

All Wave Length Changes Up-to-Date

# Radio Digest

JULY 1927

JANUARY, 1928

TWENTY-FIVE CENTS



*Official  
Call Book  
and Log  
Complete This Issue*

EDNICE JOHNSON - KOA

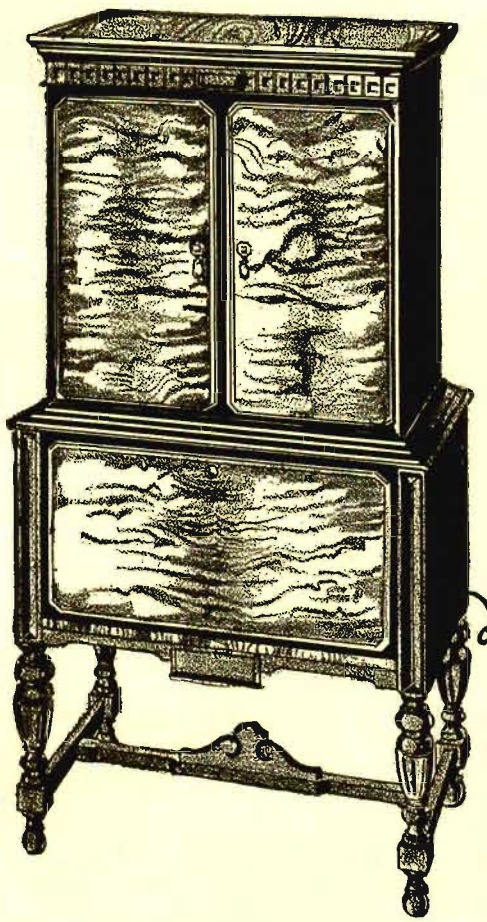
*That Christmas Set; CKY Gets Its Man; Donald Morgan Announcing; Orchestra Ballot; Marconi Interviewed; Karas AC-Equamatic; SOS Rescues Miners; How of Broadcasting*



**no** acids  
 trouble  
 batteries  
 water  
 excuses  
 makeshifts

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**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—

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- 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

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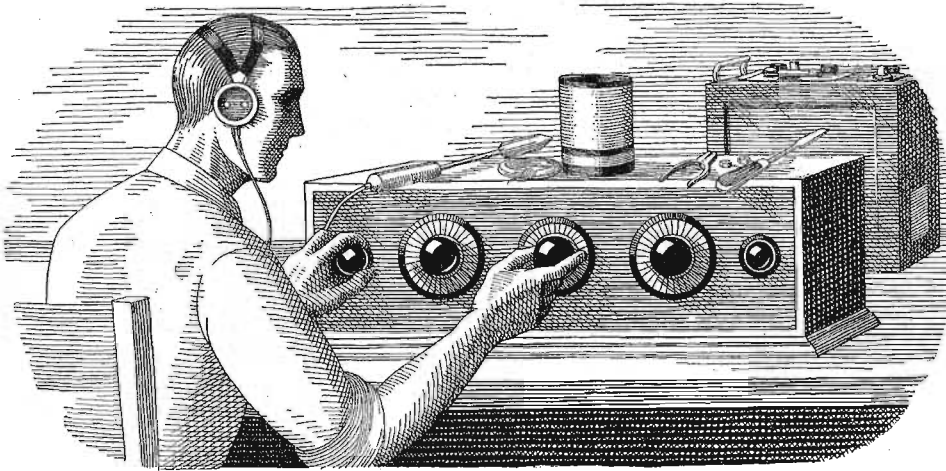
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*by Authorized Freshman Dealers Only*

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 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.

**W**HEN 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.**

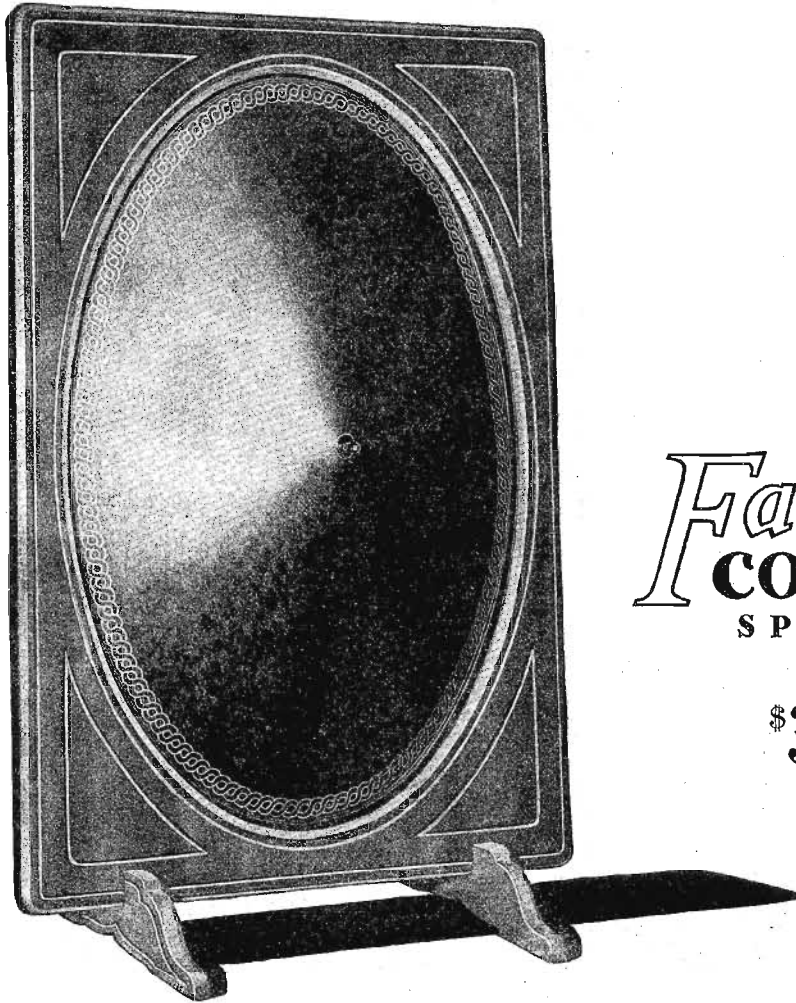
Dear Mr. Smith:

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.....



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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!

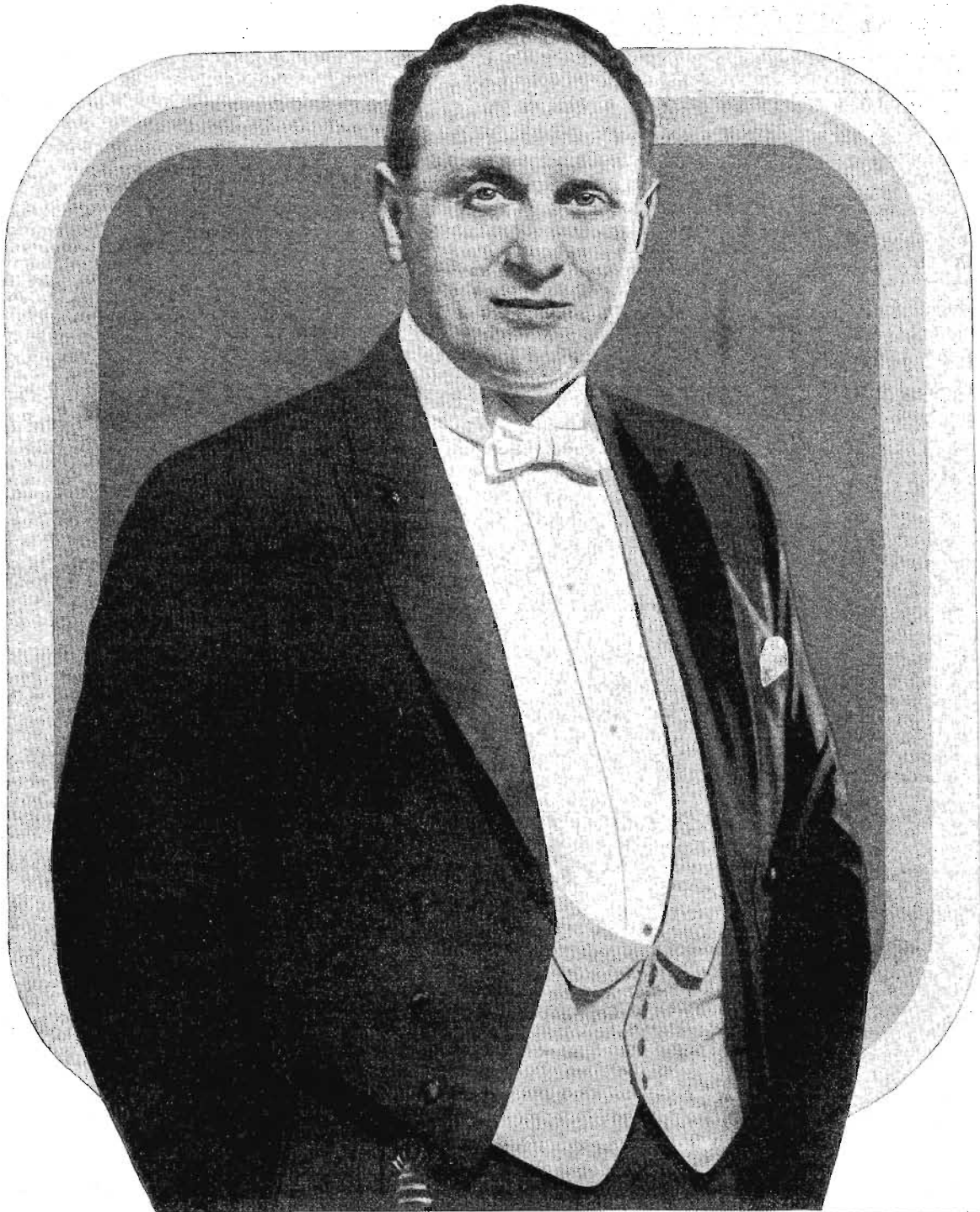
Another Farrand advancement—the Farrand *Concert* Speaker—attaining a new, deep-reaching tonal radius, with all the pleasing treble retained as heretofore—virtually *next year's* model presented *today!* See and hear it, at your dealer's—and be thrilled by its matchless, all-around performance.

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"



**W**HEN 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 Solvid; 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 1920 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 week, 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 KPRU 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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Radio Digest, Illustrated, Volume XXII, Number 6, published Chicago, Illinois, January 1, 1928. Published monthly on the first of each month by Radio Digest Publishing Co., (Incorporated), 510 N. Dearborn Street, Chicago, Illinois. Subscription rates yearly, Three Dollars, Foreign Postage, One Dollar additional; single copies, Twenty-Five Cents. Entered as second-class matter Sept. 6, 1927 at the post office at Chicago, Illinois, under the Act of March 3, 1879. Title Reg. U. S. Patent Office and Dominion of Canada. Copyright 1927, by Radio Digest Publishing Co. All right reserved.

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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 proofed, 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

**W**HAT 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 Tunney-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 to 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 Byggerson, 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

**D**URING 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-

## 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

**S**EVEN 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 drenched 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 Jasper 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-WBEZ, 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.



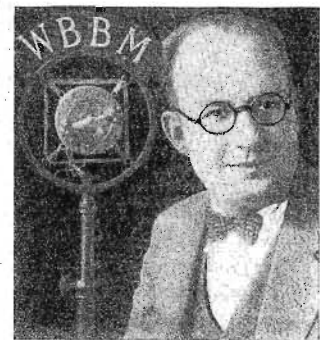
REMEMBER this lady's face? Of course you do—Irene Rich, one of the Warner Brothers KFVB stars.



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 lounge 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

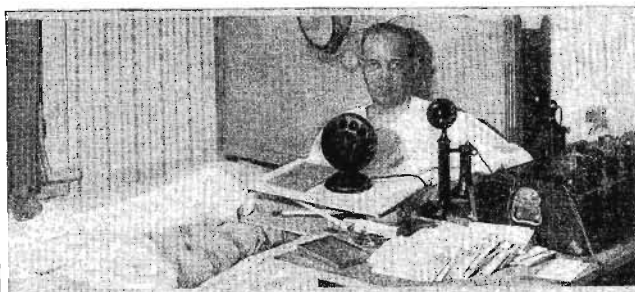
MEMBERS of the federal Radio commission received a distinct shock recently as the result of four different applications from broadcasters asking to be assigned the lowest waves in the band. Commissioner Caldwell of New York, who has been on the firing line of the battle of the "Kill O' Cycles" and "Kill 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 WCSI, 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!

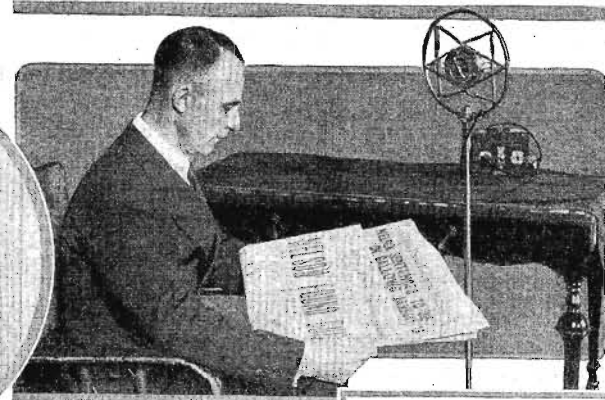
Rewards have been posted for his arrest across the United States and Canada. Scarcely a week passed but he left the strangled and broken body of an innocent woman or little girl along his ghastly trail, a predatory animal seeking the fairest to satisfy his lust and killing them with iron talons that 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.



Senatore Marconi and Bride in America

By Guglielmo Marconi

**O**NLY 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

**E**XORBITANT 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

**A**S 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

**A**NOTHER 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

**W**HILE 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 whatnot. 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 various orchestras and their vote counts for District No. 1—East, including entries like Tom Timothy's Frivolity Club orchestra, Dellwood Ballroom orchestra, etc.

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 various orchestras and their vote counts for District No. 2—South, including entries like Tom Timothy's Frivolity Club orchestra, Irving Sectors Rhode Islanders, etc.

Table listing various orchestras and their vote counts for District No. 2—South, including entries like Jean Hammond's Elks Club Tune, Tinkers, WTAM, Sammy Watkins' Claremont Tent orchestra, etc.

DISTRICT No. 2—SOUTH

Table listing various orchestras and their vote counts for District No. 2—South, including entries like Comprising: Virginia, West Virginia, North and South Carolina, Georgia, Florida, etc.

DISTRICT No. 3—MIDDLE WEST

Table listing various orchestras and their vote counts for District No. 3—Middle West, including entries like Comprising: Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa and Missouri, etc.

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. A rather interesting incident occurred in Frankfurt, Germany, where I had gone upon hearing the rumor that they were going to broadcast their performances of opera. In talking with one of the Radio officials, he informed me that it was seriously considered, as the idea had been taken back to Germany in 1924 by their State Opera Company as performances had been broadcast while in Philadelphia. You can imagine his amazement when I informed him that my station had been the station that broadcast the German State Opera Company's performances from the Metropolitan Opera House in Philadelphia. I had the pleasure of renewing my acquaintance with several of the artists who were appearing in Frankfurt at that time, and who had been with the German company in Philadelphia in 1924. To sum the whole thing up, while I enjoyed every minute of my trip to Europe, and was interested in observing their method of operating their broadcasting business, I was firmly convinced that the American broadcasting station is superior to any in the world.

