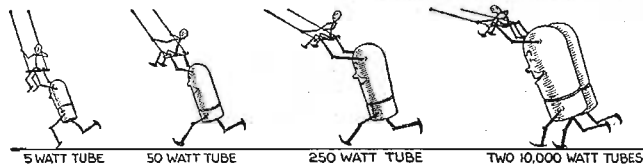


Figure 4

Now a Radio telephone transmitter, as used by the first class broadcasting station of today, is quite an imposing affair. Probably a great many readers have seen the neat little transmitters assembled by a Radio amateur and have that in mind as a Radio transmitter. A great many have, by now, visited a broadcasting plant and seen an outfit of, let us say, 500 to 1000 watts power. That's the way they're rated; by the number of watts (units) of electrical energy they can throw out into the air.

The really large, nationally known broadcast transmitters are nearly beyond the conception of anyone who has not actually inspected such a plant. The generator room has become of moderate size building, or a large part of a large building. Where two control panels of about

quency of 640 kilocycles," the similar group of parts at his station is expected to deliver 640,000 waves into the wide open spaces every second. The tubes and their associated equipment which accomplish this are known as the "oscillator" and "power amplifiers." These terms probably mean very little at the moment but we'll come back to them.

The other part of the apparatus at each station is there to see that the voice, music or other sounds to be broadcast are properly and thoroughly placed on the Radio waves and so carried to the thousands of waiting receivers. The process of getting sound so mingled with the Radio waves that it will stay there is called "modulating," and the tubes and equipment which do the trick are "modulators." In ordinary conversation we use the word by saying "Please modulate your voice a little lower," when a friend is talking too loudly. It is into the modulating apparatus that we feed the impulses from the speech amplifiers described in Part I.

How Amplifiers Work

Taking up now the oscillator and power amplifier. We start things with a tube but little larger than the ordinary UV-201-A, one which many fans now use as the second audio tube in their sets—the UX-250. We connect it to coils and other parts in such a way that it now does just the opposite duty that a detector tube does in your receiver. In your receiver, it is the function of the detector to take in Radio frequency currents, which change their direction of travel in the wire from 500,000 to 1,500,000 times a second, and turn out direct current which travels only in one direction. When we apply the 210 tube as an oscillator in our broadcast outfit, we apply direct current to it, and it produces alternating current which starts in one direction and then comes back, anywhere from a half million to one and one-half million times a second. These frequencies of alternation are called Radio frequencies but they are not as yet Radio waves.

Refer now to Figure 4. Here we have a semi-cartoon depicting Energy being given a gentle swing by a small tube, the UX-210, which is rated as a 5 watt tube. Being a little tube, it can reach the bar at the ends of each swing only up to a certain point, but—it has started the swinging. For that reason it is called the oscillator. Now, the power amplifiers come

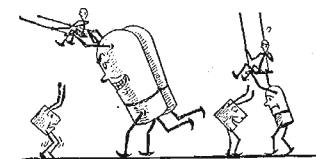


Figure 5

five feet by three feet dimensions used to be ample front for the equipment, a long row of much larger upright panels is now used. They form a solid wall about seven feet high and twenty to thirty feet long. Meters by the score dot this wall, and almost as many huge wheels and knobs.

Behind this wall of black panels, is a series of structures of angle iron and braces and shelves in which the myriad square metal boxes, bird cage-like coils, gleaming tubes and parallel rows of wire are carefully placed. To reach into some of these sections would produce merely a tickling sensation, into others a sting from which we'd recoil with a grimace of pain, while touching parts in those at one end would be instant death. The power required to toss Radio waves from coast to coast would light a good sized building.

Apparatus in Two Groups

This high priced assembly of carefully made apparatus divides itself into two distinct groups, each having a different purpose. Most of us have, by now, heard station WLW announce that "we are broad-

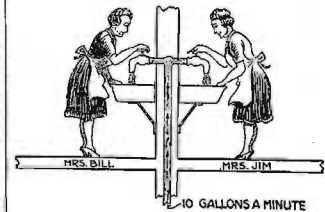


Figure 7

bank totaling 50,000 watts. The Bound Brook station also starts with a 7½ watt oscillator, and then has a single 250 watt, two 250 watt tubes, and then a group of large ones totaling 40,000 watts.

"Squeezing" a Wave

This truly terrific power is then placed across the huge condenser formed by the antenna on the one side and the ground on the other. Between these two surfaces there is an electrical pressure set up at each alternation of the current which, seemingly, tends to squeeze a wave motion into space. You will recall that wave motion was explained in Part I as Energy being passed onward through

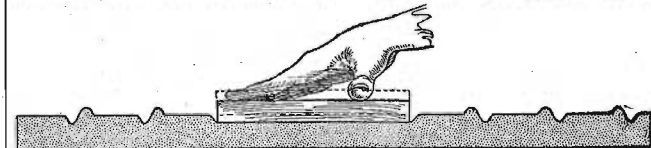


Figure 6

The broadcasting station, being a commercial enterprise and therefore expected to be on an assigned frequency, must pay many times that for a crystal which has been brought to just the frequency wanted. For use in controlling the frequency of a station, this little thin plate is mounted in a special holder to get just the right amount of pressure on it.

It can now be so connected into one of the circuits about the 210 oscillator tube

space as a nudging of particles without the actual particles themselves moving either forward or back. Figure 5 will make this clearer.

Suppose we take a large rubbery sheet of gelatin and place a flat plate of metal near its center. If we now press and release, press and release on this plate, we cause ripples or waves to go out from the plate. We have momentarily created pressure. (Continued on page 20)

Facts About That New Christmas Receiver

ABOUT the only exact figures the Radio commission probably cannot get that pertain to Radio are those on the number of new sets that went into operation between December 23rd and 27th. From the business the Radio departments and Radio stores did during December, as good a guess as any would be 300,000. That many families, at least, will find themselves faced with an electrical and mechanical triumph of science that has been brought down to considerable simplicity in the matter of operation but still remains a device for handling energy in such minute quantities as were hardly dreamed of not many years ago.

To get trouble-free operation from it, and the results which the advertisement makes possible for the machine, takes a little practice and some study of what happens when various symptoms occur. You had to learn a few things about your car, its switches, chokes, gauges and breaks, so have the same patience with your Radio—and give it as much thought.

Most of the receivers sold this year will probably be installed either by the dealers who sold them or by service men, so it is hardly necessary to explain to the new set owner how to connect up the various accessories with the main cabinet. Earlier in Radio's history, each purchaser of a set had to be his own installer, service man and trouble-shooter, but those days are about over. There are many points in connection with ownership of a Radio set, however, that will make for much more enjoyable operation, and these we propose to give here as one who is somewhat familiar with Radio talking to the newcomer.

Study Instructions Before "Kicking"
First of all, new member of the Lodge of Listeners, read over the instructions carefully. Doubtless right now you can just flip the switch and hear a few stations, and get them with a beauty of reproduction that cheers your soul and makes you think of many wonderful evenings at home. But, you'll find that some stations have a tendency to tune pretty close to others and maybe there is a faint background of one mixed in with the loud music of a station you wish to hear. Do you know how to adjust and tune to eliminate the unwanted broadcaster? It's highly probable that there are several paragraphs in the instruction book about what to do to improve selectivity, or get around a too powerful nearby station.

The remedy may be a little more inside the top cover which changes what is called "coupling," or a couple of small knobs at one side of the panel that "sharpen" the tuning a bit or, yet again, you may have too long an antenna for your location. If the book don't help you, after careful study, discuss the matter with your dealer.

On the other hand, perhaps you get distance without trouble, but rather faintly in the speaker and not sufficiently loud that you can sit over in the arm chair and enjoy those far away programs. The book or your dealer, if you approach him pleasantly on it, can solve the difficulty nine times out of ten.

How to Tune
Success with a Radio outfit depends on learning it—thoroughly. For instance, once you learn the numbers on the dial where certain nearby stations come in very loudly, you'll tune with one hand on the tuning dial and one on the volume control. And then, when you go across the scale, you'll back up a little with your "Volume" when approaching those numbers, and advance "Volume" when in between them. That way, you won't have programs blasting forth at you one moment and a dead silence the next. This procedure makes a great many stations come out with practically equal volume, whether near or far away. But that little stunt is not "in the book."

It is not probable that anyone told you that your cone speaker was a little temperamental or fussy as to where it was to be placed. True, it will work anywhere you may hang or set it, but it is liable to sound a great deal better if hung either across a corner of the room or away from a wall. Presuming it is the kind with a base, the natural tendency is to place it on the set and shove it back close to the wall. Cones, most of them, do not fare well in that location; better to keep a cone speaker well forward on the set or, better yet, place it somewhere else and away from walls, since quite a few Radios create within themselves an unpleasant howl or steady whistle with a speaker resting on the cover.

Practically all speakers, either cones or horns, are adjustable. It is possible that your dealer's clerk did not have time in the rush to explain this to you. Also, most of them have instruction sheets on this point. If you haven't one, note to the maker will bring it. Cones, such as Western Electric, have a little nut on the tip for adjusting to your set and its voltages. A few have this inside a removable back grill-work. Horn speakers have a

***Y**OUR Radio Digest expert tells here some of the secrets inside the new Christmas Radio set you are just beginning to understand. Of course, if you are a novice, there is a great deal of mystery about the whys and wherefores of the little jiggers that make it work, and if anything should go wrong you never, never would know why—unless someone who does know would sit down and explain. Sit down and go over this summary with Dr. Tommy.*

little lever on the side just below the neck, or underneath the base, and inside.

Power Supply Units
Possibly you didn't feel in a position to invest in a power supply unit at this time, or the giver felt that batteries were O. K. Batteries, especially if of the large heavy duty type, should run your set for several months—they should last until summer. This refers to "B" batteries. You can get a power-from-the-socket, "E" unit at that time; get your money's worth out of those batteries now. If you did get power supply units, they too should have instruction sheets enclosed or pasted in the cover.

There are two types of these socket units for supplying "B" energy to sets; that which has a tube and that which uses little jars of liquid. There are two types of tubes; if you find something on the unit or its instructions about "Raytheon" or "Q.R.S." it is quite alright if the tube does not light up. It's not supposed to, although it may get warm and even hot, which is O. K. If the tube turns out to be a "213" or "280" it should light up when in operation. Tube type "B" units need no attention after being installed.

The power units for giving one "A" current, to light up the tubes in the set, are of four types. There is one kind, completely dry, and the elements in them last indefinitely. If the sheet lists nothing to be done in the way of maintenance, yours is that kind. Then there are dry ones, that use a cartridge, which should last about a year. The replacement of the cartridge is very cheap however. Then, there is a wet variety that needs an occasional glass of distilled water in the rectifier cell, which should be covered in the operating sheet. The fourth variety, and that in most general use, is the one containing a storage battery, a rectifier (either wet or dry) and a power switch.

The battery in this kind will need water every so often, but there cannot, from this type, be a "hum" in the reproduction. If there is an adjustment to be made of the charging rate from the rectifier, study the "dope" on this operation carefully.

Adjusting "B" Unit
The socket power device for "B" current should be put into use with the help of a "high resistance voltmeter." The ordinary meter, such as you or your friends may have tested batteries with, will not do. The "B" eliminator is, like the cone speaker, a little temperamental on one or two points. If your dealer did not adjust this unit with such a meter on installation, you should borrow one from a friend or the dealer. Weston makes such a meter and so do Jewell, the type number of the latter being No. 118.

To quote from the Jewell instruction sheet: "A 'B' eliminator should be tested under load. To adjust it to a radio set the 'B' eliminator should be connected so that the set is operating normally. The negative (—) terminal of the voltmeter should be connected to the negative (—) terminal of the 'B' eliminator and the other lead attached to the 250 volt terminal of the instrument. This should be touched in turn to the several binding posts (plus) of the 'B' eliminator and the true voltages applied to the Radio set will be indicated on the 250 volt scale."

"Adjustments should be made where possible, so that the voltages on any tap are those required for the proper operation of the Radio set as indicated on it. If the receiver merely has instructions for the number of 'B' batteries to be supplied, an equivalent voltage to these 'B' batteries should be supplied by the 'E' power unit."

Now most Radio sets require 45 volts (1 battery), 90 volts (as supplied by 2 batteries) and "Power" which can be either 135 or 180 volts (3 or 4 batteries). As a rule the colored leads from the set are identified with little metal tags that indicate the voltage each wire should get. In relation to the minus wire, so you can readily adjust the knobs on the "B" unit so that the meter readings at each plus wire are as required.

Ground Is Important
All sets, except those which operate from a loop aerial, require a ground con-

nection. Most people, because the erecting of the antenna of a great deal more importance and let almost anything go as a "ground connection." This connection is just as important and, in these days of A.C. tubes, it is even more necessary because it is the ground connection that eliminates much of the possible "hum."

If a friend volunteers to put in your set and wants to just wrap a piece of scraped wire around the radiator pipe or water pipe, let him go ahead to save argument, but you drop into a Radio store and purchase, for a quarter, a ground clamp which looks like a very small carpenter's clamp and has a threaded screw, pointed, that you can force to dig into the pipe a fraction of an inch. Then just fasten the bare wire under the screw on the clamp, put it on the pipe and tighten up. That's the only decent ground connection this writer has yet seen, next to soldering with a blow torch.

Loop aeriels, such as are used with super-heterodyne receivers, and a few shielded tuned Radio frequency sets, are another type of accessory that is a little finicky about where it is placed. If you put the set on a table in front of a nice tall mirror and want the loop on the set, take the mirror away. Or put the loop somewhere else. The silvering on the mirror is a very effective shield against stations in that direction and, when the loop is parallel to it, will "kill" signals perceptibly. Radiators, too, should be avoided by several feet with a loop aerial. If your apartment has those very solid metal doors, finished in walnut or mahogany, don't expect the loop to do "its stuff" 100 per cent with the door swung back close to it. Just below a wall bracket containing lights, with the possibility of wires running in the wall straight down from it, is a good place to avoid with a loop.

Tube Precautions
If the set was installed hurriedly, it may help a great deal to switch tubes around a little—providing you watch your step on which tubes you switch. In storage battery type sets, or rather, those using storage battery type tubes, there are 201A, 200A and either 112 or 171 tubes. The 201A variety are the ones to be tried out in the different sockets that take these tubes; there is likely to be only one 200 or 200A, which must stay where it is, and only one 112 or 171, that must stay where it is. There may not be a 200A, in which case all but the 112 or 171 will be 201A. Tubes do not run quite uniform in their characteristics due to the delicacy of their construction and some are better amplifiers in what we call the "Radio frequency stages" than others, while the one that shows up poorly at that point may make a whale of a tube in the "first audio stage." Or, it might make a great detector in sets not supplied with the 200A type for that purpose.

The AC tubes seem to vary even a little more, and here the trying of different tubes in the various sockets will almost surely prove of value. Remember, however, that tubes of the 226 type must be put only in the sockets intended for them. If you put one in the socket intended for the 112 or 171 you'll be "out" a tube. You cannot mix the 226 and the 225 type because the number and placing of pins is different, but the 226 will go in the sockets intended for the power tubes 112 and 171—with disastrous results. Keep the 226 bulbs in their correct sockets and playing around with them will prove of value.

Regardless of which kind you have, 201A or 226, have one or two extra ones. In the first place, you have more to try out for extra good ones, and second, if one "goes" during an interesting program, it is only a matter of a minute to put in the extra. Just like having a spare tire on your car only less trouble to replace. An extra power tube is good too. It can burn out.

(Continued on page 35)

WHK IS FOR MEN—MALE QUARTETTES

Upper photo shows Underwood Quartette and lower the Fifth City Four—Members of the WHK staff at Cleveland.



CLEVELAND is famous for its good male voices, and here are a couple of quartettes that have done their share. Both are with the WHK broadcasting station. The upper group is known as the Underwood Battery Male Quartette and the lower, The Fifth City Four. Letters from the fans indicate that the voices of both fours have been heard simultaneously on the Atlantic and Pacific Coasts.

"WHK has no quarrel with the women," said the program director, "but experience has taught us that men are preferred for the air entertainment. We are for men all the time. We take great pains to provide male voices that please, and are proud of these two quartettes."

Hidden Minerals Answer Radio's Call

New Scientific Tests Indicate Subterranean Ores Respond to Ether Waves Operated by Prospectors

WILL the Forty-niner of 1949 start out with a short wave transmitter and portable receiver, and hunt his ore with microphone and headphones?

It begins to look that way. Max Mason, the tall, angular sport loving president of the University of Chicago, says experiments in that direction have already been successfully carried out. The main thing is to learn the language of the ore, signal to it and tune in for the answer—if any.

He pictured the progress of the work to a recent gathering of the New York section of the American Institute of Mining and Metallurgical Engineers. His revelations surprised his listeners almost out of their seats. The Radio prospector presents an analogous appearance to the old time superstitious voodoo and his divining rod, except the Radio apparatus, sets on tripods, is keyed with electricity and actually produces sounds from the depths below the surface.

The pictures on this page give one an idea of how the "magic" devices for finding ore by Radio look. The engineers with their outfit journey into the field beneath which they expect to locate ore. The underbrush is cleared away, the tripods erected, batteries connected to transmitter and receiver. The engineer at the transmitter practically sends down this query, after the English fashion:

Calling Up Ore

"Elo, 'ello, 'ello—'ello Ore, are you there?" "Um-um-um-huh-huh, I'm here," comes the answer to the engineer at the receiver with the headphones over his ears.

"Good, Old Top, and I say how far do you extend yourself down there?" "You hear me now, don't you? Well keep going until I fail to answer."

So the Radio prospector picks up his apparatus and moves on a little further and makes another inquiry. He keeps on testing while his assistant marks off the area into charted squares or circles where the responses are most clearly audible and where they fade.

Finally the whole field is laid out, even to the approximate depth at which the pay ore may be found and never a pick or shovel or drill is used except to clear the ground sufficiently to set up the tripods.

Does this process sound absurd? Well, just hold your smile, it has been worked out. President Mason described all the technical details to the open mouthed engineers. When he had finished the theory seemed perfectly clear and Radio prospecting was accepted as one of the new miracles of modern science.

"The fundamental procedure is to shout down questions in the hope that the ore body will hear and answer back," said President Mason. "A large part of the expert's study must relate to the kind of questions best suited to the temperament and intelligence of the ore bodies."

Best results have been obtained working at a depth of 100 feet or less, he said, and was skeptical of working at depths of 500 feet or more. The greatest uncertainties are those met in the exploration of virgin lands for new ore bodies.

He stated that with his associates practical surveys have been made of nine different mineral regions, four known to contain ore. In each case results agreed with ore known to exist. Only one of the remaining five areas has since been drilled. Ore was found there in paying quantities and the cost of survey was found to be between \$5 and \$7.50 an acre.

Others Interested

Experiments of this nature have been carried on not only through physicists but also by other educational interests and to some extent by commercial interests. Dr. A. S. Eve of McGill University at Montreal has been experimenting in Colorado. He

is at this time conducting a study of geophysical prospecting for the bureau of mines. He is using a superheterodyne set with nine tubes, in the mine of the American Mining and Prospecting company of Caribou, Colo.

His first test was performed at a depth of 220 feet. The next series of experiments were conducted at a depth of 550 feet beneath solid rock. Results were not

"When set up for operation in the field the broadcasting set sends out an alternating electrical current of high frequency and creates a large primary electro-magnetic field.

Sends Out Signals

"Engineers point out that an electro-magnetic field is formed about a conductive body wherever an electrical current is passed through it. After continued ex-

case the transference of radiation was by some conductors in the mine; electric wires, pipes or rails, common in all mines.

"It is possible that at Caribou the Radio waves excited the conductors in the shaft, and these in turn excited rails and pipes, which brought the radiation to within 70 feet of the experimenters, and that the strong amplification of the Radio apparatus enabled the radiation to bridge the gap. This Doctor Eve considers, is improbable, but not impossible.

"On the other hand he was impressed with the fact that the loop did not point towards neighboring conductors or along the tunnels, but it did point at both levels within a few degrees of the source at Denver. The evidence is strong, but not absolutely conclusive, that wireless waves will penetrate 500 feet of rock to an extent which enable them to be received with powerful amplification. It is desirable that these investigations should be followed by further research work on the subject.

"The experiments conducted at the Caribou mine tend to confirm the view that radiation passes through the rock with, of course, much attenuation. It is known that Radio signals will just penetrate through a conductor like sea water to a maximum depth of about fifty or sixty feet, and there is no reason why radiation should not

penetrate to ten times that distance through a poor conductor like dry rock." This expresses the unflinching conservatism of Uncle Sam and his bureaus. Doctor Mason expresses a broader assurance. He states unequivocally that prospecting by Radio has, is being and will be done with assured success. His word is unimpeachable. When he speaks he speaks with authority.

Learn to Build

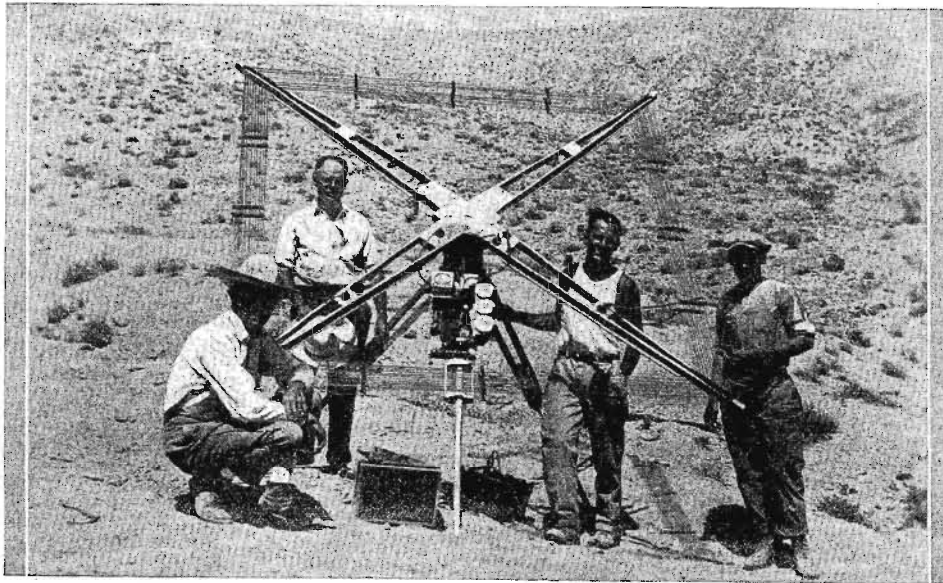
So the prospective Forty-niner of the Twentieth Century should begin at once to qualify for the How-to-Build class of set constructors. You never can tell when there will be another call to the gold fields. The man with the best Radio outfit is the one who is going to stake the best claim.

Do not be too pessimistic because the most of these observations seem to specify "conductive ore bodies" without any particular reference to the quest of all metals—Gold. Yes, indeed, gold is a conductive metal, although it is not commonly used for wiring receivers. It serves much better for old fashioned wedding rings and door knobs for millionaire bootleggers.

Of course gold is still good for coin of the realm and many articles of jewelry, and just to prove to you that Radio works in gold prospecting it is a known fact that several wholesale manufacturers who use gold in quantity employ a Radio device at the exits to detect any uninvolved parcels of the precious metal departing in the pockets of the workers. Certain thieves and crooks make a practice of seeking employment in such institutions, where they work along side of honest employees. In the dexterity of their professions they manage to slip items of gold into their clothing. The whistle blows. They rush for their coats and hats and pass in line toward the door. But as they approach the door a man near the exit observes a little dead-end on a dial suddenly becoming agitated. It fidgets back and forth and then points accusingly at the thief.

The detective takes the culprit out of line and in a very few minutes the gold is discovered and the thief is on his way looking for a new job.

If the detector will work in a case like this, there is every reason to believe that the same device will go even further and tell the new Forty-niner where good old Mother Earth hides her treasure when the prospector is within reasonable distance



TRANSMITTING and Receiving apparatus used in prospecting for hidden ores. Upper photo shows transmitter ready to send down alternating current of high frequency with large primary electro-magnetic field. Presence of conductive ore body is indicated when some of this current flows through, creating secondary magnetic field detected by the listener at Spectacle device shown below. The "rims" are loop direction finders which locate the axis of the electro-magnetic field detected. Repeated tests have shown these Radio "hook-ups" are surprisingly accurate.

so good at this depth but Radio conditions were found to be generally bad and therefore the test was not considered a fair criterion of what might be expected under more favorable atmospheric conditions.

Operation of the Radio prospecting device is described in a recent issue of the Dallas News as follows:

From Dallas News
"In the mining country of the Southwest Radio transmitting and receiving sets not much unlike those used for broadcasting and reception in the average home are being used for the location of valuable mineral deposits. The equipment is known as the radio process. Experts who have developed the apparatus declare that the system will definitely locate conductive ore bodies to a depth of 500 feet, regardless of surface conditions.

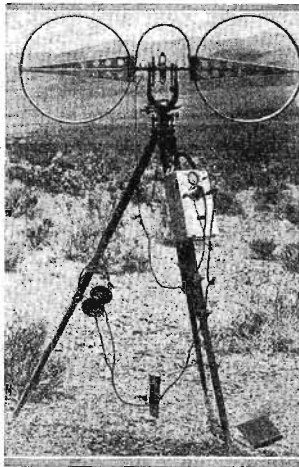
"Mining engineers point out that the innovation of this new use of Radio will eliminate hit-or-miss prospecting. The essential features of this apparatus, they say, are composed of a high-frequency broadcasting set and receiving set with a direction-finding loop. The entire outfit has been designed for active field work, and every convenience for quick set-ups and portability have been carefully planned. It weighs nearly 500 pounds, while the heaviest part is only 50 pounds. The broadcasting set is mounted in a tripod, while the receiving set is erected on a surveyor's transit, making a valuable combination.

permenting with the apparatus it was found that, although the instruments were within both fields, if a conductive ore body is present within the primary field created by the high-frequency broadcasting set some of the current naturally will flow through and thus create the secondary magnetic field.

"The Radio prospector next determines the axis of the secondary field in mines for determining the best locations for new tunnels or shafts or in finding faults in the mineral veins, the experts say. The apparatus works as well underground as on the surface and is applicable to many uses.

"The geologist or mining engineer of the future will be using Radio as one of his most valuable tools for scouting and prospecting work in territories under his supervision. Large areas may be quickly surveyed without a tremendous outlay of money. Where the prospector of yesterday depended on favorable outcroppings, shallow digging or drilling, the Radio prospector of the future will cover immense territories in a vastly more efficient manner, with greater results."

In a report issued by the United States Bureau of Mines it is not accepted as absolutely conclusive that Doctor Eve's experiments have proven the efficacy of Radio as an ore discoverer. The statement says: "In previous experiments it was at first concluded that radiation and induction would penetrate rock for considerable depths. Subsequent



Dorothy Thinks Morgan Ace Announcer

He Exerts Perfect Self Control Although Sub Tenor Tears His Soul to Bits by "Waugh-Waugh" Blasting

By Dorothy Brister Stafford

STRUGGLING out of the Times Square station after our first visit to the National Broadcasting company's studios at 195 Broadway, something over a year ago, we were hailed by an acquaintance who is an ardent Radio listener, with the breathless query,

"Oh, did you meet Mr. McNamee?"

"No," we returned, "but we did have a nice chat with Arnold Morgan."

"Morgan?" she repeated, "Why whoever is he? I've never heard of him."

"Well, there are a lot of highly necessary people around there you've never heard of," we told her. "With some of them announcing is a side issue when they are not busy with other duties. But something tells me there is a time coming when you are going to hear more of Arnold Morgan."

Whether it was some unusual intuition, or the impression made by our short contact with him, when our common sense told us we were not talking with the



ARNOLD MORGAN, above, who has forged ahead as dependable NBC announcer. **Norman Clark**, left, and **Leslie Joy**, right, tenor and announcer who are becoming known to the millions who listen to the music of the chains.

usual, garden variety of announcer, we have been gratified in the past year to see our impulsive prophecy come true, for the phrase, "This is Arnold Morgan speaking from New York," has been coming in with increasing frequency for the past several months.

With Mr. McNamee devoting more and more time to personal appearances and sports broadcasts, and Mr. Carlin now busily engaged with the manifold duties of general manager of WEAF, and Leslie Joy, another veteran of the microphone acting as his chief assistant, in the course of events it naturally followed that there was an opportunity for some other rising young man to come to the fore and be identified with the more important announcements of this station.

Hear Arnold Morgan

And when, one night this fall, we had all drawn up our chairs to listen to the Sunday evening program, the Man Who Eats Batteries pricked up his ears and said, "By George, it's Arnold Morgan." And sure enough it was,—handling the most important hour of the entire National Broadcasting company's chains, which heretofore had been the exclusive prerogative of the Messrs. McNamee and Carlin.

It is just possible, that with the carelessness born of familiarity, you at the other end don't realize just how seriously the studio takes this concert hour. After being present during the broadcasting of one of these important features, one comes away with the impression that the entire NBC, from Merlin Hall Aylesworth down, would curl up and die from chagrin should there be a single misplaced accent or the slightest slip-up to mar the perfection of the offering.

Strolling in casually one Sunday night at half-past nine when a Metropolitan star was making her debut via microphone, we were struck by the tense atmosphere as soon as we closed the reception-room door. Gone was all the cheery hospitable air prevalent among the WEAF-ers on other nights. Mr. Carlin, the master of ceremonies, wore evening clothes and a worried expression. Miss Stewart, gowned in green decolletage, had the same apprehensive air. Several assistant hostesses moved about in awe-struck silence.

They seated us quietly before a big cone speaker with all the seriousness of a

mortician's assistants at a funeral, and we stayed patiently put for about five minutes. Then remarking that it was all very nice, but we could be doing just as well six hundred miles away, we asked one of the young ladies if we might not stand where we could see the singer through the glass door.

Diva Fears Observers

"Oh, I am afraid not," she fluttered, "It's her first broadcast, and she is very nervous and temperamental, and we are afraid she wouldn't like being stared at."

Such an idiosyncrasy on the part of a public artist, who was accustomed to facing Metropolitan audiences sounded ridiculous to us, and we inquired who the lone man might be who was enjoying the privilege of viewing proceedings through the glass door.

"Oh, that's H——," naming a celebrated conductor. "He's a personal friend of Madam's."

"Well, you tell them we're Mary Garden," we whispered, as we slipped to a vantage point beside the conductor. And our persistence was worth while, though we know the little hostess was terribly worried.

The celebrated diva, from whose throat issued the golden notes of a great aria, stood before the microphone, a stage smile upon her face, accompanying her singing with every studied movement she would have used upon the opera stage.

When, with some dramatic gesture she moved away from the microphone, she was gently put in place by the conductor, and as she sang with closed eyes, she was apparently unconscious of the fact that she wasn't facing a visible audience. But when,—as the last glorious note floated out from the loud speaker, she turned with an angry exclamation to the first violin, and then clapped her hand over her mouth in horror at the director's gesture toward the microphone, she was brought back to the four walls of the studio and the nervousness that had gripped her at the start.

It was all very interesting, and the air of suspense was present until the last song was sung, when the tension lifted, and the quiet listeners, who turned out to be all

musical celebrities, with a sprinkling of Broadway stars, including the perennial Miss Nora Bayes, crowded around the diva with congratulations. The studio staff shook off its air of responsibility, and for the first time we realized just what an undertaking a broadcast of this character is. And when one considers the expense of the far-flung hook-up that handles this hour, to say nothing of the enormous fees commanded by the artists, it isn't surprising that everyone concerned should want it to go off without a hitch. And it naturally follows that the announcer selected to preside over this event must be a man of sound musical erudition and faultless diction.

She Meets Morgan

The night we met Mr. Morgan was one of those hectic evenings that are a common occurrence at a big studio, and in the breathing spells between his manifold duties,—which seemed to include such various chores as announcing programs, steering artists to their destinations, listening to complaints and emptying ash-trays,—he dropped into a chair beside us, and with slurred twinkling eyes told us some of the merry catastrophes that crop up in the course of a busy evening.

The West street plant had broken down twice that night, (of course this was before the installation of the 50 K.W. Bellmore transmitter, and they had been off the air for several minutes in the middle of two important programs, and the worst of it was no one around the studio seemed to know who had been short-changed on his time. Leslie Joy was popping in and out of the monitor's booth like an agitated jack-in-the-box, his general harassed appearance contrasting sharply with the calm, cool exterior he presents in his photographs. This alone was enough to upset one evening.

Then the irate German sponsor of a commercial half-hour had indignantly phoned in from Jersey to know why in the name of the Kaiser his quartette had chosen to sing "Madelon" when they had all the songs in the world to choose from! And at that moment every fibre of Mr. Morgan's musical soul was being torn to

bits by a substitute tenor in a quartette of national renown who was waugh-waughing through the loud speaker in the way that always causes tenor voices to blast.

The announcer's keen sense of humor, and his frank and sure criticism of the singer's short comings aroused our enthusiasm and we examined him with much interest, feeling that here was a real human being, without any of the pose and self-esteem we had encountered in other gentlemen occupying similar positions in less important studios. He hadn't a thought that he was being interviewed,—he didn't tell us anything about the many gifts sent him by admiring listeners,—in fact one felt instinctively that Arnold Morgan never would talk about such things, and seemed more interested in our experiences with broadcasters than in talking about himself.

He had a good laugh at the "discovery" we had made that practically every member of the National Broadcasting company, no matter what his official capacity, is prepared to "double in brass" at short notice. We told him one expected to find musicians among announcers and program directors, but we had been considerably amazed that noon while having a business chat with Mr. G. W. Johnstone, the general manager of the Press Relations department to have one of the hostesses stick her head in at the door and say,

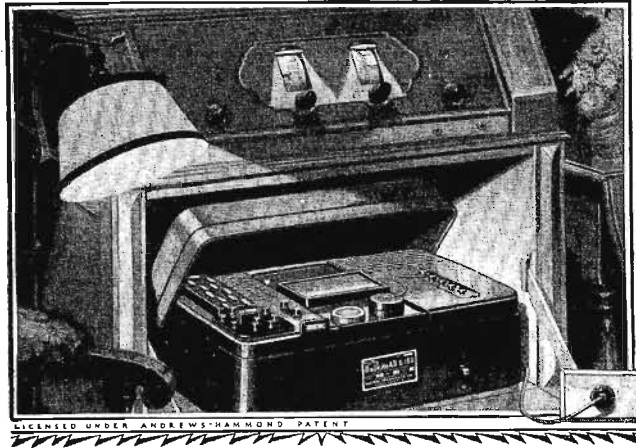
"Oh, Johnny won't you come and play for us? We have five minutes to fill." And Mr. Johnstone had obliged by diving into the bottom drawer of his desk and emerging with several pieces of music. He disappeared into the studio, and then came the voice of the announcer,

"Mr. Johnstone will now play for you,—'Black Bottom.'"

And Mr. Johnstone did,—in a very finished manner. After several selections he returned to his office, cached his music and took up the discussion of newspaper reviewers in the middle west where we had left off. It was all very surprising and novel to us and Mr. Morgan thought our simplicity very diverting.

Arnold Morgan looks like an Englishman, speaks like an Englishman, and was born in Oklahoma and spent his early life in Oregon. How easily the Radio listener may be misled by a well trained voice was demonstrated recently, when a musician listening to his announcing of an operatic program, in commenting upon what he called the announcer's "perfect Italian accent" said authoritatively,

"That man has lived much abroad. He couldn't get that accent otherwise." If he has, nobody has been able to find it out. After completing his academic education in Oregon Mr. Morgan studied concert and oratorio singing and taught voice in the West. During the war he served in the Coast Artillery. Coming east three years ago for further musical study he became a member of the Stellar Quartette, and began his Radio career as one of the original Eveready Group. He is now tenor soloist of Grace Episcopal Church in Brooklyn, and occasionally gives a short Radio recital with Kathleen Stewart at the piano.