# Simple Explanation of Broadcasting

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



By Marvin W. Thompson

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

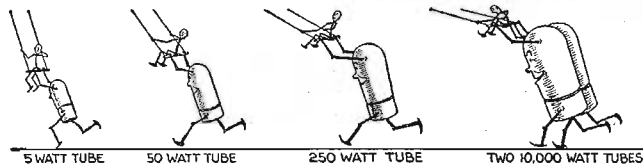


Figure 4

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-210. 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

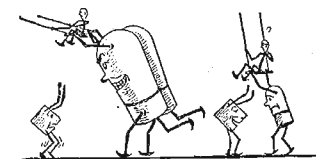


Figure 5

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-

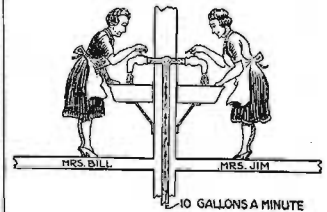


Figure 7

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

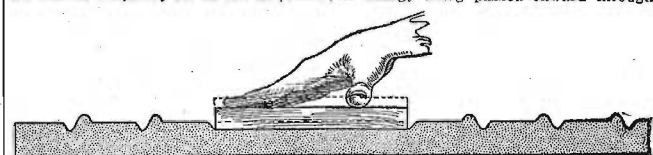


Figure 6

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 pres-

(Continued on page 20)



# Facts About That New Christmas Receiver

**A**BOUT 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 music 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 devices 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 aerials, 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)

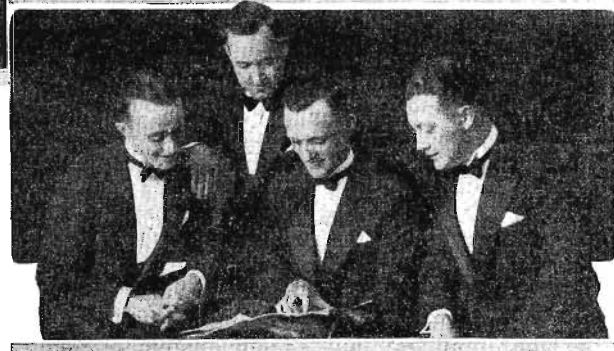
## WHK IS FOR MEN—MALE QUARTETTES

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



**C**LEVELAND 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

**W**ILL 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

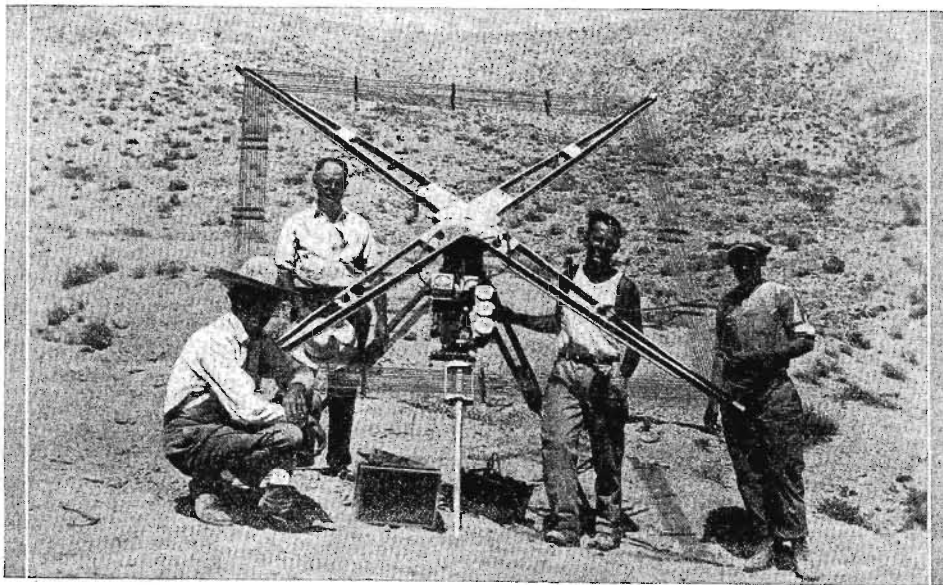
So the prospective Forty-niner of the Twentieth Century should begin at once to qualify for the How-to-Build class of set constructors. You never can tell when there will be another call to the gold fields. The man with the best Radio outfit is the one who is going to stake the best claim.

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



**T**RANSMITTING 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.

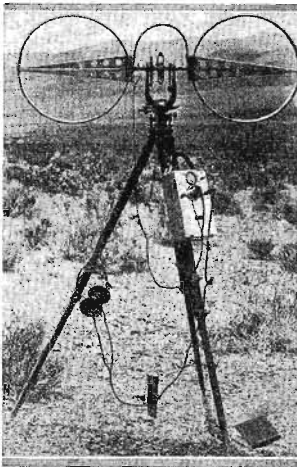
Operation of the Radio prospecting device is described in a recent issue of the Dallas News as follows:

### 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.



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



# Broadcasting of Interest to Home Makers

## Directs Programs for Listeners of Two Nets

FRIENDS of Bertha Brainard, the new program director of the National Broadcasting company, are not surprised that she has been made supervisor of all the programs staged by the two New York "key" stations. They know that in every way she is qualified for such a position.



Bertha Brainard, N. B. C.

Although Miss Brainard is lovely to look at with her expressive eyes and her Titan hair, it is her energetic personality which impresses the interviewer. She has definite and interesting ideas on every part of her broadcasting work from the mechanical methods of reproducing the human voice to the dramatic handling of each program. She is continually thinking about her vast invisible audience.

New Jersey claims Miss Brainard because she was born in South Orange and graduated from the South Orange High School and the Montclair Normal school. It was during her school days that she

## New Dishes for the Careful Hostess To Add to Her Bridge Supper Recipes

By Mildred D. Terman—KDKA Cooking Expert

DURING the long winter evenings nothing is pleasanter than an evening of bridge played to the soft accompaniment of the Radio. To fast Radio and bridge are closely connected, since the bridge lessons broadcast during the past two years have made a knowledge of scientific bridge universal.

If the hostess is to enjoy the game, her mind must be at ease about the supper she will serve when the game is over. She must feel that her menu is attractive and incorporates some new idea. If she does not have a maid, she must plan so that everything can be prepared to a large extent in advance. A two-dish supper is an excellent choice and may be composed of a salad or entree with sandwiches or hot bread or rolls, pickles, olives, celery or radishes, and a dessert with a beverage.

All linen, dishes and silverware should be ready and waiting, of course. Many hostesses place the supper cloth over the bridge cover, which serves as a silence cloth. A teacart is invaluable to help bring in the linen, silver and plates on which the first course has been placed. It is used to remove these dishes and to bring in the dessert and coffee.

developed her dramatic instinct. She was interested in theatrical work and took part in many amateur performances.

At the outbreak of the World War, she enlisted in the motor ambulance section of the American Red Cross. She served with her unit for many months during the hostilities. After the Armistice she took up newspaper work.

When WJZ opened in 1922, Miss Brainard became interested in broadcasting. She determined to go into this field and used her newspaper pass to get an interview with the manager. Her next step was to submit a proposal to conduct a weekly review of current Broadway plays over the station and to have it accepted. She was not paid for this work but it gave her a thorough knowledge of the broadcasting methods then in use and when WJZ needed a representative in New York she was offered the position.

When WJZ's studios and offices were moved to the Aeolian Building in New York City, Miss Brainard was made assistant manager of the station.

For an unusual sandwich to serve with a salad, the following is suggested:

### Mosaic Sandwiches

Cut crusts from one loaf white and one loaf rye bread. Cut in 1/2-inch slices, having an equal number of each color. Butter two slices of white bread and place a slice of dark bread between them. Now butter two slices of dark bread and place a slice of white bread between them. Continue until all is used. Cut these sandwiches of three slices of bread into slices 1/2 inch thick. Butter a slice and put it with another slice so that a dark strip is against a white. Put three of these together. Wrap a damp cloth around them—place a flat weight on them—cut in 1/4-inch slices. This makes a nine-cubed sandwich with alternating colors.

If a hot bread is desired to serve with a salad, butterscotch rolls are interesting and easy to make and are enjoyed by everyone.

### Butterscotch Rolls

Sift 3 cups flour, 4 teaspoons baking powder, 1/2 cup sugar and 1 teaspoon salt. Cut in 1 1/2 tablespoons shortening, then add 1 beaten egg to which 1 cup sweet milk has been added. Roll out into a rectangular shape. Spread with melted butter, granulated sugar, and sprinkle with cinnamon and broken pecan meats. Roll lengthwise like a jelly roll and cut in 1/2-inch slices. Melt 1 teaspoon butter and 1 tablespoon brown sugar in each compartment of muffin pans. Place the slices of the roll in the muffin pans, cut side down. Place in refrigerator until twenty minutes before baking, then take them out to let rise. Bake in a hot oven (375 degrees F.) 20 to 25 minutes. Turn rolls out and serve hot.

An unusually attractive salad with much color is:

### Song Salad

Scoop pulp out of bright red apples, allowing 1 apple for each serving. Cut the apple pulp into small pieces. To each cup of apple add the following: Cut finely 1 cup stoned dates, 1 cup English walnuts and 1 stalk celery. Chill thoroughly. Add boiled salad dressing to moisten. Fill apple cuts with the mixture. Place on a crisp lettuce leaf. On the edge of the apple balance a bird made of cream cheese, as follows: Cream the cheese and mold

the body of the bird first. Then mold on the head and wings which have been made separately. Use cloves for eyes and beak.

A different mayonnaise for fruit salad is often desired, and the following recipe makes an unusually delicious dressing.

### Whipped Cream Dressing

Heat 1/2 cup pineapple juice in a double boiler. Add very gradually to 2 beaten eggs, to which 1/2 cup of sugar has been added. Return to double boiler and cook until the mixture coats a spoon. Add 1/2



Mildred D. Terman, KDKA

cup each of orange juice and lemon juice. Let cook a few minutes longer. Remove from fire, cool. Before using add 1/2 cup whipped cream.

Mock egg on toast is an unusually appetizing dessert and is very easily prepared.

### Mock Egg on Toast

Cut slices of sponge cake and trim to make a square piece. On this lay a large half of a peach, the round side up. This represents the yolk. With a pastry tube or a spoon place whipped cream on the sponge cake around the peach. The whipped cream represents the egg white.

## WOMAN'S PROGRAM INDEX (Daily Unless Indicated)

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

Eastern	Central	Mountain	Pacific
9:30 a. m.	8:30	7:30	6:30
WJZ (352.7m-550kc), Tonight's dinner.	8	7	
WBAR (270.1m-110kc), Modern Housekeeping hour, test work in the American home.	8	7	
WCSH (365.6m-820kc), ex. Sat.	8	7	
WHP (205.9m-580kc), Home hour.	8	7	
WYB (348.3m-560kc), Tues., Thurs., Sat., menu.	8	7	
WLAV (428.3m-700kc), Women's hour.	8	7:15	
10:15	9:15	8:15	
WLWV (428.3m-700kc), Cooking chats.	9	8:15	
10:30	9:30	8:30	
WFI (405.2m-740kc), Housekeeper's hour.	9	7:30	
WNAK (461.3m-640kc), Women's club.	9		
WRC (468.5m-640kc), Mon.	9		
WTAC (516.9m-580kc), Wed, Fri.	9	7:45	
10:45	9:45	8:45	
WJZ (333.1m-600kc), Radio Chef.	9	7:45	
WFO (353.4m-560kc), Wed, Fri.	9		
11	10	9	
WYAM (367.7m-120kc), Cooking, Tues., Fri.	10	8	
WEAF (461.3m-610kc), Wed, Fri., Betty Crocker.	10	8	
WLN (416.4m-720kc), 12	10		
WHL (265.3m-1130kc), Tues., Thurs., homemakers' hour.	10	8	
WDB (475.9m-610kc), 11	10		
11:15	10:15	9:15	
KDKA (315.6m-580kc), Housekeeper's period, Tues., Thurs.	11	8:15	
11:45	10:45	9:45	
WRFN (354.1m-1180kc), 11	10	9	
12	11	10	
WEPI (365.6m-820kc), Prudence Penny.	11	9	
WOL (447.5m-670kc), Calumet hour.	11	9	
WYB (423.9m-1020kc), Home help hints.	11	9	
12:30 p. m.	11:30	10:30	
KYA (309.1m-970kc), Shopping service, Mon, Fri.	11	9:30	
WEHI (365.6m-820kc), Prudence Penny.	11	9	
WMAK (343.1m-550kc), Tues., Sat., Kate Drew.	11	9:45	
WMAJ (447.5m-670kc), Calumet hour.	11	9:45	
12:45	11:45	10:45	
WLAC (325.4m-510kc), 12	11		
WSM (336.9m-820kc), 11	10		
1	12	11	
KEX (239.9m-1250kc), 1	12		
KCV (491.5m-610kc), Household helps.	1		
KPD (325.9m-710kc), 1	12		
1:30	12:30	11:30	
KXV (336.9m-580kc), ex. Fri., Sat., Kate Drew.	1	10:30	
KONO (385.9m-980kc), Forum cooking school.	1	10:30	
WGY (379.5m-790kc), Economics talk.	1	11	
2	11		
KFC (454.4m-660kc), Mon, Wed, Fri.	2	11	
KOH (319.9m-940kc), Housewives' hour.	2	11:05	
WTP (277.6m-1020kc), Home help.	2	11:05	
3	12	11:05	
WZ (454.4m-660kc), Daily means.	3	11:15	
2:15	1:15	12:15	
KOH (319.9m-940kc), Shoppers' aid.	3	11:30	
2:30	1:30	12:30	
CKL (356.9m-840kc), Julia Jane, Mon, Wed, Fri.	3	11:30	
WGY (379.5m-790kc), Tues.	3		

Eastern	Central	Mountain	Pacific
1:30	1:30	1:30	1:30
WLS (344.7m-570kc), Homemakers' hour.	1		
4	2		
WOC (374.8m-840kc), Aunt Jane	2		
4:30	3:30	2:30	1:30
KFOA (447.5m-670kc), Daily ex. Sur., Mon, Tues.	3	2:30	1:30
8:30	7:30	6:30	5:30
KOA (325.9m-920kc), Question box, culinary	3		
8:20	7:20	6:20	5:20
KOJA (296.9m-1010kc), 4	3		
8:45	7:45	6:45	5:45
WHA (333.1m-900kc), Home economics.	4		
8:45	7:45	6:45	5:45
WJZ (333.1m-600kc), Tues., Thurs.	4		
KOAC (270.1m-1110kc), Tues., Thurs.	4		

### "Aunt Sammy"

Eastern	Central	Mountain	Pacific
10 a. m.	9	8	7
WJR (440.7m-680kc), Mon, Wed, Fri.	9	8	7:30
10:30	9:30	8:30	
WLSH (365.6m-820kc), WIIO (535.4m-560kc).	9	8	7:30
10:45	9:45	8:45	7:45
WDBO (288.3m-1040kc), 9	8		
11	10	9	8
WEAO (282.8m-1020kc), 9	8		
WEN (353.7m-850kc), 9	8		
WYB (348.3m-560kc), 9	8		
WSP (433.3m-710kc), 9	8		
11:15	10:15	9:15	8:15
WUSA (325.9m-580kc), 9	8		
11:30	10:30	9:30	8:30
KUGA (296.9m-1010kc), 9	8		
WJZ (333.1m-600kc), Mon, Tues., Wed, Thurs.	9	8	7:30
11:50	10:50	9:50	8:50
KFSD (440.7m-680kc), 10	9		
12	11	10	9
KRVA (270.1m-1100kc), Mon, Wed, Fri.	10		
12:15 p. m.	11:15	10:15	9:15
WYB (348.3m-560kc), 10	9		
12:30	11:30	10:30	9:30
WYAM (309.1m-970kc), 10	9		
12	11	10	9
KTHS (384.4m-760kc), 10	9		
12:30	11:30	10:30	9:30
KPWR (361.2m-830kc), 10	9		
1:30	12:30	11:30	10:30
WAFB (340.7m-580kc), Fri.	10		
1:45	12:45	11:45	10:45
WDAF (370.2m-810kc), 11	10		
WDAJ (250.1m-1400kc), 11	10		
2	12	11	10
KTL (319.9m-940kc), 11	10		
KUOM (461.3m-610kc), 11	10		
WASH (256.3m-1170kc), 11	10		
1:30	12:30	11:30	10:30
WHR (265.3m-1130kc), 11	10		
2	1		
WOC (374.8m-840kc), 11	10		
4:10	3:10	2:10	1:10
WFO (267.7m-1120kc), 11	10		
4:15	3:15	2:15	1:15
WDAY (545.1m-550kc), 11	10		
4:30	3:30	2:30	1:30
KOH (319.9m-940kc), 11	10		
WOL (422.3m-710kc), Thurs.	4:30	3:30	2:30
6:30	5:30	4:30	3:30
KMA (394.5m-760kc), 7	6		
KQW (296.9m-1010kc), 7	6		

### Fashions and Sewing

Eastern	Central	Mountain	Pacific
11:30 a. m.	10:30	9:30	8:30
WMAK (461.3m-640kc), Styles, Tues, Fri.	10	9:30	8:30
KFWI (267.7m-1120kc), Fashion hints, Mon, Thurs.	10	9:30	8:30
1:35	12:35	11:35	10:35
KTV (423.3m-710kc), Fashion critic, Fri.	10	9:30	8:30
WGBS (349.9m-560kc), Dressmaking lessons, Fri.	10	9:30	8:30
WGS (422.3m-710kc), Wed.	10	9:30	8:30
6:45	5:45	4:45	3:45
KOA (325.9m-920kc), Fashion review, Tues.	10	9:30	8:30

### Health and Beauty

Eastern	Central	Mountain	Pacific
10 a. m.	9	8	7
WGBS (349.9m-560kc), Lessons in loveliness.	9	8	7
10:15	9:15	8:15	7:15
WCAF (461.3m-640kc), Health talk, 10:30	9	8	7
10:30	9:30	8:30	7:30
KDKA (315.6m-580kc), Tues., Beauty hints, 10:45	9	8	7
10:45	9:45	8:45	7:45
WLWV (428.3m-700kc), Beauty talks, Tues, Fri.	9	8	7
WDR (422.3m-710kc), Lessons on Loveliness, Mon.	9	8	7
10 a. m.	9	8	7
KMA (315.6m-580kc), Beauty talks, Tues.	9	8	7
1:30	12:30	11:30	10:30
KFSD (440.7m-680kc), Physiology of beauty, Fri.	9	8	7
KFWI (267.7m-1120kc), Beauty hints, Tues, Fri.	9	8	7
KVA (369.1m-970kc), Diet and Health, Tues.	9	8	7
ATAM (329.8m-760kc), Beauty talk, Tues.	9	8	7
2:30	1:30	12:30	11:30
KJ (348.6m-860kc), Health talk.	9	8	7
8:40	7:40	6:40	5:40
XGA (267.7m-1150kc), Dietetic talk, Wed.	9	8	7
KFRC (454.3m-660kc), Thurs., Madame Marie.	9	8	7
8:45	7:45	6:45	5:45
KXV (336.9m-830kc), Dr. Robert T. Williams, Tues.	9	8	7

### Interior Decoration

Eastern	Central	Mountain	Pacific
8:30	7:30	6:30	5:30
WVJ (352.7m-580kc), Sat.	8	7	6
8:30	7:30	6:30	5:30
WLWV (428.3m-700kc), Furniture talks.	8	7	6
WYB (526.6m-570kc), Tues. Talk, W. Crafts Watson.	8	7	6

### Gardening

Eastern	Central	Mountain	Pacific
1:40 p. m.	12:20	11:20	10:20
KPI (468.5m-640kc), "How and What to Plant."	11	10	9

Eastern	Central	Mountain	Pacific
7:30 a. m.	6:30	5:30	4:30
WIF (348.6m-580kc), Home Gardening, Mon.	6	5	4
8	7	6	5
KBJ (416.4m-740kc), Garden talk.	6	5	4

# 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

**S**TRUGGLING 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 picked 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 shrewd 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,

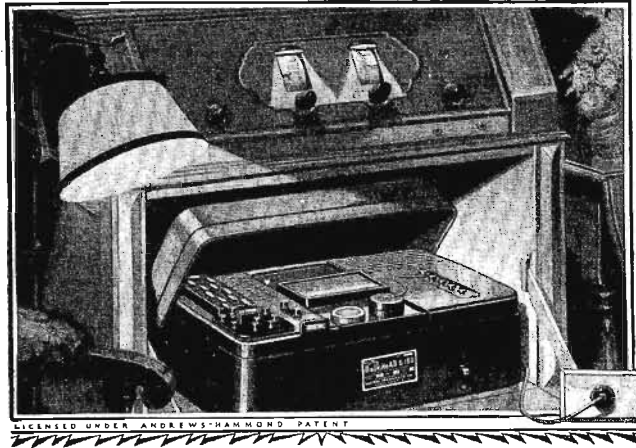
"Mr. Johnstone will now play for you,—'Black Bottom.'"

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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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.

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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

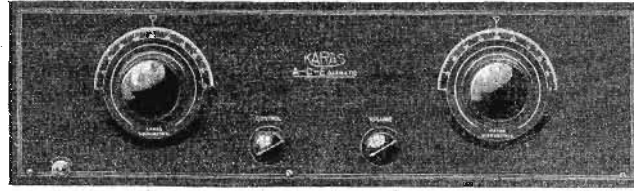
IN THESE days of Sonorous Sixes, Snappy Sevens, Aching Eights and Naughty Nines it is hard to imagine a five-tube receiver that will really step out and give a performance that astonishes anybody, let alone blase Radio editors, experts, writers and what have you. Yet the Karas AC Equamatic does just 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

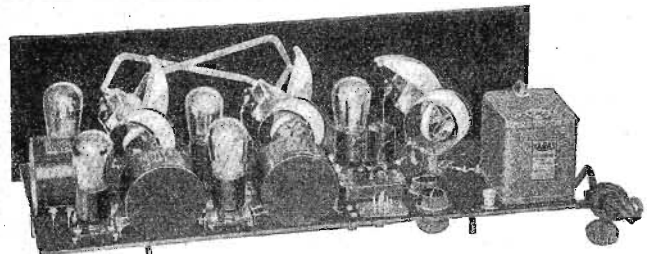
This receiver is not hard to build, as really unusual work has been done to simplify the layout and cover every detail so that it may be constructed even by those who have never before attempted such a thing. A picture wiring diagram is provided, each wire is numbered, each hole in both panel layouts 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."

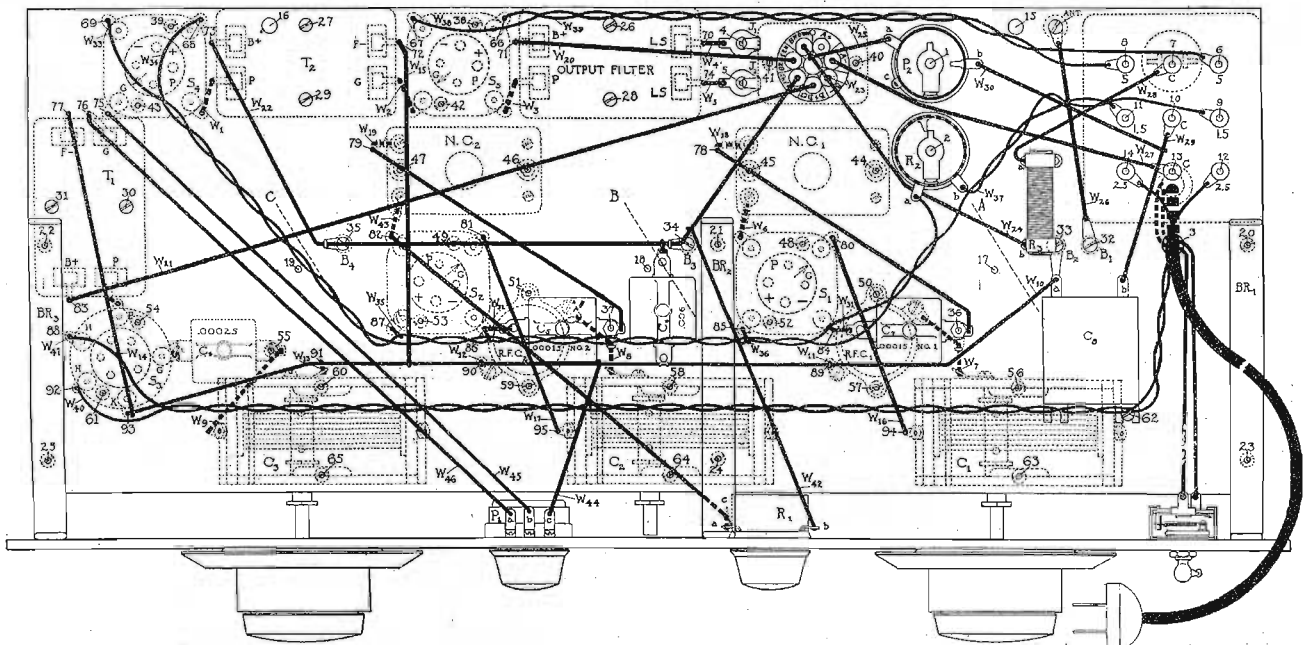
The 1 mfd. Carter fixed condenser, C8, is mounted through hole No. 62 with a 1/2" 6-32 round head screw. Now remove the mounting bracket and cardboard index of the Yaxley cable plug and mount from above in holes Nos. 49 and 41, with two 1/4" 6-32 round head screws. Replace the cardboard index on the 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. 51. 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 uninsulated 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 top 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 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.

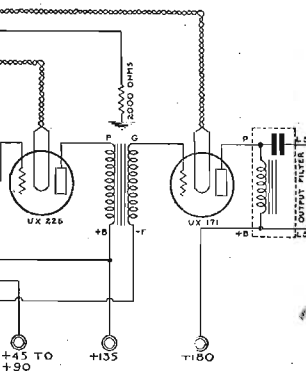
If Mrs. Bill and Mrs. Jim both have their faucets about half open, each gets, we'll say, 5 gallons a minute. But, if Mrs. Jim (the modulators) opens hers a little wider she gets 6 and Mrs. Bill gets only 4. This latter lady calls out that she needs a little more and Mrs. Jim turns her faucet back and 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 S3; W12 connects W10 to the terminal just above hole 30, 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 57. 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.

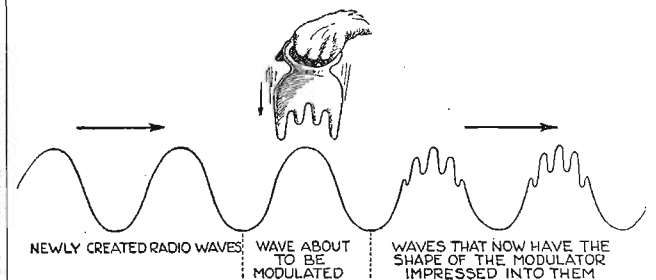
also at the back of the set. It is possible to operate this receiver on a fifty foot aerial; a longer aerial however, will give better results. It is good practice to have just as long an aerial as is consistent with your location, so that the nearest local does not interfere too much. We are now ready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



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 capacitors and resistors.

Table listing club orchestras and their stations, including WFSA, KVOO, KUOM, WOAL, KSAC, and others.

DISTRICT NO. 6—CANADA

Table listing Canadian orchestras and their stations, including Dominion of Canada, CNRW, and others.

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.



# Radio Digest Illustrated

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## 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 solving 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 IMPERIAL 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. L. 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

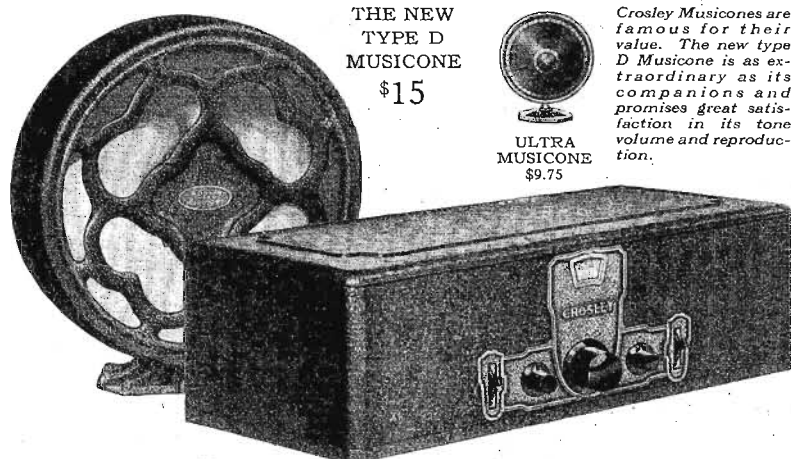


The research and development work of these great industries—the Radio Corporation of America, The General Electric Co., The Westinghouse Co., The American Telephone & Telegraph Co., and The Hazeltine and Latour Corporations—are available to Crosley engineers in the constant advancement of radio design.

## 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.





# ON EXCHANGES PROGRAMS WITH WBAL

joying the weekly concerts given every Friday evening from 9 to 10 p. m. at the... This quartet, which is composed of Nathan Abas, violinist; Julian... and Romain Joseph Verney, viola soloist, has a reputation for... Smiling Stan Lee Broza, left, is the genial voice heard over the air from... announces but directs the production as well. To the right is Nellie... who frequently appears at WGBS, New York. Although she is only... Vagabond King" and has starred in vaudeville. She is also a protégé... of Rudolf Friml.



## FARMERS' PROGRAM INDEX

Special Farm Features		Farmers' Program Index			
Weather		Eastern	Central	Mountain	Pacific
Local Time		5:50	5:50	4:50	3:50
KDKA, 10:10 a. m., 10 p. m.		WSEA (263m-1190kc), U. S. Farm school	5:55	5:55	4:55
KFKX, 10:55 a. m., 11:55 p. m.		WVAB (222.1m-1130kc), U. S. Farm talks	5:55	5:55	4:55
KFNF, 7:30 a. m., 12:40 p. m.		WFCB (280.2m-1070kc), U. S. Farm school	5:55	5:55	4:55
KFOA, 4:30 p. m.		KGW (296.9m-1070kc), U. S. Farm talks	5:55	5:55	4:55
KFWA, 10:30 p. m.		KOA (325.9m-920kc), Farm Question Hour	5:55	5:55	4:55
KGA, 6 p. m.					
KGO, 12:30 p. m., 7:03 p. m.					
KGV, 10 a. m., 7:30 p. m.					
KHS, 12 a. m., 11:05 p. m.					
KMMJ, 9:30 a. m., 12:30 p. m.					
KMOX, 1 p. m.					
KOA, 11:45 a. m.					
KOL, 10:45 a. m., 5:45 p. m.					
KOMO, 12:15 p. m., 8 p. m.					
KPO, 12 a. m.					
WVAA, 7:15 p. m.					
WVBC, 11:55 a. m., 11 p. m.					
WBZ, 3:55 p. m., 11:30 p. m.					
WCAE, 3:40 p. m.					
WCSH, 7:10 p. m.					
WDAF, 5:45 p. m., 10 p. m.					
WDBO, 7:40 p. m.					
WEEI, 11:40 p. m.					
WFAA, 10:30 a. m., 9:30 p. m.					
WFLA, 8:30 p. m.					
WGY, 12:01 p. m.					
WHD, 10:30 a. m., 2 p. m.					
WIC, 1:30 p. m.					
WJAC, 9:30 p. m.					
WJW, 11:15 p. m., 12 p. m.					
WMA, 9:45 a. m., 12 a. m., 3:30 p. m.					
WMAZ, 10 a. m., 12:10 p. m.					
WOC, 12:30 p. m.					
WOL, 10:30 a. m.					
WOP, 11:30 a. m., 9:55 p. m.					
WPD, 10:30 a. m.					
WSM, 11:45 a. m.					
WTAG, 12:59 p. m.					