The clearest and truest **Electric Radio**

**Is a standard radio set equipped with
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Balkite "A"—Exactly like Balkite "AB" but for the "A" circuit only. Enables owners of Balkite "B" to make a complete light socket installation at very low cost. Price \$35.



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The standard charger (whether trickle or high-rate) for radio "A" batteries is Balkite. Noiseless. Can be used during reception. Three models: \$7.50, \$9.50, \$17.50.

There are special models for 25-40 cycle current at slightly higher prices. Prices are higher West of the Rockies and in Canada.

Of course you want an AC electric receiver. For its convenience. Now you can have it, without the uncertainty of untried apparatus, and without sacrificing quality of reception.

Simply by adding Balkite Electric "AB" to your present radio set. Balkite Electric "AB" replaces both "A" and "B" batteries and supplies radio power from the light socket. It contains no battery in any form. It operates only during reception. It makes any receiver an electric set.

This method makes possible the use in electric reception of standard sets and standard type tubes. Both are tried and proved, and give by far the clearest and truest reproduction. With this method there is no waiting for tubes to warm up. No difficulty in controlling volume. No noise. No AC hum. No crackling or fading of power.

Instead the same high standard of reception to which you are accustomed.

In this method there is nothing experimental, nothing untried. It consists of two of the most dependable products in radio—a standard set and Balkite. And if you should already own a radio set, the cost of equipping it with Balkite is only a fraction of the cost of a new receiver.

By all means go to AC reception. Its convenience is the greatest improvement in radio.

But be as critical of an AC receiver as you would of any other. Let your AC receiver be a standard set equipped with Balkite Electric "AB." Then it will be as clear and faithful in reproduction as any receiver you can buy.

Two models, 135 volts, \$64.50, and 180 volts, \$74.50. Ask your dealer. Special model for 25-40 cycles, \$74.50.

Chicago Civic Opera Balkite Hour Every Thursday Evening

Now Balkite brings you an entire season of one of the world's greatest opera companies. Balkite Hour, Thursday Evenings, 10 o'clock and 10:30 o'clock Eastern time. Over WJZ and fifteen associated stations on the Blue Network of the National Broadcast Chain.

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Balkite ELECTRIC AB

— contains no battery —

How to Build New Karas AC Equamatic

A Famous Circuit Adapted to the '26 and '27 Tubes

By John G. Ryan

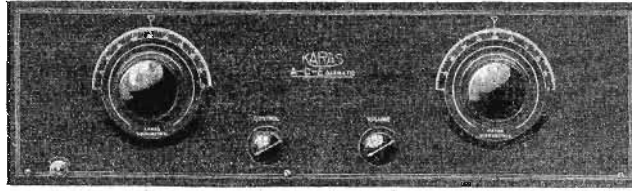
IN THESE days of Sonorous Sixes, Snappy Sevens, Aching Eights and Naughty Nines it is hard to imagine a five-tube receiver that will really step out and give a performance that astonishes anybody, let alone blase Radio editors, experts, writers and what have you. Yet the Karas AC Equamatic does just that and more; it surpasses many, many super-heterodynes in both sensitivity and sharp tuning and puts out reproduction that really has the "purity of tone" the ads all tell about.

What it has proven it can do is usually pretty convincing. Mr. A. L. Kafka, of 909 Foster Avenue, Chicago, has had one on test for some time. That address is on the lake and programs from the west must pass through all of Chicago and, since the aerial is on the east side of his hotel, must pass through his own steel building as well. Mr. J. L. Bright of 6211 S. Carpenter Street, Chicago, was present on the evenings of September 21st and November 12th while Mr. Kafka was tuning around. So we have a witness to the set's performance AND verification cards. Just look at the coast stations on this list: WBZ, WCAE, WEA, WFAA, WGY, WJZ, WLW, WMAK, WOW, WRC, WRR, WSAI, WSM, WWJ, KPDK, KFI, KFJR, KFRC, KPWB, KGO, KGW, KJR, KAITR, KNN, KOA, KOMO, KIX, KPSS, CPCA, CHIC, CNRT and CKNC.

Through the Locals

These evenings were not silent nights and the Chicago stations were all with us. One was a Wednesday and the other a Sunday night. Since there are 69 stations in the metropolitan area varying between 15 and 15,000 watts, those two evenings of tuning are really something to cheer about. Location is not responsible, as that hotel boasts some high priced, multi-tube receivers that are perfectly satisfied to stick to locals every night. This was not headphone reception either; all were brought in on the loud speaker. And unless they were clear and clean of interference they didn't count. There are other samples of performance that might be quoted, but in this case we had both a witness present as to the set used and a full list of verifications—either letter or card.

Arrangements have been made now so that you can buy both front and sub-panel for this set, all drilled and engraved, ready for use. Laying out and drilling these pieces is the nuisance of Radio. Their cost, ready for assembly, is but slightly higher than if one bought them plain. The Equamatic, either in its original form for storage battery tubes or this new development for the AC type, is unusual in that you get a constant and equal transfer of energy at all wavelengths between each stage. Most tuned Radio frequency sets have the objection that they are sensitive only at one narrow band in the range of 200 to 600 meters and rather "dead" elsewhere.



Equamatic System Unique

The primary and secondary windings of the Equamatic System are entirely separated from each other. The primaries are mounted on the extended shafts of the condensers so that they turn with the turning of the condenser dials. Each secondary coil is mounted on the sub-base and is adjustable both as to the distance from its primary and for angular relation with respect to the primary at any setting. There, I believe, is the secret of this set's superiority. Adjustments are made when the set is first put into use, such that individual differences in wiring, "B" power, etc., are compensated for, and one can get that equal transfer of energy and equal sensitivity at any broadcast wave length.

When these easily made adjustments have been determined and set, the result is a variable coupling between primary and secondary, which automatically varies at exactly the proper rate to maintain the tubes at their highest point of efficiency while the dials are revolved clear from zero to one hundred. By reason of this design, the Equamatic does away with the necessity of any lesser methods, such as high variable resistances in the plate circuit, potentiometers, designs which involve coil absorption, etc. By a very simple adjustment of the first primary coil the AC Equamatic automatically compensates for any length of aerial.

Construction Is Easy

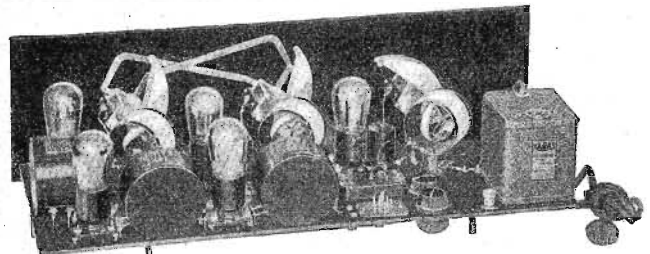
This receiver is not hard to build, as really unusual work has been done to simplify the layout and cover every detail so that it may be constructed even by those who have never before attempted such a thing. A picture wiring diagram is provided, each wire is numbered, each hole in both panel layouts is numbered, and the instructions cover fully the placing of each wire, indicating if the wire goes through a hole and the number of the hole when it does. Complete hardware, including screws for mounting every piece of apparatus in the entire set, is supplied with the control system.

Before proceeding to the mounting instructions, a reminder will be in order. In the sub-panel layout and wiring diagram you are looking at it from the bottom side. Therefore, apparatus located above the sub-panel is shown dotted as

though you were looking through it. Bear in mind also that the apparatus is reversed with respect to the ends of the set from the way they appear in a top view. Wires and parts below the sub-base are shown in solid lines, while wires and apparatus above are in dotted lines. You can determine the top of your sub-base purchased drilled by the three white engraved lines.

Mounting Parts Below Sub-Base

Using two 5/16-inch 6-32 oval head nickel plated machine screws, supplied with the sub-panel brackets, mount BR1 through countersunk holes Nos. 20 and 23, making sure that the hole in the bracket



which mounts the front panel is on the outside. Likewise mount BR2 through holes Nos. 21 and 24, and BR3 through holes Nos. 22 and 25.

The two panel legs, supplied with the hardware, are then mounted by screwing them into tapped holes Nos. 15 and 16. The two tip jacks are mounted in holes Nos. 4 and 5 as per the diagram. Now mount the .00015 fixed condenser, C7, through hole No. 36 with a 3/4-inch 6-32 round head machine screw (see diagram). Use a soldering lug on top of the sub-panel with a right angle bend in it and fasten the condenser underneath with a hexagon nut. Likewise mount .00015 fixed condenser, C5, through hole No. 57.

Mount the Carter 2,000 ohm potentiometer, P2, so that the two terminals close together ("A" and "C") are toward hole No. 40. Mount the 2 ohm rheostat, R2, in hole No. 2, so that the two terminals

are toward hole No. 17. Bend the mounting strips on the 2,000 ohm Elee-trad fixed resistor, R3, at the bottom of the soldering lugs, at right angles and away from them. Now mount this resistor in hole No. 23 with an 1/4-inch round head screw. A soldering lug is to be attached as per the diagram and screw is fastened on top with a hex nut. Now put on the 6-32 terminal nut, which completes binding post B2.

See the diagram for the placing of binding post B1 in hole No. 22, noting the soldering lug. Binding post B3 is mounted in hole No. 24 with a soldering lug bent at right angles; likewise, B4 is mounted in hole No. 35. With a soldering lug slipped over it, the antenna binding post is then secured in hole labeled "ANT."

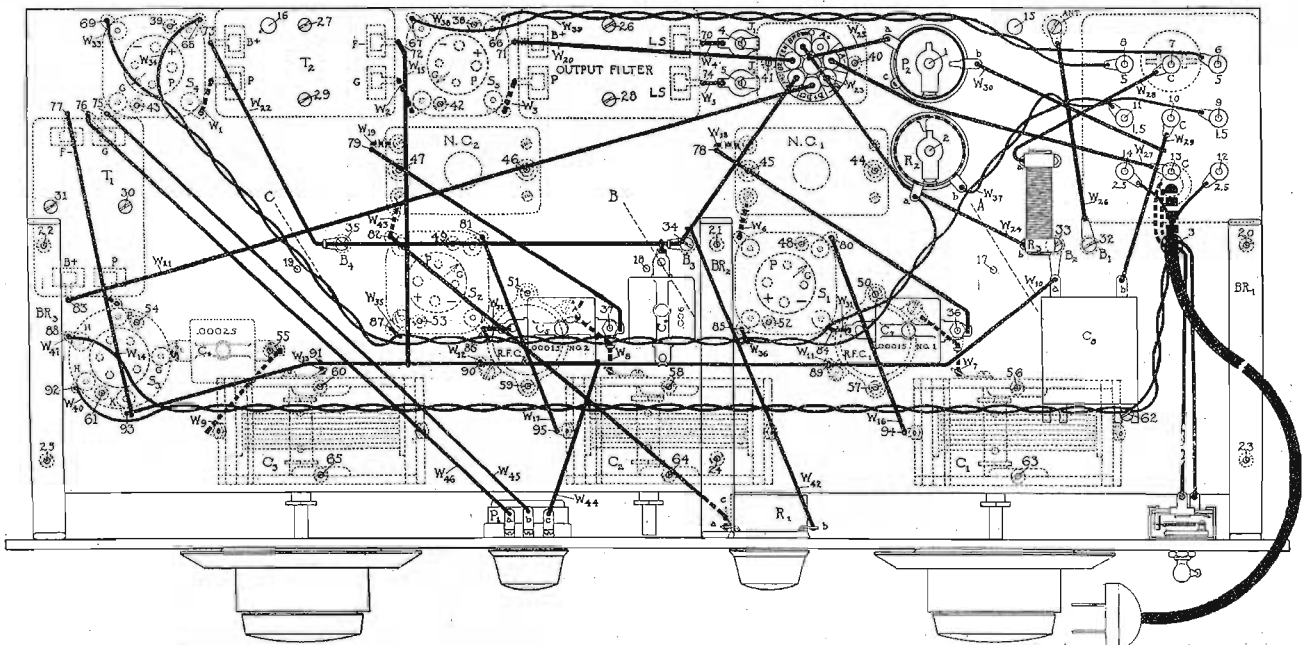
The 1 mfd. Carter fixed condenser, C8, is mounted through hole No. 62 with a 1/2" 6-32 round head screw. Now remove the mounting bracket and cardboard index of the Yaxley cable plug and mount from above in holes Nos. 49 and 41, with two 1/4" 6-32 round head screws. Replace the cardboard index on the bottom side of the cable plug underneath the sub-panel.

Apparatus Above Sub-Base

Mount socket No. 1 with two 1/16" 6-32 round head machine screws through holes

Nos. 48 and 52, with the white arrow on the socket pointing toward hole No. 50. Mount socket, S2, through holes Nos. 43 and 53 with the arrow pointing toward hole No. 31. S3 is the green top socket with five terminals and it is mounted through holes Nos. 54 and 61, with the "K" terminal just above hole No. 53. Socket, S4, is secured through holes Nos. 33 and 45 with the arrow pointing in the direction of hole No. 75. Using holes Nos. 48 and 42, mount S5 with the arrow pointing in the direction of hole No. 79.

The .00025 mfd. Carter grid condenser is secured at hole No. 55 with a 1/4" 6-32 round head screw so that the remaining terminal touches the "G" terminal of socket S2. Neutralizing condenser, NCl, is mounted through holes Nos. 44 and 45 with a 1/4" 6-32 round head screw; the terminals to be at hole No. 45. The other neutralizing (Continued on next page)



AC EQUAMATIC

(Continued from page 19)

condenser, NC2, is secured at holes Nos. 46 and 47 with the terminals at hole No. 47. Audio transformer, T1, is mounted with the round head screws supplied with it, through holes Nos. 30 and 31. The "P" terminal is to be just over the "P" post on socket S3.

The other audio transformer, T2, is mounted at holes Nos. 27 and 29 with the "P" terminal nearest the "P" terminal on socket S4. Through holes Nos. 26 and 28, mount the output filter, and so that the "P" connection is close to the "P" terminal on socket S5.

Take one of the Type 17 variable condensers which we will call C1, and secure it through holes Nos. 66 and 63 with two of the 1/4" 6-32 round head screws. The low end is toward BR1. Likewise mount another Type 17 (C2) by means of holes Nos. 58 and 64, and the other one, C3, through holes Nos. 60 and 65. Radio frequency choke, RFC1, is mounted with two 1/4" 6-32 round head screws through holes Nos. 50 and 57. RFC2 is mounted in the same manner at holes Nos. 51 and 55. Now

At this stage you install the front panel using the 3 gold screws supplied. There is a 5" piece of sleeve on wire 42, 7 3/4" length on W43 and a 10 1/4" piece on W45. There is another 10 1/4" length on W46. Pull out the small wire of the AC Former as far as it will go. Remove the plug from the extension cord and pass both of these wires through hole No. 3. Cut the small wire in the center and attach the ends to the two terminals of the 110 volt switch. Now replace the plug on the extension cord. The set is now completely wired and we are ready to install the Equamatic coils and the control system.

Mounting Control System

Before proceeding, loosen the bearing nut on the condensers so that the plates will just drop of their own weight. Then remove the shafts in condensers C1 and C3 and replace them with the long shafts provided with the control system. Apply one of these in C1 so that the shaft protrudes from the back of the condenser 1/2". Now loosen the set screws on condenser C2 and push the shaft far enough back to allow for the un-insulated end of the control system. Now push the shaft forward so that it protrudes from the back of the

Connect the "B" plus detector, or blue connection, of the cable plug to 45 volts positive, and the "B" plus amplifier, or gray connection of the cable, to 90-120 volts positive. Connect the green wire to 180 volts positive, and the minus "A" or black wire to 45 volts positive. The "A" plus or red terminal of the cable plug is not used. If the "B" supply device is a "B" eliminator it should be plugged into the outlet in the AC Former. The 110 volt switch will then automatically turn the "B" eliminator off when the set is not in operation. The cable plug is now inserted into the cable receptacle and the AC Former extension is plugged into the light socket and we are ready to insert the tubes.

Install UX 226 or CX 326 type tubes in sockets Nos. 1, 2 and 4 and a UX 227 or CX 327 type tube in socket No. 3. Install a UX 171 or a CX 371 in socket No. 5. It is very important that the tubes be inserted into their correct sockets as each type tube is designed for a different voltage. By inserting them in the wrong socket there is a possibility of their being burned out. The aerial is next attached to the X-L binding post at the back of the set and the speaker tips placed in the two tip jacks,

receiver to counteract the period of the aerial. It is sometimes necessary to provide maximum coupling on the first coil at the low wavelengths due to the aerial. This is an adjustment which can be made only under the particular conditions under which the set is operating.

SIMPLE EXPLANATION

(Continued from page 13)

sure between our top and bottom plates. While you cannot see it, a pressure of an electrical nature has been created between the antenna and ground and a steady stream of waves is radiated. Because it carries the program to its thousands of destinations, you frequently see this referred to as the "carrier wave."

Having created this wave, we must now get the program impressed on it. As mentioned before, the modulation equipment provided to accomplish this is our power chain of power amplifiers we ended up with two 10,000 watt tubes working together. Very well, to place music on the wave they throw into the aerial circuit. We must have two more 10,000 watt tubes working with them. The system of modulating, universally used and about to be described, is called the Heising method because first devised by an American inventor of that name. It has proven far superior to anything else for this purpose.

Heising Modulating Method

Figure 7 illustrates how it is done. Let Mrs. Bill at the left represent our first mentioned two large tubes which are the last stage of power amplification. We will say that Mrs. Jim at the right is our pair of modulator tubes and of equal size. The power supply which is common to both pairs of tubes is here represented by the water pipe coming up through the wall and going to the faucet of both Mrs. Bill and Mrs. Jim. There is a steady, unvarying flow to the water of 10 gallons a minute, while, in our Radio parallel, there is 5,000 volts pressure and 3 amperes per second.

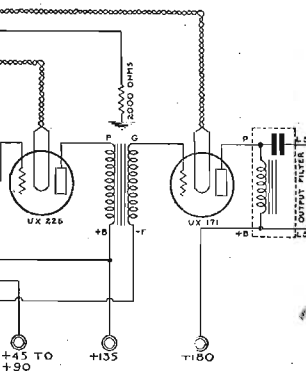
If Mrs. Bill and Mrs. Jim both have their faucets about half open, each gets, we'll say, 5 gallons a minute. But, if Mrs. Jim (the modulators) opens hers a little wider she gets 6 and Mrs. Bill gets only 4. This latter lady calls out that she needs a little more and Mrs. Jim turns her faucet back and cuts her flow of water to 3 gallons. Then Mrs. Bill (the big amplifier tubes) gets 7. Now, in our Radio transmitter, we cause the amount of current (amperes) to vary in our modulator tubes by talking or playing and, since the amount supplied is 3, the current possible to the amplifier tubes will vary above and below 4.

If the Mrs. Jim, modulator tubes take 4 1/2, the other pair get but 3 1/2 while, if they draw but 3 1/2 amperes, the Mrs. Bill, power tubes can have 4 1/2—and take it. So it goes. As we talk or sing into the microphone we cause little impulses to tear through the speech amplifiers, building up strength as they go, which in turn so affect the modulator tubes that they draw more or less current and permit the powerful amplifier team to get varying amounts.

Modulator a "Shaper"

The result is pictured in Figure 8. Here we have the steady stream of waves being created by the big amplifier tubes racing from left to right. At the modulation point it is as though we held a shaper which we can raise and lower to hit every wave. After it is past the modulator, every wave carries the impression of the shaper. The shaper, in its Radio form, changes rapidly with every letter spoken and note that is sung.

In the large stations, where the modulators total a power of 50,000 watts to equal the same power in the output bank of amplifiers, it would be im-



Schematic Wiring Diagram of Karas A C Equamatic

remove the terminal nuts and washers from the Karas AC Former and mount through holes Nos. 6 to 14 inclusive by placing so that terminal screws go down through these holes and the 5 volt filament supply posts are in holes Nos. 7 and 8.

Apparatus on Front Panel

The front panel is not as yet secured to the sub-base; we'll do that later on. The 75-ohm Carter potentiometer, R1, is mounted in the hole marked "Control" and so that terminals "a" and "c" are toward the center of the panel. The 500,000-ohm Electrical potentiometer, R2, is secured through the hole marked "Volume" with soldering lugs toward the bottom of the panel. The 110 volt Carter switch is mounted in the hole at the extreme left of the panel. We are now ready to wire the Equamatic.

Wiring Suggestions

Wiring can be done almost entirely with the picture diagram but a few pointers on things not entirely clear on the picture will help. One side of the grid condenser, C4, touches "G" post of socket S3 and these should be soldered. Likewise the "P" post of socket S3 and the "P" terminal of transformer T1. Wire 7, running from condenser C1 to RFC1, is soldered to the lug at hole 36. The same with wire 8 and the lug at hole 37. Where wire 10 passes under hole 59, a short piece of wire W11 connects it to the terminal just above 89; W12 connects W10 to the terminal just above hole 90, and W13 connects W10 to the terminal of condenser C3 just above hole 91 through that hole. A 2" piece of sleeve or spaghetti is slipped on 10 where it passes bracket BR2.

Wire W14 is looped around and soldered to W10 just where W10 bends to go up through hole 93. There is a 5 3/4" piece of sleeve on W15, a 3 3/4" piece on W16, and one of the same length on W17. Put a 2" piece on W19 to insulate it from W15, a 5" piece on W20 and a 14" piece on W22. W22 is soldered to B4 and between that point and its being soldered to E3, there is a 6" sleeve; between E3 and the grey post of cable plug, there is a 3 3/4" piece. W23 is a short piece connecting W24 to the yellow post of cable plug as W24 passes to reach the brown post. Put a 4 1/2" sleeve on W24. The piece on W27 is cut 6 1/4". There is a 2 1/2" piece on W28, a 2 1/4" length on W29 and the piece on W30 is 3 3/4".

W33 and W34 are flexible Celastite, the first being 24" long and the other 30". They are twisted about 3 times between holes 59 and 87. W23 makes connection with minus of socket 2 at hole 86 and minus of socket 1 at hole 84, then continues to the lug at hole 11. W34 makes connection to the plus of S2 at hole 87 and plus of S1 at hole 85 and goes to "a" of R2. They are stripped of insulation at those holes and connected up through with short lengths. A 6" piece of Celastite connects "b" of R2 to the lug at hole 9. Wires 33 and 39 are 13" strips of Celastite twisted. Wires W40 and W41 are 30" pieces of Celastite twisted.

condenser 1/2" and tighten the set screws. Place the other long shaft through condenser C3, through the insulated end of the control system and through the panel, so that it also protrudes by 1/2" at the back. Now with the control system up against the panel, the condensers all the way in, and the control as far in that same direction as it will go, tighten the set screws. If the system does not work easily, something is out of alignment and should be rectified. This can often be done by loosening the condenser mounting screws and shifting the condensers about slightly. The dials can now be applied.

Mounting the Coils

The hardware includes three spring clips, and three 8-32 screws with nuts, for providing a slip adjustment for the secondary coils. These spring clips are assembled with the screws into holes Nos. 17, 18 and 19, with the lock nut on the bottom of the sub-panel. Tighten these so that the secondary coil, when put under the spring clip, with the little notches riding in the slot of the secondary bracket, will just slip easily.

Now apply the primary coils. When the condensers are turned entirely in, the bracket across the primary coil should be horizontal and the part which slips over the condenser shaft should be slipped over to within 1/2" from the end of the condenser bearing adjustment, but should not touch.

The black lead of the first primary should be attached to binding post No. 1, and the green lead to binding post No. 2. The black lead of the second primary coil should be attached to the "P" binding post of socket No. 1, and the green lead attached to binding post No. 3. The black lead of the third primary coil should be attached to the "P" binding post of socket No. 2. The green lead goes to binding post No. 4. The primaries should be set cross-wise to the white engraved lines just below them.

The secondaries are now slipped under their respective spring clips with the secondary brackets parallel to the white lines. The black lead of the first secondary should be attached underneath the screw terminal of the frame connection of C1 and the green lead should be attached to the grid terminal of socket No. 1. The black lead of the second secondary coil goes to the screw terminal of the frame connection of C2. The green lead goes to the grid terminal of tube socket No. 2.

The black terminal of the third secondary should be attached under the screw terminal of the frame connection of C3. The green wire goes to the screw which holds the nearest clip of the grid condenser C4. Now insert the 2 megohm grid leak.

Attaching the "B" Supply

Connect the brown or ground connection to a water pipe with a ground clamp, or solder securely. Connect the "B" minus, or yellow connection of the cable plug, to the minus of the "B" voltage supply.

also at the back of the set. It is possible to operate this receiver on a fifty foot aerial; a longer aerial however, will give better results. It is good practice to have just as long an aerial as is consistent with your location, so that the nearest local does not interfere too much. We are now ready to make the final adjustment.

Grid Bias

The negative bias on the two RF and the first audio tubes is provided by the voltage drop in the variable resistance P3 applied at the exact electrical center of the 1.5 volt filament supply. At 90 volts, this resistance will provide 6 volts negative bias at full 3000 ohms and proportionately less depending upon the setting of the rheostat. This rheostat should be varied until the best operation is obtained. The UX 227 tube requires a positive bias for the heater circuit with reference to the cathode for best results. This is accomplished by connecting the exact electrical center of the heater filament supply to the 2 1/2 or 45 volt positive "B" supply.

Neutralizing Condensers

Now, with the adjusting thumb screws of the neutralizing condensers turned entirely up, tune the receiver to some high powered, low wave station; set the 2 ohm rheostat, R2, so that the receiver is just in oscillating condition, with the control and volume dials turned entirely up, then turn down the thumb screws a little at a time until the signal clears up. Now

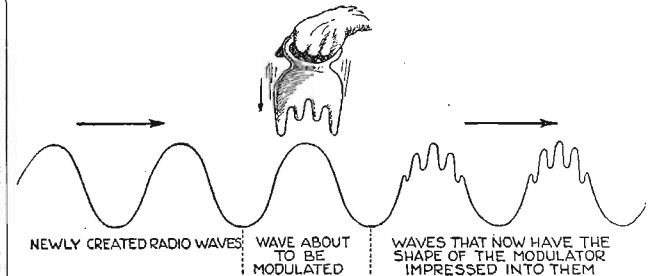


Figure 8

turn up R2 and turn the dials back and forth across the point at which the station was tuned in. If the receiver still oscillates, make a slight adjustment on the thumb screws. A point will be found on these condensers at which the receiver will not oscillate when R2 is turned entirely up and the dials are turned over the entire broadcasting range. It is possible in adjusting these condensers to go too far, however.

The only other adjustment that need be made is on the first primary coil; this should be varied, depending on the length of the aerial used in connection with the

possible for the little third speech amplifier depicted in Part 1 of this series to properly affect these modulator tubes. Hence we put in a series of audio amplifiers similar to the series of amplifiers of Radio frequency currents that followed the oscillator.

Editor's Note—Thrown off the aerial to travel at the speed of 187,000 miles a second, what happens to the countless unseen Radio waves? In the February issue, Mr. Thompson brings a peak through the magic glasses of science which make all things "see-able" to the eye of our understanding.

NEW RADIO YEAR

(Continued from page 5)

actually 1,500,000 now and constantly increasing. The Radio farm and market service already has gone far in solving the age-old problem of market glut, with resulting demoralization of prices and wrecking of values. WLS has found. Tens of thousands of farmers or their wives now hear and tabulate the market returns every day on the particular product in which they are interested at the time and plan their marketing accordingly. This helps to maintain or increase values, or at least to stop disastrous breaks. Livestock truckers within a radius of 100 miles of their market can decide after hearing the morning's estimates and review of conditions whether that is the day to sell or whether to wait for more favorable news. Scores of thousands of livestock shippers act on these reports daily and the same is true of the grain and other market reports.

"WLS feels that this service is so important and has such a big place in the Radio field that it has extended the farm programs to other stations until now the WLS farm service is conducted regularly on programs over station WSB at Atlanta, Ga., WJIC at Memphis, Tenn., and WFSA at Dallas, Tex. And the response to these programs is proving as great in comparison as those at WLS.

"Now as to the actual dollars and cents value of this service. A casual intimation by the farm program director at WLS, Fred L. Petty, recently that he wondered if the market information as broadcast was being used by listeners brought a 5,000 letter response in which the specific instances of definite gains and savings to the writers on account of Radio market reports from WLS totaled into tens of thousands of dollars. Typical is the case of an Indiana farmer who followed the livestock report summaries and on one shipment alone added \$500 to the price received on a large shipment of cattle."

Voice of Chain Station

As a typical and pivotal chain station reaching every class of listener from the Fan Handle to Newfoundland WGN, Chicago Tribune, was consulted as to the general program situation. The following statement was submitted in reply:

"Having brought the Radio year of 1927 to a successful close with a series of spectacular Christmas broadcasts, WGN, Chicago, is planning new delights for Radio listeners who follow the fortunes of the station during the coming twelvemonth. Programs are to be enlarged and improved; the cream of the New Year chain features will be continued, and mechanical conditions are already of the finest.

"The year 1927 proved a remarkably successful one for WGN. A steady stream of excellent programs was furnished to listeners, and so many special features were broadcast, often at great expense, that the station probably exceeded the efforts of any one individual broadcaster in this field. The list of celebrities presented on WGN reads like a page from 'Who's Who,' and the fine educational programs were enjoyed by every listener.

Indianapolis Race

"Among the top-notchers presented by WGN during 1926 were the broadcasts of the Indianapolis 500-mile auto race, the Kentucky Derby, the Dempsey-Tunney fight, all of the season's baseball games played in Chicago, a record list of important football games, both collegiate and professional, and many other interesting individual items. For the listener who likes to meet prominent people on the Radio there were interviews with Count Felix von Luckner, the famous German sea raider; with 'Tex' Rickard, the boxing promoter; with Red Grange and Benny Friedman, football stars, and a host of others.

"The year 1928 will see a continuation of feature broadcasts from WGN. The Indianapolis auto races and the Kentucky Derby will both be presented again, and the station plans a resumption of its baseball broadcasts throughout the year. It will be the station's endeavor to bring as many great events to listeners as present themselves, making it more than ever a force for public service.

"Bigger and Better"

"Improved musical programs, with larger orchestras and a greater amount of variety in vocal music, together with many new musical novelties, are the WGN musical plans for 1928. The station's staff continues the same as in 1927, with Bill Hay as manager and chief announcer; Henry Selinger, musical and program director; Quin Ryan, director of features, and sports and feature announcer."

Broadcasters from New York to the Pacific have expressed every confidence that 1928 is going to be the banner year—that programs are to be better, reception better and the listeners happier with the results of their Radio pleasures. It has been hinted that international programs will be a common feature for every listener before the next New Year comes around.

We are told Radio listeners may expect to hear London programs almost any day over the National Broadcasting Net stations.

"VIVA LINDY!" REMEMBER THE DAY WHEN YOU HEARD HIM COME HOME?



HERE'S your real and only Air Hero—on the wave or on the wing—and now that he's gone and done it again you might like to see this latest photo. You can hear that staccato voice, hoarsely dignified: "I am sorry that those waiting for me had such a long time under the hot sun, but I was just as anxious to come down as they were to have me. The entire trip was made in the face of some difficulties which, I think, show conclusively the importance of cross-country training in flying."

ORCHESTRA STANDINGS

(Continued from page 12)

Table listing orchestra standings for District No. 4—West, including names like Scheurman's Colorado orch., KOA, and various other regional ensembles.

Table listing orchestra standings for District No. 6—Canada, including names like Kensington Hall dance orch., KPRC, and various other ensembles.

LIST OF PARTS FOR KARAS AC EQUAMATIC

Table listing parts for Karas AC Equamatic, including items like AC Former, Type 28 Audio Transformers, and various electronic components with prices.

Table listing club orchestras such as Club orchestra, WFSA, and University Symphony, KUOM.

Table listing District No. 5—Far West orchestras, including those from Idaho, Arizona, Nevada, California, and Washington.

DISTRICT NO. 6—CANADA

Table listing District No. 6—Canada orchestras, including names like Irwin Plummer and his orch., CNRW, and Guy Watkins Art Harmony Seven.

Rules and Conditions

1. The contest starts with this issue of Radio Digest, November 1, 1927, and ends at midnight, April 10, 1928. All mail enclosing ballots must bear the postmark on or before midnight, April 10, 1928. 2. Ballotting will be by means of coupons appearing in each monthly issue of the Radio Digest and by special ballots issued only when requested at the time of receipt of paid in advance mail subscriptions to Radio Digest which received direct and not through subscription agencies according to the schedule given in paragraph 4. 3. When sent singly, each coupon clipped from the regular monthly issue of Radio Digest counts for One Vote. BONUS votes given in accordance with the following schedule: For each two consecutively numbered coupons sent in at one time a bonus of five votes will be allowed. For each three consecutively numbered coupons, a bonus of fifteen votes will be allowed.

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Vol. XXII January, 1928 No. 6

Crystal Control or Quit!

RADIO engineers agree that practically all the heterodyning between stations on the same or nearby wave lengths can be eliminated by the use of the inexpensive Piezo electric oscillators by broadcasters. These magic crystals, when properly calibrated by the Bureau of Standards, hold the signal on the assigned wave length.

Although practical and endorsed by all experts, yet there are many broadcasting stations that are not yet equipped with this device. While the Federal Radio Commission is perspiring under the job of assigning a few wave lengths among seven times too many applicants, many plants are going on the air daily without using the Piezo crystal—thus musing up receiving conditions. It is time that the Federal Radio Commission issue a mandatory order for all stations not equipped with crystal control to stop broadcasting until so equipped.

With the constant shifting of wave lengths and the slowness of the Bureau of Standards in calibrating crystals, we would suggest that the commission compel each broadcasting station when changing bands to surrender its calibrated Piezo oscillator for its old wave to Washington. In turn the commission could send the surrendered crystal to the station assigned that band. Proper credit arrangements could be made.

The ideal way of working out this plan would be for the commission to have a stock of Piezo electric oscillators calibrated by the Bureau of Standards for each wave band and ship the crystal with the renewal license for the new allocation. All stations would thus be crystal controlled by law.

Put Chain on One Band

BEFORE the elimination of stations by the Federal Radio Commission, as announced by Commissioner Pickard, is resorted to; that body owes to the public its serious considerations of placing station members of chains on one wave band during a chain broadcast. The time thus made available on the freed wave length could be assigned to other local and worthy stations.

The plan is practical as demonstrated by WBZ and WBZA. Dr. Goldsmith and Commissioner Caldwell have both gone on record publicly that the idea is technically correct. WHT, Chicago, worked on two different waves during the evening, thus indicating there would be no difficulty in the local non-chain station stepping up or down to use the freed band of the chain station.

Messrs. Commissioners, any listener who has found chain programs all over his dial when he wanted to listen in to a local or nearby event, is interested in this logical and inevitable one-wave-for-the-chain plan. Every broadcaster who divides time or is eliminated from the free air is entitled to demand the reason for the favoritism shown in the wastage of wave bands and time.

The broadcasting fraternity must be Democratic in politics, judging from the number of state righters before the Radio Commission. A broadcasting channel for each senator would leave only WEAF and WJZ in New York state with nothing for the (in)dependencies.