Monday		Eastern	Central	Mountain	Pacific
KMMJ (285.5m-1050kc), Poultry talks		9 a. m.	7	6	6
WHK (265.3m-1130kc), Farm Flashes		9	9	9	9
WJAX (340.7m-890kc), Farm Flashes		9:30	9:30	9:30	9:30
WIR-WCX (440.9m-680kc), U. S. Farm service		9:45	9:45	9:45	9:45
WGY (379.5m-790kc), Farm Flashes		10	10	10	10
WHR (327.9m-1080kc), Farm talks		10:10	10:10	10:10	10:10
WHR (220.4m-1360kc), U. S. Farm talks		10:15	10:15	10:15	10:15
WMAQ (447.5m-670kc), Prairie Farmer		10:15	10:15	10:15	10:15
WTAV (483.6m-630kc), Farm talks		10:20	10:20	10:20	10:20
WBEA (282.5m-1060kc), Timely hints to farmers		10:30	10:30	10:30	10:30
WFAA (545.1m-550kc), Farmers' hour		10:35	10:35	10:35	10:35
KSAK (333.1m-590kc), Farm talks		10:45	10:45	10:45	10:45
WIR-WCX (440.9m-680kc), U. S. Farm service		10:50	10:50	10:50	10:50
WMAQ (447.5m-670kc), Prairie Farmer		10:55	10:55	10:55	10:55
WBEA (282.5m-1060kc), Timely hints to farmers		11	11	11	11
WFAA (545.1m-550kc), Farmers' hour		11:05	11:05	11:05	11:05
KSAK (333.1m-590kc), Farm talks		11:15	11:15	11:15	11:15
WIR-WCX (440.9m-680kc), U. S. Farm service		11:20	11:20	11:20	11:20
WMAQ (447.5m-670kc), Prairie Farmer		11:25	11:25	11:25	11:25
WBEA (282.5m-1060kc), Timely hints to farmers		11:30	11:30	11:30	11:30
WFAA (545.1m-550kc), Farmers' hour		11:35	11:35	11:35	11:35
KSAK (333.1m-590kc), Farm talks		11:45	11:45	11:45	11:45
WIR-WCX (440.9m-680kc), U. S. Farm service		11:50	11:50	11:50	11:50
WMAQ (447.5m-670kc), Prairie Farmer		11:55	11:55	11:55	11:55
WBEA (282.5m-1060kc), Timely hints to farmers		12	12	12	12
WFAA (545.1m-550kc), Farmers' hour		12:05	12:05	12:05	12:05
KSAK (333.1m-590kc), Farm talks		12:15	12:15	12:15	12:15
WIR-WCX (440.9m-680kc), U. S. Farm service		12:20	12:20	12:20	12:20
WMAQ (447.5m-670kc), Prairie Farmer		12:25	12:25	12:25	12:25
WBEA (282.5m-1060kc), Timely hints to farmers		12:30	12:30	12:30	12:30
WFAA (545.1m-550kc), Farmers' hour		12:35	12:35	12:35	12:35
KSAK (333.1m-590kc), Farm talks		12:45	12:45	12:45	12:45
WIR-WCX (440.9m-680kc), U. S. Farm service		12:50	12:50	12:50	12:50
WMAQ (447.5m-670kc), Prairie Farmer		12:55	12:55	12:55	12:55
WBEA (282.5m-1060kc), Timely hints to farmers		1	1	1	1
WFAA (545.1m-550kc), Farmers' hour		1:05	1:05	1:05	1:05
KSAK (333.1m-590kc), Farm talks		1:15	1:15	1:15	1:15
WIR-WCX (440.9m-680kc), U. S. Farm service		1:20	1:20	1:20	1:20
WMAQ (447.5m-670kc), Prairie Farmer		1:25	1:25	1:25	1:25
WBEA (282.5m-1060kc), Timely hints to farmers		1:30	1:30	1:30	1:30
WFAA (545.1m-550kc), Farmers' hour		1:35	1:35	1:35	1:35
KSAK (333.1m-590kc), Farm talks		1:45	1:45	1:45	1:45
WIR-WCX (440.9m-680kc), U. S. Farm service		1:50	1:50	1:50	1:50
WMAQ (447.5m-670kc), Prairie Farmer		1:55	1:55	1:55	1:55
WBEA (282.5m-1060kc), Timely hints to farmers		2	2	2	2
WFAA (545.1m-550kc), Farmers' hour		2:05	2:05	2:05	2:05
KSAK (333.1m-590kc), Farm talks		2:15	2:15	2:15	2:15
WIR-WCX (440.9m-680kc), U. S. Farm service		2:20	2:20	2:20	2:20
WMAQ (447.5m-670kc), Prairie Farmer		2:25	2:25	2:25	2:25
WBEA (282.5m-1060kc), Timely hints to farmers		2:30	2:30	2:30	2:30
WFAA (545.1m-550kc), Farmers' hour		2:35	2:35	2:35	2:35
KSAK (333.1m-590kc), Farm talks		2:45	2:45	2:45	2:45
WIR-WCX (440.9m-680kc), U. S. Farm service		2:50	2:50	2:50	2:50
WMAQ (447.5m-670kc), Prairie Farmer		2:55	2:55	2:55	2:55
WBEA (282.5m-1060kc), Timely hints to farmers		3	3	3	3
WFAA (545.1m-550kc), Farmers' hour		3:05	3:05	3:05	3:05
KSAK (333.1m-590kc), Farm talks		3:15	3:15	3:15	3:15
WIR-WCX (440.9m-680kc), U. S. Farm service		3:20	3:20	3:20	3:20
WMAQ (447.5m-670kc), Prairie Farmer		3:25	3:25	3:25	3:25
WBEA (282.5m-1060kc), Timely hints to farmers		3:30	3:30	3:30	3:30
WFAA (545.1m-550kc), Farmers' hour		3:35	3:35	3:35	3:35
KSAK (333.1m-590kc), Farm talks		3:45	3:45	3:45	3:45
WIR-WCX (440.9m-680kc), U. S. Farm service		3:50	3:50	3:50	3:50
WMAQ (447.5m-670kc), Prairie Farmer		3:55	3:55	3:55	3:55
WBEA (282.5m-1060kc), Timely hints to farmers		4	4	4	4
WFAA (545.1m-550kc), Farmers' hour		4:05	4:05	4:05	4:05
KSAK (333.1m-590kc), Farm talks		4:15	4:15	4:15	4:15
WIR-WCX (440.9m-680kc), U. S. Farm service		4:20	4:20	4:20	4:20
WMAQ (447.5m-670kc), Prairie Farmer		4:25	4:25	4:25	4:25
WBEA (282.5m-1060kc), Timely hints to farmers		4:30	4:30	4:30	4:30
WFAA (545.1m-550kc), Farmers' hour		4:35	4:35	4:35	4:35
KSAK (333.1m-590kc), Farm talks		4:45	4:45	4:45	4:45
WIR-WCX (440.9m-680kc), U. S. Farm service		4:50	4:50	4:50	4:50
WMAQ (447.5m-670kc), Prairie Farmer		4:55	4:55	4:55	4:55
WBEA (282.5m-1060kc), Timely hints to farmers		5	5	5	5
WFAA (545.1m-550kc), Farmers' hour		5:05	5:05	5:05	5:05
KSAK (333.1m-590kc), Farm talks		5:15	5:15	5:15	5:15
WIR-WCX (440.9m-680kc), U. S. Farm service		5:20	5:20	5:20	5:20
WMAQ (447.5m-670kc), Prairie Farmer		5:25	5:25	5:25	5:25
WBEA (282.5m-1060kc), Timely hints to farmers		5:30	5:30	5:30	5:30
WFAA (545.1m-550kc), Farmers' hour		5:35	5:35	5:35	5:35
KSAK (333.1m-590kc), Farm talks		5:45	5:45	5:45	5:45
WIR-WCX (440.9m-680kc), U. S. Farm service		5:50	5:50	5:50	5:50
WMAQ (447.5m-670kc), Prairie Farmer		5:55	5:55	5:55	5:55
WBEA (282.5m-1060kc), Timely hints to farmers		6	6	6	6
WFAA (545.1m-550kc), Farmers' hour		6:05	6:05	6:05	6:05
KSAK (333.1m-590kc), Farm talks		6:15	6:15	6:15	6:15
WIR-WCX (440.9m-680kc), U. S. Farm service		6:20	6:20	6:20	6:20
WMAQ (447.5m-670kc), Prairie Farmer		6:25	6:25	6:25	6:25
WBEA (282.5m-1060kc), Timely hints to farmers		6:30	6:30	6:30	6:30
WFAA (545.1m-550kc), Farmers' hour		6:35	6:35	6:35	6:35
KSAK (333.1m-590kc), Farm talks		6:45	6:45	6:45	6:45
WIR-WCX (440.9m-680kc), U. S. Farm service		6:50	6:50	6:50	6:50
WMAQ (447.5m-670kc), Prairie Farmer		6:55	6:55	6:55	6:55
WBEA (282.5m-1060kc), Timely hints to farmers		7	7	7	7
WFAA (545.1m-550kc), Farmers' hour		7:05	7:05	7:05	7:05
KSAK (333.1m-590kc), Farm talks		7:15	7:15	7:15	7:15
WIR-WCX (440.9m-680kc), U. S. Farm service		7:20	7:20	7:20	7:20
WMAQ (447.5m-670kc), Prairie Farmer		7:25	7:25	7:25	7:25
WBEA (282.5m-1060kc), Timely hints to farmers		7:30	7:30	7:30	7:30
WFAA (545.1m-550kc), Farmers' hour		7:35	7:35	7:35	7:35
KSAK (333.1m-590kc), Farm talks		7:45	7:45	7:45	7:45
WIR-WCX (440.9m-680kc), U. S. Farm service		7:50	7:50	7:50	7:50
WMAQ (447.5m-670kc), Prairie Farmer		7:55	7:55	7:55	7:55
WBEA (282.5m-1060kc), Timely hints to farmers		8	8	8	8
WFAA (545.1m-550kc), Farmers' hour		8:05	8:05	8:05	8:05
KSAK (333.1m-590kc), Farm talks		8:15	8:15	8:15	8:15
WIR-WCX (440.9m-680kc), U. S. Farm service		8:20	8:20	8:20	8:20
WMAQ (447.5m-670kc), Prairie Farmer		8:25	8:25	8:25	8:25
WBEA (282.5m-1060kc), Timely hints to farmers		8:30	8:30	8:30	8:30
WFAA (545.1m-550kc), Farmers' hour		8:35	8:35	8:35	8:35
KSAK (333.1m-590kc), Farm talks		8:45	8:45	8:45	8:45
WIR-WCX (440.9m-680kc), U. S. Farm service		8:50	8:50	8:50	8:50
WMAQ (447.5m-670kc), Prairie Farmer		8:55	8:55	8:55	8:55
WBEA (282.5m-1060kc), Timely hints to farmers		9	9	9	9
WFAA (545.1m-550kc), Farmers' hour		9:05	9:05	9:05	9:05
KSAK (333.1m-590kc), Farm talks		9:15	9:15	9:15	9:15
WIR-WCX (440.9m-680kc), U. S. Farm service		9:20	9:20	9:20	9:20
WMAQ (447.5m-670kc), Prairie Farmer		9:25	9:25	9:25	9:25
WBEA (282.5m-1060kc), Timely hints to farmers		9:30	9:30	9:30	9:30
WFAA (545.1m-550kc), Farmers' hour		9:35	9:35	9:35	9:35
KSAK (333.1m-590kc), Farm talks		9:45	9:45	9:45	9:45
WIR-WCX (440.9m-680kc), U. S. Farm service		9:50	9:50	9:50	9:50
WMAQ (447.5m-670kc), Prairie Farmer		9:55	9:55	9:55	9:55
WBEA (282.5m-1060kc), Timely hints to farmers		10	10	10	10
WFAA (545.1m-550kc), Farmers' hour		10:05	10:05	1	









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

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

Regular Friday Features

KDKA Pittsburgh, Pa. (516.6m-650kc) & WJZ; 8:30, WJZ; 9, WJZ; 10:01, R. V. B. trio.

FRIDAY, JANUARY 6

Headliners

Eastern Mountain Pacific
WGHP (277.6m-1080kc) Lady Mason, Musical Period.

Eastern Time Stations

KDKA Pittsburgh, Pa. (516.6m-650kc) & WJZ; 8:30, WJZ; 9, WJZ; 10:01, R. V. B. trio.

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.

Mountain Time Stations

KFOA Seattle, Wash. (447.5m-670kc) 9-10, chain program; 10:30-12, KGW.

SATURDAY, JANUARY 7

Headliners

Eastern Central Mountain Pacific
KRLD (461.3m-650) Buster Dees, Margaret Sanford.

Regular Saturday Features

CFCA Toronto, Can. (357m-840kc) 8 p. m. talk; 9, concert.

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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

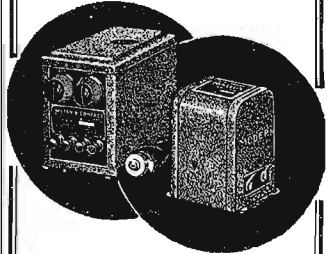
Table with 4 columns: Eastern, Central, Mountain, Pacific. Lists radio stations and their programs for Monday, January 16.

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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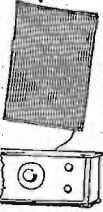
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TELEVOCAL QUALITY TUBES

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

THURSDAY, JANUARY 19

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.			
WSHU (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
KTJIS (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
KTJIS (384.4m-780kc) Melody Boys, Charles Gray and Floyd Taylor.			
10	9	8	7
KOIL (319m-940kc) Oll Revue.			
KVPO (348.6m-860kc) Roy Cunningham, baritone.			
WSM (336.9m-890kc) Annie Sullivan, pianist; Mrs. Wm. Hall, Jr., contralto.			
WTC (535.4m-560kc) Club Worthly Hills orchestra.			
10:30	9:30	8:30	7:30
KVVO (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

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
KTJIS (384.4m-780kc) Miss Ethel Wadsworth, pianist.			
WTC (535.4m-560kc) Ivanhoe Knights.			
8:45	7:45	6:45	5:45
KTJIS (384.4m-780kc) Pete Phillips, tenor.			
10	9	8	7
KOIL (319m-940kc) Uncle Josh.			
KTJIS (384.4m-780kc) Musical comedy songs, by KTJIS orchestra.			
10:30	9:30	8:30	7:30
WHR-WCX (440.9m-890kc) "Stattie" with Gladys Sanderson and Leah Hilder.			
11	10	9	8
KVO (348.6m-860kc) Leon Shreuder, baritone.			
WLS (344.6m-870kc) WLS Showband.			
WMAQ (447.5m-670kc) WQJ Chamber Music players.			

SATURDAY, JANUARY 21

Eastern	Central	Mountain	Pacific
6:30 p.m.	5:30	4:30	3:30
KOIL (319m-940kc) E. S. Gettude Iowa Baseball game.			
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.			
WSHU (475.9m-630kc) Purdue-Iowa Baseball game.			
8:30	7:30	6:30	5:30
KTJIS (384.4m-780kc) Natalie Arnoux, violinist.			
10	9	8	7
WAL (285.5m-1050kc) Municipal Band of Baltimore.			
WHR-WCX (440.9m-890kc) Charlotte Meyers and Mary Taylor. "WJR Personality Girls."			
WSM (336.9m-890kc) Regular Barn Dance program.			

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 Pay postman \$1.50 plus postage. Your guarantee certificate assures absolute satisfaction. When remittance accompanies order, Inkograph will be sent postage prepaid. Write name and address plainly.

**INKOGRAPH CO., Inc.**  
 199-309 Centre St., New York

**AGENTS!** Sell Inkographs. Make bigger profits, more sales, without investment. Quicker commissions, popular prices, no competition. Send for an Inkograph or write for special sales plan booklet.

Eastern	Central	Mountain	Pacific
10:15	9:15	8:15	7:15
WMAQ (447.5m-670kc) 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

Eastern	Central	Mountain	Pacific
7 p.m.	6	5	4
WHR-WCX (440.9m-890kc) Dinner Music by Jean Goldkette's Venetian Ensemble.			
7:30	6:30	5:30	4:30
KVVO (348.6m-860kc) Dorothy Heywood Reed, pianist.			
7:45	6:45	5:45	4:45
KR.L.D. (461.3m-650kc) Dallas Athletic Club orchestra.			
8	7	6	5
WCAU (260.7m-1150kc) Edward Nimble-Thumble Boys.			
WMAQ (447.5m-670kc) Chicago Sunday Evening Club, Dr. Albert Parker Fitch.			
8:15	7:15	6:15	5:15
WHAM (280.2m-1070kc) Rochester string quartet.			
9:15	8:15	7:15	6:15
WCAU (260.7m-1150kc) WCAU (508.2m-610kc).			
WCFB (491.5m-610kc) WSN (361.2m-830kc).			
WTC (535.4m-560kc) WGA (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
WHR-WCX (440.9m-890kc) Caspar J. Lindeman, 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
WSHU (475.9m-630kc) Radio Chamber orchestra.			
9:30	8:30	7:30	6:30
WTC (535.4m-560kc) New Denture band.			

MONDAY, JANUARY 23

Eastern	Central	Mountain	Pacific
7 p.m.	6	5	4
KR.L.D. (461.3m-650kc) Ruth Muse-Feature 3.			
8	7	6	5
WHR-WCX (440.9m-890kc) Caspar J. Lindeman, pianist.			
8:15	7:15	6:15	5:15
WMAQ (447.5m-670kc) "Art Principles Applied to Room Arrangement," Mrs. Marion Hoffman.			
9:15	8:15	7:15	6:15
WSHU (475.9m-630kc) Radio Chamber orchestra.			
9:30	8:30	7:30	6:30
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) Blues Singer.			
9:40	8:40	7:40	6:40
WFMC (483.6m-620kc) "A Wee Bit of Scotland."			
10:30	9:30	8:30	7:30
KTJIS (384.4m-780kc) Dance frolics, Ray Miller's orchestra.			
11:30	10:30	9:30	8:30
KVVO (348.6m-860kc) Gustav Branborg, baritone.			
12 mid.	11	10	9
KOIL (319m-940kc) Mose and Charlie.			

TUESDAY, JANUARY 24

Eastern	Central	Mountain	Pacific
7 p.m.	6	5	4
WHR-WCX (440.9m-890kc) 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
KLJIS (344.6m-870kc) White Alouette players.			
8:45	7:45	6:45	5:45
"Gianna's Puccini."			
9	8	7	6
CFL (355.9m-840kc) "The Chocolate Soldier."			
WCFB (491.5m-610kc) Real Fevers.			
WTC (535.4m-560kc) Manning-Bowman Concert.			

**TRY IT 30 DAYS FREE BEFORE YOU BUY**

**FACTORY PRICES - SAVE 50%**  
 Choice of beautiful cabinets offered

**7 tube one dial**  
**MIRACO**  
 TRADE MARK REGISTERED

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 Your Miraco reaches you completely assembled, rigidly tested, fully guaranteed. Easy to connect and operate. **30 days' trial free.** 3 year guarantee if you buy. You take no risk, you insure satisfaction, you enjoy rock-bottom money-saving prices by dealing direct with one of radio's oldest, most successful builders of fine sets. 8th successful year in the radio manufacturing business.

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**THIS COUPON IS NOT AN ORDER**

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 ADDRESS \_\_\_\_\_



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

WEDNESDAY, JANUARY 25

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

THURSDAY, JANUARY 26

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

FRIDAY, JANUARY 27

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

SATURDAY, JANUARY 28

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

SUNDAY, JANUARY 29

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

TUESDAY, JANUARY 31

Table with 4 columns: Eastern, Central, Mountain, Pacific. Lists radio stations and their programs for Wednesday, February 1.

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

SATURDAY, JANUARY 28

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

SUNDAY, JANUARY 29

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

MONDAY, JANUARY 30

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

TUESDAY, JANUARY 31

Table with 4 columns: Eastern, Central, Mountain, Pacific. Lists radio stations and their programs for Wednesday, February 1.

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

SATURDAY, JANUARY 28

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

SUNDAY, JANUARY 29

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

MONDAY, JANUARY 30

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

TUESDAY, JANUARY 31

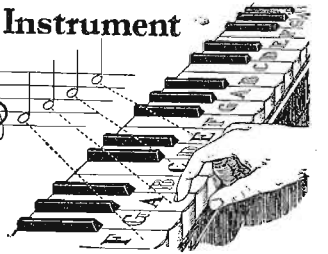
Table with 4 columns: Eastern, Central, Mountain, Pacific. Lists radio stations and their programs for Wednesday, February 1.



Gets Japan and Australia! Gentleman: You may be interested to know have received Japan and Australia using your Eliminator. D. J. Mills.

10 Days' Free Trial You are the Judge! Just put your name and address on a piece of paper, fill a \$1.00 bill to it and mail today. Upon arrival of the "B" Socket Power Unit, deposit only \$5.85, plus postage, with the balance.

Townsend "B" Socket Power Complete 685 BALANCE \$100 DOWN C.O.D.



Easy as A-B-C! You Can Play Any Instrument In a Few Months This Delightful New Easy Way!

Quickest because natural and pleasant. Grateful students say they learn in a fraction of the time old dull methods required. You play direct from the notes. And the cost averages only a few cents a lesson!

LEARNING MUSIC is no longer a difficult task. If you can read the alphabet, you can now quickly learn to play your favorite instrument! A delightful new method has made it positively easy to become a capable performer within just a few months. And the cost is only a fraction of what people used to spend on the old, slow methods!

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. And almost before you realize your progress, you begin playing real tunes and melodies instead of just scales. There are no trick "numbers," no "memory stunts." When you finish the U. S. School of Music course, you can pick up any piece of regular printed music and understand it! You'll be able to read music, popular and classic, and play it from the notes. You'll acquire a life-long ability to please your friends, amuse yourself, and, if you like, make money (musicians are highly paid for their pleasant work).

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. By means of the newly perfected home study method mentioned, the newly perfected home study method reading and playing music is made almost as simple as reading aloud from a book. You simply can't go wrong. First, you are told how a thing is done, then a picture shows you how, then you do it yourself and hear it. No private teacher could make it any clearer. The lessons come to you by mail at regular intervals. They consist of complete printed instructions, diagrams, all the music you need, and music paper for writing out test exercises. And if anything comes up which is not entirely plain you can write to your instructor and get a full, prompt, personal reply!

The Surest Way To Be Popular and Have a Good Time

PICK YOUR INSTRUMENT Piano, Organ, Ukulele, Flute, Cornet, Saxophone, Mandolin, Hawaiian Steel Guitar, Sight Singing, Piano Accordion, Voice and Speech Culture, Harmony and Composition, Drums and Traps, Automatic Finger Control, Banjo (Tenor, Plectrum or 5-String)

Free Book and Demonstration Lesson

The whole interesting story about the U. S. School course can not be told on this page. So a booklet has been printed—"Music Lessons in Your Own Home." You can have a copy absolutely free by mailing the coupon below. In the booklet you will find an offer that makes the U. S. course available to you at a very low price. With it will be sent a Demonstration Lesson, which explains better than words how delightfully quick and easy this Method is. If you are really anxious to become a good player on your favorite instrument, mail the coupon now—today. Instruments supplied when needed, cash or credit.

U. S. School of Music 18312 Brunswick Bldg., New York City

U. S. SCHOOL OF MUSIC 18312 Brunswick Bldg., New York City Please send me your free book "Music Lessons in your Own Home," with introduction by Dr. Frank Crane. Demonstration Lesson, and particulars of your offer. I am interested in the following course:

Form with fields for Name, Address, City, State, and a checkbox for 'Have you above instrument?'

30 Days FREE TRIAL New Westgate One Dial RADIO Here's our offer. Put any one of our 21 new 1928 models in your home on 30 DAYS' TRIAL. Use it for 30 days at our risk. Test it for distance, selectivity and real tone value. Compare it in quality and price with any radio you ever saw or heard. Then if you are not convinced that the WESTGATE gives you the highest value and the best price—YOU DON'T HAVE TO KEEP IT!

KARAS A-C-FORMER FILAMENT SUPPLY TYPE 12. LIST PRICE \$13.50 NO HUM! At last you can step down your 110 volt A. C. home current to operate your set with standard A. C. tubes such as Cunningham, RCA and CoCo, without having to use separate device for center tap and with ABSOLUTELY NO HUM. Let the Karas A-C-Former Filament Supply, Type 12, replace your "A" Battery and charger. Will operate 8 1/2-volt Type 226 or 326 tubes, 220-volt Type 227 or 327 Tubes, and 2.5-volt Type 177 Tubes at one time. Compact, powerful, sturdy and built the Karas Way—by precision methods. Write for complete information about the new Karas A-C-Former and also data on the Knickerbocker 4 and Karas 2-Dial Equamatic. KARAS ELECTRIC COMPANY 4034-A North Rockwell Street Chicago





### 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	760 votes
5-year; five 1-year; one 2-year, and one 3-year; two 2-year and one 1-year; 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! Big New 1928 Catalog—100 Items Show the latest circuits, the newest developments in radio at dealer low prices. Get the parts you want here and save money. The best in parts, kits, complete factory-built sets and supplies. Orders filled same day received. Write for free copy NOW. Standard due course to dealers, set builders, agents.

WARREN CO., 125 N. Jefferson, Dept. 871, Chicago, U. S. A.

**NEW Spring Edition!**

**RADIO RED BOOK** for **1928**

Just out with All the Latest Changes Direct From Radio Trade Commission

Exclusive copyrighted arrangement for quick and accurate tuning in, keynotes, 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 programs 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 information 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 and 100-1000 Ohm resistors. 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 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, 849 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 uniquely 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**

The Majestic is connected to your radio just like "B" batteries and attached to an ordinary electric socket. (For 1 to 12 tube radios.) Replaces "B" batteries entirely and furnishes "B" current from regular house lighting current. Simplifies radio receiving. More efficient than dry or wet "B" batteries. Entirely noiseless. Operates from 110-120 AC, 50-60 cycle current.

**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**

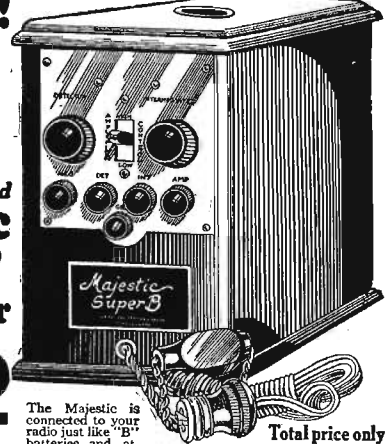
Only \$1.00 with the coupon below brings the Majestic Super "B" Eliminator to your home on trial. Try it out thoroughly before you pay another penny. See how it improves reception. See how much more convenient than using batteries. Judge for yourself how it will save you money and make your radio set 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.

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  
4721 Lincoln Ave. Chicago, Ill.

**CONSUMERS RADIO COMPANY**

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.

**Guaranteed**  
**3 1/2 Socket Power**  
**A 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

**\$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 mls. on 110 volt, 60 cycle, AC. Will operate any set with 1 to 12 tubes.



**WARREN**  
**ELECTRIC CO.**  
DEPT. RD  
PEORIA - ILLINOIS

**WANTED!**

Radio Dealers  
**PROFESSIONAL**  
Set Builders and  
Radio Fans

**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 22 1/2 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.

**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

**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



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. Anyone can operate. No experience necessary 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.

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**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 machine!

**Sells for \$2.95—You Make \$1.65**

This most remarkable invention does all the work of a \$5.00 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 4 oz. Contains 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 demonstrating everything else and knocking up Ve-Do-Ad. Ve-Do-Ad sells them quick money and lots of it. Shippers out in California make \$475 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



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.

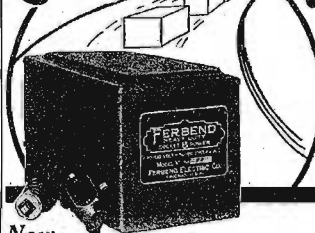
### Not a Substitute

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**  
Cleyton Station  
Dept. 842 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

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Since 1921 Ferbend Products have been famous for outstanding quality and long-life efficiency at lowest prices—prices within reach of all.

The new HEAVY DUTY "B" Power unit is an exception in workmanship, performance, materials and appearance. It is the equal of any of our HVTLite construction.

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Shipment will be made upon receipt of price or C. O. D. Use for thirty days to convince yourself—if not satisfied write us within that time and purchase price will be refunded. Order today.

**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 "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. (Dime to cover postage and MAIL TODAY! Don't miss the marvelous buy.)

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

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**Positive GUARANTEE ONLY \$1.00**

This amazing little Nu-Life Regenerator will positively do all that high priced regenerators will do. At just any time on any make radio can instantly be given new life—without any amazing low cost! Make conditions like new, this low-priced, easy way.

Think of it! Only \$1 for this guaranteed renewer that is so simple and easy to operate a child can do it. Operates direct from your A and B batteries—nothing more to buy. Approved by Popular Radio Laboratory. Your money refunded if you are not amazed and delighted. Order today. Just send name and address and tube numbers. Sent prepaid for only \$1, or pay postman \$1 plus few pennies postage. Don't wait. Give your tubes protection—be ready to instantly give them new life and vigor when they fail.

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



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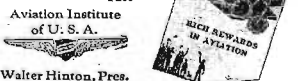
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## Amazing New Ground Antenna

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 catchers. Aer-O-Liminator (Ground Antenna) is simple and easy to install. Takes but a few minutes."

### FREE TRIAL

Make this thrilling test at our risk! Install an Aer-O-Liminator (Ground Antenna). Leave your old overhead aerial up. Try out on a night when static is bad. If you do not get a wonderful improvement in freedom from static, greater selectivity and clear, sweet tone without interfering noises, if you can't get good reception on stations that are reported on your old aerial, you need not pay us a red cent for this test. Send coupon today for scientific explanation of Aer-O-Liminator (Ground Antenna), proof of performance, and our conclusive ground-mount guarantee and remarkable Free Trial Offer. Send coupon today!

**CURTAN MFG. CO.**  
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Please send me at once complete description of Aer-O-Liminator with details of guarantee. Scientific Proof and FREE TRIAL OFFER.  
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Large room, private bath for one - Four Dollars - For Two Five Dollars (serving pantry optional) - - - Restaurant BOOKLET FREE

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WGN
Blain, Ill. 416.6m-720kc. 500 watts. Chicago Trib-
une. Announcers, Bill Gray, John Ryan, Frank
Doherty, J. R. Tyson, Tommy Connor. Daily ex
Sun, 9-10 am, news; 11-11:30 pm, music; 11:30-12:30
pm, music; 12:30-1:30 pm, music; 2-5:55, baseball;
6:10, stocks and bonds; 6:10-6:35, Punch and
Judy; 6:35-6:50, music; 6:50-7, Almanack. Daily
ex Sun, Mon, 8-11 pm, Sun, 12-1 pm, Uncle Wags;
12-2 organ; 2-3, music; 3, baseball; 6:10-6:45,
Punch and Judy; 6:45-11:25, music. Central.

WGOP
Port Washington, N. Y. 159.9m-1500kc. 100 watts.
Frederick B. Zittel, Jr. Founded Sept. 15, 1925.

WGR
Buffalo, N. Y. 302.3m-950kc. 750 watts. Federal
Radio Corp. Announcer, Kenneth Fickett. Daily
ex Sun, 6:45-8 am. Daily ex Sun, Sat, 12-1 pm, stocks;
1 pm, 2:30-3:30, Tues, Thurs, 8-11 pm, Mon, Wed,
Fri, 8-12 mid. Sun, 10:45-12 n, 7:45-9 pm, 9:15-10,
Eastern. Founded May 21, 1922.

WGST
Atlanta, Ga. 279.1m-1100kc. 500 watts. Georgia
School of Technology. Announcer, Walter W. Mer-
cile. Slogan, "The Southern Technical School with
National Reputation." Mon, 9:30-10:30 pm,
Thurs, 2-3 pm, Central. Founded Jan, 1924.

WGWA
Milwaukee, Wis. 218.8m-1370kc. 500 watts. Radio-
cast Corp. of Wisconsin. Announcer, John Sullivan.
Slogan, "The Voice of Wisconsin." Daily ex
Sun, Sat, 10:30-12:30 pm, Mon, 8:10-30 pm,
Wed, 8-9 pm, Fri, 9-10:30 pm, Sun, 10-11 am, 6-7
pm, Central.

WGY
Schenectady, N. Y. 379.5m-700kc. 50,000 watts.
General Electric Company. Announcer, Kohn Hager.
Slogan, "Good Evening to You All." Daily ex
Sun, 6:45-8 am, exercises; 8:50, talk; 11:35, time;
12:01 pm, weather; 12:05, produce; 12:05, weather;
12:30 pm, music; 2:30, orchestra; 6, orchestra; 6:30,
orchestra; Mon, 6:30-11 pm, Tues, 6:30-10:30 pm,
Wed, 6:30-11 pm, Thurs, 6:30-12:30 pm, Fri, 6:30-
11 pm, Sat, 6:30-11 pm, Sun, 10:30-11:30 pm,
10:45 pm, Short wave, 2XAF, 21, 30m. Founded 1922.

WHA
Madison, Wis. 333.1m-920kc. 750 watts. Univ. of
Wis. Mon, Wed, Fri, 7:30-9:30 pm, Central.
Founded 1919.

WHAD
Milwaukee, Wis. 270.1m-1100kc. 500 watts. Mar-
quette University. C. Foster, Ed. Ann. Harry
Friedman. Mon, Tues, Wed, Thurs, Fri, 3:00-4 pm,
5:30-8, Fri, 8-9:30 pm, Sun, 4:30-5 pm, Eastern.
Founded Oct. 1921.