The parable of the loaves and the fishes might be of help to the perplexed Radio commissioners in satisfying the multitude.

Leaving the heir: "My boy, bumpers on automobiles are not for the protection of pedestrians."



THE READER'S VIEW

Vega's Petition

A PETITION to the President of the United States of America and to the Chairman of the House and President of the Senate of the U. S. A. and to the Radio Commission, Washington, D. C., and to the Radio Digest, Chicago, Ill. or to Whomsoever Else this may come, Greeting:

We, the undersigned Radio Listeners, wishing to daily use our Radio Receiving Sets, beg to submit some conditions and stern facts, which we are continuously running up against, and which cause us much annoyance and considerable profanity. We have coolly given much time and thought as to the cause and remedy of this untimely and fierce interference, with the following conclusions: We believe that the Radio Commission has not given due consideration to the wishes and needs of the listening public, but on the other hand has given overdue consideration to some of the big financial broadcasters and have given them much more control of the air than is beneficial to the general public. We do not know if this SUPER POWER given to the big financial stations is a product of the wealth of said stations or not, but **WE DO KNOW** that it is not what is wanted by the PUBLIC, for reasons as follows:

We do not object to chain programs, on the other hand, are glad to have them, but we want all of the stations of the same chain to be on the same meter. I. E.: Let each station that is on the chain have its own meter for its own private programs, but for the chain programs, let each chain station use the SAME METER as the mother KEY station uses. Let these meters be some where from 300 to 400, then any ordinary receiving set can get them, and we will not be compelled to listen to them unless we want to do so. We believe that the only way any station has any right to compel us to listen to them would be that they put on programs that would compel our attention.

5,000 Watts Enough

After several years at the RECEIVING end, we would further say FIRMLY that FIVE THOUSAND WATTS is as much as should be allowed to any station, and WE are of the opinion that 1,000 watts would fill the needs of any station and through the chains reach any hamlet in the U. S. A. and at the same time do very much toward clearing up the air.

We would further state that we are not in favor of discontinuing any of the stations now licensed, but we DO KNOW that there are too many stations now on the air to broadcast continuously and do any of them any good, or the public either, therefore we would suggest that stations of the same or near the same meter in the same part of the country be required to divide time; properly allocated, this can easily reduce interference at least FIFTY PER CENT.

We would further request that the members of the Radio Commission or some representatives of said commission, visit remote and various parts of the United States, and listen in, on common Radio sets on average nights from seven to eleven p. m. and be informed of the INTERNAL HOWLS that come from almost every mark on the dial. And we would then DEMAND that said commission take proper steps to correct this continual interference.

If opposition should develop to the reasonableness of this petition, then we may well be sure that those objecting are in some way financially interested in the big financial stations which are principally responsible for the disturbance.

In submitting this petition, we are asking the Radio Digest to publish same, with the hope that every community in the U. S. A. may either take this petition literally as it is, or draw one of a similar nature and have it signed by the listeners of each community and forward the demand to the Radio Commission at Washington as we have done.

Keep Politics Out

The author of this petition is a northern man, a Republican in politics, living in the South, and in sympathy with the present administration, but this is not a political issue. It is not North nor South, neither East nor West, and we want POLITICS kept out of it, but if the people cannot have red-dress in that the air we breathe be kept free, then we had better take stock of our present conditions.

This petition is being mailed to each of the above, addressed, and in addition, to Fields, at KFNF, to Baker at KTNT, to Henderson at KWKH, and to Gish at KGRS, with the wish that each person concerned will do every HONORABLE thing possible; that each and every broadcaster may have a fair DEAL, and that the public may be enabled to enjoy their Radio sets.

Signed,
O. H. LOYD and

John Heisleman	Vernon Shields	W. A. Williams
Lulu M. Loyd	Harb. Ballard	Vega Drug Store
Merle Wood	J. E. Scott	D. E. McKendree
George Funk	J. C. Campsey	E. B. Harris
Bob Ballard	C. M. Raley	John VanMeter
B. L. Freeman	F. A. Collins	Jack M. Roberson
W. A. Jinks	F. H. Krahn	Merle Morgan
Mrs. C. Williams	J. H. Jones	W. F. Ballard
O. M. Jinks	John Reector	Henry Metz
F. J. Smith	F. Wiseman	W. C. Denny
C. M. McNabb	Bain Wiseman	D. M. Voyles
C. E. Slutz	H. L. Morris	Col. J. T. Owen
H. R. Shields	S. E. Green	W. E. Klein
A. D. Glava	A. C. Klein	H. Murphy
E. L. Krahn	R. C. Godwin	C. L. Morris
F. P. Smith	A. A. Kirkpatrick	W. N. Miller
Lynn Smith	Allen Stargis	J. E. Murray
A. M. Miller	T. M. Blacklock	Otis McCall
J. O. Murray	Roy N. Ivy	H. G. Green
Chas. Ingram	Rex McNabb	C. E. Winder
C. E. Campsey	Wayne Dyer	J. A. Campsey
C. H. Roark	W. H. Hobbs	E. H. Bales
L. W. Landrum	O. O. Slutz	J. C. McDonald
R. Harvell	John Dunn	J. A. McGowan
F. E. Walker	(All of Vega, Tex.)	

The above petition speaks for itself and is submitted without alteration of any kind as an expression of the people of this Texas community. Similar petitions have been received from other sections of the country. This one is typical.—EDITOR

No Soap!



RADIO INDI-GEST

God's Radio

I sit in the gloom of my lonely room
Far from the noise of the town
Like the deadly doom of a voiceless tomb
The stillness holds me down

And yet this I know I have but to go
To a magic chest near by
With a touch or so and I'll hear the flow
Of raptures from the sky.

Oh I wonder, dear, perhaps you can hear—
In that Somewhere over There—
Ah—to tune that Sphere, and to keep you near,
God's Radio to share!

Iowa City Wins Bean

ROSCOE! Roscoe! Come hither! Bring forth the golden key to the Vault of the Sacred Saccharine and out of the crystal treasure select the Bluest and Purest Jelly Bean. Make haste and do not linger in the Royal pantry. See to it that the Jelly Bean is securely boded and directed by special messenger at once to J.E.R., winner of the Forty-ninth Word Steeple Chase. We might quibble on his o in out but otherwise the tale is well told.

The course, the faithful will remember, was as follows:

Resistance
Microphone
Soprano
Tenor
Duet

The epistle from J.E.R. of Iowa City follows:

"Camping, a few months ago, on the shores of the Iowa river, I grew disgusted with the insects. I could drive off bugs and beetles, but simply couldn't resist ants. I decided to telephone to town for a taxi. The nearest station, however, was across the river. I had no boat, but camping near was a general Irishman. To him said I: "Mike, row, phone, and call a taxi." "Nothing" don't unless you pay me \$10," retorted Michael. I flattered him a while, but 'twas futile, and finally, when my "soft soap" ran out, I drew forth a "tenner," and said: "All right, do it!"—and he did.

Get set for the next course. Here it is—
Circuit, unit, eliminator, ampere, static.

Good Steeplechase Sport

C. M. GOULD of Wann, Okla., pulled a Prince of Wales for the jolly old Jelly Bean, but gave us a peach of a line in his letter. He said: "I call the Digest the Wish Book. You wish you could get the programs you read about."

Then he slips us a nice little posy. "I don't see how any one could use a receiver and get half what they should from it without the Radio Digest." It's improved wonderfully. I notice that my friend who runs the drug store at Copan is selling more of them now. I bought my first Radio Digest from him.

Thanks a lot, Mr. Gould. We sure'd like to send you the jelly bean for "them kind words" but the jelly bean "ain't even been think up yet" that could do justice to your letter.

My Goodness What Crowds!

"FLORENZ ZIEGFELD'S 'Rio Rita' which, it is reported, has been seen by more than five thousand persons in New York City will be broadcast in part direct from the stage."

—From National Broadcasting Co. Publicity.

By this time we may safely assume that all of six thousand people have seen that wonderful show! That's the Big Town for you!

—INDI

The Crosley A C Bandbox is the leading radio of today—because

A T LAST! The radio tube that needs no batteries! Here it is functioning quietly, smoothly, powerfully in this new Crosley 6 tube receiver—the A C Bandbox.

Now, the Crosley A C Bandbox needs no more attention than you pay the electric lamp that lights your home.

This is what the world has anticipated and many have imitated. Crosley offers it to you at the **WORLD'S LOWEST PRICE—\$110** without tubes.

Combined with the Crosley facilities for economical manufacture is the patent situation of which Crosley has full advantage. Licensed to manufacture under the patents controlled by the electrical and radio industries, the Crosley Bandbox is a **NEW** receiver incorporating latest radio developments, the most advanced ideas of radio reception as well as sound reproduction. This outstanding engineering job is best understood when you consider its features are such as are found in radios twice and more its price.

1. Complete shielding of all elements.
2. Absolute balance (genuine Neutrodyne).
3. Volume control.
4. Acuminators for sharpest tuning.
5. Single cable connections.
6. Single station selector.
7. Illuminated dial.
8. Adaptability to ANY type installation.

The set is solidly mounted on a stout steel chassis. As all controls are assembled together in the front, cabinet panels are easily cut to allow their protrusion. The metal escutcheon is screwed on over the shafts and the installation has all the appearance of being built to order.

Two large furniture manufacturers have designed console cabinets in which the Bandbox can be superbly installed (Showers Bros. Co., of Bloomington, Ind., and the Wolf Mfg. Industries of Kokomo, Ind.). Powel Crosley, Jr., has approved them mechanically and acoustically and has seen to it that the famous Crosley Musicones are built in them so that the best type of loud speaker reproduction may be insured.

The Bandbox is housed in a brown frosted crystalline finished metal case which is easily removed for console installation.

See the new Crosley A C Bandbox at your dealer's **NOW!** Hear first hand its delightful performance! Enjoy the best in radio at the least cost! Write Dept. 49 if you can't locate a dealer!

of these wonderful tubes



The amazing new RCA alternating current tubes—the UX 226 and UY 227—utilize for their filaments and their heating regular house-lighting current. Current is stepped down through transformers. Rectifiers are not used.

the radio patents of these industries

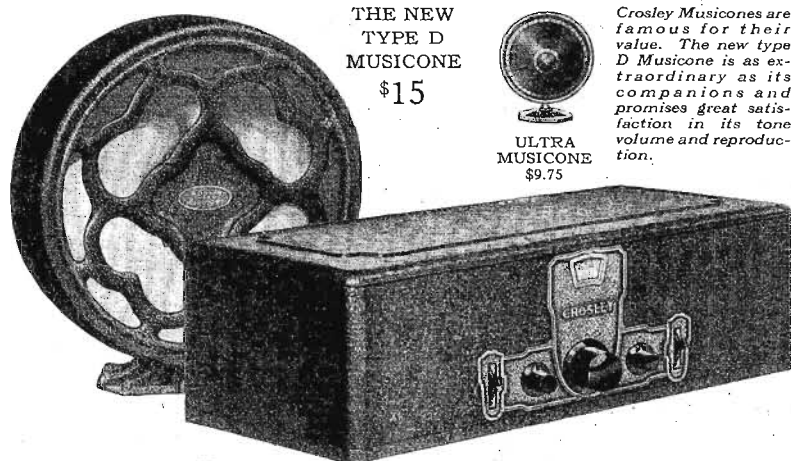


The research and development work of these great industries—the Radio Corporation of America, The General Electric Co., The Westinghouse Co., The American Telephone & Telegraph Co., and The Hazeltine and Latour Corporations—are available to Crosley engineers in the constant advancement of radio design.

and the amazing capacity of this MERSHON Electrolytic CONDENSER



This is one of Crosley's great features. It is an exclusive Crosley device. It is self-healing—will last indefinitely—never needs attention and eliminates the danger of blown out paper condensers which are causing so much trouble in electrically operated sets.



THE NEW TYPE D MUSICONE \$15



ULTRA MUSICONE \$9.75

Crosley Musicones are famous for their value. The new type D Musicone is as extraordinary as its companions and promises great satisfaction in its tone volume and reproduction.



SUPER MUSICONE \$12.75

CROSLEY RADIO

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

*The CROSLEY RADIO CORPORATION
Powel Crosley, Jr.,
President
Cincinnati, Ohio*

Montana, Wyoming, Colorado, New Mexico and West. prices slightly higher.

DIRECTOR OF NORWEGIAN STATION EX

HIGH LIGHTS OF THE AIR

KOA, DENVER, is not going to wait until another station acquires its listeners with the works of Denver composers. Friday evening, January 6, some of the composers themselves will appear. Estelle Philico, who wrote the music to "Out Where the West Begins," Burrill Phillips, H. Everett Sachs, Edwin J. Stingham, Francis Hendricks, Grace Mays, and Jean Allard-Jencon will broadcast their own compositions.

A regular Saturday feature of KFI is the "Media Hora Espanola" or Spanish half hour. Felipe Delgado, baritone, explains the meaning of the song in English and then sings it in Spanish.

Listeners of the Chicago Sunday Evening club will reserve January 29 to hear Dr. Harry Emerson Fosdick speak. Other speakers during the month are Bishop Edwin H. Hughes, January 1; Dr. Charles M. Gordon, January 8; Dr. Alfred E. Stearnes,

January 15, and Dr. Albert Parker Fitch, January 22.

This is the season of the year when basketball fans tune in. WIDB will describe the games played at Northwestern this year. January 7 Michigan meets Northwestern; January 30, Minnesota.

The musical biographies being given by Don Malin from WLS have been creating a favorable impression with the audience of this station. Tuesday, January 8, Mr. Malin discusses Jules Massenet; January 10, Georges Bizet; January 24, Giacomo Puccini and January 31, Johannes Brahms.

Olaf T. Holst, director of the Bergen Broadcasting company's stations at Bergen, Norway, has planned the program which will be given from WBAL January 22. This "All-Norwegian" program Mr. Holst exchanged with Mr. Huber for an "All-American" program planned by the American station.



Olaf T. Holst, director of the Bergen Broadcasting company's stations at Bergen, Norway, has planned the program which will be given from WBAL January 22.

PACIFIC Coast Radio fans are enjoying the weekly concerts given over KPO by the Abbe string quartet. This quartet, which is composed of Brodetsky, violinist; Michel Penha, cellist, and Romain Joseph Verney doing unusually fine group work. Smiling Stan Lee Broza, left, is the WCAU, Philadelphia. He not only announces but directs the product Paley, young coloratura soprano, who frequently appears at WGBS, seventeen she has appeared in "The Vagabond King" and has starred of Rudolf Friml.



Regular Monday Features

Eastern Time Stations		DANCING Central Time	
KDKA Pittsburgh, Pa. (315.6m-950kc) 7:30 p. m.	WAIU Columbus, O. (282.8m-1060kc) 7:15 p. m. service; 10. Columbia chain.	8:45, Wfla; 9:15, Wfla; 9:30, Wfla; 9:45, Wfla; 10:05, Wfla; 10:25, Wfla; 10:45, Wfla; 11:05, Wfla; 11:25, Wfla; 11:45, Wfla; 12:10, Wfla.	
WJAZ Springfield, Mass. (333.1m-1050kc) 7:30 p. m. WJZ, 9, band; 9:30, musical; 10, orchestra.	WCAE Pittsburgh, Pa. (613.3m-650kc) 8 p. m. studio program; 8:30, WEAJ.	8:30, Wfla; 8:45, Wfla; 9:00, Wfla; 9:15, Wfla; 9:30, Wfla; 9:45, Wfla; 10:05, Wfla; 10:25, Wfla; 10:45, Wfla; 11:05, Wfla; 11:25, Wfla; 11:45, Wfla; 12:10, Wfla.	
WCAU Philadelphia, Pa. (261m-1150kc) 6:30 p. m. orchestra; 9, chain.	WEAF New York, N. Y. (491.5m-610kc) 7:30 p. m. chamber music; 8:30, time 10:30, W. S. P. Gipsies; 9:30, W. S. P. Gipsies; 10:30, W. S. P. Gipsies; 11:30, W. S. P. Gipsies; 12:30, W. S. P. Gipsies.	8:30, Wfla; 8:45, Wfla; 9:00, Wfla; 9:15, Wfla; 9:30, Wfla; 9:45, Wfla; 10:05, Wfla; 10:25, Wfla; 10:45, Wfla; 11:05, Wfla; 11:25, Wfla; 11:45, Wfla; 12:10, Wfla.	
WCHS Portland, Me. (355.6m-820kc) 7:30 p. m. farm feature; 8:30, WEAJ.	WEAF New York, N. Y. (491.5m-610kc) 7:30 p. m. chamber music; 8:30, time 10:30, W. S. P. Gipsies; 9:30, W. S. P. Gipsies; 10:30, W. S. P. Gipsies; 11:30, W. S. P. Gipsies; 12:30, W. S. P. Gipsies.	8:30, Wfla; 8:45, Wfla; 9:00, Wfla; 9:15, Wfla; 9:30, Wfla; 9:45, Wfla; 10:05, Wfla; 10:25, Wfla; 10:45, Wfla; 11:05, Wfla; 11:25, Wfla; 11:45, Wfla; 12:10, Wfla.	
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MONDAY, JANUARY 2

Headliners	
Eastern 7:30 p. m.	Central 8:30 p. m.
KVOO (348.6m-860kc) Aklar theater orchestra.	WJAZ Springfield, Mass. (333.1m-1050kc) 7:30 p. m. WJZ, 9, band; 9:30, musical; 10, orchestra.
WEMC (483.6m-620kc) Dutch songs.	WCAE Pittsburgh, Pa. (613.3m-650kc) 8 p. m. studio program; 8:30, WEAJ.
WVNC (256.9m-1010kc) Johnny & Frankie.	WCHS Portland, Me. (355.6m-820kc) 7:30 p. m. farm feature; 8:30, WEAJ.
CKNC (356.9m-840kc) Eveready orchestra.	WEAF New York, N. Y. (491.5m-610kc) 7:30 p. m. chamber music; 8:30, time 10:30, W. S. P. Gipsies; 9:30, W. S. P. Gipsies; 10:30, W. S. P. Gipsies; 11:30, W. S. P. Gipsies; 12:30, W. S. P. Gipsies.
WVOR (422.3m-710kc) WEAN (275.1m-1090kc) WNAC (461.3m-650kc) WFIL (258.5m-1160kc) WJAZ (270.1m-1100kc) WJAZ (238.1m-1240kc) WJAZ (282.8m-1060kc) WKRC (245.8m-1230kc) WJAZ (277.6m-1080kc) WCAO (244.3m-1230kc) KOIL (319m-940kc) WWOV (228.9m-1310kc) WCAO (243.8m-1230kc) Columbia chain musical album.	WJAZ Springfield, Mass. (333.1m-1050kc) 7:30 p. m. WJZ, 9, band; 9:30, musical; 10, orchestra.
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WSUN St. Petersburg, Fla. (516.9m-580kc) 8:32 p. m. program; 10, dance orchestra.
 WTA Worcester, Mass. (516.9m-580kc) 7:30 p. m. studio program.
 WTAM Cleveland, Ohio (399.5m-750kc) 6 p. m. State theater transfer program; 7, orchestra; 8, WEAF; 10, Negroes; 11, Allen reed.
 WTC Hartford, Conn. (535.4m-750kc) 7:30 p. m. music; 9, concert; 10, orchestra; 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.

Eastern Central Mountain Pacific
 1310kc. WCAO (243.2m-1230kc) Columbia
 Phonograph hour
 10:15 9:15 8:15 7:15
 KOA (325.9m-920kc) Mrs. Harry Berry, soprano,
 10:30 9:30 8:30 7:30
 KFI (468.5m-640kc) Nick Harris, detective stories,
 WJR-WCX (443.9m-580kc) Charlotte Meyers and
 Mary Tudor, WTR's Personality Girls.
 10:45 9:45 8:45 7:45
 KFI (468.5m-640kc) William MacDougal, Scotch
 entertainer.
 WLS (344.6m-570kc) Blackhawks-Canadiana Doc-
 tor.
 10:05 9:05 8:05 7:05
 WJAM (280.2m-1070kc) Organ Recital, J. Gordon
 Baldwin.
 11:30 10:30 9:30 8:30
 WSM (336.9m-590kc) Bob Stark's Tennesseans
 orchestra.
 11:00 10:00 9:00 8:00
 KFI (468.5m-640kc) Half Hour of modern music,
 Whitfield Hoole, concert pianist.

WFLA Clearwater, Fla. (516.9m-580kc) 8:30 p. m.
 open house; 10, dance program.
 WGBS New York, N. Y. (348.6m-580kc) 6:30 p. m.
 concert; 9, Columbia chain; 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.

Central Standard Time Stations
 KFAB Lincoln, Neb. (319m-940kc) 5:30-6:30 p. m.
 dinner concert; 8:30-10:15, orchestra.
 KFA Shenandoah, Ia. (394.5m-750kc) 6 p. m. program.
 KOFI Council Bluffs, Ia. (319m-940kc) 7 p. m. pro-
 gram; 9, musical; 12, Pop-Vox.
 KPRC Houston, Tex. (429.5m-1020kc) 7:30 p. m.
 orchestra; 8:30, concert.
 KSI St. Louis, Mo. (545.1m-550kc) 7 p. m. WEAF.
 KTHS Hot Springs, Ark. (384.4m-750kc) 8 p. m. con-
 cert; 9:30 p. m., chamber music; 9, frolic.
 KYOO Tulsa, Okla. (348.6m-580kc) 6 p. m. program;
 7, soloists; 8, WEAF; 9, program.
 KYW Chicago, Ill. (526m-570kc) 7-9 p. m. WJZ; 9,
 musical; 10, Scrambler.
 WAMD St. Paul, Minn. (222.1m-1350kc) 7:15 p. m.
 musical; 10, dance program; 11:15, organ.
 WYAF Fair Worth, Tex. (468.7m-590kc) 8 p. m.
 WEAF.
 WBBM Chicago, Ill. (388.4m-770kc) 7 p. m. dinner
 concert; 8:1, popular program; 12, mid-week frolic.
 WCCO Minneapolis-St. Paul, Minn. (405.2m-740kc)
 7:30 p. m. WEAF; 11:30, organ.
 WCFL Chicago, Ill. (483.6m-620kc) 7:15-12 mid. pro-
 gram.
 WFOA Pensacola, Fla. (249.8m-1200kc) 8 p. m. pro-
 gram.
 WDAF Kansas City, Mo. (370.2m-810kc) 7:30-9:30
 p. m. WEAF; 9:30, Cavaliers; 11:45-1 a. m., Night-
 hawk frolic.
 WDDO Chattanooga, Tenn. (243.8m-1230kc) 7-10 p. m.
 musical.
 WERH Chicago, Ill. (385.6m-820kc) 7 p. m. orches-
 tra; 9:11, program; 10, revue.
 WGN Chicago, Ill. (418.4m-720kc) 8:30 p. m. WEAF;
 9:30, musical; 10:10, "Sam 'n' Henry"; 10:20, Mus-
 sic Box; 10:30, melody show.
 WHAS Louisville, Ky. (322.4m-930kc) 7:30 p. m.
 program; 9:30, WEAF; 8:30, WEAF.
 WRB Kansas City, Mo. (340.7m-880kc) 7-8 p. m.
 string trio.
 WHO Des Moines, Ia. (533.4m-560kc) 7:11-30 p. m.
 WEAF.
 WHT Chicago, Ill. (305.3m-980kc) 8:30 p. m. musical.
 WIOO Chicago, Ill. (305.3m-980kc) 7:10 p. m. us-
 er; 10, musical.
 WJAZ Chicago, Ill. (263m-1140kc) 7 p. m. program;
 9, studio concert.
 WJLW Chicago, Ill. (365.6m-820kc) 8-9 p. m. chil-
 dren's musical hour; 11-12, Victorians.
 WLAC Nashville, Tenn. (226m-1300kc) 7 p. m. class-
 ical program; 8, popular music.
 WLBB Chicago, Ill. (416.4m-720kc) 7:30-7:50 p. m.
 program; 7:50, WEAF; 11-12, Huskies; 12, dance mu-
 sic.
 WLS Chicago, Ill. (344.6m-570kc) 7:30 p. m. Shake-
 speare; 8, chorist music; 10, Lodge Poole; 11-12,
 popular program.

Regular Wednesday Features
 Eastern Time Stations

CFCA Toronto, Can. (356.9m-940kc) 7 p. m. orches-
 tra; 8:30, program.
 KDKA Pittsburgh, Pa. (316.6m-590kc) 7:30 p. m. pro-
 gram; 8, WJZ; 9, WEAF.
 WAU Columbus, O. (422.3m-1060kc) 8:30 p. m. pro-
 gram; 9, Columbia chain.
 WBAL Baltimore, Md.

KFRC San Francisco, Calif. (454m-660kc) 6:20 p. m. dance orchestra.

Eastern Central Mountain Pacific
WLS (344.6m-670kc) Ralph Emerson, organist.

Central Time Stations
KFAB Lincoln, Neb. (319m-840kc) 5:30-6:30 p. m. Hotel Lincoln orchestra; 8-10:30, program; 11-11:30, orchestra.

KFOA Seattle, Wash. (447.5m-670kc) 9-10, chain program; 10-12, KCW.
KFRC San Francisco, Calif. (454.5m-660kc) 6:30 p. m. program; 9, studio program; 10, dance music.

Regular Friday Features

Eastern Time Stations
KDKA Pittsburgh, Pa. (316.6m-650kc) & WJZ; 8:30, WJZ; 9, WJZ; 10:01, R. V. B. trio.

Central Time Stations
KFBM Lincoln, Neb. (319m-840kc) 5:30-6:30 p. m. Hotel Lincoln orchestra; 8-10:30, program; 11-11:30, orchestra.

Friday silent night for: CFCB, CKCL, KPBC, KFSM, WCBD, WFL, WIP, WLAC, WLIT, WPC, WSMB.

FRIDAY, JANUARY 6

Headliners

Eastern Central Mountain Pacific
WGHP (277.6m-1080kc) Lady Mason, Musical Period.
WKAR (277.6m-1080kc) 'First Impressions of the Jumble', G. W. Bradt.
WJZ (316.6m-650kc) Austin Organ Recital—Esther A. Nelson.

Eastern Time Stations

KDKA Pittsburgh, Pa. (316.6m-650kc) & WJZ; 8:30, WJZ; 9, WJZ; 10:01, R. V. B. trio.
WJZ (316.6m-650kc) 8 p. m. trio; 9, WBAL, Baltimore, Md. (285.5m-1050kc) 7:30-10, N. B. C.; 10, dance music.

Central Time Stations

KFBM Lincoln, Neb. (319m-840kc) 5:30-6:30 p. m. Hotel Lincoln orchestra; 8-10:30, program; 11-11:30, orchestra.
KFOA Seattle, Wash. (447.5m-670kc) 9-10, chain program; 10-12, KCW.

SATURDAY, JANUARY 7

Headliners

Eastern Central Mountain Pacific
KRLD (461.3m-650) Buster Dees, Margaret Sanford-Feature.
WRM (720m-1100kc) Purdue-Illinois basketball.
WLS (344.6m-670kc) Baro dance.
CFCB (357m-840kc) CFCB's ensemble.
WCTI (491.5m-610kc) Joe Warner.

Regular Saturday Features

Eastern Time Stations
CFCB Toronto, Can. (357m-840kc) 8 p. m. talk; 9, ensemble.
KDKA Pittsburgh, Pa. (315.5m-650kc) 7:30 p. m. concert; 8, WJZ.

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WGR Buffalo, N. Y. (303m-890kc) 8 p. m. WEAF; 9:30 WEAF; 11:05 supper.

WGY Schenectady, N. Y. (379.5m-790kc) 7:30 p. m. WEAF; 11, dance music.

WHK Cleveland, Ohio (285.3m-1130kc) 8 p. m. program.

WIP Philadelphia, Pa. (348.6m-860kc) 7 p. m. bedtime story; 9, concert; 10, orchestra; 11:05, organ.

WJAX Jacksonville, Fla. (340.7m-800kc) 6:30 p. m. program; 9, WJZ; 10, dance music.

WJR-WCX Detroit, Mich. (440.9m-680kc) 7 p. m. orchestra; 8, WJZ; 10, Personality Girls; 10:15, Carlton Pichers; 11:30, orchestra.

WJZ New York, N. Y. (454.2m-660kc) 7 p. m. Hotel Astor orchestra; 8, New York symphony; WEKL, WTIC, WJAX, WJAG, WJSH, WJAM, WKBA, WJAL, WJBL, WJCM, WJGC, WJHS, WJLV, WJLB, WJLD, WJLE, WJLF, WJLH, WJLI, WJLJ, WJLK, WJLM, WJLN, WJLO, WJLP, WJLQ, WJLR, WJLS, WJLT, WJLU, WJLV, WJLW, WJLX, WJLY, WJLZ, WJMA, WJMB, WJMC, WJMD, WJME, WJMF, WJMG, WJMH, WJMI, WJMJ, WJMK, WJML, WJMN, WJMO, WJMP, WJMQ, WJMR, WJMS, WJMT, WJMU, WJMV, WJMW, WJMX, WJMY, WJMZ, WJNA, WJNB, WJNC, WJND, WJNE, WJNF, WJNG, WJNH, WJNI, WJNJ, WJNK, WJNL, WJNM, WJNO, WJNP, WJNQ, WJNR, WJNS, WJNT, WJNU, WJNV, WJNW, WJNX, WJNY, WJNZ, WJPA, WJPB, WJPC, WJPD, WJPE, WJPF, WJPG, WJPH, WJPJ, WJPK, WJPL, WJPM, WJPN, WJPP, WJPQ, WJPR, WJPS, WJPT, WJPU, WJPV, WJPW, WJPX, WJPY, WJPZ, WJRA, WJRB, WJRC, WJRD, WJRE, WJRF, WJRG, WJRH, WJRI, WJRJ, WJRK, WJRL, WJRM, WJRN, WJRP, WJRS, WJRT, WJRU, WJRV, WJRW, WJRX, WJRY, WJRZ, WJSA, WJSB, WJSC, WJSD, WJSE, WJSF, WJSG, WJSH, WJSI, WJSJ, WJSK, WJSL, WJSM, WJSN, WJSO, WJSR, WJSS, WJST, WJSU, WJSV, WJSW, WJSX, WJSY, WJSZ, WJTA, WJTB, WJTC, WJTD, WJTE, WJTF, WJTG, WJTH, WJTI, WJTJ, WJTK, WJTL, WJTM, WJTN, WJTO, WJTR, WJTS, WJTT, WJTU, WJTV, WJTW, WJTX, WJTY, WJTZ, WJUA, WJUB, WJUC, WJUD, WJUE, WJUF, WJUG, WJUH, WJUI, WJUJ, WJUK, WJUL, WJUM, WJUN, WJUO, WJUR, WJUS, WJUT, WJUW, WJUX, WJUY, WJUZ, WJVA, WJVB, WJVC, WJVD, WJVE, WJVF, WJVH, WJVI, WJVJ, WJVK, WJVL, WJVM, WJVN, WJVO, WJVR, WJVS, WJVT, WJVU, WJVV, WJVW, WJVX, WJVY, WJVZ, WJWA, WJWB, WJWC, WJWD, WJWE, WJWF, WJWG, WJWH, WJWI, WJWJ, WJWK, WJWL, WJWM, WJWN, WJWO, WJWP, WJWS, WJWT, WJWU, WJWV, WJWX, WJWY, WJWZ, WJXA, WJXB, WJXC, WJXD, WJXE, WJXF, WJXH, WJXI, WJXJ, WJXK, WJXL, WJXM, WJXN, WJXO, WJXR, WJXS, WJXT, WJXU, WJXV, WJXW, WJXX, WJXY, WJXZ, WJYA, WJYB, WJYC, WJYD, WJYE, WJYF, WJYG, WJYH, WJYI, WJYJ, WJYK, WJYL, WJYM, WJYN, WJYO, WJYR, WJYS, WJYT, WJYU, WJYV, WJYW, WJYZ, WJZA, WJZB, WJZC, WJZD, WJZE, WJZF, WJZH, WJZI, WJZJ, WJZK, WJZL, WJZM, WJZN, WJZO, WJZR, WJZS, WJZT, WJZU, WJZV, WJZW, WJZX, WJZY, WJZZ.

WGN Chicago, Ill. (416.4m-720kc) 6:10 p. m. Punch and Judy; 6:55, ensemble; 6:50, Old Fashioned Minstrel; 10, Tomorrow's Tribute; 10:10, Sun 'n' Shine; 10:20, Music Box; 10:40, Melody Time.

WHAS Louisville, Ky. (322.4m-930kc) 7:30 p. m. program; 9, N. B.

WHO Des Moines, Ia. (535.4m-560kc) 7:11 p. m. N. B. C.

WHT Chicago, Ill. (305.5m-860kc) 8:30-10 p. m. program.

WIBO Chicago, Ill. (305.9m-890kc) 7:10 p. m. music; 10, popular; 11, classical.

WJAZ Chicago, Ill. (263m-1140kc) 7 p. m. m. dinner concert; 9, studio.

WJMD Chicago, Ill. (365.6m-820kc) 6 p. m. symphony; 8:11, Palmer House program.

WLAC Nashville, Tenn. (225m-1330kc) 7 p. m. children's period; 8:10, program.

WLS Chicago, Ill. (344.6m-870kc) 7:30-11 a. m. barn dance.

WMAQ Chicago, Ill. (447.5m-670kc) 8, photoquiz; 9, Chicago Theater review.

WMMB Chicago, Ill. (252m-1190kc) 6 p. m. dinner concert; 7-8:30, Trianon ensemble; 8:30-10, popular concert.

WMC Memphis, Tenn. (516.9m-580kc) 8 p. m. WJZ; 9, orchestra.

WOC Davenport, Ia. (374.8m-800kc) 7-8 p. m. music; 8, WJZ.

WOW Omaha, Neb. (308.2m-590kc) 6 p. m. program; 8, WJZ.

WQJ Chicago, Ill. (447.5m-670kc) 9:45 p. m. popular concert.

WSB Atlanta, Ga. (475.9m-630kc) 8 p. m. WJZ; 10:45, concert.

WWSB Nashville, Tenn. (335.9m-890kc) 8-9 p. m. N. B. C.; 9-11:30, barn dance.

WSMB New Orleans, La. (295.9m-1010kc) 8:30-10:30 p. m. Public School of the Air program; organ solo.

WSTL St. Petersburg, Fla. (616.9m-580kc) 7 p. m. Florida theater program; 10, Ed and Maud; 11, dance orchestra.

WTMJ Milwaukee, Wis. (293.3m-1020kc) 8 p. m. WJZ; 9, Eagles.

Pacific Standard Time Stations

XFI Los Angeles, Calif. (468.5m-640kc) 7:30 p. m. program; 8:9, orange network; 9-10, N. B. C.; 11-12 a. m. KFI midnight frolic.

KFRS San Francisco, Calif. (454.6m-660kc) 6:30-7 p. m. California; 8:10, orchestra; 10-12, dance music.

KFWB Hollywood, Calif. (252m-1190kc) 6-7 p. m. Tonight dinner hour; 8:9, program; 10:11, Motor Oil Company; 9-10, musical; 10-11, program.

KGO Oakland, Calif. (384.4m-780kc) 8 p. m. National Broadcasting company; 9, concert; 10, band.

KGW Portland, Ore. (481.5m-610kc) 6-7 p. m. dinner music; 8:9, National Broadcasting company; 10-12, dance music.

KHJ Los Angeles, Calif. (416.4m-720kc) 6:30 p. m. children's hour; 8-10, varied program.