WHAM
Rochester, N. Y. 280.7m-1070kc. 5000 watts. Stroum-
berg-Carlson Tel. Mfg. Co. Announcer, E. E.
Chamwell. W. R. Boudine, Donald Clark. Daily ex
Sun, 6:30-11 pm, Tues, 2:30-4 pm, Sun, 10:30-12 n,
8:30-5, 6:30-11. Eastern.

WHAP
Carlsbad, N. J. 236.1m-1270kc. 1000 watts. De-
tenders of Truth Society. Ed. Ann. Mon, Thurs, 6-9
pm, Wed, 9-11:30 pm, Sat, 7-11:30 pm, Sun,
7:30-9:30 pm, Eastern. Founded May 1925.

WHAS
Louisville, Ky. 322.9m-920kc. 500 watts. Courier-
Journal and Louisville Times Co. Daily ex Sun,
3-5 pm, 7-9 pm, Sun, 10 am, service; 2:1, 4:30-5:30,
Sun, 8:30-9:15, 9:15-9:45. Founded July, 1923. Central.

WHAZ
Troy, N. Y. 395.9m-980kc. 500 watts. Resonator
Polytechnic Inst. Announcer, Rutherford Hayner.
Slogan, "Transcontinental and International Broad-
casting Station." Daily ex Sun, 6:30-11 pm, Tues,
Science and Engineering in America." Club, R.
of S. students, Mon, 8-12 midnight concert, edu-
cational talks, orchestra, lectures. Founded June 22,
Eastern.

WHB
Kansas City, Mo. 340.7m-890kc. 500 watts.
Sweeney Auto & Electrical School. Announcer, J. P.
Schilling. Slogan, "Heart of America." Daily ex
Sun, 8:25 am, 9:25, 10:25, 11:30, 11:30-11:55,
11:55, market reports; 2-3, ladies' hour; Daily
ex Sun, Sat, 12-15 pm, 12:30, 1:25, 1:30, stocks,
Daily, 7-8 pm, Mon, 8-9 pm, Tues, Thurs, 8-10
pm, Sat, 12:05 pm, 2-3 pm, 5-6 pm, 7-9 pm,
Sun, 9:45-10:45 am, service; 6:30, 7:15, 7:45, 11:15-11
am, organ. Central. Founded April, 1922.

WHBA
Oil City, Pa. 260.7m-1590kc. 10 watts. Shaffer
Music House. Tues, 9-10 pm, Eastern.
Founded Nov. 1925.

WHBC
Canton, Ohio, 236.1m-1270kc. 10 watts. Rev. E.
P. Graham. Slogan, "Ignorance is Our Greatest
Foe." Mon, 8-8:30 pm, Central.

WHBD
Bellefontaine, Ohio. 222.1m-1350kc. 100 watts.
Chandler of Commerce. Sun, 11 am, 7 pm.

WHBF
Rock Island, Ill. 221.8m-1350kc. 100 watts. Besley-
Speight Specialty. Announcer, C. L. Bearsley.
Slogan, "Where the Voice of the People Lives." Daily
ex Sun, 12-2 pm, Mon, Wed, 9-11 pm, Sat, 2-4
pm, 7-9 pm, Central. Founded Feb. 1925.

WHBL
Chicago, Ill. 204m-1470kc. 100 watts. C. L. Car-
roll. (Portable.) Founded 1925.

WHBM
Chicago, Ill. 201.2m-1490kc. 100 watts. C. L.
Carroll. (Portable.)

WHBN
Gainesville, Fla. 302.6m-1480kc. 5000 watts. U. of
Florida. Not on air.

WHBP
Johnstown, Pa. 228.9m-1310kc. 250-500 watts.
Johnstown Automobile Co. Announcer, J. C. Tully.
Slogan, "The Voice of the People of Johnstown."
Daily ex Sun, 1:15 pm, Mon, 11 pm, Thurs, 10 pm,
Sat, 10 pm, Eastern.

WHBQ
Memphis, Tenn. 232.4m-1250kc. 100 watts. Broad-
casting Station WHBQ, Inc. Announcer, Thomas
Thompson. Daily ex Sun, 7-8 pm, Sun, 10:45 am,
Central. Founded March, 1925.

WHBA
Anderson, Ind. 220.4m-1360kc. 15 watts. Citizens'
Bank. Announcer, A. L. McKee. Slogan, "First
Bank on the Air."

WHBW
Philadelphia, Pa. 230.4m-1360kc. 100 watts. D. R.
Kienick. Mon, Wed, Sat, Sun, evenings.

WHBY
West De Pere, Wis. 249.9m-1200kc. 50 watts.
St. Norbert's College. Ann. Harry Bay. Daily ex
Sun, 6:30 am, Tues, 6:30 am, weather, markets.
Wed, Fri, Sat, Sun, 5-6 pm, Fri, 7-8 pm, Sun, 10-
11 am, service. Central. Founded July, 1925.

WHDI
Minneapolis, Minn. 245.9m-1220kc. 500 watts. Wm.
Hood Woodbury Industrial Institute. Announcer,
M. R. Baas. Slogan, "Northwest Leading Trade
School." Mon, 8-9 pm, Tues, 8-9 pm, Wed, 9-10
pm, Daily ex Sun, 6:27-9:30 am, time. Central.
Founded May 22, 1922.

WHCC
Rochester, N. Y. 254.1m-1180kc. 500 watts. Hick-
son Electric Company, Inc. Slogan, "The Magazine
of the Air." Announcer, Elmer Wheeler. Daily
ex Sun, 12-3 pm, 6:30-10, 10:30-12 n, 7:30-10
pm, Eastern. Founded Jan, 1924.

WHFC
Chicago, Ill. 215.7m-1390kc. 200 watts. Trianglo
Broadcasting. Daily ex Mon, 8-12 mid. Central.
daylight.

WHK
Cleveland, Ohio. 265.3m-1130kc. 500 watts. 1,600
watts. 6 am-6 pm. Radio Air Service Corp. Slogan,
"Cleveland's Finest Broadcasting Station." Daily,
12 n-1 pm, music; 3:30, housekeepers' chat; 5:30, 9,
10, 11-12, Sat, 12 n, 6, 8-9, 9-12 mid, Sun, 10 am,
8, 9, 5-15, 6, 7-9, 9:15-9:30, Eastern. Founded 1921.

WHN
New York, N. Y. 394.5m-750kc. 500 watts. Loew's
State Broadcasting Station. Announcers, N. T. G.
Edward B. Huskin, J. Lewis Reid. Slogan, "The
Voice of the Great White North." Daily ex Sun,
1-2 pm, 6-12:30 pm, Sat, 12-11 pm, Sun, 9-11 am,
12:30-3 pm, 5-7:30, 9:45-12 mid, Eastern. Founded
March, 1925.

WHO
Des Moines, Ia. 535.6m-590kc. 5000 watts. Bankers
Life Co. Announcer, N. Dean Cole. Daily ex
Sun, 8-9 am, 10:30-12 n, 12:15-1:15, 2:15-4:30,
6:30-9:15, 11 am, 2:3 pm, 6:30-9:30, Central.
Founded 1924.

WHPP
New York, N. Y. 206.8m-1450kc. 10 watts. Bronx
Broadcasting Co.

WHI
Deerfield, Ill. 305.9m-980kc. 5000 watts. Radio-
Times Broadcast Co. Announcer, Pat Henry.
Slogan, "White Home Tenth." Daily and Sun,
10 am-2:30 pm. Daily and Sun ex, Mon, 8:20-10 pm,
Central. Founded April 25, 1925.

WIAD
Philadelphia, Pa. 288.3m-1040kc. 100 watts. How-
ard R. Miller. Slogan, "The Voice from the Birth-
place of Liberty." Tues, Thurs, Fri, 6-12 mid,
Eastern. Founded June, 1922.

WIAS
Ottawa, Ia. 322.4m-920kc. 400 watts. Poling
Electric Co. Announcer, Frank B. Orr. Daily, 5-6
pm, Central. Founded June 12, 1922.

WIBA
Madison, Wis. 239.9m-1250kc. 100 watts. The
Capital Times Strand Theater. Announcer, Kenneth
F. Schmitt. Slogan, "Four Lakes City." Mon, 8-11
pm, Wed, 7-9 pm, Fri, 6:15-7:15 pm, Sun, 12-1 pm,
Central. Founded June, 1924.

WIBG
Elkins Park, Pa. 440.9m-680kc. 50 watts. St.
Paul's Protestant Episcopal church. Announcer,
W. Le Roy Alvord. Sun, 10:55 am, 3:55 pm,
Eastern. Founded 1925.

WIBJ
Chicago, Ill. 201.2m-1490kc. 100 watts. C. L. Car-
roll. (Portable.)

WIBM
Chicago, Ill. 201.2m-1490kc. 100 watts. C. L. Car-
roll. (Portable.)

WIBO
Chicago, Ill. 305.9m-990kc. 5000 watts. Nelson
Broadcasting and Mfg. Co. Announcer, Walter
Preston. "Star Dawson." Daily ex Sun, 2:30-5 pm,
Mon, Tues, Wed, 7:30-10:30 am, Thurs, 7-9 pm,
Sun, Tues, Wed, 11-12:30 pm, Central. Founded
May 20, 1925.

WIBR
Steubenville, Ohio. 249.9m-1200kc. 50 watts.
Thurman A. Dwyers. Announcer, Robert Merry-
man. Slogan, "Where Investments Bring Results."
Daily ex Sun, 6:30-7:30 pm, Wed, 11:15-12:45 am,
Sun, 8-8:30 pm, Sun, 4-5 pm, Founded Jan,
1925. Eastern.

WIBS
Elizabeth, N. J. 204m-1470kc. 250 watts. New
Jersey Broadcasting Corp. Ann. Mon, Tues, 7-5 pm,
Wed, 7-9 pm, Thurs, 7-9 pm, Fri, 7-9, 8-12,
6-11 pm, Sun, 5:30-7:30 pm, Eastern. Founded
June, 1925.

WIBU
Fayetteville, Wis. 217.3m-1390kc. 20 watts. The
Electric Farm. Wisconsin State Journal. Mon, 9
pm, Sun, 2 pm, Central. Founded July 10, 1925.

WIBW
Tonawanda, Kan. 204m-1470kc. 100 watts. C. L. Car-
roll. (Portable.) Announcer, Boyd Shreffler.
Daily ex Sun, 10:30 am, 5:30-8:30 pm, Mon, 11 pm, Sun,
12:15-6:15 pm, Central.

WIBX
Utica, N. Y. 238m-1260kc. 150 watts. WIBX Inc.
Daily ex Sun, 6:30-11 am, shopping hour; 12-1, news,
stocks, markets, music, farm news; 3-4, music; 6-11,
Wed, silent night; Sat, 6-11 am, Sun, 10:30-11 pm,
6-10, Eastern. Founded 1923.

WIBZ
Montgomery, Ala. 230.6m-1300kc. 15 watts. A. D.
Trum.

WICC
Bridgewater Hill, Conn. 265.3m-1130kc. 500 watts.
The Bridgewater Broadcasting Station, Inc. An-
nouncer, Charles H. Boudine. Slogan, "The Indus-
trial Capitol of Connecticut." Mon, Tues, Thurs,
Fri, 8-10 pm, Sun, 10:50 am, Eastern. Founded
Aug. 2, 1926.

WIL
St. Louis, Mo. 258.5m-1160kc. 250 watts. Beason
Broadcasting Co. Announcer, L. A. Benson. Daily
ex Sun, 9:30-11:30 am, 2:45-5 pm, Tues, Thurs, Sat,
8-11 pm, Central. Founded Sept. 1, 1922.

WIOD
Miami Beach, Fla. 247.8m-1210kc. 1000 watts.
Carl G. Fisher. Announcer, Jesse H. Jay. Slogan,
"World's Wonderful Isle of Dreams."

WIP
Philadelphia, Pa. 348.6m-920kc. 500 watts. Gimpel
Bros. Announcer, E. A. Davies. Slogan, "Watch
His Progress." Daily ex Sun, 1-2 pm, 3-4:30, 6-7:30,
8-9 pm, Mon, Tues, Thurs, 8-12 pm, Fri, Thurs, Sat,
8-12 mid, Sun, 10:45-12 n, 9-12 mid, alternate Sun,
10:45-12 mid, Eastern.

WJAD
Waco, Tex. 333.1m-700kc. 500 watts. Hotel
Raleigh. Mon, Tues, Thurs, 6:30-7:30 pm, Mon,
Thurs, Fri, 8:30-10 pm, 1st and 3rd Wed,
8:30-9:30 pm, Central.

WJAG
Norfolk, Nebr. 285.5m-1050kc. 250-500 watts. Nor-
folk Daily News. Announcer, Karl Stefan. Slogan,
"The World's Greatest Country, Land and Home of
Fruit and Dairy." Daily ex Sun, 12-12:15 pm,
Wed, Sat, 6:30-7:30 pm, orchestra, Sun, 3 pm,
Central. Founded 1922.

WJAK
Kokomo, Ind. 234.2m-1200kc. 50 watts. Kokomo
Radio. Daily ex Sun, 11-45 am, chapel, Mon, 7:30
pm, music, Wed, Thurs, 5-6 pm, concert, Fri, 7:30
pm, Sun, 8-8:45 pm, Central.

WJAM
Cedar Rapids, Iowa. 239.9m-1250kc. 250 watts. D.
M. Perkins. Daily ex Sun, 9-9:45, 12:30-1:20,
markets, Mon, Wed, Fri, 7-9 pm, Tues, Thurs,
Sat, 9-11 pm, Central. Founded July 29, 1922.

WJAR
Providence, R. I. 483.6m-620kc. 500 watts. The
Outlet Co. Announcer, J. A. Reilly. Slogan, "The
Gateway of New England." Daily ex
Sun, 10:5-7 pm, weather, reports, music. Wed,
Thurs, Fri, 10 am, household hints, Mon, Wed,
7:30-10:30 pm, Tues, 7:30-10:30 pm, Thurs, 7:30-
10 pm, Fri, 8-11 pm, Sat, 7:45-9 pm, Sun, 5:30-
10:15 pm, Eastern. Founded Sept. 6, 1922.

WJAS
Pittsburgh, Pa. 270.1m-1100kc. 500 watts. Pitts-
burgh Radio Broadcast Co. Announcer, Johnny
Announcer, Howdy Clark. Slogan, "World's Justest
Ancient Station." Daily ex Sun, 10:30 am-2 pm,
11-11:30 pm, Tues, Thurs, Sat, 10:30 am-2 pm, 8-11,
Sun, 11 am-2 pm, 3-4, 9-10, Eastern.

WJAX
Jacksonville, Fla. 340.7m-880kc. 1000 watts. City
of Jacksonville. Daily ex Sun, 11:55-12:05 pm,
11-11:30 am, Tues, Thurs, Sat, 10:30 am, 6:30-
7:30 pm, 8-9, 10-11, Eastern. Founded Nov. 26,
1925.

WJAY
Cleveland, Ohio. 227.1m-1320kc. 500 watts. Cleve-
land Radio Broadcast Co. Announcer, Johnny
Maack. Slogan, "On the Hollenden." Daily ex Sun,
10 am, organ; 1, 2, 6-6:12 mid, Sun, 10:30 am,
service; 6:30 pm, 7, 11 pm, 11, time. Eastern.
Founded Jan. 7, 1927.

WJAZ
Mt. Prospect, Ill. 263m-1140kc. 5000 watts. Zenith
Radio Supply House. Fickler's Studio. An-
nouncer, John Maack. Slogan, "The Zenith of
Radio." Daily ex Sun, 10:30 am-2 pm, 8-11,
Sun, 11 am-2 pm, 3-4, 9-10, Eastern.

WJBB
Sarasota, Fla. 238m-1260kc. 250 watts. Financial
Radio. Daily ex Sun, 11:30-2 pm, 4:30-6, 6-7,
9-12, Eastern.

WJBC
La Salle, Ill. 227.1m-1320kc. 100 watts. Hummer
Furniture Co. Announcer, LeRoy Strenlund.
Slogan, "Your Home Station." Daily ex Sun, 12:30-
1:30 pm, Sun, 8-10 pm, Sat, 4-5 pm, Sun, 10-
11:30 am, 3:30-4:45 pm, 7:30-9:30 pm, Founded
Sept. 1925. Central.

WJBI
Red Bank, N. J. 263m-1140kc. 250 watts. Robert
S. Johnson.