KJR Seattle, Wash. (348.6m-860kc) 7-10 p. m. studio program; 10-12, dance orchestra.

KPO San Francisco, Calif. (422.3m-710kc) 6:30 p. m. States Restaurant orchestra; 8, National Broadcasting company; 10, dance orchestra.

Saturday, silent night for: KFDM, KGA, KLX, KOB, WRAL, WCBT, WCHS, WCFB, WCHT, WCCB, WJAR, WQAI, WOS, WRVA, WTIC, WWJ.

SUNDAY, JANUARY 8
Headliners

Eastern	Central	Mountain	Pacific
6:30 p. m.	6:30	4:30	3:30
WCAU (260.7m-1160kc) Paul J. DeWitt concert.			
WLS (344.6m-870kc) Little Brown church.			
KVDO (348.6m-860kc) Wanner instrumental trio.			
WHAM (290.2m-1070kc) Tommy Weir, tenor.			
WMAQ (447.5m-670kc) Club National Evening club, Dr. Charles N. Gordon.			
WJAM (280.2m-1070kc) Gordon String quartet.			
WJEA (491.5m-610kc) WJEA (508.2m-515)			
WGEA (461.3m-650kc) WSAI (361.2m-830kc)			
WJAY (393.3m-750kc) WJAY (416.4m-720kc)			
XSD (545.1m-580kc) WRG (468.5m-640kc)			

Eastern	Central	Mountain	Pacific
WGR (302.8m-900kc)	WVU (374.8m-800kc)		
WDAF (370.2m-810kc)	WVJ (352.7m-830kc)		
WFL (453.3m-740kc)	KVOO (348.6m-860kc)		
WFAA (545.1m-580kc)	WCCO (405.2m-740kc)		
WFTS (379.2m-800kc)	WCFR (475.9m-630kc)		
WSSM (536.9m-590kc)	WABC (516.9m-530kc)		
WBT (258.5m-1160kc)	WHO (535.4m-560kc)		
WOW (538.2m-590kc)	Atwater Kent hour, Giovanni Martelli.		
9:30	8:45	7:30	6:30
KTHS (384.4m-780kc) Mrs. George Fletcher, soprano.			
8:45	8:45	7:45	6:45
KTHS (384.4m-780kc) Edward Barry, tenor.			
10	10	9	7
KOL (319m-940kc) Little symphony.			
KRLD (461.3m-650kc) Willard Music, tenor.			
WIR-WXN (440.2m-680kc) "Happy Half-Hour of Heaven" First Baptist church.			
11:30	10:30	9:30	8:30
KTHS (384.4m-780kc) Organ recital, Thomas Avey.			
11:30	10:30	9:30	8:30
KTHS (384.4m-780kc) Frolic with the Cock a Frolic band.			
12 mid.	11	10	9
KNV (436.9m-890kc) Calmon Luboviski, master violinist.			

MONDAY, JANUARY 9
Headliners

Eastern	Central	Mountain	Pacific
6:30 p. m.	5:30	4:30	3:30
KTHS (384.4m-780kc) Seven Aces.			
7:30	6:30	5:30	4:30
KVCO (348.6m-860kc) Aklar orchestra.			
WTC (535.4m-560kc) New Departure band.			
8:30	7:30	6:30	5:30
WLS (344.6m-870kc) Harmony Girls.			
5:45			
WVNC (296.9m-1010kc) Popular vocal numbers.			
9:30	8:30	7:30	6:30
KTHS (384.4m-780kc) Jubilee songs by the Ruanee Harmony Kings, negro quartet.			
WSDU (572.9m-630kc) Northwestern-Iowa Basketball game.			
9:40	8:40	7:40	6:40
KTHS (384.4m-780kc) Mr. W. L. Brown, baritone.			
10	9	8	7
KRLD (461.3m-650kc) A. A. DeMond, violin.			
10:15	9:15	8:15	7:15
KXN (326.9m-890kc) One act play by KRX Players.			
10:40	9:40	8:40	7:40
WEMC (483.6m-650kc) Over the Fence.			
11	10	9	8
KTHS (384.4m-780kc) Miss Marion Stanley, soprano.			
WTR-WXN (440.9m-680kc) "Along the Pau Alley."			
11:10	10:30	9:30	8:30
11:10	12	11	10
WJL (475.9m-630kc) Pastime Theatre program, Elaine Blair, organist.			

TUESDAY, JANUARY 10
Headliners

Eastern	Central	Mountain	Pacific
7:30 p. m.	6:30	5:30	4:30
WTR-WXN (440.9m-680kc) "The Drummers," Muriel Moser; Kyle, soprano and Kenyon Condon, baritone.			
WKAJ (277.6m-1080kc) "A Program of Mental Hygiene for Children," Catherine Miller, WJL (535.4m-560kc) Trinity College Dialogue.			
WJAN (282.2m-1070kc) "Minding Your Mind," Prof. William Henry.			
8:45	7:45	6:45	5:45
KSNAC (331.1m-900kc) "Are Animals Changing?" Dr. R. R. Nabours.			
8:30	7:30	6:30	5:30
WJL (475.9m-630kc) White Masque players.			
WJAN (332.4m-930kc) Joseph Lombardi, tenor.			
WJLS (347.6m-870kc) Personalities in Music, Georges Bizet.			

Eastern	Central	Mountain	Pacific
8:30	7:30	6:30	5:30
CKCL (356.9m-840kc) "The Gondoliers," Frank Weir (319.5m-810kc) Gail Handell and Frank Chiddix.			
9:30	8:30	7:30	6:30
KTHS (384.4m-780kc) Little Rock Civic concert featuring artists of the Arkansas School for the Blind.			
10	9	8	7
KOHL (319m-940kc) Family Reunion.			
10:30	9:30	8:30	7:30
WTR-WXN (440.9m-680kc) The Red Apple Club.			
10:30	9:30	8:30	7:30
KTHS (384.4m-780kc) Dance Frolic with the Arlington Hotel orchestra.			
10:45	9:45	8:45	7:45
WMAQ (447.5m-670kc) Musicians Club of Women.			

WEDNESDAY, JANUARY 11
Headliners

Eastern	Central	Mountain	Pacific
7 p. m.	6	5	4
KVCO (348.6m-860kc) Phillip LaRoue, organist.			
7:30	6:30	5:30	4:30
WCAU (260.7m-1160kc) Snellenburg concert.			
8	7	6	5
KVCO (348.6m-860kc) Wednesday Morning musical club.			
8:30	7:30	6:30	5:30
WMAQ (447.5m-670kc) "Human Life and Human Science," Dr. E. E. Stossion.			
9	8	7	6
WSDU (572.9m-630kc) Second Semester French.			
9:30	8:30	7:30	6:30
WJAM (280.2m-1070kc) "Musical Vistas."			
10	9	8	7
WCFJ (491.5m-610kc) Harold O'Halloran.			
10:30	9:30	8:30	7:30
KTHS (384.4m-780kc) Perry Drug and his ukulele.			
11	10	9	8
KOL (319m-940kc) Prof. Heinrich Schultze and his boys.			
11:30	10:30	9:30	8:30
WTR-WXN (440.9m-680kc) Hedy Choral society.			
12	11	10	9
WTR-WXN (440.9m-680kc) Hedy Choral society.			
12:15	11:15	10:15	9:15
WTR-WXN (440.9m-680kc) Married Maged Kaly.			
12:30	11:30	10:30	9:30
KTHS (384.4m-780kc) Organ recital by Miss Margaret Glass.			
12:30	11:30	10:30	9:30
WSM (336.9m-890kc) Hob Stark's Tennesseeans orchestra.			

THURSDAY, JANUARY 12
Headliners

Eastern	Central	Mountain	Pacific
6:30 p. m.	5:30	4:30	3:30
WCAU (260.7m-1160kc) Cathay Tea Garden orchestra.			
7	6	5	4
WTC (535.4m-560kc) Ayers boys.			
7:15	6:15	5:15	4:15
WKAR (277.6m-1080kc) "Miserere Tread in French and German Toppies," Helen Bates.			
8	7	6	5
WJAM (280.2m-1070kc) Madrigal Mixed quartet.			
8:15	7:15	6:15	5:15
WML (475.9m-630kc) Lyric Theatre, Prof. Frank L. Mott.			
8:15	7:15	6:15	5:15
WVNC (296.9m-1010kc) Alva Lewis & Associate artists.			
8:30	7:30	6:30	5:30
WCFJ (491.5m-610kc) Ethora Smith.			
9:30	8:30	7:30	6:30
KTHS (384.4m-780kc) Grace Brown, the ukulele lady.			
9:45	8:45	7:45	6:45
KTHS (384.4m-780kc) Miss Ethel Wilson, pianist.			
10	9	8	7
KVCO (348.6m-860kc) Roy Cunningham, baritone.			
11	10	9	8
KXN (336.9m-890kc) Calmon Luboviski, master violinist.			
11:30	10:30	9:30	8:30
WVNC (296.9m-1010kc) Plaza theatre frolic.			
12	11	10	9
WSM (336.9m-890kc) Arthur Henkel, organist.			
12 m.	11	10	9
KRLD (461.3m-650kc) All Dallas hour.			

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FRIDAY, JANUARY 13

Headliners

Table with 4 columns: Eastern, Central, Mountain, Pacific. Lists radio stations and their programs for Friday, January 13.

SATURDAY, JANUARY 14

Headliners

Table with 4 columns: Eastern, Central, Mountain, Pacific. Lists radio stations and their programs for Saturday, January 14.

SUNDAY, JANUARY 15

Headliners

Table with 4 columns: Eastern, Central, Mountain, Pacific. Lists radio stations and their programs for Sunday, January 15.

Table with 4 columns: Eastern, Central, Mountain, Pacific. Lists radio stations and their programs for Wednesday, January 18.

WEDNESDAY, JANUARY 18

Headliners

Table with 4 columns: Eastern, Central, Mountain, Pacific. Lists radio stations and their programs for Wednesday, January 18.

MONDAY, JANUARY 16

Headliners

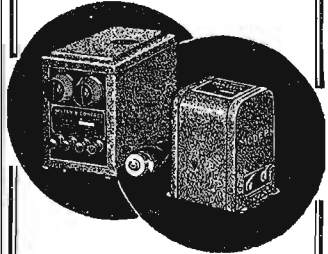
Table with 4 columns: Eastern, Central, Mountain, Pacific. Lists radio stations and their programs for Monday, January 16.

TUESDAY, JANUARY 17

Headliners

Table with 4 columns: Eastern, Central, Mountain, Pacific. Lists radio stations and their programs for Tuesday, January 17.

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TELEVOCAL QUALITY TUBES

Eastern	Central	Mountain	Pacific
10:45	8:45	7:45	7:45
WLS (344.6m-870kc) Hockey game, Blackhawk-Jessup.			
12 mid.	11	10	9
KOIL (319m-940kc) Ambassadors.			
KPD (43.3m-1070kc) Abas string quartet.			

THURSDAY, JANUARY 19

Headliners

Eastern	Central	Mountain	Pacific
7:15 p.m.	6:15	5:15	4:15
WKAR (277.6m-1090kc) "The Dardenelles Expedition," H. DeVeere.			
8	6	5	4
KSAC (333.1m-920kc) Debate: "The United States Should Generously Reduce Her Tariff on Imports."			
9	7	6	5
WCAU (260.7m-1150kc) Blue Anchor Sailors.			
WLS (344.6m-870kc) Tony's Scrum Hoop.			
WSIU (475.9m-630kc) Dramatic Verse, Prof. Frank L. Must.			
8:15	7:15	6:15	5:15
WWNC (296.9m-1010kc) Dr. A. L. Manchester.			
9	8	7	6
KTLS (384.4m-780kc) Popular refrains, by Ray Miller and his band.			
WCFB (491.5m-610kc) Billy Allen, Huff, songs.			
9:30	8:30	7:30	6:30
KTLS (384.4m-780kc) Melody Boys, Charles Gray and Floyd Taylor.			
10	9	8	7
KOIL (319m-940kc) Oll Revue.			
KVOD (348.6m-860kc) Roy Cunningham, baritone.			
WSM (336.9m-890kc) Annie Sullivan, pianist; Mrs. Wm. Hall, Jr., contralto.			
WTC (535.4m-560kc) Club Worthy Hills orchestra.			
10:30	9:30	8:30	7:30
KVOD (348.6m-860kc) Marie M. Hine, organist.			
11	10	9	8
WMAQ (447.5m-670kc) Hamiltonians.			
11:05	10:05	9:05	8:05
WHAM (280.2m-1070kc) Cliff Weller and his Club orchestra.			

FRIDAY, JANUARY 20

Headliners

Eastern	Central	Mountain	Pacific
7 p.m.	6	5	4
WCAU (260.7m-1150kc) Piccadilly orchestra.			
8	7	6	5
KR.L.D. (461.3m-650kc) Ruth Muse, Buster Dees, Bill Saline.			
9	8	7	6
WCFB (491.5m-610kc) Haynes & Ferris.			
8:30	7:30	6:30	5:30
KTLS (384.4m-780kc) Miss Ethel Wadsworth, pianist.			
WTC (535.4m-560kc) Ivanhoe Knights.			
8:45	7:45	6:45	5:45
KTLS (384.4m-780kc) Pete Phillips, tenor.			
10	9	8	7
KOIL (319m-940kc) Uncle Josh.			
KTLS (384.4m-780kc) Musical comedy gems, by KTLS orchestra.			
10:30	9:30	8:30	7:30
WIR-WCX (440.9m-680kc) "Stattie" with Gladys Sanderson and Vocal Hider.			
10	9	8	7
KOIL (319m-940kc) Leon Shiroder, baritone.			
WLS (344.6m-870kc) WLS Showband.			
WMAQ (447.5m-670kc) WQJ Chamber Music players.			

SATURDAY, JANUARY 21

Headliners

Eastern	Central	Mountain	Pacific
6:30 p.m.	5:30	4:30	3:30
KOIL (319m-940kc) E. S. Gettude Day.			
7:30	6:30	5:30	4:30
WCAU (260.7m-1150kc) Cathay tea garden.			
8	7	6	5
WCFB (491.5m-610kc) Isabel Deford, Peter Gross.			
WSIU (475.9m-630kc) Purdue-John Baseball game.			
8:30	7:30	6:30	5:30
KTLS (384.4m-780kc) Natalie Arnoux, violinist.			
10	9	8	7
WAL (285.5m-1050kc) Municipal Band of Baltimore.			
WIR-WCX (440.9m-680kc) Charlotte Meyers and Mary Taylor. "WIR Personality Girls."			
WSM (336.9m-890kc) Regular Barn Dance program.			

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Eastern	Central	Mountain	Pacific
10:15	9:15	8:15	7:15
WLS (344.6m-870kc) Chicago theater revue.			
10:45	9:45	8:45	7:45
WLS (344.6m-870kc) Hockey game, Blackhawk-Boston.			
11:05	10:05	9:05	8:05
WHAM (280.2m-1070kc) Hughie Barrett's orchestra.			

SUNDAY, JANUARY 22

Headliners

Eastern	Central	Mountain	Pacific
7 p.m.	6	5	4
WIR-WCX (440.9m-680kc) Dinner Music by Jean Goldkette's Venetian Ensemble.			
7:30	6:30	5:30	4:30
KVOD (348.6m-860kc) Dorothy Heywood Reed, pianist.			
8:15	7:15	6:15	5:15
KR.L.D. (461.3m-650kc) Dallas Athletic Club orchestra.			
9	8	7	6
WCAU (260.7m-1150kc) Edward Nimble-Thumble Boys.			
WMAQ (447.5m-670kc) Chicago Sunday Evening Club, Dr. Albert Parker Fitch.			
9:15	8:15	7:15	6:15
WHAM (280.2m-1070kc) Rochester string quartet.			
9:15	8:15	7:15	6:15
WCAU (260.7m-1150kc) WSAI (508.2m-610kc), WTAM (461.3m-650kc), WGN (416.4m-720kc).			

Eastern	Central	Mountain	Pacific
8:15	7:15	6:15	5:15
KR.L.D. (461.3m-650kc) Ruth Muse-Feature 3.			
8:30	7:30	6:30	5:30
WIR-WCX (440.9m-680kc) Caspar J. Lingenau, pianist.			
8:45	7:45	6:45	5:45
WMAQ (447.5m-670kc) "Art Principles Applied to Room Arrangement," Mrs. Marion Hoffman.			
9:15	8:15	7:15	6:15
WSIU (475.9m-630kc) Radio Chamber orchestra.			
WTC (535.4m-560kc) New Denture band.			

Eastern	Central	Mountain	Pacific
8:15	7:15	6:15	5:15
WWNC (296.9m-1010kc) Happiness Girls.			
8:30	7:30	6:30	5:30
WLS (344.6m-870kc) Harmony Girls.			
8:45	7:45	6:45	5:45
WWNC (296.9m-1010kc) Old time music.			
9:15	8:15	7:15	6:15
WWNC (296.9m-1010kc) Dites Singer.			
9:40	8:40	7:40	6:40
WEMC (483.6m-620kc) "A Wee Bit of Scotland."			
10:30	9:30	8:30	7:30
KTLS (384.4m-780kc) Dance frolics, Ray Miller's orchestra.			
11:30	10:30	9:30	8:30
KVOD (348.6m-860kc) Gustav Branborg, baritone.			
12 mid.	11	10	9
KOIL (319m-940kc) Mose and Charlie.			

TUESDAY, JANUARY 24

Headliners

Eastern	Central	Mountain	Pacific
7 p.m.	6	5	4
WIR-WCX (440.9m-680kc) The Amnis Trappers.			
7:30	6:30	5:30	4:30
WKAR (277.6m-1090kc) "Stories for Children."			
8:30	7:30	6:30	5:30
KLDS (344.6m-870kc) White Alouette players.			
8:45	7:45	6:45	5:45
"Gianna's Puccini."			
9	8	7	6
CHL (355.9m-640kc) "The Chocolate Soldier."			
WCFB (491.5m-610kc) Real Fevers.			
WTC (535.4m-560kc) Manning-Bowman Concert.			

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Table with 4 columns: Eastern, Central, Mountain, Pacific. Lists radio stations and programs for Wednesday, January 25.

WEDNESDAY, JANUARY 25

Table with 4 columns: Eastern, Central, Mountain, Pacific. Lists radio stations and programs for Thursday, January 26.

THURSDAY, JANUARY 26

Table with 4 columns: Eastern, Central, Mountain, Pacific. Lists radio stations and programs for Friday, January 27.

FRIDAY, JANUARY 27

Table with 4 columns: Eastern, Central, Mountain, Pacific. Lists radio stations and programs for Saturday, January 28.

Table with 4 columns: Eastern, Central, Mountain, Pacific. Lists radio stations and programs for Sunday, January 29.

SATURDAY, JANUARY 28

Table with 4 columns: Eastern, Central, Mountain, Pacific. Lists radio stations and programs for Monday, January 30.

SUNDAY, JANUARY 29

Table with 4 columns: Eastern, Central, Mountain, Pacific. Lists radio stations and programs for Tuesday, January 31.

MONDAY, JANUARY 30

Table with 4 columns: Eastern, Central, Mountain, Pacific. Lists radio stations and programs for Wednesday, January 31.

Table with 4 columns: Eastern, Central, Mountain, Pacific. Lists radio stations and programs for Thursday, January 31.

TUESDAY, JANUARY 31

Table with 4 columns: Eastern, Central, Mountain, Pacific. Lists radio stations and programs for Friday, January 31.

WEDNESDAY, JANUARY 31

Table with 4 columns: Eastern, Central, Mountain, Pacific. Lists radio stations and programs for Thursday, January 31.

Advertisement for 'Gets Japan and Australia!' featuring a globe and text about international radio connections.

Advertisement for Townsend 'B' Socket Power 685, highlighting '10 Days' Free Trial' and '100 Down Balance C.O.D.'.

Large advertisement for 'Easy as A-B-C!' instrument learning, featuring a piano and text about quick learning methods.

Quickest because natural and pleasant. Grateful students say they learn in a fraction of the time old dull methods required.

LEARNING MUSIC is no longer a difficult task. If you can read the alphabet, you can now quickly learn to play your favorite instrument!

No Tricks or Stunts—You Learn From "Regular" Music

You don't have to know the first thing about music in order to begin. You learn to play from actual notes, just like the best musicians do.

Whether you like the piano, violin, cello, organ, saxophone, or any other instrument, you can now learn to play it in an amazingly short time.

Advertisement for '30 Days FREE TRIAL' and 'New Westgate One Dial RADIO' with a list of 24 styles to choose from.

Advertisement for 'KARAS A-C-FORMER FILAMENT SUPPLY TYPE 12' with a list price of \$13.50 and a 'NO HUM!' guarantee.

Advertisement for 'U. S. SCHOOL OF MUSIC' with a list of instruments and a 'Free Book and Demonstration Lesson' offer.

Effarsee Art Panels Make Novel Aerials

INSIDE aerials in the form of tapestry effect art panels are among the interesting aerial instruments now on the market. The Fishwick Company has made these Effarsee aerials on a design which involves a patent construction that is new



"The Nymph"—This is one of several Greek mythological representations that are used on the Effarsee Antennae art panels.

in the electrical art. The art panels are suspended from a silk cord and have a binding post in the center hole of the lower condenser which is attached to the antenna post of the receiving set. They are generally used with ground wires—or counterpoise for very sensitive sets. These panels produce a decorative effect in the home as the neutral colorings blend into any color scheme.

ORCHESTRA STANDING

(Continued from page 21)

For each four consecutively numbered coupons a bonus of twenty-five votes will be allowed.

For each five consecutively numbered coupons a bonus of thirty-five votes will be allowed.

For the complete series of the six consecutively numbered coupons sent in at one time a bonus of fifty votes will be allowed.

4. Special ballots will be issued only when requested at the time of receipt of paid in advance mail subscriptions, old or new, to the Radio Digest when received direct and not through subscription agencies according to the following voting schedule:

- 1-year paid in advance mail subscription.....\$ 3.00 150 votes
- 2-year; two 1-year paid in advance mail subscriptions direct 6.00 325 votes

- 3-year; three 1-year; one 1 and one 2-year paid in advance mail subscriptions direct..... 9.00 500 votes
 - 4-year; four 1-year; two 2-year; one 3-year and one 1-year; paid in advance mail subscriptions direct..... 12.00 750 votes
 - 5-year; five 1-year; one 2-year, and one 3-year; two 2-year and one 1-year; one 1-year and one 1-year; paid in advance mail subscriptions direct..... 15.00 1,000 votes
 - 10-year; ten 1-year; five 2-year; three 3-year and one 1-year; two 4-year and one 2 or two 1-year; two 5-year paid in advance mail subscriptions direct 30.00 2,500 votes
5. For the purposes of the contest the United States has been divided into five districts. Canada will comprise the sixth district. District number one, known as (Continued on next page)

DEALERS BIG DISCOUNTS

SET BUILDERS, AGENTS! The latest circuit, the newest developments in radio at dealer low prices, set the parts you want here and more money. The best in parts, kits, complete factory-built sets and supplies. Orders filled same day received. Write for free copy NOW. Standard due cannot be dealers, set builders, agents. STARBUCK CO., 125 N. Jefferson, Dept. 871, Chicago, U. S. A.

NEW Spring Edition RADIO REDBOOK for LISTENERS 1928

Just out with All the Latest Changes Direct From Radio Trade Commission Exclusive copyrighted arrangement for quick and accurate tuning of kilocycles, wave lengths or call letters. All stations also cross indexed by cities, giving names of owners.

Most recent and authentic information on Chain Broadcasting

The wonderful programs now being broadcast are too good to miss. The Red Book is the greatest help to get the program you want and obtain the utmost enjoyment from your set, regardless of make or type. No advertising pages to wade through. It is so simple and convenient to use, yet so complete and reliable that it is now accepted by fans everywhere as the standard log book and directory of Broadcasting.

Some of its features are: A clear-print two-page map showing broadcasting stations, distances, directions and time zones. "Radio Doctor" section giving hold-down formulas on set troubles and interference, with remedies for each. By far the biggest seller in the field today. Don't be misled by cheap imitations. Get the genuine Red Book.

If your Radio or News dealer cannot supply you, send 25c in coin to us.

The Wayne Andrews Co., Inc. 101 Central Bldg., Ft. Wayne, Ind.

25c a copy (Quantity discounts to dealers)

"B" Power Unit Aids In Radio Operation

The "B" power unit is rapidly becoming recognized as the logical source of "B" Radio current. This has made it necessary that any "B" power unit, in order to be successful, must be capable of performing satisfactorily with a variety of Radio sets whose electrical characteristics and requirements differ greatly. The plate current for the receiver must be direct, and it is the function of "B" power units to produce this current. In compliance with these requirements, the Modern engineers have built a "B" compact that is the source of constant and dependable power. The Modern compact uses Raytheon type B or BH tubes. The internal compartments are shielded to prevent line disturbance and interference, and the large capacity con-

densers are carefully insulated. All compartments are sealed against moisture. Large size overwindings capable of withstanding heavy overloads, two variable controls and provision for reducing the voltage output from the last tap make the Modern "B" compact a high quality product.

6 TUBE SUPERPHONIC
Only \$16.95
Can be wired in a few minutes

FREE! 6 TUBES \$10.00 value. Tested and Matched.

An amazing value that can't be beat! Latest 6-tube tuned radio frequency circuit. Extremely selective, marvelous sensitivity. Three stages of radio frequency, detector and two stages of low ratio audio frequency, for improved tone quality. Two-dial control. Straight line frequency condensers. All metal chassis. Shielded, clear and realistic reception guaranteed. Beautiful black front panel (7.5" x 10"). Ornamental design, degree and kilocycle markings in gold. Metal panel and sub-panel. Complete chassis. No extra parts to buy. All parts mounted. Simply connect a few wires. No special tools needed. Kutz-Kash indicator knobs. New type U. S. sockets. All hook-up wire and colored battery cable included. Value \$60.00, our price \$16.95.

Tested and Approved
Severe laboratory tests have proved the remarkable efficiency of this set. Owners everywhere are sending us letters praising its wonderful reception qualities.

Simple Wiring Directions
Very easy to wire this set with the instructions we furnish. All you just connect a few wires. All you have to do is to follow numbers. That is all. Can be wired in a few minutes by anyone. No radio knowledge needed. Make money by wiring these sets in your spare time and selling them to your friends.

SEND NO MONEY
Just write your name and address on a post card and ask us to send you this great outfit together with 6 tubes. We will ship them right away. When they arrive, pay only \$16.95 plus a small delivery charge. (Foreign countries send \$19.50 with order. We pay shipping charges.)

RADIO EQUIPMENT CO., Dept. 61, 549 S. Wells St., CHICAGO, ILL.

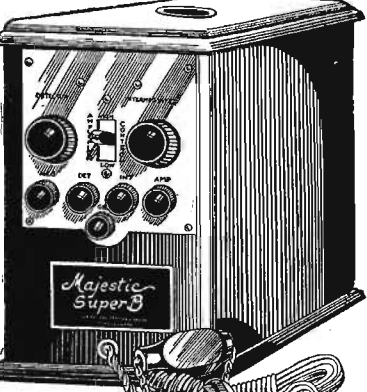
When in New York Reside where the New Yorkers reside—at Beautiful Standish Hall

THIS magnificent Apartment Hotel overlooks Central Park, faces the Museum of Natural History and is only a few minutes from Broadway—Fifth Ave. and the Shopping and theatre centers. The rooms are large and furnished with luxurious refinement. An ideal summer residence for families. During the Spring and Summer months a Special Discount is offered to transient and permanent guests. Send for Illustrated Booklet and Rates

Standish Hall
45 W. 81st St. New York

Stop Using "B" Batteries On Your Radio!

Startling reduced price offer on a highest grade, nationally known "B" Eliminator. Seize this opportunity. Get constant 100% efficiency in "B" current for your radio direct from your light socket. Stop using the old style, inefficient and costly "B" batteries.



1-Year Guaranteed Majestic Super "B" Eliminator

\$1.00 Down

Total price only \$29.50

Attaches to Any Electric Light Socket
Cabinet finished in rich black crystal enamel. Dimensions: 10 1/2 in. deep by 5 1/2 in. wide by 9 in. high. Weight: 20 pounds net; 25 pounds packed. Bakelite Panel. Complete with extension cord and attachment plug. One majestic Super-Power "B" Rectifier. Packed in individual padded wire-bound wood cases. Guaranteed for one year against electrical and mechanical defects.

\$4.50 a Month If Satisfied After Free Trial

Only \$1.00 with the coupon below brings the Majestic Super "B" Eliminator to your home on trial. Try it out thoroughly before you pay another penny. See how it improves reception. See how much more convenient than using batteries. Judge for yourself how it will save you money and make your radio set more enjoyable. Then, if not satisfied, send it back at our expense and we'll refund your \$1.00 plus all transportation charges. If you decide to keep the Majestic Super "B" Eliminator, start paying only \$4.50 a month until you have paid the total price of only \$29.50. Special reduced price now! We give you the lowest cash price on easy monthly payments you will never feel.

Send Coupon!

Send coupon now while this offer lasts. Order by No. Y8789JA. \$1.00 with coupon; \$4.50 a month; total price \$29.50.

Straus & Schram
Dept. R3511 Chicago, Ill.

Name _____
Street, R. F. D. _____
or Box No. _____
Shipping Point _____
Post Office _____ State _____
Married or Single _____ Nationality or color _____
If you want ONLY our free catalog of home furnishings mark X here

SAVE 1/2!

30 days TRIAL FREE Satisfy yourself Completely Shielded Genuine Licensed Circuits Manufactured under license grants of Radio Corporation of America and affiliated companies

The set that's the talk of the radio trade. Acknowledged as the greatest radio value. A Con-Rad six tube completely shielded chassis with single illuminated dial control. Absolutely the latest in radio receivers. Manufacture under license grants, insures highest quality; chassis incorporates all the features found in most efficient receivers. Complete shielding insures freedom from all foreign noises. Very selective and sensitive. Brings in long distance stations with wonderful tone and volume. Both table and console cabinets come in the newest style and most beautiful woods.

Prove It Yourself—30 Day Free Trial
Quality and price are what you are most interested in. A Con-Rad receiver is ready to undergo any test you demand. Try it in your home on our 30 day Free Trial offer and be satisfied. If you are not, return the receiver to us and your money will be refunded. You must be satisfied!

BIG DISCOUNTS TO AGENTS AND DEALERS
Demonstration set sent on Free Trial. Make big money working full or spare time taking orders for Con-Rad Radios. Write today for special prices and proposition.

MAIL COUPON NOW!
Write today for complete information. Our catalog gives full details of the Con-Rad line of 1928 and our liberal 30 day Free Trial offer.

Dept. 181 CONSUMERS RADIO COMPANY 4721 Lincoln Ave. Chicago, Ill.

CONSUMERS RADIO CO., 4721 Lincoln Ave., Dept. 181, Chicago, Ill.
Gentlemen: Please send me full particulars and catalog of the Con-Rad Line of 1928 and your 30 day Free Trial offer. No obligation.

Name _____
Street _____
City _____ State _____

6 TUBE SETS Completely assembled \$34.75 to \$66.66 RETAIL PRICES

THAT CHRISTMAS SET

(Continued from page 14)

and will eventually, and is just as necessary as the others. It will not deteriorate in a drawer and you'll need it sooner or later—maybe sooner.

An Extra Speaker

A great many people find that they would like to have a speaker in the dining room, at the end of the hall, after the set is installed in the living room. This is perfectly feasible and is not hard to put in; the diagram at the start of this article will give you the layout for accomplishing this. The added parts needed are three Carter portable jacks, type 12, and 3 Carter "One-Way" Plugs. Yaxley probably makes similar items but these are the Carter identifications.

If your set has two little holes into which you insert the tips of the speaker cord, you'll also need two Carter "Imp" Plugs. "One-Way" Plugs are "A" and portable jacks, "B". A piece of fine insulated flexible wire, 4 feet long, is cut into one-foot lengths, and the insulation removed at both ends of each piece for about one-half inch. Take one of these pieces and insert an end into one of the "Imp" plugs. Do the same with another piece and the second plug. The "Imp" plugs can be inserted into the holes in the set where the speaker tips went. The third one-foot length is now applied by wrapping one of its bared ends around the bared end of the first one just where it goes into the plug, making two wires which are connected to the plug. If a friend has a soldering iron, solder it.

Wire 4 is now wrapped around the bared end of wire 2 where it enters its plug, so we have two leads from this plug also. We will call wires 1 and 3 which we have connected to the same plug, pair X and 2 and 4 going to another plug, pair Y. Take one of the portable jacks and run one wire of pair X into it and one from pair Y. Do the same with another of the portable jacks. We now have two speaker outlets. Put a "One-Way" plug on the speaker tips of the speaker at the set. Now run twisted, flexible light cord to the point at which you wish the other speaker; put a "One-Way" plug at the end by the set, and a portable jack at the other end. The second speaker can now have a "One-Way" applied to its cord tips—and there you are.

ORCHESTRA STANDING

(Continued from page 34)

the "EAST," will include the states of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, and District of Columbia. District number two, known as the "SOUTH," will comprise the states of Virginia, West Virginia, North and South Carolina, Georgia, Florida, Louisiana, Mississippi, Alabama, Tennessee, Arkansas, and Kentucky. District number three, known as the "MIDDLE-WEST," will include the states of Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa, Missouri. District number four, known as the "WEST," will comprise the states of North and South Dakota, Nebraska, Kansas, Oklahoma, Texas, Montana, Wyoming, Colorado, and New Mexico. District number five, known as the "FAR WEST," will consist of the states of Idaho, Arizona, Utah, Nevada, California, Washington, and Oregon. District number six, known as Canada, will comprise the entire Dominion of Canada.

6. The orchestra polling the highest number of votes of all six districts will be declared **THE WORLD'S MOST POPULAR ORCHESTRA** and will be awarded

a golden plaque. After the grand prize winner is eliminated the orchestra pulling the highest vote in the district in which they are registered will be declared to be the **MOST POPULAR** of their district and each awarded a silver plaque. No orchestra is to receive more than one prize.

7. In the event of a tie for any of the prizes offered, prizes of identical value will be given to each tying contestant.

8. Any question that may arise during the contest will be decided by the Contest Editor, and his decision will be final.

ROXY SAYS

(Continued from page 3)

The studio party every week soon had the effect of cementing the various artists into a family. They knew each other before and were friendly enough, but something about getting together each week for the Radio made a homeliness that brought us all into closer relationship.

This is how "Roxy's Gang" came into being—the result of the Radio and the millions of listeners-in. The folks who heard of us took a personal interest in our doings and in the different members of the Gang. They made each singer and player a household word all over the country.

You would be surprised at the number of well-known artists who have "arrived" by way of the Radio and the motion picture houses. Four of my own people have realized a singer's greatest ambition, that of singing at the Metropolitan Opera House. They are Mario Chamlee, Jeanne Gordon, Vincente Ballester, who died recently, and Frederick Jagel, the Brooklyn boy who scored such a success at his debut this season. Many others have made good in the music field proper after their training into the picture theaters and over the Radio.

My Gang started of itself. The Radio unified my artists into one homey family, and this personal touch element is what made a hit with the Radio fans from Boston to San Francisco. It made a hit with me, too, for it is much easier to keep the wheels of such a big undertaking running smoothly if your people have a little of that old college spirit. The enthusiasm of the Gang members made itself felt over the Radio so that the listeners really felt they were a part of the Gang and were doing their bits in the entertainment.

For the folks on the other end—the receiving end—the Radio has been one of the greatest blessings ever known. Before broadcasting came along the general public had practically no idea of good music. "The Maiden's Prayer" and others of the same sort were about all some of the folks knew existed in the way of songs.

The Radio has been the means of introducing the great mass of people to music of a higher order. Do they like it? Do they? Well, you'd think they did if you saw the mail we get after each week of broadcasting. At first we used songs and orchestral music that were well known—at least to a majority of folks, but now it is possible to play music of quite an advanced order. And the listeners-in like that, too.

In other words, they are getting an education—getting it painlessly. If the ordinary man is offered an education in so many words, he will run as if pursued by a tiger, but the Radio is teaching him many things without him knowing it, because entertainment is always acceptable.

Understand, we are not training a musical appreciation Radio hour—our object is to entertain. But, honestly, sometimes in the course of a good show you can get some mighty useful knowledge, and knowledge never hurt anybody very much.

But the uplift and educational side of broadcasting is incidental. Our greatest "comeback" is due to the fact that we know our programs reach thousands of people who otherwise would not hear any kind of musical entertainment.

\$21.00

Warren "B" Supply

Cash with order, f. o. b. Peoria, Ill. Complete with tube. Money back guarantee with every unit. (Formerly \$35.00)

Guaranteed output—180 volts at 50 mils. on 110 volt, 60 cycle, AC. Will operate any set with 1 to 12 tubes.

WARREN ELECTRIC CO.
DEPT. RD
PEORIA - ILLINOIS



Guaranteed Socket Power Unit \$13.75



90-Day Guarantee
An absolutely unequaled value! We want you to test the World "A" Socket Power Unit and compare it with any other of two or three times the price. Try for ten days at our risk. Then if you are not convinced that it is unsurpassed as to quality and wonderful results, purchase price will be refunded in full. Operates on 50 or 60 cycles at 110 volts A. C. Highest quality Westinghouse electrical equipment. No hum or noise. Approved by Radio News Laboratories and other leading Authorities.

Send Order Today Just write your name and address on a slip of paper—pin a one dollar bill to it and mail today. We will ship same day order is received for \$12.75 C. O. D. 5% discount for cash with order. Remember you are the judge and are fully protected—so send order NOW.

World Battery Company
1219 South Wabash Avenue
Dept. 62 Chicago, Illinois
[Station W. S. B. C. owned and operated by] World Battery Company

WANTED!

Radio Dealers
PROFESSIONAL
Set Builders and
Radio Fans

IN EVERY community to introduce and become our factory representative on the newest, most revolutionary radio development in the history of the industry . . . The **SUPER HILODYNE** Circuit, a radio circuit that is modern and independent. See December issue of Radio News.

The **SUPER HILODYNE** is a new basic circuit employing nine tubes. Its all around performance will amaze you. You can help repeat Radio History and make money by representing us in your community in your full or spare time. Write **TODAY** for details. Dept. RD-128.

ALGONQUIN ELECTRIC CO., Inc.
245 Fifth Ave. New York City

Renew OLD RADIO TUBES Instantly!

If your tubes are three months old, they need rejuvenating. And you'll be amazed at how much better they'll work. One at a time, plug them into the Master Craft Tube Renewer. Then back into your set. They'll give you bigger volume, greater distance, finer tone. The Master Craft Tube Renewer makes most any old tube as good as new—and keeps it new indefinitely. Practically triples the useful life of all tubes.

Operates Off Your "B" BATTERY or ELIMINATOR

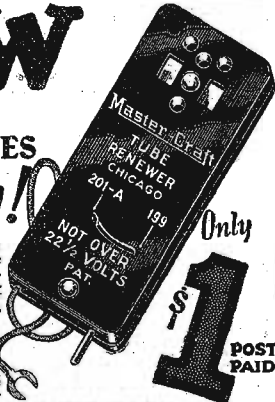
Requires no electric light current. Simply connect to 22½ volt "B" battery tap, insert the tube and the job is done.

Anyone can rejuvenate tubes with the Master Craft Tube Renewer. Small, compact, simple to use. Nothing to get out of order. Perfect results guaranteed. Thousands of satisfied users. Approved by Popular Radio, Popular Science Monthly, etc.

FREE TRIAL OFFER

Order a Master Craft Tube Renewer NOW. Test it on your old tubes. Decide, after you have seen it do its wonder work, whether you want to keep it. Slip the coupon right away. Pin it to a dollar bill and mail at once. Send the Master Craft back if you're not satisfied. We'll refund your dollar if you want it.

MASTER CRAFT PRODUCTS CO.
3803 N. Clark St. Dept. M. Chicago, Ill.



GUARANTEE COUPON
Master Craft Products Co., Dept. M.
3803 N. Clark St., Chicago.

I enclose \$1. Send me one Master Craft Tube Renewer and full instructions. I understand that I can have my money back if not satisfied.

Name.....
Street.....
Town..... State.....

Aerial Easily Installed

What will, no doubt, be hailed by Radio users as a distinct relief from antenna troubles is the Stanley Aerial, a compact, single-mounting unit of tin-dipped copper wire, manufactured by the Stanley Engineering and Sales Company of 70 Monroe Street, Lynn, Mass.

Where formerly it was necessary to clutter backyards and apartment house roofs with innumerable crisscrossing wires, the Stanley Aerial offers alleviation of all



STANLEY AERIAL

For more selectivity volume and tone

such conditions. It has been particularly effective for apartment house use inasmuch as its super-selectivity eliminates interference and all neighborhood noises that raise havoc with all good reception.

A & B Battery Charger ONLY \$2

SATISFACTION GUARANTEED

Charges any type of storage A or B battery, using a few cents worth of ordinary house current, either alternating or direct. Cannot future history. Complete directions enclosed. No expansion extra to buy. Why pay \$10.00 to \$15.00 for a charger when you can get this splendid GUARANTEED A & B Charger by mailing us two dollars (plus postage) or 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 now TODAY!

R. B. SPECIALTY CO. Dept. 80-7, 308 East Third St., Cincinnati, O.

Most Amazing INVENTION in 25 years "Cleans Up" for Agents

FREE MACHINE FOR AGENTS

\$90 WEEKLY IN SPARE TIME!

Men, here is a wonder—the most sensational invention of the age! If you're looking for a rapid fire seller—an item that nets you 100% profit—an item that sells itself to 7 out of 10 men on demonstration—try it in the Ve-Do-Ad, the amazing new vest pocket adding mechanical.

Sells for \$2.95—You Make \$1.65

This most remarkable invention does all the work of a \$3.00 adding machine, yet fits the vest pocket and sells for only \$2.95! It sells on sight to storekeepers, business men, and everyone who uses figures—and makes you over 100% profit on every sale! Ve-Do-Ad does any kind of figuring in a jiffy, yet weighs but a couple of ounces to a billion. Shows total visible at all times. Perfectly accurate, lightning fast. Never makes a mistake or gets out of order. Over 100,000 in daily use!

Get Your Machine FREE

Let us wire salesmen are dropping everything else and flocking to Ve-Do-Ad. Ve-Do-Ad sells them quick money and lots of it. Shippers out in California make \$875 in one week! You can "clean up" too! Only 10 sales a day in spare time will bring you \$1,000 a week! You need no previous sales experience—Ve-Do-Ad sells itself! You are really interested in earning a steady, substantial income, write at once for full details of my MONEY-MAKING PLAN and FREE VE-DO-AD given to new Agents. Do it NOW—TODAY!

C. M. CLEARY, Dept. 879 184 W. WASHINGTON ST. CHICAGO, ILL.

In addition to this, its one-point mounting prevents the usual property damage that accompanies the installation of antennas. A few minutes only are required to erect the Stanley. It is thoroughly rigid and can be locked in any direction desired.

An interesting feature in connection with its origin is the fact that it was conceived and designed by a former General Electric engineer. Since its introduction two years ago it has been in constant use by thousands of Radio enthusiasts, and in every instance has given more than satisfactory service, obtaining greater clarity, volume and signal, with less static and electrical interference. These features, together with



Tobacco Habit BANISHED

Let Us Help You

No craving for tobacco in any form after you begin taking Tobacco Redeemer. Don't try to quit the tobacco habit unaided. It's often a losing fight against heavy odds and may mean a serious shock to the nervous system. Let us help the tobacco habit to quit YOU. It will quit you, if you will just take Tobacco Redeemer according to directions. It is marvelously quick; thoroughly reliable.

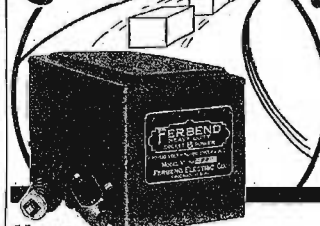
Not a Substitute

Tobacco Redeemer contains no habit-forming drugs of any kind. It is in no sense a substitute for tobacco. After finishing the treatment you have absolutely no desire to use tobacco again or to continue the use of the remedy. It makes not a particle of difference how long you have been using tobacco, how much you use or in what form you use it—whether you smoke cigars, cigarettes, pipe, chew plug or fine cut or use snuff. Tobacco Redeemer will positively remove all craving for tobacco in any form in a very few days. This absolutely guaranteed in every case or money refunded. Write today for our free booklet and positive proof that Tobacco Redeemer will quickly free you of the habit.

NEWELL PHARMACEUTICAL COMPANY, Dept. 842, 417 W. Superior St., ST. LOUIS, MO.

the high indorsement the Stanley Aerial is receiving from Radio experts, bid fair to assure this unit an unequalled success and extreme popularity in the Radio field. Of the many indorsers of the Stanley are the Radio operator of the U. S. S. Galveston and Mr. Walter Myers, chief an-

FERBEND LEADS AGAIN!



Now—Lowest Priced Quality Tube "B" Eliminator \$18.50

Complete Including LONG LIFE PERFECTED 85 MIL. TUBE. Delivers up to 150 volts on any set.

NO LIQUIDS OR ACIDS

30 Days Trial.

See Your Dealer, or Send Direct

FERBEND ELECTRIC CO., 417 W. Superior St., Chicago, Ill.

nouncer of WEEI, both of whom have used one ever since its initial appearance and are highly enthusiastic regarding its superior performance.

Roll-o Clarifier Only \$1.00



Here is the amazing new ROLL-O CLARIFIER—an absolute necessity to owners of "B" Battery Eliminators. This marvelous new chemical condenser, immediately eliminates all hum and set noises. Two of these can be used in place of 1 block of high priced condensers when building your own A or B eliminator.

ELIMINATES NOISES! Now you can listen to perfect radio reception. Noises due to condenser dry "B" batteries disappear as if by magic. No harmful acids. Easy to attach—only two connections necessary. Hundreds of satisfied users.

Worth \$2—Sells for \$1! Easily worth \$8 or more. But we sell for \$1! Just attach one dollar bill to this ad, write name and address, enclose one dime (dial to cover postage) AND MAIL TODAY! Don't miss the marvelous buy!

ROLL-O RADIO CO., Dept. D-201 Cincinnati, Ohio

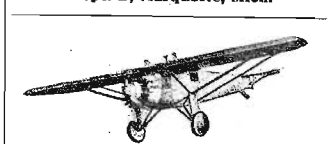
TUBES REBORN New, Easy Way



Positive GUARANTEE ONLY \$1.00

This amazing little Re-Lite Reformer will positively do all that high priced regenerators will do. At just any time on any make radio can instantly be given new life—no cost! Amazing low cost! Like new, this low-priced, easy way.

Sentinel Tube Protector Co. Dept. B, Marquette, Mich.



Training gets men ahead in AVIATION

At home, in your spare time, you can learn the fundamentals of Aviation—and start yourself on the way to large earnings

Lieut. Walter Hinton, of N.C.4 fame, and his staff of experts will guide your instruction from beginning to end. There are many positions open as mail pilots, commercial flyers, instructors; plenty of well paid jobs as inspectors, riggers and mechanics on the field and in the different factories.

The Aviation Institute Course teaches you everything you need to know, right up to the point of actual flight instruction on the flying field and in the air.

In cooperation with the Institute, flying instructions are given all over the United States, at reasonable rates.

Get all the facts about the Institute course and the way it leads to Opportunity. Do it now. FREE This Book Tells All

Aviation Institute of U. S. A.

Walter Hinton, Pres. Aviation Institute of U. S. A., Suite 6412 1115 Connecticut Ave. N.W., Washington, D. C. You may send me without obligation a Free copy of "Rich Rewards in Aviation."

Name: _____ (Not under 18)
Age: _____
Street: _____
City: _____ State: _____

Amazing New Ground Antenna



GETS FARAWAY STATIONS LOUD AND CLEAR REGARDLESS OF STATIC CONDITIONS

Radio Engineers and hundreds of users report that Aer-O-Liminator, the sensational new Ground Antenna, gets better long distance reception, almost unbelievable freedom from static and outside noises, far greater selectivity and marvelously clear and sweet tone quality. R. Curtis, of Ill., says: "There's no such thing as static trouble since I got my Aer-O-Liminator. I get stations I never got before—so loud and clear I would almost swear they were in the next room. In addition you are free from troublesome overhead aerials that everyone now knows are static suckers. Aer-O-Liminator (Ground Antenna) is simple and easy to install. Takes but a few minutes."

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COURTESY OF THE HOTEL

OFFICIAL CALL BOOK AND LOG

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KDKA

E. Pittsburgh, Pa. 315.6m-950kc. 50,000 watts. Westinghouse Elec. & Mfg. Co. Daily ex Sun. 10 am. 12 m. 4-5 pm. 6-8. Tues. 7 pm. Wed. Fri. 7 pm. 7:15. Fri. 11:30 pm. Blue chain program. Mon. 7:30-10 pm. Tues. Wed. Fri. 8-10 pm. Thurs. 8-11 pm. Sat. 8-10. Sun. 10-15 am. 4 pm. 4-5. 6-7. 8-15. Eastern.

KDLR

Devils Lake, N. Dak. 230.6m-1300kc. 15 watts. Radio Elec. Co. Announcer, Harold Serengeti. Week. Daily ex Sun. 7:30-9 am. news, music. 12-12:30 pm. weather; 6-6:30. markets. Mon. 9:30-11:30 pm. Sun. 11 am. church. Founded Jan. 25, 1925. Central.

KDYL

Salt Lake City, Utah. 258.5m-1160kc. 100 watts. Intermountain Broadcasting Corp. Announcer, Philip G. Lasky. Slogan, "On the Air—Everywhere." Daily ex Sun. 10:30 am. 4:55-5:15 pm. Mon. Wed. Fri. 6-10 pm. Tues. Thurs. Sat. 6-12 mid. Sat. 12-2 pm. Mountain.

KELW

Rutherford, Calif. 228.9m-1310kc. 250 watts. Earl L. White. Daily ex Sun. 11-2 pm. 5-10. Wed. 1-2 pm. 5-7 pm. 9-10. Last Sat. in month 10-11 am. Pacific.

KEX

Portland, Ore. 239.9m-1250kc. 2,500 watts. West-er Broadcasting Co. Announcer, Jack Barret. Daily ex Sun. 9:15-3 pm. 5:30-12 mid. Sun. 6:30-10 pm. Pacific.

KFAB

Lincoln, Neb. 319m-940kc. 5070 watts. Nebraska Buick Auto Co. Announcer, Gayle Grubb. Daily. 9-10 am. 11:45-12:30 pm. 2-3, 4-5, 6-7, 8-9, 10-11. 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. Mon. 3-4 pm. 6-9. Tues. Wed. Sat. 10-11 pm. Daily ex Sun. Mon. Sat. 2-3 pm. Sun. 11 am. 12-12:30 pm. 8-9. Founded Oct. 30, 1921. Mountain.

KFAU

Boise, Idaho. 285.5m-1050kc. 4600 watts. 6 am-6 pm. 3000 watts. Independent School Dist. of Boise. Mon. Tues. Wed. Thurs. Fri. 12:30-1 pm. weather, markets. U. S. program. Tues. 7-10 am. children's hour; 8-10. music. Thurs. 8-10 pm. Sun. 3-4 pm. 7:30-9 pm. Founded Oct. 1921. Mountain.

KFBB

Hayward, Mont. 275.1m-1090kc. 50 watts. F. A. Burrey Co. Announcer, E. A. Baer. Daily ex Sun. 12:30-1:30 pm. music, markets, weather reports. Wed. 7:30-9 pm. Sun. 1-3 pm. Founded 1921. Mountain.

KFBC

San Diego, Calif. 247.8m-1210kc. 100 watts. Bal-ban Theater Bldg. Daily ex Sun. 9:30-10:30 am. 12:45-1:45 pm. 5-10. Sun. 10-12 am. Bible lesson. Pacific.

KFBB

Sacramento, Calif. 535.4m-560kc. 100 watts. Sacra-mento Bee, Kimball-Tipton Co. Announcer, R. K. Clark. Tues. Sat. 7:30-10 pm. Thurs. 8:10-10 pm. Founded 1922. Pacific.

KFBL

Everett, Wash. 223.7m-1340kc. 50 watts. Lesse Bros. Daily ex Sun. 10-11 am. 4-5 pm. 6-7. Sun. 11-12 pm. Tues. 10:30-12 mid. Pacific.

KFBW

Laramie, Wyo. 453m-630kc. 500 watts. Bishop John S. Thomas. Announcer, W. J. Reed. Sunday services. Daily 11 am. 7:30 pm. Mountain.

KFCB

Phoenix, Ariz. 243.8m-1230kc. 125 watts. Nielsen Radio Supply Co. Announcer, E. E. Hartung. Slogan, "Kind Friends Come Back." Mon. Thurs. 8-9 pm. Sat. 8-10 pm. Sun. 9-11 am. Mountain.

KFCR

Santa Barbara, Calif. 211.1m-1420kc. 50 watts. Santa Barbara Broadcasting Co. Daily ex Sun. 12-1 pm. 5:45-7. 7-7:30. 7:30-10 pm. Tues. Wed. Thurs. 7:30-9:30 pm. Fri. 7:30-10 pm. Sat. 12-1 pm. 6:15-7:30 pm. Sun. 7:15-8:45 pm. 8:15-9:15. Pacific.

KFDM

Wilmington, Del. 483.6m-620kc. 500 watts. Magna-nolia Petroleum Co. Announcer, "Matic." Slogan, "Call for Dependable Magnesia." Tues. Fri. 12:30-12:55 pm. hand concert; Tues. 8-10 pm; Fri. 8:30-10:30 pm. Sun. 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 n. 7:45-9. Founded 1922. Central.

KFDY

Brookings, S. D. 545.1m-550kc. 500 watts. State College of Agricultural and Mechanical Arts. Announcer, Albert Kratz. Daily ex Sun. 12:30-1:15 pm. Tues. Thurs. 7:30-9 pm. Pacific.

KFDZ

Mineapolis, Minn. 215.7m-1390kc. 10 watts. Harry O. Iverson. Sat. 8 pm. Central.

KFEC

Portland, Ore. 214.2m-1400kc. 50 watts. Meier & Frank Co., Inc. Announcer, R. E. Hartung. Daily ex Sun. 12 pm. weather, music; 4-5 pm. music. 6-7. Pacific.

KFEL

Denver, Colo. 247.8m-1210kc. 250 watts. Eugene P. O'Fallon. Announcer, R. E. Hartung. Daily. Daily ex Sun. 7:15 am. 7:15-11. 2, 4, 5, 6. Tues. Thurs. 8 pm. Tues. 10 pm. Fri. 11 pm. Sun. 8:30 am. 10, 2:30 pm. 4-30. Mountain.

KFEQ

St. Joseph, Mo. 230.6m-1300 kc. 1000 watts. J. L. Seagraves. Announcer, Clarence Koch. Daily ex Sun. 8:45 am. 9, 10, 11, 12. 3. markets; 5 music; 6:30 music. 8:30-10. Mon. 11-12 mid. Sun. 11-12 am. Pacific.

KFEY

Kellgren, Idaho. 232.4m-1280kc. 10 watts. Union High School Station. Announcer, Walter C. Clark. Slogan, "Voice of the Couer D'Alenes." Mon. Thurs. 7-8 pm. Sun. 11 am. 7:30 pm. Pacific.

KFGQ

Boone, Iowa. 209.7m-1430kc. 10 watts. Boone Winifred school. Founded April 1923.

KFH

Wichita, Kan. 245.8m-1220kc. 500 watts. Hotel Laska. Announcer, J. L. Fox. Daily ex Sun. 8:30 am. 9, 10, 11, 1-2. markets; 1:15, music. 7:30-9. Sun. 9:29 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 Nydman. "Where the Sun Shines Every Day." Tues. Fri. 7-9:30 pm. Founded May 1923. Mountain.

KFHL

Oskaloosa, Iowa. 212.6m-1410kc. 10 watts. Fern College. Announcer, Donald Haworth. Tues. Fri. 7 pm. Fri. 9:45 am. Sun. 4 pm. Central.

KFI

Los Angeles, Calif. 468.5m-640kc. 5900 watts. Earle C. Anthony, Inc. Announcer, Leslie Adams. Slogan, "A National Institution." Daily ex Sat. Sun. 5:20-11 pm. Sat. 3:30-11 pm. 11 am. 5-9:11. Installed Spring, 1920. Pacific.

KFIF

Portland, Ore. 214.2m-1400kc. 50 watts. Benson Polytechnic School. Announcer, Albert Skei. Omar Bittner. W. Hollensted. Tues. 8:15-9:15 pm. Pacific.

KFIO

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

KFIU

Juneau, Alaska. 225.4m-1310kc. 10 watts. Alaska Elec. Light & Power Co. Announcer, O. E. Schoen-bell. Mon. Wed. Fri. 6-7 pm. Alaskan time.

KFIZ

Fond du Lac, Wis. 267.7m-1120kc. 100 watts. Fond du Lac Commonwealth Reporter. Daily ex Sun. 5 pm. news, markets, weather. Central.

KFJB

Marshalltown, Iowa. 247.8m-1210kc. 100-250 watts. Marshall Electric Co. Announcer, E. L. Prickett. Slogan, "Marshalltown, the Heart of Iowa." Daily ex Sun. 10 am. 12-1:30 pm. Daily. 6 pm. 7 Tues. Fri. 8:30 pm. Sun. 11 am. 7:30 pm. Founded June 2, 1923. Central.

KFKZ

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

KFLV

Rockford, Ill. 267.7m-1290kc. 100 watts. Swedish Evangelical Mission Church. Announcer, Oscar Olson. Paul Bodin. Mon. 8:15 pm. Sun. 10:45 am. 9:30 pm. Founded Oct. 1923. Central.

KFLX

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

KFMR

Sioux City, Iowa. 232.4m-1290kc. 100 watts. Morn-ington News. 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 ex Sun. 10:30 am. time. Fri. 8:15 pm. lecture. 8:45, 10. Sun. 7 pm. Central.

KFNF

Shenandoah, Iowa. 461.3m-650kc. 2000 watts. 6 am-7 pm. Henry Field Seed Co. Announcer, Henry Field. Slogan, "The Friendly Farmer Station." Daily ex Sun. 6-8:30 am. 10-11, 12-2:30 pm; 3, ladies hour; 5-7. Sun. 8:30-9:20 am. 10:45 am. 4 pm. 3-4 services; 6. Golden Rule, church service. Founded Feb. 1924. Central.

KFOA

Seattle, Wash. 447.5m-670kc. 1000 watts. Rhodes Det. Store. Announcer, Arthur W. Lindsay. Mon. 10 am-10 pm. Tues. 12-10 pm. Wed. 10 am-11 pm. Thurs. 12-10 pm. Fri. 10 am-12 mid. Sat. 12n-10 pm. Sun. 5:30-6:30 pm. Pacific.

KFON

Long Beach, Calif. 241.8m-1240kc. 500 watts. Nichols & Farmer, Inc. Announcer, Hal G. Nichols. Slogan, "Fidelity, Wholesome Station." Daily and Sun. 9:30 am-12 mid. Founded March 1924. Pacific.

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 directories and lists. Readers also must live in same state or province as stations corrected are located. Station verifications must accompany corrections. In case of U. S. duplicate awards will be paid. Until the wave lengths and watts are permanently assigned these cannot be counted in the challenge.

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 sta-

tions 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 of 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.

KFJF

National Radio Mfg. Co. Announcer, Tired Hand. Slogan, "Radio Headquarters of Oklahoma City—The City Overlarks." Daily ex Sun. 9 am. music; 10, sacred music; 10:30, markets; 12-1:30 pm. music; 7-10. Sun. 9 am. 1, D. S. A.; 2, news class; 11, services; 8, services. Central.

KFJI

Astoria, Ore. 249.9m-1290kc. 15 watts. E. E. Marsh and Liberty theater. Announcer, E. E. Marsh. Wed. 11-11:30 pm. orgau. Sun. 12:30-1:30 pm. Pacific.

KFJM

Grand Forks, N. D. 333.1m-900kc. 100 watts. University of North Dakota. Daily. 12 m. 6 pm. Sun. 10:45 am. 12:30 pm. 4:30. 6. Founded Oct. 1923. Central.

KFJR

Portland, Ore. 282.8m-1060kc. 100 watts. Ashley C. Dixon & Son. Announcer, Ashley C. Dixon. Sat. Mon. Tues. Wed. Thurs. 5-6 pm. 7-8. Min. 9:11 pm. Tues. 9:11-30 pm. Fri. 4-6 pm. 7-8. 12:1 pm. Sat. 4-6 pm. 7-8. 9-10. Founded Sept. 23, 1924. Pacific.

KFJY

Fort Dodge, Iowa. 232.4m-1290kc. 100 watts. Tunwall Radio Co. Announcer, Carl Tunwall. Daily ex Sun. 10:30-11:30 am. 3:45-7 pm. Tues. 10-11:30 pm. Thurs. Fri. 8:30-9:30 pm. Wed. 4 pm. Sun. 11-12:30 pm. Founded Oct. 1923. Central.

KFJZ

Fort Worth, Texas. 249.9m-1200kc. 50 watts. W. E. Branch. Announcer, Jack Fraja. Daily ex Wed. Sun. 7-8 pm. 9-10, 7-8, 9-10. Sun. 1-3 pm. 6-7. Central.

KFKA

Greeley, Colo. 249.9m-1200kc. 200 watts. Colorado State Teachers College. Announcer, H. E. Greard.

KFKB

Milford, Kan. 241.8m-1240kc. 2500-1500 watts. J. R. Brinkley, M. D. Daily ex Sun. 10:15-10:30 am. 12-1:30 pm. Daily ex Sun. Sat. 3-4 pm. 5:30-10. Sun. 8 am. 10, 6-12 mid. Central.

KFKU

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

KFKX

Chicago, Ill. 526m-570kc. 2500 watts. Westing-house. Tues. Fri. 8:30-9:30 pm. Wed. 8 am. Daily ex Sun. 2 pm. 5:30 pm. 10:55. Central.

KFQU

Holy City, Calif. 249.9m-1200kc. 100 watts. W. F. Riker. Announcer, Arthur J. Landstrom. Daily ex Sun. 6:30-7:30 pm. Tues. Fri. 9:30-11 pm. Wed. Thurs. Sat. 9-10 pm. Sun. 11-12 n. 10-11 pm. Pacific.

KFW

Seattle, Wash. 217.3m-1380kc. 100 watts. KFW. Inc. Pacific. Daily ex Sun. 10-11 am. 12-1 pm. 2-3, 4:30-5:30, 5:30-6, 6-7, 8:30-10, 10-11. Stud. 4-5 pm. 5-7:10. Pacific.

KFOZ

Hollywood, Calif. 232.4m-1290kc. 100 watts. Taft Radio Company. Announcer, Allan Fairchild. Daily ex Sun. 12-1 pm. 5-6 pm. 6-11. Sun. 7-11 pm. Pacific.

KFRS

San Francisco, Calif. 454.1m-660kc. 1,000 watts. Don Lee, Inc. Announcer, Harrison Holloway. Daily ex Sat. Sun. 7-9 am. 10-12 n. 12-1 pm. 4:30-12 mid. Sat. 7-9 am. 10:12 n. 12-1 pm. 4-12 mid. Sun. 10:1 pm. 2-4, 5-12. Pacific.

KFRU

Columbia, Mo. 249.9m-1200kc. 500 watts. Stephens college. Announcer, L. A. Von Hall. Slogan, "Where Friendliness Is Broadcast Daily." Daily ex Sun. 8:30-11:15 am. 3 pm. 6-30. Wed. 7:30-10 pm. Thurs. 7:30-9 pm. Tues. 7:30-9:45. 4 pm. 7:30. Founded October 25, 1925. Central.

KFSD

San Diego, Calif. 440.9m-690kc. 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. Friendship Is Broadcast Daily. Announcer, Howard Brown. Mon. 5-7 pm. 10-12. Tues. 8-10 pm. Thurs. 8-12 mid. Fri. 10-12 mid. Sat. 8-10 pm. Pacific.

KFUL

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

KFUS

Colorado Springs, Colo. 253.8m-1060kc. 1030 watts. Colorado Theological Seminary (Lutheran). Announcer, I. H. Brown. Mon. 5-7 pm. 10-12. Tues. 8-10 pm. Thurs. 8-12 mid. Fri. 10-12 mid. Sat. 8-10 pm. Pacific.

KFUP

St. Louis, Mo. 518.7m-590kc. 1023 watts. Concordia Theological Seminary (Lutheran). Announcer, I. H. Brown. Mon. 5-7 pm. 10-12. Tues. 8-10 pm. Thurs. 8-12 mid. Fri. 10-12 mid. Sat. 8-10 pm. Pacific.

KFUR

Denver, Colo. 227.1m-1390kc. 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

Golden, Utah. 225.4m-1330kc. 500 watts. Peery Building. 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." Daily ex Sun. 10-11 am. Wed. Fri. 8-9 pm. Sun. 1:20-2:30 pm. 5:30-7:30. Sun. 9-10 am. 11-12n. 7:30 pm. Pacific.

KFUT

Salt Lake City, Utah. 249.9m-1200kc. 500 watts. University of Utah.

KFV

Yonkers, N.Y. 208.2m-1440kc. 250 watts. W. J. & C. I. McWhinnie. Announcer, Mary Elizabeth Carter. Daily ex Sun. 7:30-9 am. 8:30-6 pm. 9-12 mid. Wed. 12-2. Founded April 1925. Pacific.

KFVJ

Independence, Kan. 225.4m-1330kc. 50 watts; First Methodist Episcopal church. Announcer, R. W. Elliott. Slogan, "The Voice of Southwestern Kansas from Independence, the Buckle on the Old Belt." Tues. 8 pm. Sun. 10:55 am. 7:30 pm. Founded Mar. 1924. Central.

KFVI

Houston, Texas. 238m-1260kc. 50 watts. KFVI Broadcasters Company. Announcer, Harry Waters. Daily ex Sun. 1-2 pm. Mon. Wed. Sat. 8:30-9 pm. Founded 1925. Central.

KFVS

Cape Girardeau, Mo. 223.7m-1340kc. 50 watts. Hirsch Battery & Radio Co. Announcer, W. W. Watkins. Slogan, "The City of Opportunity." Daily ex Sun. 7:15 pm. news, markets, 4:45; music. Founded July, 1925.

KFWB

Hollywood, Calif. 361.2m-830kc. 500 watts. Warner Brothers. Announcer, William "Bill" Ray. Mon. Tues. Thurs. Fri. 10-10:45 am. 12-2:30 pm. 4:45-12 mid. Wed. Sat. 10 am. 12n-12 mid. Sun. 7:30-10 pm. Pacific.

KFWC

Pomona, Calif. 222.1m-1330kc. 100 watts. L. E. Wall. Announcer, Bert Eisse Wall. Daily ex Sun. 4-6 pm. 7:11. Pacific.

KFWF

St. Louis, Mo. 214.2m-1400kc. 250 watts. St. Louis Truth Center. Slogan, "The Voice of Truth." Announcer, Rev. Charles H. Hartman. Thurs. 10:45 am. 7:45 pm. Sun. 9 am. 10:45, 7:45 pm. Founded 1924. Central.

KFWI

KFXJ

Idewater, Colo., 215.7m-1590kc. 50 watts. R. G. Howell. Slogan "America's Scenic Center." Daily ex Sun, 2:45-3:30 pm, 5:30-9 pm, Sun, 9-10 pm. Mountain time. Thru, services.

KFXR

Oklahoma City, Okla., 232.7m-1400kc. 50 watts. Exchange Ave. Baptist church. Mon, Wed, Fri, 8 pm. Thru, services.

KFY

Flagstaff, Ariz., 205.4m-1460kc. 25 watts. Mary M. Costigan. Announcer, Cecil J. Walters. Thurs, Sat, 10:15-11:15 pm. Mountain.

KFYO

Breckenridge, Tex., 211.1m-1420kc. 15 watts. Kivsky Brothers Battery & Elec. Co. Daily ex Sun, 10:30-11:30 am, 12-1 pm, 8-10 pm, Sun, 8-10 pm.

KFYR

Bismarck, N. D., 249.9m-1200kc. 250 watts. 500 6 am-5 pm. Hoskins-Meyer, Inc. Announcers. P. Diriam. Daily ex Sun, 12:30-3:30 pm, 6:30-8:30 pm, Tues, Thurs, 10-11 pm, Sun, 10:30-12 n, 1-3 pm. Founded Dec. 1925.

KGA

Spokane, Wash., 220.7m-1150kc. 2,000 watts. Northwest Radio Service Co. Daily ex Sun, 9-11 am, 12 news; 12:15 pm, 5-9 pm, feature program; 6, 7, 8, 9, 10, 11 pm, Sun, 11 am, 7-9 pm. Pacific.

KGAR

Tucson, Ariz., 234.2m-1280kc. 100 watts. Tucson Citizen. Announcer, Harold S. Sprkes. Daily ex Sat, 7-9 pm. Sun, 11 am. Installed June 1926. Mountain.

KGBU

Chickasha, Okla., 228.9m-1310kc. 500 watts. Alaska Radio & Service Co. Announcer, Jack Kelly. Slogan, "The Voice of Alaska." Daily ex Wed, 11-11 pm, Tues, Thurs, 2:30-9 pm. Sat, 10-12 mid. Alaskan time.

KGBX

St. Joseph, Mo., 288.3m-1040kc. 100 watts. Foster-Hall, Inc. Announcers, R. D. Foster, R. L. Hill. Daily ex Sun, 7-9 am, 12-1 pm, Mon, 5-6 pm, Wed, 5-7 pm, Tues, Thurs, Fri, 6-10 pm, Sun, 7:30 pm. Founded August 11, 1926. Central.

KGBY

Columbus, Neb., 222.1m-1350kc. 100 watts. Thelen and Lindholm. Tues, Sat, Fri, 12:35-1:15 pm, 8-9:15 pm. Central.

KGBZ

York, Neb., 212.6m-1410kc. 250 watts. Announcer, Dr. George E. Miller. Slogan, "Keep Your Head and Family Healthy." Mon, Tues, Wed, Thurs, Fri, Sat, 5-8 am, 12-1 pm, Mon, 5-6 pm, Wed, 7-9 pm, Thurs, Sat, 10:30-11:30 pm, music. Alternate Sun, 11 am, 7-9 pm. service Opened Aug, 1926. Central.

KGCC

Decatur, Ga., 247.8m-1210kc. 10 watts. Bar Dear Christine Company. Announcer, Charles Greenleaf. Daily, 12:30-1 pm, Wed, 7-8 pm, Sun, 2-4 pm. Central.

KGCB

Oklahoma City, Okla., 215.7m-1390kc. 50 watts. Wallace Radio Institute.