WJBK
Ypsilanti, Mich. 220.4m-1360kc. 15 watts. Ernest
Goodwin. Announcer, H. T. Augustus. Mon, 9-11
pm, Tues, 10-11 pm, Sat, 11-12 mid, Eastern.
Founded Oct. 7, 1925.

WJBL
Dearborn, Ill. 212.6m-1410kc. 250 watts. William
Gardner Dry Goods Co. Announcer, W. H. Wiley.
Mon, 9-10:30 pm, Wed, 9-11 pm, Sat, 9:11-30 pm,
Sun, 10:45-12:15 pm, Central. Founded Sept. 24,
1925. Central.

WJBO
New Orleans, La. 263m-1140kc. 100 watts. Valde-
mar. Service. Founded 1922.

WJBT
Chicago, Ill. 369.4m-770kc. 500-5000 watts. J. S.
Boyd, Inc. Announcer, Bobby Griffin. Daily ex
Sun, 11 am, 11:30 am, Mon, 10:30 am, news;
10:30-11 am, Sun, 11-12, Thurs, 12 mid, Sun, 10:30-
12n, 2:30-12 mid, Central.

WJBU
Lewisburg, Pa. 214.2m-1400kc. 100 watts. Duck-
lock. Announcer, J. D. Ludolph. Slogan, "In
the Heart of the Keystone State." Thurs,
8 pm, Eastern. Founded 1925.

WJBW
New Orleans, La. 238m-1260kc. 30 watts. C.
A. Dato. Fri, Tues, Fri, 7-8 pm, Sun, 7-10 pm,
Central.

WJBY
Gadsden, Ala. 234.2m-1280kc. 50 watts. Electric
Construction Co. Mon, Wed, Fri, 8-9 pm, Central.
Founded Aug. 11, 1926.

WJCB
Chicago Heights, Ill. 208.2m-1440kc. 100 watts.
Richard G. Palmer. Anthony Coppotelli. Mon, Wed,
Fri, 7-12 mid, Central.

WJDD
Mooseheart, Ill. 365.6m-820kc. 1000 watts. Loyd
Corder of Music Station. Palmer House. Herald
Announcer, Announcer, Gene Rouse. Slogan, "The
Call of the Moose." Daily ex Sun, 10 am, news;
10:30-11 am, 11-11:30, Prudence Plant; 12, music;
4 pm, piano recitals; 4:45, Palmer house soloists;
5-6:30, music; 7:30-8:30, music; 8-11, music; 11-12,
Sun, Mon, 8 pm, Tues, Fri, 11-11 am, Wed, Thurs,
11-12 mid, Sat, 9-10 pm, 12-2 am, Sun, 7:30-10:30
pm, news; 1:00-2 pm, 11-12, Wed, 7-9 pm, 11-11,
Central. Founded Aug. 16, 1927.

WJDS
Gary, Ind. 232.4m-1290kc. 500 watts. Thomas J.
Johnson and Frances Kennedy Radio Corp. Mon,
11-12, Tues, 11-12, Wed, 11-12, Thurs, 7-9 pm,
11-12, Sat, 9-10 pm, Sun, 12:45-2 pm, 6-12 mid,
Central. Founded Aug. 16, 1927.

WJEW
Ashtabula, Ohio. 208.2m-1440kc. 30 watts. J. P.
Wilson. Mon, Wed, Fri, 7-45 pm, 8:30-11, Sun,
10-10:30 pm, 7:30-8:30, Central.

WJR
Pontiac, Mich. 440.9m-680kc. 5000 watts. 8x A. O.
22. The Richards-Oakland Co. Slogan, "The
Good Will Station." Announcers, Leo Fitzpatrick,
M. J. Kelly. Daily ex Sun, 12:45-2 pm, 6-12 mid,
Mon, Wed, Fri, 10 am, 11, Sun, 10 am, service;
2:4 pm, service; 6:10-30 pm, Eastern. Founded
August, 1925.

WJF
Brook, N. J. 454.3m-660kc. 30,000 watts.
R. C. A. Nucleus by National Broadcasting Co.
Announcers, Milton J. Cross, Marley Sherris, Nor-
man Westcott. Daily ex Sun, 12:45-2 pm, 6-12
mid, Sun, 12:40-1:20, Sat, 12:45-4 pm, 4:30-5:30, 6-12,
Sun, 9-10 am, 11:45-45 pm, Founded 1921. Eastern.

WJGA
San Juan, Puerto Rico. 322.4m-930kc. 500 watts.
Radio Corporation of Puerto Rico. Announcer, Joa-
quin Aguayo. Slogan, "The Island of Enchantment.
Where the World's Best Coffee Grows." Wed, 8-10
pm, Intercontinental.

WKAR
East Lansing, Mich. 277.6m-1080kc. 500-1000
watts. Michigan State College. Announcer, Keith
Bullington. Daily ex Sun, 12:12-30 pm, weather,
markets, agricultural topics, 7:15-8, farm school;
8-9 pm, music. Eastern.

WKAV
Laconia, N. H. 233.7m-1340kc. 50 watts. Laconia
Radio Co. Fri, 7:30 pm, Sun, 5 pm, Eastern.
Founded Oct. 1, 1922.

WKBB
Joliet, Ill. 215.7m-1320kc. 150 watts. Sanders
Brothers. Mon, 7-9 pm, Tues, Thurs, 8-12 mid,
Mon, 8-8:45 pm, Sun, 3-5 pm, Central.

WKBC
Birmingham, Ala. 218.8m-1370kc. 10 watts. H. L.
Ansley. Tues, Thurs, 5-6:30 pm, Central. Founde.
Jan, 1926.

WKBE
Weaver, Mass. 228.9m-1310kc. 100 watts. K. &
D. Electric Co. Thurs, Sat, 8:10-30 pm, Eastern
daylight. Founded Feb. 27, 1925.

WKBF
Indianapolis, Ind. 257m-1150kc. 250 watts. Noble
B. Watson. Daily ex Sun, 10 am, 10:30, 10:40, 5
pm, 7, 7:10, Daily ex Sun, 12 n, Mon, 7:30 pm,
8:30, 9, Tues, 8:30-10:30 pm, Thurs, 7:30-10 pm,
Fri, 7:30, 8:30-9 pm, Sun, 10:45 am, 3 pm, 7-9,
Central. Founded Oct. 1925. Eastern.

WKBG
Chicago, Ill. 201.2m-1460kc. 100 watts. C. L.
Carroll. (Portable.)

WKBH
LaCrosse, Wis. 230.4m-1360kc. 500 watts. Calla-
way Music Co. Daily ex Sun, 10 am, Aunt Sam; 10
n, weather, U. S. Farm talks, Mon, 8:30 pm,
Wed, 8:30 pm, Fri, 7:30 pm, Sat, 8:30 pm, Sun,
10:30 am, 6:30 pm, Central. Founded 1924.

WKBI
Chicago, Ill. 215.7m-1390kc. 50 watts. Fred L.
Schuenhoff. Daily, 8-10 pm, Fri, Sat, Sun, 10-12
mid, Central.

WKBL
Monroe, Mich. 205.4m-1460kc. 15 watts. Mon-
roe, Mich. Co.

WKBN
Youngstown, Ohio. 214.2m-1400kc. 50 watts. Radio
Electric Service Co. Daily ex Sun, 7:30 am, exer-
cises, Tues, 5-4:45 pm, Thurs, Sat, 6 pm, Eastern.
Found. Cent., 1926.

WKBO
Jersey City, N. Y. 218.8m-1370kc. 500 watts.
Camith Corp. Mon, 12-11 pm, 6-9, Tues, 12-11 pm,
6-8, Wed, 12-6 pm, Thurs, 10-11 pm, 6-8, Fri, 10-11
pm, 9-12 mid, Sat, 12-1 pm, Sun, 5-9 pm, Eastern.
Founded Sept. 11, 1926.

WKBP
Battle Creek, Mich. 212.6m-1410kc. 50 watts. Bat-
tle Creek Enquirer and News.

WKBQ
New York, N. Y. 218.8m-1370kc. 500 watts. Staud-
and Cahill. Inc. Announcer, Allan Cahill.
Mon, 9-12 n, Tues, 9-12 n, 4-5 pm, 9-12, Wed, 9-12
mid, Thurs, 1-3 pm, 8-12, Fri, 3-5 pm, Sat, 3-8
pm, Sun, 8-12 mid, Eastern. Founded Sept. 1926.

WKBS
Galesburg, Ill. 217.3m-1360kc. 100 watts. Paul N.
Anderson. Announcer, Paul W. Palmquist. Slogan,
"The Mayflower Station in the Renowned City of
Galesburg, Iowa." Mon, 9-11 am, 12:30-1
pm, 2:30-3:30, 7-11, Tues, Thurs, 10-11 am, 12:30-1
pm, 2:30-3:30, 7-9, 10



WLBN

Chicago, Ill. 304m-1470kc. 100 watts. William Beer Hiler (Portable). Daily ex Sun, 12-1 pm. 5-7, 9-11. Central.

WLBO

Galesburg, Ill. 217.3m-1380kc. 100 watts. Fredrick A. Trethe. Fri. Tues, Thurs, Sat, 9-10 pm. Central. Founded Jan. 16, 1927.

WLBO

Arwood, Ill. 218.8m-1370kc. 25 watts. E. Dale Trout.

WLBR

Rockford, Ill. 247.8m-1210kc. 15 watts. Rockford Broadcasting Corp.

WLBT

Crown Point, Ind. 247.8m-1210kc. 50 watts. Harold Wendell.

WLBY

Maumslie, Ohio. 206.8m-1450kc. 50 watts. Mansfield Broadcasting Association. Announcer, Ray Davis. Mon, 6-7 pm, 9-11 pm. Wed, 9-11 pm. Sat, 9-10 pm. Sun, 10-30-12 n. Central. Founded Jan. 1, 1927.

WLBY

Oil City, Pa. 293.9m-1020kc. 50 watts. Petroleum Telephone Co. Daily ex Sun, 12:15-1:15 pm, 3:15-4:15 pm. Mon, 12:30-1 pm. Tue, 12:30-1 pm. Wed, 12:30-1 pm. Thu, 12:30-1 pm. Fri, 12:30-1 pm. Sat, 12:30-1 pm. Sun, 12:30-1 pm. Eastern. Founded 1925.

WLBY

Long Island, N. Y. 204m-1470kc. 250 watts. John N. Brady.

WLBY

Iron Mountain, Mich. 209.7m-1430kc. 50 watts. Amone Electric. Daily and Sun, 12-1 pm. Central.

WLBY

Foxcroft, Me. 208.2m-1400kc. 250 watts. Thompson L. Guentsey. Irregular schedule.

WLBY

Ithaca, N. Y. 247.8m-1210kc. 50 watts. Lutheran Assn. of Ithaca. Announcer, Robert F. Schütz. Slogan, "The Church at the Gate of the Campus." Sun, 10-45 am, 7-45 pm. Eastern. Founded 1926.

WLBY

Lexington, Mass. 218.7m-1390kc. 50 watts. Lexington Star Station. Daily ex Sat, 9:30-10:30 pm. Sat, 11 pm. Eastern. Founded Oct. 1926.

WLBY

Elein, Ill. 416.6m-720kc. 15000 watts. Liberty Magazine. Announcers, Bill Hay, Art Smith. Daily ex Sun, 10-30-11 am, Mon, 8:30-11 pm. Thurs, 11 am, 12-12:30 pm. Sun, 8:15-6 pm. Central.

WLBY

Philadelphia, Pa. 405.2m-740kc. 500 watts. Lit Brog. Mon, Wed, Fri, 12-1 pm. music, 2-3, 4:30, music, 6-8, 8:30, storage, 7:30-9 pm. Thurs, 11 am, Tues, Thur, Sat, 12-1, 3 pm, 4:30, 5:30, 7:30. Eastern. Founded Mar. 18, 1923.

WLBY

Chelsea, Mass. 211.1m-1430kc. 100 watts. William C. Poig.

WLS

Chicago, Ill. 344.6m-870kc. 5000 watts. Sears, Roebuck & Co. Slogan, "World's Largest Store." Daily ex Sun, 9-1:30 pm. Daily hour markets, 12-1 pm, 2-3 pm program, 2:30-3:30, housewives hour, Mon, 4:30-10 am, Wed, Fri, 4:30-12 mid, Sat, 4:30-10 am, 7:30-11:30 am, 12:30-1:30 pm, 4:30-10:45-12:15 pm, 11 of C. services, 12:15-1:30 pm, concert, 1:30-2:30 pm, S. school, 6-8:30. Little Brown church. Central. Founded April 6, 1924.

WLSI

Providence, R. I. 209.7m-1430kc. 250 watts. Lincoln Studios Inc. Mon, 6-45 pm, Tues, 6-30 pm, Wed, 7 pm, Thurs, 5:30, Fri, 7 pm, Sat, 6:30 pm, Sun, 6:30 pm. Eastern.

WLTH

Brooklyn, N. Y. 256.3m-1170kc. 250 watts. Voice of Brooklyn, Inc. Mon, 10 am, 10:45 am, 9-11 pm, Tues, 10:15, Fri, 9-11 am, Sat, 4-6 pm, 9-12 mid, Sun, 1-3 pm, 5-6, 9-11. Eastern.

WLTS

Chicago, Ill. 483.6m-620kc. 100 watts. Lane Technical High School. Mon, 9-10 am, 2-4 pm, 6-7, Tues, Wed, Thurs, Fri, 9-10 am, 2-4 pm. Central.

WLW

Harrison, Ohio. 428.2m-700kc. 5000 watts. 52m-570kc. 250 watts. The Crosley Radio Corp. Announcer, Fred Smith. Daily ex Sat, Sun, 8 am, exercise; 10 women's hour; 11:15 markets; 11:55, time; 12, weather, music; 1:30, 2:30-4:30, music; 4:30, 5:30, markets; 6-6:15, Sat, 10 am, women's hour; 11:15, markets; 11:55, time; 12 n, weather; 12:45, music; 1:30-2:30, music; 6:45, markets; 6-12, Sun, 9:30 am, 11:30, 7:15-11. Alternate Sun, 8:30 pm, chain. Eastern. Founded 1919.

WLWL

New York, N. Y. 370.2m-810kc. 1000 watts. The Paulist League. Announcer, Joseph A. Bier. Slogan, "For God and Country." Tues, Thurs, 8-11 pm, Sat, 2-9 pm. Sun, 8:45 pm. Eastern.

WMAK

Cazenovia, N. Y. 225.4m-1330kc. 500 watts. C. B. Meredith. Announcer, C. R. Jones. Thurs, 12 n. farm program; 8 pm, popular studio. Founded 1922. Eastern.

WMAF

South Dartmouth, Mass. 428.3m-700kc. 500 watts. Round Hills Radio Corp. Not operating.

WMAK

Buffalo, N. Y. 545.1m-550kc. 750 watts. WMAK Studios, Inc. Announcer, William Fay. Daily ex Sun, 11 am, news period; 1:30, news; 12:15, music; 10-45-12 n, 7 pm, 8-10. Daily ex Sat, Sat, 12:10-12:25 pm, farm. Central. Founded April 14, 1922.

WMAK

Washington, D. C. 241.8m-1240kc. 500 watts. M. A. Lease Radio Co. Daily 6:30 pm. Eastern.

WMAK

Columbus, Ohio. 234.2m-1280kc. 50 watts. First Baptist church. Announcer, John Dehannan. Sun, 10:30-12 n, 7:30-9 pm. Eastern. Founded Sept., 1922.

WMAQ

Chicago, Ill. 447.5m-670kc. 1000 watts. The Chicago Daily News. Announcer, Harry Geise. Daily ex Sun, 6:20-11 am, 12-12:15 pm, 2-7, 8-10, 10:45-12 n, 7 pm, 8-10. Daily ex Sat, Sat, 12:10-12:25 pm, farm. Central. Founded April 14, 1922.

WMAZ

St. Louis, Mo. 234.2m-1200kc. 100 watts. Kansas Highway Presbyterian church. Announcer, Miss Evelyn E. Way. Hear Kinsbushway. Sun, 11 am, 8 pm. Central.

WMAZ

Macon, Ga. 270.1m-1110kc. 500 watts. Mercer University. Announcer, E. K. Cavill. Tues, Wed, Thurs, 8-9:15 pm, Fri, 11-12:15 pm. Eastern. Founded 1925.