KGCH

Wayne, Nebr., 293.9m-1020kc. 250 watts. Wayne Hospital. Announcer, Merrill Shum. Slogan, "Remember Us When U R Ill." Daily ex Sat, Mon, 6:30 pm, Tues, Thurs, 4-5 pm. Founded Aug, 1926. Central.

KGCI

San Antonio, Texas, 220.4m-1360kc. 100 watts. Liberty Radio Sales.

KGCL

Seattle, Wash., 230.6m-1300kc. 50 watts. Louis Wassner. Archibald, C. H. Heston. Mon, Sat, 7:30 pm, Mon, Wed, Thurs, 6:30-7:30 pm, 8:20-11 pm, Fri, Sat, 3:30-7:30 pm. Pacific.

KGCN

Concordia, Kan., 208.2m-1440kc. 50 watts. Concordia Broadcasting Co. Daily ex Sun, 12:30-1:30 pm, 7-9 pm. Founded Aug, 1926. Central.

KGCR

Brookings, S. D., 208.2m-1440kc. 15 watts. Cutler's Radio Broadcasting Service, Inc.

KGCU

Mandan, N. D., 239.9m-1350kc. 100 watts. Mandan Radio Assn. Announcer, H. L. Dahners. Daily ex Sun, 7:30-8:30 am, 12-1:30 pm, 6:30-8 pm, 11-12 n, 8:30-6:30 pm. Mountain.

KGCX

Vida, Mont., 243.8m-1230kc. 100 watts. First State Bank of Vida. Announcer, E. E. Kreshbach. Daily ex Sun, 12n, Sun, 11 am, 2-4 pm. Mountain.

KGDA

Dell Rapids, S. D., 254.1m-1180kc. 6 am-6 pm, 15 watts. Home Auto Co., Sun, 10-11 am, 1:30-5 pm. Central.

KGDE

Barrett, Minn., 205.4m-1460kc. 50 watts. Jaren Drug Company. Daily ex Sun, 12:30 pm, music; 1-2 pm, weather, markets; 6:30-7 pm, music. Sun, 10:30-3 pm, 6-8. Licensed Sept. 15, 1926. Central.

KGDM

Stockton, Calif., 217.3m-1380kc. 10 watts. Peffer Music Co. Daily ex Sun, 10-11:30 am, 2-3 pm. Thurs, Sat, 8-10 pm. Central.

KGDP

Pueblo, Colo., 223.7m-1340kc. 10 watts. Boy Scouts of America. Tues, 8 pm, Thurs, 9 pm. Mountain.

KGDR

San Antonio, Texas, 206.3m-1450kc. 15 watts. Joe D. McShane. Announcer, Joe B. McShane. Daily ex Sun, 4:30-5:30 pm, Thurs, 9-10 pm. Central.

KGDW

Rumholdt, Nebr., 293.9m-1020kc. 100 watts. Frank J. Rigg. Announcer, Howard H. Mitchell. Daily ex Sun, Tues, Wed, Fri, 11:30 am, Thurs, 8:30 am. Central.

KGDY

Shreveport, La., 212.6m-1410kc. 250 watts. William Erwin Antony.

KGDZ

Oldham, S. D., 206.8m-1450kc. 15 watts. J. Albert Loesch. Thurs, 7:05-11 pm. Central. Founded Dec. 26, 1926.

KGEF

Los Angeles, Calif., 263m-1140kc. 500 watts. Trinity Methodist church. Daily ex Sat, 6-10 am, Wed, 10:45-12:30 pm, 5-7:10 pm. Pacific. Founded Dec. 26, 1926.

KGEH

Eugene, Ore., 201.2m-1490kc. 50 watts. Eugene Broadcasters. Daily ex Sun, 9-10 am, 12:15-12:50 pm, 6:30-8 pm, Sun, 9:45-10:30 am, 6-8 pm, Fri, 10-13 mid. Pacific. Founded Jan. 1, 1927.

KGEK

Yuma, Colo., 263m-1140kc. 10 watts. 7 am-7 pm. Hesterman. Electrical Equipment Co.

KGEN

El Centro, Calif., 225.4m-1330kc. 15 watts. E. R. Frey and F. M. Howles. Daily ex Thurs, Sun, 12:15-1:15 pm, Mon, Wed, Fri, 5:30-6:30 pm, Tues, Sat, 8-10 pm. Pacific.

KGEO

Grant Island, Nebr., 205.4m-1460kc. 100 watts. Hotel Yuma. Mon, Wed, Sat, 8-9 pm, Tues, Fri, 12:25-12:55 pm, Sun, 2-4 pm. Central.

KGEQ

Muncie, Ind., 204m-1470kc. 50 watts. Fred W. Hesterman. Howard H. Mitchell. Daily ex Sun, 11:30 am, 1 pm, weather, stocks; 6:45-5:15 pm, 9 am, leap review; 8:30-9 pm, kiddie club; 9-9:15 pm, opera; 9:15-9:30 pm, Pipers; 9:10-9:15 pm, Eveready hour; 10-11 pm, 10-11 pm, Pipers; 9:10-9:15 pm, faru; 8:9-vaudeville; 9:10, drama; 10-12, dance music; Thurs, 5-6 pm, boy's hour; 8:9-9:10, 10-11, Fri, 5:40-6 pm, 8:9-9:10, 10-11, Sat, 8:9 pm, 9:10-10-11, 11-12, Sun, 11 am, 7:30 pm, services; 4, vesper; 5:30-6:30, 6:30-7:30, 9-9:10. Pacific.

KGER

Long Beach, Calif., 215.7m-1390kc. 100 watts. C. M. Polynce. Daily ex Sun, 9 am-11 am. Founded Dec. 19, 1926.

KGES

Central City, Neb., 204m-1470kc. 10 watts. Central Radio Elec. Co.

KGEU

Lower Lake, Calif., 227.1m-1320kc. 50 watts. Sitowana Lodge. Mon, Wed, Fri, 7:30-9 pm, Fri, 7-9 pm, Sun, 1:30-2:15 pm, 8-9. Pacific. Founded Dec. 1926.

KGEW

Fort Morgan, Colo., 218.8m-1370kc. 100-200 watts. City of Fort Morgan. Announcer, Glenn S. White. Daily ex Sat, Sun, 5:15-8:45 pm, markets. Tues, Thurs, 8-10 pm, Sat, 12-1 pm, 8-10 pm, Sun, 11-12n, 2-4 pm. Mountain.

KGEY

Denver, Colo., 201.2m-1490kc. 250 watts. J. W. Dietz.

KGEZ

Kalispell, Mont., 293.9m-1020kc. 100 watts. Flathead Broadcasting Assn. Daily and Sun, 12:30-3:30 pm, Thurs, 7:30-9 pm, Sun, 11 am, 7:30 pm. Mountain. Founded Feb. 20, 1927.

KGFB

Iowa City, Iowa, 223.7m-1340kc. 10 watts. A. G. Dunkel. Daily ex Sun, 12-12:30 pm, 6-6:30 pm, Mon, Wed, Thurs, Fri, 11-12 mid. Central.

KGFF

Okla. Okla., 205.4m-1460kc. 25 watts. Earl E. Harpshire.

KGFG

Oklahoma City, Okla., 215.7m-1390kc. 50 watts. Full Gospel Church.

KGFH

La Crescenta, Calif., 223.7m-1340kc. 250 watts. Frederick Robinson. Announcer, Formosa J. Robinson. "The Voice of the Sierras." Mon, Tues, Wed, Fri, 8-10 pm. Founded Feb. 7, 1927.

KGFI

San Angelo, Tex., 220.4m-1360kc. 15 watts. M. L. Eaves. Daily ex Sun, 9 am, 12n, 3 pm, markets, weather. Sat, 8-11, entertainment. Central.

KGFJ

Los Angeles, Calif., 208.2m-1440kc. 100 watts. Ben S. McGlashan. Slogan, "Keeping God Folks Joyful." Daily ex Sun, 6:30-9:30 am, 12-4:30 pm, 7-9 pm. Daily ex Sat, 12:30-3:30 am, Sun, 9 am-2:30 pm. Pacific. Founded Jan. 18, 1927.

KGFK

Hallock, Minn., 223.7m-1340kc. 50 watts. Kittson County Enterprise. Founded May, 1927.

KGFL

Raton, N. M., 222.1m-1350kc. 50 watts. N. M. Radio.

KGFN

Aveta, N. D., 199.9m-1500kc. 15 watts. Haraldson & Thingstad.

KGFO

Terra Haute, Ind., 204m-1470kc. 100 watts. KGFO, Inc.

KGFP

Mitchell, S. D., 212.6m-1410kc. 10 watts. Mitchell Radio Co.

KGFQ

Ravena, Nebr., 296.9m-1010kc. 10 watts. Otto F. Sothman. Announcer R. H. McConnell. Slogan, "Catering to the Home Folks." Daily ex Sun, 6:30-9:15-12:15 pm, 3:15-4:15. Central.

KGFJ

Pierre, S. D., 254.1m-1180kc. 200 watts. 6 am-6 pm. Dana McNeil.

KGFF

Picher, Okla., 206.8m-1450kc. 100 watts. Dr. J. Connell. Daily ex Sun, 7:30-8:30 pm, 8:30-9:30 pm. Central. On air Sept. 1, 1927.

KGGH

Cedar Grove, La., 212.6m-1410kc. 50 watts. Bates Radio & Elec. Co. Announcer, A. J. Bates. Mon, Wed, Fri, 7-9 pm. Central. Founded Sept. 13, 1927.

KGGM

Inglewood, Calif., 204m-1470kc. 100 watts. Jay Peters. Portable. Daily ex Sun 6-10 pm, Sun, 12-2 pm, 8-12. Pacific.

KGHB

Hranthulu, H. I., 227.1m-1320kc. 250 watts. Radio Radio Co.

KGHC

Shayton, Minn., 209.7m-1430kc. 15 watts. Hegstad Radio Co.

KGHD

Pueblo, Colo., 207m-1490kc. 250 watts. Philip G. Lasky & J. H. Albert.

KGHE

Hardin, Mont., 263m-1140kc. 50 watts. American Radio. Hardin Post, No. 8.

KGHO

Oakland, Calif., 584.4m-780kc. 500 watts. Gen. Elec. Co. Announcer, Howard H. Mitchell. Daily ex Sun, 11:30 am, 1 pm, weather, stocks; 6:45-5:15 pm, 9 am, leap review; 8:30-9 pm, kiddie club; 9-9:15 pm, opera; 9:15-9:30 pm, Pipers; 9:10-9:15 pm, Eveready hour; 10-11 pm, 10-11 pm, Pipers; 9:10-9:15 pm, faru; 8:9-vaudeville; 9:10, drama; 10-12, dance music; Thurs, 5-6 pm, boy's hour; 8:9-9:10, 10-11, Fri, 5:40-6 pm, 8:9-9:10, 10-11, Sat, 8:9 pm, 9:10-10-11, 11-12, Sun, 11 am, 7:30 pm, services; 4, vesper; 5:30-6:30, 6:30-7:30, 9-9:10. Pacific.

KGHP

San Antonio, Texas, 220.4m-1360kc. 100 watts. Patman Radio Co. Announcer, L. G. Weber. Daily ex Sun, 7:30-9:30 am, 12-1 pm, Mon, Sat, 8:30-9:30 pm, Wed, 9:30-10:30 pm, Fri, 7:30-8:30 pm, Sun, 1-2 pm. Central. Opened Jan. 31, 1927.

KGHS

Amarillo, Texas, 243.8m-1230kc. 250 watts. Gish Electric. Announcer, L. R. Cornelius. Daily ex Sun, 6:30 am, 8:9-9:10, 11-12, Sat, 8:9 pm, Wed, Fri, 9 pm, Sun, 11 am, 8 pm. Central.

KGTT

San Francisco, Calif., 296.8m-1450kc. 500 watts. Daily ex Sun, 12:30 am, Bible Institute. Daily ex Sun, 12:30 am, 1:30-2:30 pm, 3:30-4:30 pm, 5:30-6:30 pm, 7:30-8:30 pm, 9:30-10:30 pm, 11:30-12:30 pm, 1:30-2:30 pm, 3:30-4:30 pm, 5:30-6:30 pm, 7:30-8:30 pm, 9:30-10:30 pm, 11:30-12:30 pm. Pacific. Founded Nov. 1928.

KGU

Honolulu, Hawaii, 270.1m-1110kc. 500 watts. Marion E. Taylor. Announcer, Sebastian Ruth. Slogan, "Out Here the Cedars Meet the Sea." Sun, Tues, Thurs, Fri, 7:30-9:30 pm, Sat, 12-5 pm, Sun, 9-9:30 pm, 10-11:30 am, town crier, household helps; 6-7, concert, 7-10, Mon, 9-12 mid, Tues, 9:45-10 am, exercises; 2-3 pm, 7, traveling; 9-11 pm, Wed, 9:10 pm, 10-11 pm, Thurs, 10:45-11:45 pm, amusement index; 7:45-8 lecture; 9-10, Fri, 9:45-10 am, exercises; 10-11, 12-12 mid, Sat, 10-12 mid. Pacific.

KGV

Portland, Ore., 491.5m-610kc. 1000 watts. Oregonian Publishing Co. Announcer, Du. Haller. Slogan, "KGV, Keep Growing Wiser." Daily ex Sun, 10-11:30 am, town crier, household helps; 6-7, concert, 7-10, Mon, 9-12 mid, Tues, 9:45-10 am, exercises; 2-3 pm, 7, traveling; 9-11 pm, Wed, 9:10 pm, 10-11 pm, Thurs, 10:45-11:45 pm, amusement index; 7:45-8 lecture; 9-10, Fri, 9:45-10 am, exercises; 10-11, 12-12 mid, Sat, 10-12 mid. Pacific.

KGY

Lacey, Wash., 243.8m-1230kc. 500 watts. St. Martins College. Announcer, Sebastian Ruth. Slogan, "Out Where the Cedars Meet the Sea." Sun, Tues, Thurs, Fri, 7:30-9:30 pm, Sat, 12-5 pm, Sun, 9-9:30 pm, 10-11:30 am, town crier, household helps; 6-7, concert, 7-10, Mon, 9-12 mid, Tues, 9:45-10 am, exercises; 2-3 pm, 7, traveling; 9-11 pm, Wed, 9:10 pm, 10-11 pm, Thurs, 10:45-11:45 pm, amusement index; 7:45-8 lecture; 9-10, Fri, 9:45-10 am, exercises; 10-11, 12-12 mid, Sat, 10-12 mid. Pacific.

KHAC

Pacific Coast, 204m-1470kc. 50 watts. Flying Broadcaster.

KHJ

Los Angeles, Calif., 416.4m-740kc. 900 watts. Don Lee. Daily ex Sun, 12:30 pm, markets; 6, dinner music; 6:45-7, 9-10, Wed, 2:30-3 pm, Sun, 10 am, 11-12 pm, Pacific.

KHMC

Hartlingen, Tex., 236.1m-1270kc. 100 watts. Hartlingen Music Co. Daily ex Sun, 2-4 pm, Mon, Wed, Fri, 7-9 pm, Sat, 8-10:30 pm. Central. Founded Feb. 1927.

KHQ

Spokane, Wash., 370.2m-810kc. 1000 watts. Louis Wassner. Inc. Announcer, C. F. Underwood. Slogan, "The Sunshine State of America." Daily ex Sun, 12:30-1:30 pm, 5-6 pm, 7-9 pm, Mon, 5-6 pm, Wed, 7-9 pm, Tues, Thurs, Fri, 7:30-8:30 pm, music. Founded Dec. 15, 1924. Pacific.

KHKB

Sihting, Minn., 422.3m-710kc. 500 watts. Steele Co. Slogan, "The Madding Crowd." Mon, Wed, Fri, 7-8 pm, Sun, 2-3 pm. Central.

KHKB

Red Oak, Iowa, 322.4m-830kc. 100 watts. Atlantic Automobile Co. Operated by Walnut Grove Products Co. Daily ex Sun, 11:50-12:30 pm, question box, markets. Daily ex Sun, 7:45-9 pm. Founded 1923. Central.

KHKB

San Francisco, Calif., 220.4m-1360kc. 500 watts. J. H. Glick. Radio Sales Co. Announcer, Carl G. Glick. Daily ex Sun, 9-12 n, 1:30-5 pm, Mon, Wed, 8-10 pm, Tues, 8-12 mid, Thurs, 8-10 pm, Fri, 7-9 pm, Sun, 1:30-5 pm, Pacific. Founded Jan. 1925.

KHKB

Seattle, Wash., 348.6m-860kc. 2500 watts. Northwest Radio Service Co. Announcer, W. C. Gordon. Daily ex Sun, 10-11:30 am, 12-1 pm, 2-4 pm, 11-12 pm, 6:15-7:15, 7:15-7:30, 9. Pacific.

KHKB

Seattle, Wash., 265.3m-1130kc. 15 watts. City of Seattle. Daily, 10 pm. Pacific.

KHKB

Dithyville, Ark., 265.5m-1050kc. 6 am-6 pm. 50 watts. G. G. Harris.

KHKB

Independence, Mo., 270.1m-1110kc. 1500 watts. Reorganized Church of Jesus Christ of Latter Day Saints. Midland Broadcasting Co. Announcer, Arthur G. Church. Daily ex Sun, 7:30-9 am, 7:30-9 am, Thurs, 6:45 pm, 8, Fri, 6:30 am, 7, Sat, 8 pm, Sun, 10:30 am, 9, 11, 3 pm, 6, 9:15. Central. Founded 1921.

KHKB

Portland, Ore., 206.8m-1450kc. 10 watts. Lewis I. Thompson.

KHKB

Oakland, Calif., 245.8m-1220kc. 250 watts. Warner Bros. Radio Supplies. Announcer, Ralph Moore. Slogan, "The City of Golden Opportunities." Sun, 10-11 am. Pacific.

KHKB

Oakland, Calif., 508

WGN

Blain, Ill. 416.6m-720kc. 500 watts. Chicago Trib-...
Blain, Ill. 416.6m-720kc. 500 watts. Chicago Trib-...
Blain, Ill. 416.6m-720kc. 500 watts. Chicago Trib-...

WGOP

Port Washington, N. Y. 159.9m-1590kc. 100 watts.
Port Washington, N. Y. 159.9m-1590kc. 100 watts.
Port Washington, N. Y. 159.9m-1590kc. 100 watts.

WGR

Buffalo, N. Y. 302.3m-950kc. 750 watts. Federal
Buffalo, N. Y. 302.3m-950kc. 750 watts. Federal
Buffalo, N. Y. 302.3m-950kc. 750 watts. Federal

WGST

Atlanta, Ga. 279.1m-1126kc. 500 watts. Georgia
Atlanta, Ga. 279.1m-1126kc. 500 watts. Georgia
Atlanta, Ga. 279.1m-1126kc. 500 watts. Georgia

WGWA

Milwaukee, Wis. 218.8m-1370kc. 500 watts. Radio-
Milwaukee, Wis. 218.8m-1370kc. 500 watts. Radio-
Milwaukee, Wis. 218.8m-1370kc. 500 watts. Radio-

WGY

Schenectady, N. Y. 379.5m-790kc. 50,000 watts.
Schenectady, N. Y. 379.5m-790kc. 50,000 watts.
Schenectady, N. Y. 379.5m-790kc. 50,000 watts.

WHA

Madison, Wis. 333.1m-920kc. 750 watts. Univ. of
Madison, Wis. 333.1m-920kc. 750 watts. Univ. of
Madison, Wis. 333.1m-920kc. 750 watts. Univ. of

WHAD

Milwaukee, Wis. 270.1m-1110kc. 500 watts. Mar-
Milwaukee, Wis. 270.1m-1110kc. 500 watts. Mar-
Milwaukee, Wis. 270.1m-1110kc. 500 watts. Mar-

WHAM

Rochester, N. Y. 280.7m-1070kc. 5000 watts. Str-
Rochester, N. Y. 280.7m-1070kc. 5000 watts. Str-
Rochester, N. Y. 280.7m-1070kc. 5000 watts. Str-

WHAP

Carlsbad, N. J. 236.1m-1270kc. 1000 watts. De-
Carlsbad, N. J. 236.1m-1270kc. 1000 watts. De-
Carlsbad, N. J. 236.1m-1270kc. 1000 watts. De-

WHAS

Louisville, Ky. 322.9m-920kc. 500 watts. Courier-
Louisville, Ky. 322.9m-920kc. 500 watts. Courier-
Louisville, Ky. 322.9m-920kc. 500 watts. Courier-

WHAZ

Troy, N. Y. 396.9m-980kc. 500 watts. Resear-
Troy, N. Y. 396.9m-980kc. 500 watts. Resear-
Troy, N. Y. 396.9m-980kc. 500 watts. Resear-

WHB

Kansas City, Mo. 340.7m-890kc. 500 watts. Swe-
Kansas City, Mo. 340.7m-890kc. 500 watts. Swe-
Kansas City, Mo. 340.7m-890kc. 500 watts. Swe-

WHBA

Oil City, Pa. 260.7m-1590kc. 10 watts. Shaffer
Oil City, Pa. 260.7m-1590kc. 10 watts. Shaffer
Oil City, Pa. 260.7m-1590kc. 10 watts. Shaffer

WHBC

Canton, Ohio. 236.1m-1270kc. 10 watts. Rev. E.
Canton, Ohio. 236.1m-1270kc. 10 watts. Rev. E.
Canton, Ohio. 236.1m-1270kc. 10 watts. Rev. E.

WHBD

Bellefontaine, Ohio. 222.1m-1350kc. 100 watts.
Bellefontaine, Ohio. 222.1m-1350kc. 100 watts.
Bellefontaine, Ohio. 222.1m-1350kc. 100 watts.

WHBF

Rock Island, Ill. 221.8m-1350kc. 100 watts. Bes-
Rock Island, Ill. 221.8m-1350kc. 100 watts. Bes-
Rock Island, Ill. 221.8m-1350kc. 100 watts. Bes-

WHBL

Chicago, Ill. 204m-1470kc. 100 watts. C. L. Car-
Chicago, Ill. 204m-1470kc. 100 watts. C. L. Car-
Chicago, Ill. 204m-1470kc. 100 watts. C. L. Car-

WHBM

Chicago, Ill. 201.2m-1490kc. 100 watts. C. L.
Chicago, Ill. 201.2m-1490kc. 100 watts. C. L.
Chicago, Ill. 201.2m-1490kc. 100 watts. C. L.

WHBN

Geneville, Pa. 302.6m-1480kc. 5000 watts. U. of
Geneville, Pa. 302.6m-1480kc. 5000 watts. U. of
Geneville, Pa. 302.6m-1480kc. 5000 watts. U. of

WHBP

Johnstown, Pa. 228.9m-1310kc. 250-500 watts.
Johnstown, Pa. 228.9m-1310kc. 250-500 watts.
Johnstown, Pa. 228.9m-1310kc. 250-500 watts.

WHBQ

Memphis, Tenn. 232.4m-1270kc. 100 watts. Broad-
Memphis, Tenn. 232.4m-1270kc. 100 watts. Broad-
Memphis, Tenn. 232.4m-1270kc. 100 watts. Broad-

WHBU

Anderson, Ind. 220.4m-1360kc. 15 watts. Citizen's
Anderson, Ind. 220.4m-1360kc. 15 watts. Citizen's
Anderson, Ind. 220.4m-1360kc. 15 watts. Citizen's

WHBW

Philadelphia, Pa. 230.4m-1360kc. 100 watts. D. R.
Philadelphia, Pa. 230.4m-1360kc. 100 watts. D. R.
Philadelphia, Pa. 230.4m-1360kc. 100 watts. D. R.

WHBY

West De Perre, Wis. 249.9m-1200kc. 50 watts.
West De Perre, Wis. 249.9m-1200kc. 50 watts.
West De Perre, Wis. 249.9m-1200kc. 50 watts.

WHDI

Minneapolis, Minn. 245.9m-1220kc. 500 watts. Wm.
Minneapolis, Minn. 245.9m-1220kc. 500 watts. Wm.
Minneapolis, Minn. 245.9m-1220kc. 500 watts. Wm.

WHCC

Rochester, N. Y. 254.1m-1180kc. 500 watts. Hick-
Rochester, N. Y. 254.1m-1180kc. 500 watts. Hick-
Rochester, N. Y. 254.1m-1180kc. 500 watts. Hick-

WHFC

Chicago, Ill. 215.7m-1390kc. 200 watts. Triang-
Chicago, Ill. 215.7m-1390kc. 200 watts. Triang-
Chicago, Ill. 215.7m-1390kc. 200 watts. Triang-

WHK

Cleveland, Ohio. 265.3m-1130kc. 500 watts. 1,600
Cleveland, Ohio. 265.3m-1130kc. 500 watts. 1,600
Cleveland, Ohio. 265.3m-1130kc. 500 watts. 1,600

WHN

New York, N. Y. 294.5m-750kc. 500 watts. Loew's
New York, N. Y. 294.5m-750kc. 500 watts. Loew's
New York, N. Y. 294.5m-750kc. 500 watts. Loew's

WHO

Des Moines, Ia. 535.6m-590kc. 5000 watts. Bank-
Des Moines, Ia. 535.6m-590kc. 5000 watts. Bank-
Des Moines, Ia. 535.6m-590kc. 5000 watts. Bank-

WHPP

New York, N. Y. 206.8m-1450kc. 10 watts. Bronx
New York, N. Y. 206.8m-1450kc. 10 watts. Bronx
New York, N. Y. 206.8m-1450kc. 10 watts. Bronx

WHI

Deerfield, Ill. 305.9m-980kc. 5000 watts. Radio-
Deerfield, Ill. 305.9m-980kc. 5000 watts. Radio-
Deerfield, Ill. 305.9m-980kc. 5000 watts. Radio-

WIAD

Philadelphia, Pa. 288.3m-1040kc. 100 watts. How-
Philadelphia, Pa. 288.3m-1040kc. 100 watts. How-
Philadelphia, Pa. 288.3m-1040kc. 100 watts. How-

WIAS

Ottumwa, Ia. 322.4m-920kc. 400 watts. Poling
Ottumwa, Ia. 322.4m-920kc. 400 watts. Poling
Ottumwa, Ia. 322.4m-920kc. 400 watts. Poling

WIBA

Madison, Wis. 239.9m-1250kc. 100 watts. The
Madison, Wis. 239.9m-1250kc. 100 watts. The
Madison, Wis. 239.9m-1250kc. 100 watts. The

WIBG

Elkins Park, Pa. 440.9m-680kc. 50 watts. St.
Elkins Park, Pa. 440.9m-680kc. 50 watts. St.
Elkins Park, Pa. 440.9m-680kc. 50 watts. St.

WIBJ

Chicago, Ill. 201.2m-1490kc. 100 watts. C. L. Car-
Chicago, Ill. 201.2m-1490kc. 100 watts. C. L. Car-
Chicago, Ill. 201.2m-1490kc. 100 watts. C. L. Car-

WIBM

Chicago, Ill. 201.2m-1490kc. 100 watts. C. L. Car-
Chicago, Ill. 201.2m-1490kc. 100 watts. C. L. Car-
Chicago, Ill. 201.2m-1490kc. 100 watts. C. L. Car-

WIBO

Chicago, Ill. 305.9m-980kc. 5000 watts. Nelson
Chicago, Ill. 305.9m-980kc. 5000 watts. Nelson
Chicago, Ill. 305.9m-980kc. 5000 watts. Nelson

WIBR

Steubenville, Ohio. 249.9m-1200kc. 50 watts.
Steubenville, Ohio. 249.9m-1200kc. 50 watts.
Steubenville, Ohio. 249.9m-1200kc. 50 watts.

WIBS

Elizabeth, N. J. 204m-1470kc. 250 watts. New
Elizabeth, N. J. 204m-1470kc. 250 watts. New
Elizabeth, N. J. 204m-1470kc. 250 watts. New

WIBU

Fayetteville, Wis. 217.3m-1390kc. 20 watts. The
Fayetteville, Wis. 217.3m-1390kc. 20 watts. The
Fayetteville, Wis. 217.3m-1390kc. 20 watts. The

WIBW

Tonawanda, Pa. 204m-1470kc. 100 watts. C. L. Car-
Tonawanda, Pa. 204m-1470kc. 100 watts. C. L. Car-
Tonawanda, Pa. 204m-1470kc. 100 watts. C. L. Car-

WIBX

Utica, N. Y. 238m-1260kc. 150 watts. WIBX Inc.
Utica, N. Y. 238m-1260kc. 150 watts. WIBX Inc.
Utica, N. Y. 238m-1260kc. 150 watts. WIBX Inc.

WIBZ

Montgomery, Ala. 230.6m-1300kc. 15 watts. A. D.
Montgomery, Ala. 230.6m-1300kc. 15 watts. A. D.
Montgomery, Ala. 230.6m-1300kc. 15 watts. A. D.

WICC

Bridgewater Hill, Conn. 265.3m-1130kc. 500 watts.
Bridgewater Hill, Conn. 265.3m-1130kc. 500 watts.
Bridgewater Hill, Conn. 265.3m-1130kc. 500 watts.

WIL

St. Louis, Mo. 258.5m-1160kc. 250 watts. Beason
St. Louis, Mo. 258.5m-1160kc. 250 watts. Beason
St. Louis, Mo. 258.5m-1160kc. 250 watts. Beason

WIOD

Miami Beach, Fla. 247.8m-1210kc. 1000 watts.
Miami Beach, Fla. 247.8m-1210kc. 1000 watts.
Miami Beach, Fla. 247.8m-1210kc. 1000 watts.

WIP

Philadelphia, Pa. 348.6m-820kc. 500 watts. Giph-
Philadelphia, Pa. 348.6m-820kc. 500 watts. Giph-
Philadelphia, Pa. 348.6m-820kc. 500 watts. Giph-

WJAD

Waco, Tex. 333.1m-790kc. 500 watts. Hotel
Waco, Tex. 333.1m-790kc. 500 watts. Hotel
Waco, Tex. 333.1m-790kc. 500 watts. Hotel

WJAG

Norfolk, Nebr. 285.5m-1050kc. 250-500 watts. Nor-
Norfolk, Nebr. 285.5m-1050kc. 250-500 watts. Nor-
Norfolk, Nebr. 285.5m-1050kc. 250-500 watts. Nor-

WJAR

Providence, R. I. 483.6m-620kc. 500 watts. The
Providence, R. I. 483.6m-620kc. 500 watts. The
Providence, R. I. 483.6m-620kc. 500 watts. The

WJAS

Pittsburgh, Pa. 270.1m-1110kc. 500 watts. Pitts-
Pittsburgh, Pa. 270.1m-1110kc. 500 watts. Pitts-
Pittsburgh, Pa. 270.1m-1110kc. 500 watts. Pitts-

WJAX

Jacksonville, Fla. 340.7m-880kc. 1000 watts. City
Jacksonville, Fla. 340.7m-880kc. 1000 watts. City
Jacksonville, Fla. 340.7m-880kc. 1000 watts. City

WJAY

Cleveland, Ohio. 227.1m-1320kc. 500 watts. Cleve-
Cleveland, Ohio. 227.1m-1320kc. 500 watts. Cleve-
Cleveland, Ohio. 227.1m-1320kc. 500 watts. Cleve-

WJAZ

Mr. Prospect, Ill. 263m-1140kc. 5000 watts. Zenith
Mr. Prospect, Ill. 263m-1140kc. 5000 watts. Zenith
Mr. Prospect, Ill. 263m-1140kc. 5000 watts. Zenith

WJBA

Joliet, Ill. 247.8m-1210kc. 50 watts. D. H. Lentz.
Joliet, Ill. 247.8m-1210kc. 50 watts. D. H. Lentz.
Joliet, Ill. 247.8m-1210kc. 50 watts. D. H. Lentz.

WJBB

Sarasota, Fla. 238m-1260kc. 250 watts. Financial
Sarasota, Fla. 238m-1260kc. 250 watts. Financial
Sarasota, Fla. 238m-1260kc. 250 watts. Financial

WJBC

La Salle, Ill. 227.1m-1320kc. 100 watts. Hummer
La Salle, Ill. 227.1m-1320kc. 100 watts. Hummer
La Salle, Ill. 227.1m-1320kc. 100 watts. Hummer

WJBI

Red Bank, N. J. 263m-1140kc. 250 watts. Robert
Red Bank, N. J. 263m-1140kc. 250 watts. Robert
Red Bank, N. J. 263m-1140kc. 250 watts. Robert

WJBK

Ypsilanti, Mich. 220.4m-1360kc. 15 watts. Ernest
Ypsilanti, Mich. 220.4m-1360kc. 15 watts. Ernest
Ypsilanti, Mich. 220.4m-1360kc. 15 watts. Ernest

WJBL

Dearborn, Ill. 212.6m-1410kc. 250 watts. William
Dearborn, Ill. 212.6m-1410kc. 250 watts. William
Dearborn, Ill. 212.6m-1410kc. 250 watts. William

WJBO

New Orleans, La. 263m-1140kc. 100 watts. Valde-
New Orleans, La. 263m-1140kc. 100 watts. Valde-
New Orleans, La. 263m-1140kc. 100 watts. Valde-

WJBT

Chicago, Ill. 369.4m-770kc. 500-5000 watts. J. S.
Chicago, Ill. 369.4m-770kc. 500-5000 watts. J. S.
Chicago, Ill. 369.4m-770kc. 500-5000 watts. J. S.

WJBU

Lewisburg, Pa. 214.2m-1400kc. 100 watts. Duck-
Lewisburg, Pa. 214.2m-1400kc. 100 watts. Duck-
Lewisburg, Pa. 214.2m-1400kc. 100 watts. Duck-

WJBW

New Orleans, La. 238m-1260kc. 30 watts. C.
New Orleans, La. 238m-1260kc. 30 watts. C.
New Orleans, La. 238m-1260kc. 30 watts. C.

WJBY

Gadsden, Ala. 234.2m-1280kc. 50 watts. Electric
Gadsden, Ala. 234.2m-1280kc. 50 watts. Electric
Gadsden, Ala. 234.2m-1280kc. 50 watts. Electric

WJCB

Chicago Heights, Ill. 208.2m-1440kc. 100 watts.
Chicago Heights, Ill. 208.2m-1440kc. 100 watts.
Chicago Heights, Ill. 208.2m-1440kc. 100 watts.

WJDD

Moscow, Ind. 365.6m-820kc. 1000 watts. Loyd
Moscow, Ind. 365.6m-820kc. 1000 watts. Loyd
Moscow, Ind. 365.6m-820kc. 1000 watts. Loyd

WJDK

Ann Arbor, Mich. 208.2m-1440kc. 30 watts. J. P.
Ann Arbor, Mich. 208.2m-1440kc. 30 watts. J. P.
Ann Arbor, Mich. 208.2m-1440kc. 30 watts. J. P.

WJDR

Fontaine, Mich. 440.9m-680kc. 5000 watts. 8x A.
Fontaine, Mich. 440.9m-680kc. 5000 watts. 8x A.
Fontaine, Mich. 440.9m-680kc. 5000 watts. 8x A.

WJEW

East Lansing, Mich. 277.6m-1080kc. 500-1000
East Lansing, Mich. 277.6m-1080kc. 500-1000
East Lansing, Mich. 277.6m-1080kc. 500-1000

WJFA

San Juan, Porto Rico. 322.4m-920kc. 500 watts.
San Juan, Porto Rico. 322.4m-920kc. 500 watts.
San Juan, Porto Rico. 322.4m-920kc. 500 watts.

WJGB

East Lansing, Mich. 277.6m-1080kc. 500-1000
East Lansing, Mich. 277.6m-1080kc. 500-1000
East Lansing, Mich. 277.6m-1080kc. 500-1000

WJGC

Laconia, N. H. 223.7m-1340kc. 50 watts. Laconia
Laconia, N. H. 223.7m-1340kc. 50 watts. Laconia
Laconia, N. H. 223.7m-1340kc. 50 watts. Laconia

WJGD

Joliet, Ill. 215.7m-1320kc. 150 watts. Sanders
Joliet, Ill. 215.7m-1320kc. 150 watts. Sanders
Joliet, Ill. 215.7m-1320kc. 150 watts. Sanders

WJGE

WRAX

Philadelphia, Pa. 212.6m-1410kc. 250 watts. Bernhardt Church. Tues. Thurs. 7:30-9:30 pm. Sun. 11:15-12:15 pm. 4-5, 9-10. Eastern. Founded 1923.

WRBC

Valparaiso, Ind. 238m-1260kc. 250 watts. Immanuel Lutheran church. Announcer, Carl Schutes. Slogan, "Worship Redeemed by Christ." Mon. 7:30 pm. Sun. 7:30 pm. church service. Central. Founded March, 1924.

WRG

Washington, D. C. 468.5m-640kc. 500 watts. Radio Corp. of America. Announcer, John B. Daniel. Slogan, "The Voice of the Capitol." Daily ex Sun. 6:45 a.m. pm. WEAF; 1-2, organ; 5-11 pm. Sun. 11 am-9:30 pm. Eastern.

WRV

Norfolk, Va. 299.7m-1430kc. 100 watts. Radio Corporation of Virginia. Slogan, "The Voice of the Business District." Mon, Tues, Thurs, Fri, 7-8 pm. Sun. 10:30-12:15 pm. 7:15-8:45. Eastern.

WRFC

Memphis, Tenn. 249.9m-1260kc. 101 watts. WRFC. Daily ex Sun. 7:30 pm. Sun. 4:5-3:30 pm. Central. Founded 1924.

WRFN

Lawrence, Kan. 254.1m-1180kc. 750 watts. Jerry Wren. Daily ex Sun. Mon, 9-10 pm. Mon, 6-9 pm. Sun. 9:30-11 am. 9:10-10 pm. Central.

WRFS

Quincy, Mass. 217.3m-1380kc. 50 watts. Harry Leonard Sawyer. Tues, Wed, Thurs, Fri, 8-11 pm. Eastern. Founded Nov, 1925.

WRHF

Washington, D. C. 322.4m-930kc. 150 watts. American Broadcasting Company. Daily ex Sun, 10-12 p. 6-7. Founded 1924. Eastern.

WRHM

Minneapolis, Minn. 267.7m-1150kc. 1000 watts. Rosedale Hospital. Announcer, Troy S. Miller. Daily ex Sun, 9:10-10:30 am. 1-4 pm. 5-6, 6-7. Mon, Wed, Fri, 8-10 pm. Thurs, 10-12 mid. Sat, 6-11 pm. Sun, 9:15 am. 11, 7-8:45 pm. Central.

WRK

Hamilton, Ohio. 205.4m-1470kc. 100 watts. C. Slade, S. W. Doran. Mon, Wed, Fri, 1-2 pm. 6:45-10. Tues, Thurs, 1-2 pm. 6:45-7:25 am. Sat, 1-3 pm. 2:30-5, 6:45-7:30 am. 10:30. Eastern. Founded 1919.

WRM

Urbana, Ill. 272.6m-1100kc. 500-1000 watts. Univ. of Ill. Announcer, John Bayley. Daily ex Sun, 5-6 pm. 7-8 pm. musical. Sun, 3:15-5 pm. Central.

WRMU

New York, N. Y. 201.3m-1490kc. 100 watts. Atlantic Broadcasting Corp.

WRNY

Coytesville, N. J. 335.9m-920kc. 500 watts. Experimenter Pub. Co. Daily ex Sun, 11-11 pm. 2:30-4, 7-11 pm. Sun, 11 am. 1-6:30 pm. Eastern. Founded June 12, 1925.

WRPI

Terre Haute, Ind. 208.2m-1440kc. 100 watts. Rose Polytechnic Institute Broadcasting Assn.

WRR

Dallas, Tex. 461.3m-650kc. 500 watts. City of Dallas. Announcer, John Thorwald. Slogan, "City of achievements." Daily ex Wed, 11:30-12:30 pm. 6-7, 8-9, 10-11. Sun, 11-12 pm. 7:30-9 pm. 9:30-10:30. Central.

WRRS

Racine, Wis. 247.8m-1210kc. 50 watts. Racine Broadcasting Corp. Announcer, C. Leavenworth. Daily ex Sun, Sat, 6-7 pm. news. Mon, Wed, Fri, 12-1 pm. organ; 8-9 pm. Central. Founded Dec. 1, 1924.

WRST

Bay Shore, N. Y. 211.1m-1420kc. 150 watts. Radiolite Mfg. Co., Inc. Slogan, "Bay Shore, the Garden Spot of Long Island." Daily ex Sun, 12-1 pm. 4-5, 6-8. Daily ex Sun, Thurs, 12-1 pm. 4-5. Daily ex Sun, Thurs, 12-1 pm. 4-5, 8-12. Eastern. Founded 1925.

WRVA

Richmond, Va. 254.1m-1180kc. 1000 watts. Larus & Bro. Co., Inc. Slogan, "Entry Me Back to Old Virginia." Announcer, J. Robert Beardsley. Daily ex Sun, 12-1 pm. Mon, Wed, Thurs, Fri, 7-12 mid. Sun, 11-12 am. Sat, 1-12 am. 4-5. Eastern. Founded May 12, 1924.

WSAI

Mason, Ohio. 361.2m-830kc. 5000 watts. United States Playing Card Co. Daily and Sun, 7-12 mid. Fri, 8-9 pm. Eastern.

WSAJ

Grove City, Pa. 223.7m-1340kc. 250 watts. Grove City College, William L. Hartman, activities. Irregular schedule. Founded April, 1926.

WSAN

Alhambra, Pa. 222.1m-1350kc. 100 watts. Allentown Call Pub. Co. Announcer, Charles Welp. Tues, Thurs, 8:15 pm. Eastern.

WSAR

Fall River, Mass. 252m-1190kc. 250 watts. Doughty & Welch. Slogan, "The Voice of the South." Daily ex Sun, 10 am, home-made half hour; 12-1 pm, music, weather; 1, farm service; 2-3, news; 4-5, concert; 10-12 pm, concert. Mon, 5:30 pm. WJZ, Tues, 7 pm. WEAF, Wed, 6:15 pm. health talk, 10:12. Sat, 6 pm. S. S. lesson, Sun, 9:30 am. 10:54. 5 pm. 6:15. WEAF; 8:15 pm. Central.

WSAZ

Huntington, W. Va. 249.9m-1240kc. 100 watts. McKellar Elec. Co. Announcer, F. B. Smith. Daily ex Sun, 12-4 pm. 6-10. Sun, 10-12:30 pm. 3-4, 6-10. Eastern. Founded Feb, 1927.

WSB

Atlanta, Ga. 475.9m-630kc. 1000 watts. Atlanta Journal. Announcer, "The Voice of the South." Daily ex Sun, 10 am, home-made half hour; 12-1 pm, music, weather; 1, farm service; 2-3, news; 4-5, concert; 10-12 pm, concert. Mon, 5:30 pm. WJZ, Tues, 7 pm. WEAF, Wed, 6:15 pm. health talk, 10:12. Sat, 6 pm. S. S. lesson, Sun, 9:30 am. 10:54. 5 pm. 6:15. WEAF; 8:15 pm. Central.

WSBC

Chicago, Ill. 222.4m-1200kc. 500 watts. World Battery Co. Daily ex Sun, Mon, Thurs, 6:30-8 pm. Fri, ex Mon, 9-11 am. Sat, 2-4 am. Sun, 5-7 pm. Thurs, 6-7 pm. Central.

WSBF

St. Louis, Mo. 258.5m-1160kc. 250 watts. WSBF Broadcasters.

WSBT

South Bend, Ind. 359.8m-750kc. 500 watts. South Bend Tribune. Announcer, C. G. Livingston. Daily ex Sun, 6-7 pm. Mon, 9:30-11:30 pm. Tues, 9:11-30 pm. Fri, 10-12 mid. Founded April, 1922. Central.

WSDA

New York, N. Y. 227.1m-1320kc. 250 watts. City Temple. Thurs, 7:45-9 pm. Sat, 10:45-11 pm. Sun, 7:30-9:30 pm. Eastern.

WSEA

Virginia Beach, Va. 263m-1140kc. 500 watts. Virginia Beach Broadcasting Co. Announcer, George H. Sloan. Slogan, "The Voice of Tidewater Virginia." Daily ex Sun, 11-11 pm. 1-3, 5-6, 6-9 pm. 7-8, 8-11 pm. Sun, 9:30 am. 4-5 pm. 7-9 pm. Eastern.

WSIX

Springfield, Tenn. 249.9m-1200kc. 150 watts. 638 Tire and Vulc. Co. Announcer, George H. Lawrence. Slogan, "Where the Summer Starts Begins." Daily ex Sun, 12-30 pm. Sat, 7-8 pm. Sun, 11 am. Central. Founded Jan. 7, 1927.

WSKC

Bay City, Mich. 272.6m-1100kc. 250 watts. World's Star Knitting Co. Announcer, S. F. Northcott. Slogan, "Where the Summer Starts Begins." Daily ex Sun, 12-1 pm. Hardy hour of music. Tues, Thurs, Sat, 9-11 pm. Sat, 12-2 am. Sun, 11 am. Eastern. Founded June 15, 1925.

WSM

Nashville, Tenn. 336.9m-890kc. 5000 watts. National Life and Accident Insurance Company. Announcer, George Hay. Daily ex Sun, Sat, 11:45 am. 12-30 pm. 1-1:30, 5:30-6 pm. 6:15-11 pm. Tues, Wed, 7-11 pm. Thurs, 6:30-11 pm. Sat, 6-11 pm. Sun, 4:30-5:30 pm. 6:20-7:15, 8:15-9:15. Founded Oct. 5, 1925. Central.

WSMB

New Orleans, La. 96.4m-1010kc. 750 watts. Saenger Theaters, Inc. and the Mason Blanche Co. Daily ex Sun, 12-30 pm. Sat, 6-7 pm. Mon, Wed, Thurs, Sat, 8:30-10:30 pm. Founded April 21, 1925. Central.

WSMK

Dayton, Ohio. 296.9m-1010kc. 200 watts. S. M. Krohn, Jr. Slogan, "The Home of Aviation." Daily ex Sun, Thurs, 9-10 am. woman's help; 12-1 pm. 7-8 pm. Sun, 9-12 pm. 6-11:3 am. Sun, 10:30-12 pm. 7-9 pm. Central.

WSOE

Milwaukee, Wis. 270.1m-1110kc. 250 watts. School of Engineering of Milwaukee. Announced by Wisconsin News. Slogan, "In the Land of the Sky-Waters." Daily ex Sun, Sat, 1-30 pm. request numbers; 7-12 pm. news; 12:30-1:30 pm. 6-7 pm. Mon, Wed, Thurs, Sat, 8:30-10:30 pm. Founded April 21, 1925. Central.

WSO

Milwaukee, Wis. 270.1m-1110kc. 250 watts. School of Engineering of Milwaukee. Announced by Wisconsin News. Slogan, "In the Land of the Sky-Waters." Daily ex Sun, Sat, 1-30 pm. request numbers; 7-12 pm. news; 12:30-1:30 pm. 6-7 pm. Mon, Wed, Thurs, Sat, 8:30-10:30 pm. Founded April 21, 1925. Central.

WSOB

Milwaukee, Wis. 270.1m-1110kc. 250 watts. School of Engineering of Milwaukee. Announced by Wisconsin News. Slogan, "In the Land of the Sky-Waters." Daily ex Sun, Sat, 1-30 pm. request numbers; 7-12 pm. news; 12:30-1:30 pm. 6-7 pm. Mon, Wed, Thurs, Sat, 8:30-10:30 pm. Founded April 21, 1925. Central.

WSOC

Milwaukee, Wis. 270.1m-1110kc. 250 watts. School of Engineering of Milwaukee. Announced by Wisconsin News. Slogan, "In the Land of the Sky-Waters." Daily ex Sun, Sat, 1-30 pm. request numbers; 7-12 pm. news; 12:30-1:30 pm. 6-7 pm. Mon, Wed, Thurs, Sat, 8:30-10:30 pm. Founded April 21, 1925. Central.

WSOD

Milwaukee, Wis. 270.1m-1110kc. 250 watts. School of Engineering of Milwaukee. Announced by Wisconsin News. Slogan, "In the Land of the Sky-Waters." Daily ex Sun, Sat, 1-30 pm. request numbers; 7-12 pm. news; 12:30-1:30 pm. 6-7 pm. Mon, Wed, Thurs, Sat, 8:30-10:30 pm. Founded April 21, 1925. Central.

WSOH

Milwaukee, Wis. 270.1m-1110kc. 250 watts. School of Engineering of Milwaukee. Announced by Wisconsin News. Slogan, "In the Land of the Sky-Waters." Daily ex Sun, Sat, 1-30 pm. request numbers; 7-12 pm. news; 12:30-1:30 pm. 6-7 pm. Mon, Wed, Thurs, Sat, 8:30-10:30 pm. Founded April 21, 1925. Central.

WSOI

Milwaukee, Wis. 270.1m-1110kc. 250 watts. School of Engineering of Milwaukee. Announced by Wisconsin News. Slogan, "In the Land of the Sky-Waters." Daily ex Sun, Sat, 1-30 pm. request numbers; 7-12 pm. news; 12:30-1:30 pm. 6-7 pm. Mon, Wed, Thurs, Sat, 8:30-10:30 pm. Founded April 21, 1925. Central.

WSOJ

Milwaukee, Wis. 270.1m-1110kc. 250 watts. School of Engineering of Milwaukee. Announced by Wisconsin News. Slogan, "In the Land of the Sky-Waters." Daily ex Sun, Sat, 1-30 pm. request numbers; 7-12 pm. news; 12:30-1:30 pm. 6-7 pm. Mon, Wed, Thurs, Sat, 8:30-10:30 pm. Founded April 21, 1925. Central.

WSOK

Milwaukee, Wis. 270.1m-1110kc. 250 watts. School of Engineering of Milwaukee. Announced by Wisconsin News. Slogan, "In the Land of the Sky-Waters." Daily ex Sun, Sat, 1-30 pm. request numbers; 7-12 pm. news; 12:30-1:30 pm. 6-7 pm. Mon, Wed, Thurs, Sat, 8:30-10:30 pm. Founded April 21, 1925. Central.

WSOL

Milwaukee, Wis. 270.1m-1110kc. 250 watts. School of Engineering of Milwaukee. Announced by Wisconsin News. Slogan, "In the Land of the Sky-Waters." Daily ex Sun, Sat, 1-30 pm. request numbers; 7-12 pm. news; 12:30-1:30 pm. 6-7 pm. Mon, Wed, Thurs, Sat, 8:30-10:30 pm. Founded April 21, 1925. Central.

WSOM

Milwaukee, Wis. 270.1m-1110kc. 250 watts. School of Engineering of Milwaukee. Announced by Wisconsin News. Slogan, "In the Land of the Sky-Waters." Daily ex Sun, Sat, 1-30 pm. request numbers; 7-12 pm. news; 12:30-1:30 pm. 6-7 pm. Mon, Wed, Thurs, Sat, 8:30-10:30 pm. Founded April 21, 1925. Central.

WSON

Milwaukee, Wis. 270.1m-1110kc. 250 watts. School of Engineering of Milwaukee. Announced by Wisconsin News. Slogan, "In the Land of the Sky-Waters." Daily ex Sun, Sat, 1-30 pm. request numbers; 7-12 pm. news; 12:30-1:30 pm. 6-7 pm. Mon, Wed, Thurs, Sat, 8:30-10:30 pm. Founded April 21, 1925. Central.

WSOO

Milwaukee, Wis. 270.1m-1110kc. 250 watts. School of Engineering of Milwaukee. Announced by Wisconsin News. Slogan, "In the Land of the Sky-Waters." Daily ex Sun, Sat, 1-30 pm. request numbers; 7-12 pm. news; 12:30-1:30 pm. 6-7 pm. Mon, Wed, Thurs, Sat, 8:30-10:30 pm. Founded April 21, 1925. Central.

WSOP

Milwaukee, Wis. 270.1m-1110kc. 250 watts. School of Engineering of Milwaukee. Announced by Wisconsin News. Slogan, "In the Land of the Sky-Waters." Daily ex Sun, Sat, 1-30 pm. request numbers; 7-12 pm. news; 12:30-1:30 pm. 6-7 pm. Mon, Wed, Thurs, Sat, 8:30-10:30 pm. Founded April 21, 1925. Central.

WSOQ

Milwaukee, Wis. 270.1m-1110kc. 250 watts. School of Engineering of Milwaukee. Announced by Wisconsin News. Slogan, "In the Land of the Sky-Waters." Daily ex Sun, Sat, 1-30 pm. request numbers; 7-12 pm. news; 12:30-1:30 pm. 6-7 pm. Mon, Wed, Thurs, Sat, 8:30-10:30 pm. Founded April 21, 1925. Central.

WSOR

Milwaukee, Wis. 270.1m-1110kc. 250 watts. School of Engineering of Milwaukee. Announced by Wisconsin News. Slogan, "In the Land of the Sky-Waters." Daily ex Sun, Sat, 1-30 pm. request numbers; 7-12 pm. news; 12:30-1:30 pm. 6-7 pm. Mon, Wed, Thurs, Sat, 8:30-10:30 pm. Founded April 21, 1925. Central.

WSOS

Milwaukee, Wis. 270.1m-1110kc. 250 watts. School of Engineering of Milwaukee. Announced by Wisconsin News. Slogan, "In the Land of the Sky-Waters." Daily ex Sun, Sat, 1-30 pm. request numbers; 7-12 pm. news; 12:30-1:30 pm. 6-7 pm. Mon, Wed, Thurs, Sat, 8:30-10:30 pm. Founded April 21, 1925. Central.

WSOT

Milwaukee, Wis. 270.1m-1110kc. 250 watts. School of Engineering of Milwaukee. Announced by Wisconsin News. Slogan, "In the Land of the Sky-Waters." Daily ex Sun, Sat, 1-30 pm. request numbers; 7-12 pm. news; 12:30-1:30 pm. 6-7 pm. Mon, Wed, Thurs, Sat, 8:30-10:30 pm. Founded April 21, 1925. Central.

WSOU

Milwaukee, Wis. 270.1m-1110kc. 250 watts. School of Engineering of Milwaukee. Announced by Wisconsin News. Slogan, "In the Land of the Sky-Waters." Daily ex Sun, Sat, 1-30 pm. request numbers; 7-12 pm. news; 12:30-1:30 pm. 6-7 pm. Mon, Wed, Thurs, Sat, 8:30-10:30 pm. Founded April 21, 1925. Central.

WSOV

Milwaukee, Wis. 270.1m-1110kc. 250 watts. School of Engineering of Milwaukee. Announced by Wisconsin News. Slogan, "In the Land of the Sky-Waters." Daily ex Sun, Sat, 1-30 pm. request numbers; 7-12 pm. news; 12:30-1:30 pm. 6-7 pm. Mon, Wed, Thurs, Sat, 8:30-10:30 pm. Founded April 21, 1925. Central.

WSOW

Milwaukee, Wis. 270.1m-1110kc. 250 watts. School of Engineering of Milwaukee. Announced by Wisconsin News. Slogan, "In the Land of the Sky-Waters." Daily ex Sun, Sat, 1-30 pm. request numbers; 7-12 pm. news; 12:30-1:30 pm. 6-7 pm. Mon, Wed, Thurs, Sat, 8:30-10:30 pm. Founded April 21, 1925. Central.

WSOX

Milwaukee, Wis. 270.1m-1110kc. 250 watts. School of Engineering of Milwaukee. Announced by Wisconsin News. Slogan, "In the Land of the Sky-Waters." Daily ex Sun, Sat, 1-30 pm. request numbers; 7-12 pm. news; 12:30-1:30 pm. 6-7 pm. Mon, Wed, Thurs, Sat, 8:30-10:30 pm. Founded April 21, 1925. Central.

WSOY

Milwaukee, Wis. 270.1m-1110kc. 250 watts. School of Engineering of Milwaukee. Announced by Wisconsin News. Slogan, "In the Land of the Sky-Waters." Daily ex Sun, Sat, 1-30 pm. request numbers; 7-12 pm. news; 12:30-1:30 pm. 6-7 pm. Mon, Wed, Thurs, Sat, 8:30-10:30 pm. Founded April 21, 1925. Central.

WTIC

Hartford, Conn. 535.4m-560kc. 500 watts. The Travelers Insurance Company. Slogan, "The Insurance Man's Best Friend." Daily ex Sun, 11-11 pm. Sun, 4:30-7:30 pm. Founded Feb. 10, 1924. Eastern.

WTMJ

Milwaukee, Wis. 293.9m-1020kc. 1000 watts. Milwaukee Journal. Announcer, Fred Jenke. Jerry Fish. Slogan, "Voice of Wisconsin. Land of Lakes." Mon, Tues, Wed, Thurs, Fri, 10-12 pm, 3-12 mid. Sat, 10-12 pm. Sun, 11-11:45 pm. Central. Founded July 25, 1927.

WTRF

Midland Park, N. J. 206.8m-1450kc. 15 watts. Technical Radio Laboratory. Tues, 7-9 pm. Fri, 7-8 pm. Sun, 7-8 pm. Eastern.

WVAE

Chicago, Ill. 227.1m-1320kc. 500 watts. Dr. George F. Courier. Daily ex Sun, Mon, 7-9 pm. Central.

WVJ

Detroit, Mich. 352.7m-850kc. 1000 watts. The Detroit News. Announcer, E. L. Tyson. P. F. Wallace. Mon, Wed, Thurs, 6-8 pm. exercise; 9:30-10 household hints; 10:30-10:35. weather; 11:55-12. time; 12:05-12:45 pm. music; 1, organ; 3, music; 8:45-9:30 pm. Sun, 6-8 pm. Mon, 8:30 pm. WEAF, 8 WEAF, Tues, 8 WEAF, Wed, 8 pm. music; 8:45-9:30 pm. Sun, 6-8 pm. WEAF, 8 WEAF, Sat, 8 pm. WEAF, 9 WEAF, 9:15 WEAF, Sat, 8 pm. variety program. Eastern. Founded Aug. 1920.

WVW

New Orleans, La. 245.8m-1220kc. 500 watts. Loyola Univ. Announcer, O. L. Kroll. Sat, 7:30-8:30 pm. Central. Founded March 1, 1922.

WVWC

Ashville, N. C. 296.9m-1010kc. 1000 watts. Asheville Chamber of Commerce. Announcer, J. Dale Smith. Daily ex Sun, 11 am. 7-8 pm. Mon, 7-8 pm. Thurs, 8:10-9:45 pm. Sun, 11 am-4 pm. 7:30 pm. Eastern. Founded Feb. 21, 1927.

WVWL

Woodsville, N. Y. 199.9m-1500kc. 100 watts. W. B. Rogers.

WVWA

Wheeling, W. Va. 516.8m-580kc. 250 watts. John C. Stroebel, Jr. Daily ex Sun, 7 am, 8, 11, 2 pm. 6 pm. Mon, 7-11 pm. Sun, 11 am. 4-6 pm. Central. Founded Dec. 6, 1926.

Canada

Calgary, Alta. 434.5m-690kc. 500 watts. Calgary Herald. Announcer, Fred Carleton. Daily ex Sun, 12-1 pm. weather, markets. Mon, 3:30-4:30 pm. 9:30-10:30. Tues, 6-7 pm. Wed, 3:30-4:30 pm. Thurs, 6-7 pm. Thurs, 9-10 pm. Fri, 3:30-4:30 pm. Sun, 11 am. 7 pm. service.

CFAC

Calgary, Alta. 434.5m-690kc. 500 watts. Calgary Herald. Announcer, Fred Carleton. Daily ex Sun, 12-1 pm. weather, markets. Mon, 3:30-4:30 pm. 9:30-10:30. Tues, 6-7 pm. Wed, 3:30-4:30 pm. Thurs, 6-7 pm. Thurs, 9-10 pm. Fri, 3:30-4:30 pm. Sun, 11 am. 7 pm. service.

CFCA

Toronto, Ont. 356.9m-840kc. 500 watts. Toronto Star. Announcer, Gordon W. McClain. Daily ex Sun, 12-1 pm. weather, markets. Mon, 3:30-4:30 pm. 9:30-10:30. Tues, 6-7 pm. Wed, 3:30-4:30 pm. Thurs, 6-7 pm. Thurs, 9-10 pm. Fri, 3:30-4:30 pm. Sun, 11 am. 7 pm. service.

CFCB

Toronto, Ont. 356.9m-840kc. 500 watts. Toronto Star. Announcer, Gordon W. McClain.

An Evening at Home Without the Minister

IN CENTRAL TIME

IN EASTERN TIME

Call	Watt	Kc.	Watts	Sat. Radio	Sunday	Monday	Tuesday	Wed.	Thurs.	Friday	Call	Loc.	Watt	Kc.	Watts	Sat. Radio	Sunday	Monday	Tuesday	Wed.	Thurs.	Friday	
CFCA	356.9	840	500	Silent	7:00-7:15	7:15-8:15	7:00-11:45	7:00-11:45	6:25-9:30	Silent	CFCA	Toronto	356.9	840	500	Silent	8:00-10:15	7:15-9:15	Silent	8:00-12:45	7:15-10:30	Silent	
CJRM	210.7	1010	500	11:30-12:30	7:30-10:00	7:30-10:00	7:30-10:00	7:30-10:00	7:30-10:00	7:30-10:00	CJRM	Montreal	210.7	1010	500	12:30-1:30	8:30-12:00	8:30-12:00	Silent	8:30-11:00	Silent	8:30-11:00	
CKAC	406.9	730	750	7:15-12:00	2:45-3:45	7:15-11:30	7:15-11:30	8:00-9:30	8:00-9:30	8:00-9:30	CKAC	Montreal	406.9	730	750	8:15-1:00	3:45-6:45	Silent	8:15-12:30	Silent	9:30-10:30	Silent	
CKCL	356.9	840	500	6:00-7:30	7:00-9:00	7:00-9:00	7:00-9:00	7:00-9:00	7:00-9:00	7:00-9:00	CKCL	Toronto	356.9	840	500	7:00-9:00	8:00-12:00	8:00-12:00	Silent	9:00-10:30	Silent	9:00-10:30	
CKNC	356.9	840	500	Silent	Silent	8:00-9:30	Silent	Silent	8:00-9:30	Silent	CKNC	Toronto	356.9	840	500	Silent	Silent	9:00-10:30	Silent	Silent	Silent	9:00-10:30	
CKNF	384.4	780	500	7:30-9:00	6:30-9:00	6:00-10:00	6:00-10:00	6:00-10:00	6:00-10:00	6:00-10:00	CKNF	Winnipeg	384.4	780	500	8:00-11:30	7:00-10:00	8:00-12:00	Silent	9:00-1:00	Silent	9:00-1:00	
CNRO	324.5	690	500	Silent	Silent	6:00-10:00	Silent	Silent	6:00-10:00	Silent	CNRO	Winnipeg	324.5	690	500	Silent	Silent	6:00-10:00	Silent	Silent	Silent	6:00-10:00	
CYH	311	950	250	Silent	9:30-11:00	Silent	Silent	9:30-11:30	Silent	9:30-11:30	CYH	Montreal	311	950	250	Silent	10:30-12:00	Silent	10:30-12:30	Silent	10:30-11:30	Silent	10:30-11:30
CYQ	409	750	1000	9:00-10:00	Silent	9:00-10:00	9:00-10:00	9:00-10:00	9:00-10:00	9:00-10:00	CYQ	Pittsburgh	409	750	1000	10:00-11:00	10:00-11:00	10:00-11:00	10:00-11:00	10:00-11:00	10:00-11:00	10:00-11:00	10:00-11:00
KDKA	315.6	950	500	6:00-9:00	7:00-10:15	5:00-9:00	5:00-9:00	5:00-9:00	5:00-9:00	5:00-9:00	KDKA	Pittsburgh	315.6	950	500	6:00-10:00	5:00-11:15	6:00-10:00	6:00-10:00	6:00-10:00	6:00-10:00	6:00-10:00	6:00-10:00
KFAB	319	940	2000	5:30-10:00	5:30-10:15	5:30-10:15	5:30-10:15	5:30-10:15	5:30-10:15	5:30-10:15	KFAB	Lincoln	319	940	2000	6:30-11:00	10:00-11:00	6:30-11:15	6:30-11:15	6:30-11:30	Silent	6:30-11:30	
KFDM	483.6	620	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	KFDM	Bloomington	483.6	620	500	Silent	9:00-10:00	9:00-10:00	9:00-10:00	9:00-11:00	Silent	9:00-11:00	
KFT	245.8	1220	500	7:30-8:30	8:00-9:00	7:30-8:30	7:30-8:30	7:30-8:30	7:30-8:30	7:30-8:30	KFT	Wichita	245.8	1220	500	8:30-9:30	8:00-9:00	8:30-9:30	8:30-9:30	8:30-9:30	8:30-9:30	8:30-9:30	
KFI	468.3	640	500	8:15-2:00	8:30-1:00	8:15-1:00	8:15-1:00	8:15-1:00	8:15-1:00	8:15-1:00	KFI	Los Angeles	468.3	640	500	9:15-3:00	9:00-1:00	9:15-2:00	9:15-2:00	9:15-2:00	9:15-2:00	9:15-2:00	
KFJF	272.6	1100	750	7:15-2:00	8:30-1:00	7:15-2:00	7:15-2:00	7:15-2:00	7:15-2:00	7:15-2:00	KFJF	Oklahoma City	272.6	1100	750	8:15-3:00	2:00-10:00	8:15-9:30	8:15-9:30	8:15-9:30	8:15-9:30	8:15-9:30	
KFJL	461.3	640	500	8:00-1:00	8:00-1:00	8:00-1:00	8:00-1:00	8:00-1:00	8:00-1:00	8:00-1:00	KFJL	St. Louis	461.3	640	500	9:00-8:00	7:15-2:00	9:00-8:00	9:00-8:00	9:00-8:00	9:00-8:00	9:00-8:00	
KFOA	447.8	670	1000	8:00-1:00	8:30-1:00	8:00-1:00	8:00-1:00	8:00-1:00	8:00-1:00	8:00-1:00	KFOA	Seattle	447.8	670	1000	9:00-1:00	9:30-12:00	9:30-1:00	9:30-1:00	9:30-1:00	9:30-1:00	9:30-1:00	
KFON	341.8	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	KFON	Long Beach	341.8	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	9:00-3:00	
KFRD	354	850	500	8:00-1:00	8:00-1:00	8:00-1:00	8:00-1:00	8:00-1:00	8:00-1:00	8:00-1:00	KFRD	Los Angeles	354	850	500	8:30-1:00	8:00-1:00	8:30-1:00	8:30-1:00	8:30-1:00	8:30-1:00	8:30-1:00	
KFRU	249.9	200	500	Silent	5:15-7:15	6:15-7:15	6:15-7:15	6:15-7:15	6:15-7:15	6:15-7:15	KFRU	Columbia	249.9	200	500	Silent	Silent	7:15-8:15	7:15-8:15	7:15-8:15	7:15-8:15	7:15-8:15	
KFSO	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	KFSO	San Diego	440.9	680	500	7:00-1:00	3:00-10:00	7:00-1:00	7:00-1:00	7:00-1:00	7:00-1:00	7:00-1:00	
KFUO	545.1	550	500	7:15-8:15	9:15-10:15	8:00-9:00	8:00-9:00	7:30-8:30	9:30-10:30	7:15-8:15	KFUO	St. Louis	545.1	550	500	8:15-9:15	10:15-11:15	9:00-10:00	9:00-10:00	7:30-8:30	10:30-11:30	Silent	8:15-9:15
KFWI	267.7	1120	500	8:00-2:30	9:00-1:00	7:00-1:00	7:00-1:00	7:00-1:00	7:00-1:00	7:00-1:00	KFWI	San Francisco	267.7	1120	500	9:00-3:30	10:30-2:00	8:00-2:30	8:00-2:30	8:00-2:30	8:00-2:30	8:00-2:30	
KGA	280.7	1120	500	Silent	9:00-11:30	8:00-11:30	8:00-11:30	8:00-11:30	8:00-11:30	8:00-11:30	KGA	Spokane	280.7	1120	500	Silent	10:30-12:30	9:00-12:00	9:00-12:00	9:00-12:00	9:00-12:00	9:00-12:00	
KGO	384.4	780	500	10:00-2:00	8:30-11:30	8:00-11:30	8:00-11:30	8:00-11:30	8:00-11:30	8:00-11:30	KGO	Oakland	384.4	780	500	11:00-2:00	9:30-12:00	9:00-12:00	9:00-12:00	9:00-12:00	9:00-12:00	9:00-12:00	
KGV	491.5	610	1000	9:00-2:00	9:00-2:00	8:00-1:00	8:00-1:00	8:00-1:00	8:00-1:00	8:00-1:00	KGV	Portland	491.5	610	1000	9:00-3:00	10:30-2:00	9:00-1:00	9:00-1:00	9:00-1:00	9:00-1:00	9:00-1:00	
KHJ	416.4	740	500	8:00-1:00	8:00-1:00	8:00-1:00	8:00-1:00	8:00-1:00	8:00-1:00	8:00-1:00	KHJ	San Francisco	416.4	740	500	9:00-1:00	10:00-1:00	9:00-1:00	9:00-1:00	9:00-1:00	9:00-1:00	9:00-1:00	
KIAP	421	700	500	Silent	4:00-8:00	9:00-10:00	Silent	9:00-10:00	9:00-10:00	9:00-10:00	KIAP	Seattle	421	700	500	Silent	8:00-9:00	9:00-1:00	Silent	9:00-1:00	9:00-1:00	9:00-1:00	
KJRB	348.6	850	2500	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	KJRB	Kearney	348.6	850	2500	9:00-3:00	10:45-1:45	9:00-3:00	9:00-3:00	9:00-3:00	9:00-3:00	9:00-3:00	
KLDS	270.1	1110	1500	Silent	9:15-10:15	Silent	Silent	8:00-9:00	Silent	8:00-9:00	KLDS	Independ.	270.1	1110	1500	Silent	10:15-11:15	Silent	9:00-10:00	Silent	9:00-10:00	Silent	9:00-10:00
KLX	508.2	500	500	Silent	Silent	8:30-12:00	Silent	Silent	8:00-9:00	Silent	KLX	Oakland	508.2	500	500	Silent	Silent	9:30-1:00	Silent	8:30-1:00	Silent	10:00-1:30	
KM	394.5	780	500	9:00-10:30	Silent	Silent	9:00-10:30	Silent	9:00-10:30	Silent	KM	Hollywood	394.5	780	500	10:00-11:30	Silent	9:00-10:30	Silent	9:00-10:30	Silent	9:00-10:30	
KMMJ	285.5	1050	500	9:00-9:30	8:15-9:45	8:00-9:40	8:00-9:40	Silent	8:00-9:40	8:00-9:40	KMMJ	City Center	285.5	1050	500	9:00-10:00	9:45-10:45	9:00-10:00	9:00-10:00	Silent	9:00-10:00	Silent	9:00-10:00
KMNB	399.8	810	500	9:00-10:00	8:00-11:00	8:00-11:00	8:00-11:00	8:00-11:00	8:00-11:00	8:00-11:00	KMNB	Hollywood	399.8	810	500	9:00-10:00	9:15-10:15	9:00-10:00	9:00-10:00	9:00-10:00	9:00-10:00	9:00-10:00	
KMX	326.9	890	500	9:00-2:00	8:15-12:00	8:45-2:00	9:00-2:00	9:00-2:00	9:00-2:00	9:00-2:00	KMX	Hollywood	326.9	890	500	10:00-3:00	9:15-1:00	9:45-3:00	10:00-3:00	10:00-3:00	10:00-3:00	10:00-3:00	
KOA	325.9	920	500	Silent	9:30-9:45	7:30-11:30	7:30-11:30	7:30-11:30	7:30-11:30	7:30-11:30	KOA	Denver	325.9	920	500	Silent	8:30-10:45	8:30-12:00	8:30-12:00	8:30-12:00	Silent	8:30-12:00	
KOLN	319	940	1000	9:15-10:00	8:00-12:00	8:00-12:00	8:00-12:00	8:00-12:00	8:00-12:00	8:00-12:00	KOLN	Council Bluffs	319	940	1000	9:00-11:00	12:00-1:00	9:00-1:00	9:00-1:00	9:00-1:00	9:00-1:00	9:00-1:00	
KOMO	305.9	980	500	8:00-2:00	9:00-12:00	8:00-2:30	8:00-2:30	8:00-2:30	8:00-2:30	8:00-2:30	KOMO	Seattle	305.9	980	500	9:00-3:30	10:00-1:00	9:00-3:30	9:00-3:30	9:00-3:30	9:00-3:30	9:00-3:30	
KPO	423.3	710	1000	8:00-2:00	8:00-12:00	8:00-1:00	8:00-1:00	8:00-1:00	8:00-1:00	8:00-1:00	KPO	San Francisco	423.3	710	1000	9:00-3:00	9:00-1:00	9:00-3:00	9:00-3:00	9:00-3:00	9:00-3:00	9:00-3:00	
KPRC	393.9	810	500	9:00-10:00	8:00-11:00	8:00-11:00	8:00-11:00	8:00-11:00	8:00-11:00	8:00-11:00	KPRC	Portland	393.9	810	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	9:00-10:00	
KPSN	515.6	950	1000	10:00-11:00	8:00-9:00	10:00-11:15	10:00-11:15	10:00-11:15	10:00-11:15	10:00-11:15	KPSN	Pasadena	515.6	950	1000	11:00-12:00	9:00-10:00	11:00-12:15	11:00-12:15	11:00-12:15	11:00-12:15	11:00-12:15	
KR	267.7																						

State and City Index Continued

Texas (Continued)

City	Call Meters	Kc.	Watts
Dallas	KRLD	461.3	850
	WFAA	565.1	550
	WRR	461.3	500
Dublin	KFFL	275.1	1,090
El Paso	WJAH	234.2	1,200
Fort Worth	KFTZ	249.9	1,200
	KQOB	333.1	900
	WRAP	429.7	1,400
Galveston	KFLX	270.1	1,110
	KFUL	258.8	1,160
Greenville	KKFM	280.6	1,100
Harlingen	KHMC	236.1	1,270
Houston	KFTV	235.1	1,270
	KPRC	283.9	1,200
	KTUE	212.6	1,410
San Angelo	KGFI	220.4	1,360
San Antonio	KGCI	229.4	1,360
	KGDR	206.8	1,450
	KGBC	229.4	1,360
	KTAP	228.9	1,310
	KTSA	285.3	1,130
	WDAI	499.7	900
Waco	WJAD	333.1	900

Utah

Ogden	KFUR	225.4	1,330
Salt Lake C.	KDVL	234.2	1,200
	KPDT	249.9	1,200
	KSL	302.8	900

Vermont

Burlington	WCAX	254.1	1,160
Springfield	WNBX	249.9	1,100

Virginia

Arlington	NAA	434.5	690
Norfolk	WBWB	236.1	1,270
	WRCV	236.1	1,270
	WTAR	236.1	1,270
Petersburg	WLBG	214.2	1,400
Richmond	WBFL	234.2	1,160
	WMBC	220.4	1,360
	WVLA	254.1	1,160
Roanoke	WDBJ	230.6	1,300
Va. Beach	WSEA	1,140	500

Washington

Bellingham		229.7	1,430
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Washington (Continued)

City	Call Meters	Kc.	Watts
Everett	KFBL	223.7	1,340
Leavenworth	KGY	243.8	1,230
Pullman	KWOC	284.5	760
Seattle	KFOA	447.5	670
	KFJZ	447.5	670
	KXA	344.6	860
	KJR	344.6	860
	KGLI	310.6	1,300
	KKMP	253.3	1,153
	KKDM	292.9	1,000
	KPCB	230.6	1,300
	KRSC	211.1	1,420
	KTW	294.5	1,000
	KUJ	199.9	1,500
	KVL	202.6	1,480
	KYA	344.6	860
Spokane	KFIO	245.8	1,220
	KFPY	245.8	1,220
	KGA	269.7	1,150
	KHQ	370.2	810
Taroma	KVI	234.2	1,260
	KMO	254.1	1,180

West Virginia

Charleston	WOBU	267.7	1,120
Clarksburg	WOBZ	239.9	1,260
Huntington	WSAZ	249.9	1,240
Wheeling	WVVA	516.9	850

Wisconsin

Appleton	WAIZ	227.1	1,320
Beloit	WEBW	258.5	1,160
Eau Claire	WTAG	254.1	1,160
Fond du Lac	KFJZ	267.7	1,120
Kenosha	WCLO	227.1	1,320
La Crosse	WKBB	220.4	1,360
Madison	WHA	313.1	900
Sheboygan	WJBA	239.9	1,260
Manitowish	WOMT	222.1	1,350
Millwaukee	WGWB	218.8	1,370
	WISN	294.5	1,020
	WISN	270.1	1,110
	WISN	270.1	1,110
Poyntette	WIBU	217.3	1,380
Racine	WRRS	247.8	1,210
Stevens Point	WLB	302.8	900
Superior	WBCB	241.8	1,240
W. De Witt	WDBZ	249.9	1,260

Wyoming

City	Call Meters	Kc.	Watts
Laramie	KFBU	483	620

Alaska

Anchorage	KFOG	344.6	870
Juneau	KFIU	225.4	1,330
Ketchikan	KGBU	225.4	1,310

Hawaii

Honolulu	KGHB	227.1	1,320
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Philippines

Manila	KZIB	249.9	1,200
	KZRM	413	726.1

Porto Rico

San Juan	WKAQ	322.4	930
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Canada (Continued)

Bowmanville	CKCW	312.7	960
Calgary	CFAC	434.5	690
	CFCN	434.5	690
	CNRC	434.5	690
Charlottetown	CFYJ	312.3	960
Edmonton	CHMA	516.9	580
	CJCB	410.7	730
	CKUA	516.9	580
	CNRE	516.9	580
Edward Park	CFBY	516.9	580
Fredrickton	CFNB	247.8	1,210
Halifax	CHNS	322.4	930
Hamilton	CHCS	360.7	890
	CKOC	340.7	880
Ironopolis	CFAC	434.5	690
Kamloops	CFJC	267.7	1,120
King	CFRB	291.1	1,030
Kingston	CFMC	267.7	1,120
	CFRC	267.7	1,120
London	CFCA	329.5	910
Midland	CKPR	267.7	1,120
Moncton	CNRA	322.4	930
Montreal	CFCE	410.7	730
	CHYC	410.7	730
	CKAC	410.7	730
	CNRM	410.7	730

Canada (Continued from Page 43)

CKCV

Quebec, P. Q. 340.7m-890kc. 100 watts. G. A. Vandry.

CKCX

Toronto, Ont. 291.1m-1030kc. 500 watts. International Bible Students' Assn. Tues, Fri, 8-10 pm. Sun, 9:30-11 am. 1:30-3 pm, 8:15-9:15, 10:15-11:15, Eastern.

CKFK

Vancouver, B. C., Can. 410.7m-730kc. 50 watts. United Churches of Canada.

CKGW

Bowmanville, Ont., Can. 312.3m-960kc. 5000 watts. Grodenranger & Worts, Ltd.

CKLC

Fed Deer, Alta. 356.9m-840kc. 1000 watts. Alberta Pacific Grain Co., Ltd. Daily ex Sun, 12 m. music, news, weather, markets. Daily ex Sat, Sun, 7:45 pm. news, markets, 7:30-8 pm. music, 8:30-9:30 pm. Sun, 11 am. Daily ex Sat, Sun, 7:45 pm. news, markets, 7:30-8 pm. music, 8:30-9:30 pm. Sun, 11 am. Central.

CKMC

Cohat, Ont. 247.8m-1210kc. 5 watts. R. L. Macdonald.

CKNC

Toronto, Ont., Can. 356.9m-840kc. 500 watts. Canadian National Carbon Co., Ltd. Announcer, Ed. J. Stafford. Mon, Thurs, 9 pm. Eastern. Founded May 2, 1924.

CKOC

Hamilton, Ont., Can. 340.7m-890kc. 50 watts. Wentworth, Radio Supply Co., Ltd. Announcer, L. McPhee. Slogan, "The Voice of Hamilton." Mon, Wed, Fri, Sat, 12:15 m. Tues, Thurs, 6-8 pm, 11-12 mid. Wed, 6-8 pm, Sat, 6-7, 11-12. Tues, Thurs, 4:30 pm. stocks. Mon, Wed, Fri, Sat, 1 pm. Eastern.

CKPK

Preston, Ont. 247.8m-1210kc. 7 1/2 watts. Wallace Russ. Mon, Fri, 8-11 pm. Sun, 11-12:30 pm, 3-4:30.

CKPR

Midland, Ont. 267.7m-1120kc. 50 watts. E. O. Swag.

CKSH

St. Hyacinthe, P. Q. 312.3m-960kc. 50 watts. City of St. Hyacinthe.

CKSM

Toronto, Ont. 291.1m-1030kc. 1000 watts. St. Michael's Cathedral.

CKUA

Edmonton, Alta. 516.9m-580kc. 500 watts. U. of Alberta. Announcer, Harold P. Brown. Mon, 4:45 pm. organ; 5:45, dinner music; 6:30, children; 8:30, Thurs, 8:45 pm. 8:30. Mountain.

CKWX

Vancouver, B. C. 410.7m-730kc. 100 watts. Sparks Company. Announcer, H. W. Paulson. Daily ex Sun, 11:12 m. 4:30-5:30 pm. 6-7:30. Wed, 9:30-12 mid. Thurs, 11-12 mid. Fri, 9:10-30 pm. Sat, 11:30-1 am. Pacific.

CKY

Winnipeg, Man., Can. 384.4m-780kc. 500 watts. Manitoba Tel System. Announcer, F. E. Rutland. Slogan, "Manitoba's Own Station." Daily ex Sun, 10:50-11 am. 12:1-4:45 pm. 3-4:30, 8:30. 9. Wed, Sat, 9-11 pm. CNRW. Central.

CNRA

Moncton, N. B., Can. 322.4m-930kc. 500 watts. Canadian National Railways. Announcer, W. V. George. Slogan, "Voice of the Maritimes." Daily ex Sun, 2:30-4 pm. Tues, Fri, 9 pm. Atlantic. Started Nov 8, 1924.

CNRC

Calgary, Alta. Can. 434.5m-690kc. 500 watts. Canadian National Railways. Mon, Thurs, 9:30-10:30 pm. Mountain.

CNRE

Edmonton, Alta. Can. 516.9m-580kc. 500 watts. Canadian National Railways. Mon, 10:30-12 mid. Fri, 10:30-12 mid. Mountain.

CNRM

Montreal, Que., Can. 410.7m-730kc. 1,000-1,650 watts. Canadian National Railways. Announcer, J. S. McArthur. Thurs, 8:30 pm. Eastern.

CNRO

Ottawa, Can. 434.5m-690kc. 500 watts. Canadian National Railways. Announcer, W. Ryan. Daily ex Sun, 2:30-4 pm. Tues, 3-4:30. music. Mon, Thurs, 7:15-11 pm. Eastern. On the air Feb. 27, 1924.

CNRQ

Quebec City, Can. 340.7m-890kc. 100 watts. C. N. R. Thurs, 8:30 pm.

CNRR

Regina, Sask., Can. 312.3m-960kc. 500 watts. Canadian National Railways. Tues, 8-10 pm. Mountain.

CNRS

Saskatoon, Sask., Can. 329.5m-910kc. 500 watts. Canadian National Railways. Daily, 2:30-3:30 pm. Mountain.

CNRT

Toronto, Ont., Can. 356.9m-840kc. 500 watts. Canadian National Railways. Announcer, E. W. Jackson. Fri, 7-8 pm, 9-11. Eastern. First broadcast May 16, 1924.

CNRV

Vancouver, Can. 291.1m-1030kc. 500 watts. Canadian National Railways. Announcer, G. A. Wright. Daily ex Sat, Sun, 10-11 am. Mon, Wed, 10-11 am. Thurs, 9:15-10:15 am. Thurs, 10-11 pm. Fri, 9-11 pm. Pacific.

CNRW

Winnipeg, Man., Can. 384.4m-780kc. 500 watts. Canadian National Railways. Announcer, R. H. Roberts. Mon, Tues, 6:30 pm. Wed, 10 pm. Thurs, Fri, 6:30 pm. Sun, 9 pm. Central.

Cuba

PWX

Havana, Cuba. 400m-750kc. 500 watts. Cuban Telephone Co. International and Teleg. Corp. Wed, Sun, 8:30 pm. Eastern.

2CT

Havana, Cuba. 350m-855kc. 50 watts. Casimiro Duadas.

2FG

Hershey, Cuba. 200m-999.4kc. 20 watts. Alberto A. Ferrera.

2GF

Havana, Cuba. 192m-1540kc. 5 watts. Francisco Williams.

2HP

Havana, Cuba. 205m-1460kc. 200 watts. Cristina W. Vda. Cruet.

2JF

Havana, Cuba. 46m-650kc. 5 watts. Jose A. Terry.

2JT

Havana, Cuba. 294m-1020kc. 5 watts. Jose Leira.

2MA

Havana, Cuba. 305m-980kc. 50 watts. Modesto Alvarez.

2MF

Madriga, Cuba. 100m-259kc. Moises Fernandez.

2MG

Havana, Cuba. 284m-1055kc. 20 watts. Manuel Y. Guillermo Salas Music Store. Announcer, Roger Morales. Daily 2-4 pm. Music. One day each week, 8-11 pm. Eastern.

2MK

Havana, Cuba. 85m-349kc. 100 watts. R. V. Waters.

2MU

Havana, Cuba. 265m-1330kc. 10 watts. Ulpiano Muniz.

2OK

Havana, Cuba. 360m-833kc. 100 watts. Mario Garcia Velez.

2OL

Havana, Cuba. 257m-1170kc. 100 watts. Oscar Collado.

2RK

Havana, Cuba. 315m-950kc. 100 watts. Raoul Karmann. Casa De La Fort.

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. Leonora Music Co.

2XX

Havana, Cuba. 225m-1333kc. 5 watts. Antonio A. Ginard.

5DW

Matanzas, Cuba. 270m-1110kc. 100 watts. Ramon Sarrila Calderon.

5EV

Colon, Cuba. 360m-833kc. 5 watts. Leopoldo V. Fria. Sun, 9-11 pm. Eastern.

6BY

Cienfuegos, Cuba. 260m-1153kc. 200 watts. Jose Gandux.

6EV

Calbazien, Cuba. 250m-1200kc. 50 watts. Maria Jose Alvarez. Daily, 10:30 pm.

6HS

S. La Grande, Cuba. 200m-1500kc. 10 watts. Santiago Ventura.

6KC

Cienfuegos, Cuba. 240m-1250kc. 10 watts. Carlos Hernandez.

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 Anst., N. D.	218.8	1,370	100	KCEW F. Mrgn., Col.	238	1,260	50	KFVI Houston, Tex.	263	1,140	50	KFPW Carville, Mo.	312.3	950	100	CFCY Chi'lita'n, Can.
		15	KGEB Seattle, Wash.			100	WCCD Coney Is., N.Y.			1,000	WABZ N. Orleans, La.			50	KGEF Los A., Calif.		15	CHWC Wexford, Pa.	
		100	WBKN N. Y.			100	WKBZ Bismah., Ala.			150	WBX Utica, N. Y.			50	KGHR Harbin, Mont.		500	CJBR Regina, Can.	
		100	WBMS N. Y.			100	WKBW Saratoga, Fla.			250	WBZ Sarasota, Fla.			250	WDAG Amarillo, Tex.		5,000	CKCW Bismah., Ala.	
		100	WGOP N. Y.			100	WKBW Saratoga, Fla.			250	WBZ Sarasota, Fla.			250	WEAM N. Portland, N.J.		500	CKSH St. Hyacinth, C.	
		15	WNBL B'n'g'n., Ill.			25	WLBZ E. W'n'a., Ill.			5,000	WQBA Tampa, Fla.			5,000	WJAZ Mt. Prop., Ill.		50,000	CKNR Regina, Can.	
		250	WRAH Ft. Verde, Pa.			100	WRAW Reading, Pa.			100	WRO N. Orleans, La.			100	WJBI Red Bank, N.J.		500,000	CKKA Pitts'g., Pa.	
		100	WVRL Woodside, N.Y.			100	WRBC V'p'raiso, Ind.			500	WSEVA Va. Bch., Va.			500	WSEA Va. Bch., Va.		1,000	KFSN Pasad', Calif.	
201.2	1,450	50	KCEH Eugene, Ore.	220.4	1,350	100	KGCI San Ant., Tex.	239.9	1,250	2,500	KEX Portland, Ore.	265.3	1,130	2,000	KKP Seattle, Wash.	315.6	950	50,000	KFAN Lincoln, Nebr.
		250	KCEY Danver, Colo.			100	KGCR San Ant., Tex.			100	WBPP Pitts'g., Mich.			100	KTSA San Ant., Tex.		1,000	KOIL Coun. Bluffs, Ia.	
		50	WALK W'g., Pa.			50	KJBS San Fran., Cal.			300	WRAW N'ville, Tenn.			300	WRCB Dayton, Ohio.		500	KOIN Portland, Ore.	
		100	WATT Boston, Mass.			50	KRAC Shreve'p't., La.			100	WVAP Ash. P., N.J.			100	WVBC Brdget., Can.		100	CHNS Halifax, Can.	
		100	WCBR Providence, R. I.			100	WBBI Andover, Ind.			100	WVAC Madison, Tenn.			100	WVHC Cleveland, O.		100	KICK Atlantic, Ia.	
		100	WGMU N. Y.			15	WJIK Ypsilanti, Mich.			500	WVAD Norman, Okla.			1,000	WVCI Smith, Conn.		100	WHAS Louisville, Ky.	
		100	WHBM Chicago, Ill.			100	WKBH La. Cr., Wis.			500	WVAM Nashville, Tenn.			1,000	WVNOX K'ville, Tenn.		100	WIAS Plumtwr., Ia.	
		100	WBJJ Chicago, Ill.			100	WVBC Auburn, N. Y.			15	WVAX Richmond, Va.			2,500	WVWJ Trenton, N. J.		150	WKAQ San Juan, P.R.	
		100	WBM Chicago, Ill.			100	WVAX Richmond, Va.			250	WVBJ Chesg., W.Va.			250	WVWJ Trenton, N. J.		150	WRAF Wash., D. C.	
		100	WRMU N. Y.			250	WVAX Richmond, Va.			250	WVWJ Trenton, N. J.			250	WVWJ Trenton, N. J.		150	WROH Colo. Denver, Colo.	
202.6	1,460	100	KVIL Seattle, Wash.	222.1	1,350	250	KFOY St. Pim., Minn.	241.8	1,240	1,500	KEKB Millard, Kan.	267.7	1,120	15	CFJC Kamloops, B.C.	325.9	920	2,500	WCHJ J'ny C'y, N. J.
		5,000	WHBN G'ns'ls, Fla.			100	KFOM Pomona, Cal.			500	KEFN L. Beach, Nebr.			25	CHCS Utey, Can.		500	WRNY N. York, N.Y.	
		10,000	WTFP M'v'His., Va.			100	KGBY C'nt'n., Nebr.			250	WBRB B'mshg., Ala.			50	CKCR St. Cath., Ont.		500	CFCT Victoria, Can.	
204	1,470	15	KCFD Jerome, Idaho.			100	KWTC Kans. C., Mo.			200	WEDC Chicago, Ill.			100	CKPR Midland, Can.		500	CFQC Saskat'n, Can.	
		50	KCEQ Missis., Minn.			500	WAMD Mnpls., Minn.			100	WFCI Fayettev., Pa.			100	KFLV Rockford, Ill.		500	CFJC Saskat'n, Can.	
		100	KCFQ Tre. Hts., Ind.			100	WGBA Altoona, Pa.			500	WVCS Chicago, Ill.			500	WVFR S'port, La.		250	CJWC Saskat'n, Can.	
		100	KCGM Inglew., Ind.			100	WVBE Bellefonte, Pa.			100	WVMT Minnow, Wis.			100	WVAM Newark, N.J.		500	CHNS Saskat'n, Can.	
		50	KHAC Phila. on 'Pine			100	WVBE Bellefonte, Pa.			100	WVMT Minnow, Wis.			100	WVAM Newark, N.J.		500	CHNS Saskat'n, Can.	
		100	WBZ Chicago, Ill.			100	WSAN Allent'w'n, Pa.			125	KFCB Phenix, Ariz.			100	WVCC Desatur, Ill.		300	KFAM Gr. Fes., N.D.	
		100	WBHL Chicago, Ill.			250	WBS, Eliz., N. J.			100	KCCX V'ida, Mont.			100	WVDE Tennon, Fla.		1,000	WVAC W'g., Tex.	
		100	WBW Joplin, Mo.			250	WBW Tuscon, Kan.			150	KCCV St. Louis, Mo.			100	WVDE Tennon, Fla.		1,000	WVAC W'g., Tex.	
		100	WBN Kenmore, N.Y.			50	WKEN Kenmore, N.Y.			1,500	KCCV St. Louis, Mo.			100	WVDE Tennon, Fla.		1,000	WVAC W'g., Tex.	
		100	WLBH Chicago, Ill.			50	WLBH Chicago, Ill.			1,500	KCCV St. Louis, Mo.			100	WVDE Tennon, Fla.		1,000	WVAC W'g., Tex.	
		100	WLBX L. N.			100	WLBX L. N.			1,500	KCCV St. Louis, Mo.			100	WVDE Tennon, Fla.		1,000	WVAC W'g., Tex.	
		100	WMBB Newport, R.I.			100	WMBB Newport, R.I.			1,500	KCCV St. Louis, Mo.			100	WVDE Tennon, Fla.		1,000	WVAC W'g., Tex.	
		100	WMBJ Joplin, Mo.			100	WMBJ Joplin, Mo.			1,500	KCCV St. Louis, Mo.			100	WVDE Tennon, Fla.		1,000	WVAC W'g., Tex.	
		100	WMO Br'klyn, N.Y.			100	WMO Br'klyn, N.Y.			1,500	KCCV St. Louis, Mo.			100	WVDE Tennon, Fla.		1,000	WVAC W'g., Tex.	
		100	WMAJ Chicago, Ill.			100	WMAJ Chicago, Ill.			1,500	KCCV St. Louis, Mo.			100	WVDE Tennon, Fla.		1,000	WVAC W'g., Tex.	
		100	WWSV Buffalo, N. Y.			100	WWSV Buffalo, N. Y.			1,500	KCCV St. Louis, Mo.			100	WVDE Tennon, Fla.		1,000	WVAC W'g., Tex.	
205.4	1,460	25	KFKY Flagstaff, Ariz.	225.4	1,330	100	KFUI Juneau, Alaska.	247.8	1,210	25	CFNB Fred'ct'n, Can.	275.1	1,090	500	KFAD Phoenix, Ariz.	344.6	870	100	WFOG Ande., Ill.
		100	KGDE Barrett, Minn.			100	KFKZ Kirksv., Mo.			75	CKFC Preston, Can.			500	KFAD Phoenix, Ariz.		1,000	WFOG Ande., Ill.	
		100	KGFR Grand C'nt'n., Neb.			100	KFKR Ogden, Utah.			500	WVWJ Trenton, N. J.			500	KFAD Phoenix, Ariz.		1,000	WFOG Ande., Ill.	
		25	KGFF Alva, Okla.			50	KFVS C. Girard, Mo.			500	WVWJ Trenton, N. J.			500	KFAD Phoenix, Ariz.		1,000	WFOG Ande., Ill.	
		25	WABF Kington, Pa.			50	KFVR Ok. City, Ok.			500	WVWJ Trenton, N. J.			500	KFAD Phoenix, Ariz.		1,000	WFOG Ande., Ill.	
		25	WKBZ Monroe, Mich.			50	KGDP Pueblo, Colo.			500	WVWJ Trenton, N. J.			500	KFAD Phoenix, Ariz.		1,000	WFOG Ande., Ill.	
		250	WMBD Peoria, Ill.			100	KGFB Iowa City, Ia.			500	WVWJ Trenton, N. J.			500	KFAD Phoenix, Ariz.		1,000	WFOG Ande., Ill.	
		15	WNBQ Racine, Wis.			100	KGFI La. Cre., Cal.			500	WVWJ Trenton, N. J.			500	KFAD Phoenix, Ariz.		1,000	WFOG Ande., Ill.	
		100	WMBT Unity, Tenn.			100	KGFI La. Cre., Cal.			500	WVWJ Trenton, N. J.			500	KFAD Phoenix, Ariz.		1,000	WFOG Ande., Ill.	
		100	WRK Hamilton, O.			100	KGFI La. Cre., Cal.			500	WVWJ Trenton, N. J.			500	KFAD Phoenix, Ariz.		1,000	WFOG Ande., Ill.	
206.8	1,450	15	KGDR San Ant., Tex.	227.1	1,340	50	KFBL Ev'rt, Wash.	243.8	1,230	125	KCCB Phenix, Ariz.	270.1	1,110	100	KFLX Overton, Tex.	356.5	890	500	KNX L. Ang., Calif.
		15	KCDY Oilghem, S. D.			50	KFVS C. Girard, Mo.			100	KCCX V'ida, Mont.			100	KFLX Overton, Tex.		5,000	WNSM N'shville, Tenn.	
		100	KCIT Ft. Worth, Calif.			50	KFVR Ok. City, Ok.			100	KCCX V'ida, Mont.			100	KFLX Overton, Tex.		5,000	WNSM N'shville, Tenn.	
		100	KLIT Portland, Ore.			100	KGFB Iowa City, Ia.			100	KCCX V'ida, Mont.			100	KFLX Overton, Tex.		5,000	WNSM N'shville, Tenn.	
		100	WHPP N. Y.			100	KGFI La. Cre., Cal.			100	KCCX V'ida, Mont.			100	KFLX Overton, Tex.		5,000	WNSM N'shville, Tenn.	
		100	WLBV Mansfield, O.			100	KGFI La. Cre., Cal.			100	KCCX V'ida, Mont.			100	KFLX Overton, Tex.		5,000	WNSM N'shville, Tenn.	
		100	WMBJ Joplin, Mo.			100	KGFI La. Cre., Cal.			100	KCCX V'ida, Mont.			100	KFLX Overton, Tex.		5,000	WNSM N'shville, Tenn.	
		100	WNEF Endicott, N.Y.			100	KGFI La. Cre., Cal.			100	KCCX V'ida, Mont.			100	KFLX Overton, Tex.		5,000	WNSM N'shville, Tenn.	
		100	WNBZ Kn'v'ce, Tenn.			100	KGFI La. Cre., Cal.			100	KCCX V'ida, Mont.			100	KFLX Overton, Tex.		5,000	WNSM N'shville, Tenn.	
		100	WPSW Phila.			100	KGFI La. Cre., Cal.			100	KCCX V'ida, Mont.			100	KFLX Overton, Tex.		5,000	WNSM N'shville, Tenn.	
		100	WTRL Midl. P., N. J.			100	KGFI La. Cre., Cal.			100	KCCX V'ida, Mont.			100	KFLX Overton, Tex.		5,000	WNSM N'shville, Tenn.	
209.2	1,440	250	KFVD Venice, Calif.	227.1	1,320	100	KFUP Denver, Colo.	243.8	1,200	15	KFJI Astoria, Ore.	277.6	1,080	500	KWUWC B'ville, Tex.	352.7	850	1,000	WEW St. Louis, Mo.
		100	KCFJ Los Ang., Calif.			100	KGEE Lwr. L., Cal.			10	WCAT R. City, S. D.			750	WVHP Detroit, Mich.		1,000	WVDT Detroit, Mich.	
		100	KCGN Ft. Worth, Tex.			50	KXRO Aberdeen, Wa.			10	WVFB Galesburg, Ill.			500	WVKA E. Mich.		500	CFCA Toronto, Can.	
		100	KCCR Br'k'n's, S. D.			50	KXRO Aberdeen, Wa.			10	WVFB Galesburg, Ill.			500	WVKA E. Mich.		500	CFCA Toronto, Can.	
		100	KCBQ Cheyenne, Wyo.			50	KXRO Aberdeen, Wa.			10	WVFB Galesburg, Ill.			500	WVKA E. Mich.		500	CFCA Toronto, Can.	
		100	WLBZ Cheyenne, Wyo.			50	KXRO Aberdeen, Wa.			10	WVFB Galesburg, Ill.			500	WVKA E. Mich.		500	CFCA Toronto, Can.	
		100	WJWP Ashtabula, O.			50	KXRO Aberdeen, Wa.			10	WVFB Galesburg, Ill.			500	WVKA E. Mich.		500	CFCA Toronto, Can.	
		100	WJWP Ashtabula, O.			50	KXRO Aberdeen, Wa.			10	WVFB Galesburg, Ill.			500	WVKA E. Mich.		500	CFCA Toronto, Can.	
		100	WJWP Ashtabula, O.			50	KXRO Aberdeen, Wa.			10	WVFB Galesburg, Ill.			500	WVKA E. Mich.		500	CFCA Toronto, Can.	
		100	WJWP Ashtabula, O.			50	KXRO Aberdeen, Wa.			10	WVFB Galesburg, Ill.			500	WVKA E. Mich.		500	CFCA Toronto, Can.	
		100	WJWP Ashtabula, O.			50	KXRO Aberdeen, Wa.			10	WVFB Galesburg, Ill.			500	WVKA E. Mich.		500	CFCA Toronto, Can.	
		100	WJWP Ashtabula, O.																

Wave length	Frequency (kilohertz)	Power (watts)	Call signal	Location	Wave length	Frequency (kilohertz)	Power (watts)	Call signal	Location	Wave length	Frequency (kilohertz)	Power (watts)	Call signal	Location	Wave length	Frequency (kilohertz)	Power (watts)	Call signal	Location											
434.5	690	500	CFAC	Calgary, Can.	454.3	660	1,000	KFRC	S. Fran., Cal.	433.6	620	500	KFBU	Larrie, Wyo.	508.2	590	500	KLX	Oakland, Cal.	526	570	2,500	KFKX	Chicago, Ill.						
1,800	CFEN	Calgary, Can.	350	CFJ	Calgary, Can.	461.3	650	2,000	KFN	Shenandoah, Ia.	500	KFDM	Daum's, Tex.	500	WEEI	Boston, Mass.	1,000	WOW	Omaha, Neb.	500	KMTR	Los Ang., Cal.	500	KYW	Chicago, Ill.	500	WNVC	N. Y., N. Y.		
100	KCO	Oklawa, Can.	500	CNRK	Calgary, Can.	500	KUOM	Missoula, Mont.	500	WBIS	Boston, Mass.	500	WJAX	Wichita, Kan.	500	CHCY	Edm'n'tn, Can.	500	CHMA	Edm'n'tn, Can.	500	CJCA	Edm'n'tn, Can.	500	CKUA	Edm'n'tn, Can.	500	CNRE	Edm'n'tn, Can.	
500	CNRO	Ottawa, Can.	1,000	NAA	Radio, Va.	500	WACB	Pittsb'g, Pa.	500	WNAC	Boston, Mass.	500	WRR	Dallas, Tex.	481.5	610	1,000	KCW	Portland, Ore.	499.7	600	250	CFER	Ira's F's, Can.	500	WSB	Atlanta, Ga.	500	WSU	Iowa City, Ia.
440.9	680	500	KFSD	S. Diego, Cal.	466.5	640	5,000	KFI	Los Angeles, Cal.	499.7	600	250	CFER	Ira's F's, Can.	500	WSB	Atlanta, Ga.	500	WSU	Iowa City, Ia.	475.9	630	500	CJCK	Yorkton, Can.	500	WSU	Iowa City, Ia.		
500	WAAW	Omaha, Neb.	500	WBRG	Elk's Pk., Pa.	500	WRC	Washing'n, D.C.	499.7	600	250	CFER	Ira's F's, Can.	500	WSB	Atlanta, Ga.	500	WSU	Iowa City, Ia.	475.9	630	500	CJCK	Yorkton, Can.	500	WSU	Iowa City, Ia.			
447.5	670	1,000	KFOA	Seatt., Wash.	475.9	630	500	CJCK	Yorkton, Can.	499.7	600	250	CFER	Ira's F's, Can.	500	WSB	Atlanta, Ga.	500	WSU	Iowa City, Ia.	475.9	630	500	CJCK	Yorkton, Can.	500	WSU	Iowa City, Ia.		
1,000	WMAQ	Chicago, Ill.	500	WQJ	Chicago, Ill.	475.9	630	500	CJCK	Yorkton, Can.	499.7	600	250	CFER	Ira's F's, Can.	500	WSB	Atlanta, Ga.	500	WSU	Iowa City, Ia.	475.9	630	500	CJCK	Yorkton, Can.	500	WSU	Iowa City, Ia.	

CLASSIFIED ADVERTISEMENTS

HOW 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. Name and address are counted. Two initials count one word. Cash must accompany order. Minimum of ten words. Objectionable and misleading advertisements not accepted.

Employment

Agents

WE PAY \$48 A WEEK, furnish auto and expenses to introduce our soap and Washing Powder. **BUSS-BEACH COMPANY**, Dept. A-186, Chippewa Falls, Wis.

Instructors

DO YOU DRIVE A CAR? U. S. Government Chauffeur-Carrier jobs will pay you \$141 to \$175 a month. "How to Qualify," mailed Free. Write, Instruction Bureau, 206 St. Louis, Mo.

Earn \$25 weekly spare time, writing for newspapers and magazines. Experience unnecessary. Copyright book, "How to write for Pay." Free. Press Reporting Institute, 1269 St. Louis, Missouri.

Men qualify for forest ranger position; start \$125 month; cabin and vacation; patrol the forests; protect the game. Write **Mokane Institute**, M-50, Denver, Colorado.

Male Help

MEN—South American work. Oil, fruit, rubber companies. Expenses paid. **South American Service Bureau**, 14,600 Alma, Detroit, Michigan.

Men to do radio experimenting for us in spare time. Write **Experimental Dept.**, Lambert Mfg. Co., Wichita, Kans.

Maps

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 2 3/4 x 3 3/4. Send 25 cents stamps or coin to **Shopping Service**, Radio Digest, 510 N. Dearborn St., Chicago, Ill.

Miscellaneous

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