WMAZ

Newport, R. I. 204m-1470kc. 100 watts. LeRoy Joseph Beebe.

WMBB

Homewood, Ill. 252m-1190kc. 500 watts. American Bond & Mortgage Co. Announcer, Hugh Aspinwall. Slogan, "World's Most Beautiful Bedroom." Daily ex Sun, Mon, 6:10-9 pm, Sun, 7-10:30. Central. Founded 1925.

WMBC

Detroit, Mich. 243.8m-1230kc. 100 watts. Michigan Broadcasting Co. Announcer, Gordon Higham. Daily ex Sun, 6-10 pm. Eastern. Founded 1925.

WMBD

Peoria Heights, Ill. 205.4m-1400kc. 250 watts. Peoria Heights Radio Laboratory. Daily ex Thurs, music. Sun, service.

WMBE

St. Paul, Minn. 208.2m-1440kc. 10 watts. Dr. C. S. Stevens. Mon, Fri, 10-12 n. Wed, 8-10 pm. Sat, 9-11 pm. Central.

WMBF

Miami Beach, Fla. 384.4m-780kc. 500 watts. Fleetwood Hotel. Daily, 7-8 pm; 7:30-9. Eastern. Founded 1924.

WMBG

Richmond, Va. 220.4m-1300kc. 15 watts. Havens and Martin. Daily ex Sat, 9:30-10:30 am. Announcer, Wm. K. Sealey, Jr. Daily ex Sun, 2-3 pm, 6-10. Eastern.

WMBH

John, Mo. 304m-1470kc. 100 watts. Edwin Dudley Aber. Announcer, M. E. Jones, E. D. Albee. Slogan, "Where Memories Bring Happiness." Mon, Tues, Thurs, 12:15-1:30, 12:30-1:30 pm, 3-30, 5-30-7:30, 8:30-10:30, Sat, 12:30-1:15 pm, 5:30-7:30, 8:30-10:30. Sun, 10:50-12 n, 6, 7:30. Central.

WMBI

Chicago, Ill. 263m-1140kc. 500 watts. Moody Bible Institute. Slogan, "The West Point of Christian Service." Announcer, Wendell Lovelace. Daily ex Sun, 8:45-9:15 am, 10:30-11:30, 12:30-1:30 pm, 3-30, 4-30, Tues, Wed, Fri, Sat, 6-9 pm, Thurs, 7-9 pm, Sun, 3:30-7 pm. Central. Founded July 28, 1926.

WMBJ

Monessen, Pa. 232.4m-1290kc. 50 watts. Star Station. Fri, 9:45-11 pm. Eastern.

WMBL

Lakeland, Fla. 228.9m-1310kc. 100 watts. Ten-tenths Radio studios. Daily ex Sun, 10:30-1:30 pm, 7:30-9, 9-10, 10-11, Sun, 11-12 n, 7:30-8:30. Eastern.

WMBM

Memphis, Tenn. 209.7m-1430kc. 10 watts. Seventh Day Adventist Church.

WMBO

Auburn, N. Y. 220.4m-1360kc. 100 watts. Radio Service Laboratories.

WMBO

Tampa, Fla. 252m-1190kc. 100 watts. F. J. Reynolds. Daily ex Sun, 1-2 pm, 7-8, 9-10, 11-12. Eastern.

WMBS

Lenore, Pa. 234.2m-1280kc. 250 watts. Mack's Battery Co. Announcer, W. S. McCaughen. Slogan, "The Voice of the Susquehanna." Daily ex Sun, 11:30 am, music, 12 n, organ; 6, time, 6-11:30 pm, music, Sat, 11:30-3 pm, Kunt Klacker. Sun, 8:30-10 am, 8:30 am-9 pm. Eastern. Founded March 1, 1924.

WMBW

Youngstown, Ohio. 214.2m-1400kc. 50 watts. Youngstown Broadcasting Co. Inc. Mon, Wed, Fri, 2:30-3:30 pm, 6-12, Sat, 10:30-12:30 am. Founded 1923.

WMCC

Memphis, Tenn. 516.9m-580kc. 500 watts. The Commercial Appeal. Announcer, Francis S. Chamberlin. Slogan, "Station WMC, Memphis." "Down to Earth." Daily ex Sun, 2-4:45 am, 12 n, 2:30 pm, weather, markets, music. Daily, 8 pm, program; Sun, 11 am, church service. Founded Jan. 20, 1923.

WMCA

Hoboken, N. J. 370.2m-810kc. 500 watts. Hotel McAlpin. Announcer, Smedley Weir. Slogan, "Where the Searchlight Flashes and the White Way Begins." Daily ex Sun, Sat, 10:30 am, Sun, 10 am-12 mid. Eastern.

WMES

Roston, Mass. 211.1m-1430kc. 50 watts. Mass. Educational Society. Mon, Thurs, 8:10-10 pm, Sun, 10:45-12 n, 7:45-9:30. Eastern. Founded Aug. 1, 1927.

WMPC

Lapeer, Mich. 234.2m-1280kc. 30 watts. First Methodist Protestant Church. Daily ex Sat, 12-1 pm. Daily ex Sun, Thurs, 7:30-10 pm, Daily ex Sat, 4-5 pm, Sun, 10:30-12 n, 12-1 pm, 4-8:30, 7:30-10. Central. Founded Dec. 6, 1926.

WMRJ

Jamaica, N. Y. 206.8m-1450kc. 100 watts. Peter J. Prinz. Tues, Thurs, 8-11:30 pm, Sat, 12-2:30 am, Sun, 12-2:30 pm, 9-11:30. Eastern.

WMSC

New York, N. Y. 236.1m-1270kc. 500 watts. Madison Square Garden. Announcer, Horace E. Beaver. Mon, Wed, Thurs, 9-12 mid, Tues, Fri, 6-9 am, Sun, 7-9 pm. Eastern.

WMAC

Boston, Mass. 461.3m-650kc. 500 watts. The Shepley Stores. Announcer, Ben Halford. E. Lewis Dunham, Joseph Lopez, Jean Sarvent. Daily ex Sun, 7:45 am-12 mid, Sun, 10:45 am-5 pm; 7:30-11. Eastern. Founded July 31, 1922.

WMAD

Norman, Okla. 239.9m-1250kc. 500 watts. University of Oklahoma. Mon, Wed, Thurs, 7:15-9:45 pm. Tues, Fri, 12:15-1 pm, Sat, 2-5 pm. Central.

WMAL

Omaha, Nebr. 288.5m-1160kc. 250 watts. R. J. Rockwell. Announcer, Donald J. Rockwell. Slogan, "Pioneer Station Omaha." Sat, Sat, 7-9 pm, 9-11 pm. Central. Founded 1921.

WMAT

Philadelphia, Pa. 288.3m-1040kc. 100 watts. Leeing Bros. Co. Slogan, "We Never Are Tired." Wed, 7-9 pm, Sat, 8 pm. Eastern. Founded 1921.

WMAX

Vankton, S. D. 277.6m-1080kc. 1000 watts. 6 am-6 pm, 250 watts after 6 pm. Gurney Seed & Nursery Co. Daily and Sun, 11 am-10 pm, Sun, 11-12 n, 2-7 pm. Central. Founded Aug. 22, 1927.

WMBA

Forest Park, Ill. 208.2m-1440kc. 200 watts. Michael T. Paferly. Irregular hours.

WMBF

Endicott, N. Y. 206.8m-1450kc. 50 watts. Hewitt-Wood Radio Co. Irregular schedule.

WNBH

New Bedford, Mass. 247.8m-1210kc. 250 watts. New Bedford Hotel. Announcer, I. Vermilya. Mon, 6-10:30 pm, Tues, Thurs, 7-8 pm, Wed, 6-10 pm, Fri, 6-10 pm, Sat, 11-12:15 pm, 7:30-9 pm. Eastern. Founded 1923.

WNBJ

Knoxville, Tenn. 206.8m-1450kc. 50 watts. Lonsdale Baptist Church. Sun, 9:45 am, 10:45, 5-6 pm, 7, 9-10. Central.

WNBL

Bloomington, Ill. 199.9m-1500kc. 15 watts. Gray, Trumble and Smith Elec. Co. Sun, 2-4 pm. Mon, 3-12 mid. Central.

WNBO

Washington, Pa. 211.1m-1420kc. 15 watts. John Brown Springs. Daily ex Sun, 2-4 pm, 9-11 pm, Sun, 11 pm, services. Eastern.

WNBQ

Rochester, N. Y. 205.4m-1460kc. 15 watts. Gordon P. Brown.

WNBR

Memphis, Tenn. 238.9m-1310kc. 100 watts. Ponzor Radio Shop. Daily ex Sun, 6:30 pm. Sun, 2:30-3:30 pm, services. Eastern, Wm. A. Buehnermer.

WNBS

Carbondale, Pa. 199.9m-1500kc. 5 watts. Home Cut Glass and China Co.

WNBX

Springfield, Vt. 241.6m-1240kc. 10 watts. WNBX Broadcasters.

WNBY

Saranac Lake, 232.4m-1290kc. 10 watts. WNBZ Broadcasters.

WNJ

Newark, N. J. 267.7m-1120kc. 250 watts. Newark, N. J. (Evening News-Express). Announcer, W. A. Buehnermer. Slogan, "The Voice of Newark." Tues, Wed, Fri, Sat, 6-8:30 pm, 8:30-12 midnight, dance music. Eastern.

WNKX

Knoxville, Tenn. 205.3m-1130kc. 1000 watts. Peoples Telephone & Telegraph Co. Mon, Wed, 7-10 pm, Fri, 7-11 pm, Tues, 9-9:30 pm. Central. Founded 1921.

WNXX

Greensboro, N. C. 223.7m-1340kc. 500 watts. Wayne M. Nelson. Mon, Wed, Fri, 12:30-1:30 pm, 6-8:45, Tues, 7-9 pm, Thurs, 7-10 pm, Sun, 11-15 am, 11-15 am, services. Eastern. Founded Mar. 24, 1926.

WNXX

New York, N. Y. 555m-570kc. 500 watts. New York Municipal Radio Station. Announcer, Christie R. Johnson. Slogan, "Municipal Broadcasting Station." Daily, 7-10 pm, Eastern.

WNAI

San Antonio, Texas. 499.7m-600kc. 5000 watts. Southern Equip. Co. (Evening News-Express). Announcer, G. Cummins. Slogan, "The Winter Playground of America. Where the Sunshine Spends the Winter." Daily ex Sun, 7 am, weather, markets, news; 12:30 pm, 2:30, 3:30, music; 4:30-5:45, markets, news, sports; Mon, 7-8 pm, Tues, Wed, Thurs, 10-10 pm, Sun, 11 am, 7:30 pm. Central. Founded summer 1922.

WNAJ

Lawrenceburg, Tenn. 239.9m-1250kc. 500 watts. James D. Vaughan. Announcer, James D. Vaughan. Sun, 8:30-10 am, 8:30 am-9 pm. Eastern. Founded March 1, 1924.

WNAK

Trenton, N. J. 239.9m-1250kc. 500 watts. F. J. Wolff. Slogan, "Trenton Makes the World Takes." Daily ex Sun, 12:15-1:15 pm. Daily ex Sun, Sat, 10:45-12 n, 7:30-9:30 pm, Sun, 7:30-9 pm. Eastern. Founded March 2, 1923.

WNAK

Ohio, 204m-1470kc. 10 watts. Karl Smith. (Portable).

WNAK

Union City, Tenn. 205.4m-1460kc. 15 watts. Tittusville Music Shop.

WNAK

Charleston, W. Va. 267.7m-1120kc. 50 watts. Charleston Radio Broadcasting Corp.

WNAK

Davenport, Iowa. 374.8m-800kc. 5000 watts. The Paulist School of Christianity. Slogan, "Where the West Begins and in the State Where the Tall Corn Grows." Daily ex Sun, 7 am, Heavy hours; 9:45, markets; 11, 11:15, 1:55 pm, time; 2 markets; 3, Aunt Jane, 5:45, chimes; Mon, 7 pm, music; Tues, Wed, Thurs, 9:30-10:30, Tues, 7-8 pm, 8:45-9:15, W.A.F., Wed, 6:45-9:30, N. B. C., 9:30 talk; Thurs, 7, 7:30-10, N. B. C., Fri, 7-10 pm, Thurs, 7, 7:30-9 pm, W.J.Z., Sun, 11, 12-15 pm, 1:55-3 pm, N. B. C., 7, 8:15-10:15, N. B. C. Central. Founded May, 1922.

WNAK

Jamesstown, N. Y. 223.7m-1340kc. 25 watts. A. E. Smith. Daily ex Sun, 7 am, Tues, Fri, 6:30-7 pm, Sun, 10:30-11 pm, 7 am, 9 am. Eastern.

WNAK

Petersen, N. J. 293.9m-1020kc. 1000 watts. O'Dea Temple of Music. Slogan, "A Voice from the Silk Road." Daily ex Sun, 9:40 am, 12-2 pm; Mon, 6:30-9 pm, Tues, 4:30-6 pm, 9-11, Wed, 5:30-9 pm, 11-12, Thurs, 4:30-6 pm, 9-12, Fri, 5:30-9 pm, Sun, 4:20-6 pm, 9-12, Sun, 9 am, 7 pm. Founded April 13, 1925. Eastern.

WNAK

Ames, Iowa. 265.3m-1130kc. 2500-5000 watts. Iowa State College. Announcer, A. G. Woolfries. Daily ex Sun, 7 am, 7:30, 8:45, 9:30, 10



# An Evening at Home Without the Disturber

## IN CENTRAL TIME

## IN EASTERN TIME

Call	Watt.	Kc.	Watts	Sat. Sdu.	Sunday	Monday	Tuesday	Wed.	Thurs.	Friday	Sat.	Call	Loc.	Watt.	Kc.	Watts	Sat. Sdu.	Sunday	Monday	Tuesday	Wed.	Thurs.	Friday							
CFCA	356.9	840	500	Silent	7:00-7:15	7:15-8:15	Silent	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	CFCA							
CJRM	210.7	1010	500	11:30-12:30	7:30-10:00	Silent	7:30-10:00	Silent	7:30-10:00	7:30-10:00	CJRM	Montreal	210.7	1010	500	12:30-1:30	8:30-12:00	8:30-11:00	Silent	8:30-11:00	Silent	8:30-11:00	Silent	CJRM						
CKAC	406.9	730	750	7:15-12:00	2:45-3:45	Silent	7:15-11:30	Silent	8:30-9:30	Silent	CKAC	Montreal	406.9	730	750	8:15-1:00	3:45-6:45	Silent	8:15-12:30	Silent	8:30-10:30	Silent	8:30-10:30	Silent	CKAC					
CKCL	356.9	840	500	6:00-7:30	7:00-9:00	Silent	6:00-1:00	Silent	6:00-1:00	Silent	CKCL	Toronto	356.9	840	500	7:00-8:00	3:00-4:00	Silent	6:00-12:00	Silent	6:00-12:00	Silent	6:00-12:00	Silent	CKCL					
CKNC	356.9	840	500	Silent	Silent	8:00-9:30	Silent	8:00-9:30	Silent	Silent	CKNC	Toronto	356.9	840	500	Silent	Silent	9:00-10:30	Silent	9:00-10:30	Silent	9:00-10:30	Silent	CKNC						
CKNF	384.4	780	500	7:30-10:00	6:00-9:00	Silent	7:30-10:00	Silent	7:30-10:00	Silent	CKNF	Winnipeg	384.4	780	500	8:00-11:30	7:00-10:00	Silent	7:30-10:00	Silent	7:30-10:00	Silent	7:30-10:00	Silent	CKNF					
CKNO	324.5	690	500	Silent	Silent	6:00-10:00	Silent	6:00-11:00	Silent	Silent	CKNO	Winnipeg	324.5	690	500	Silent	Silent	6:00-10:00	Silent	6:00-10:00	Silent	6:00-10:00	Silent	CKNO						
CYH	311.1	950	500	Silent	9:30-11:00	Silent	Silent	9:30-11:30	Silent	9:30-11:30	CYH	Monterey	311.1	950	500	Silent	10:30-12:00	Silent	10:30-12:00	Silent	10:30-12:00	Silent	10:30-12:00	Silent	CYH					
CYD	409	750	500	9:00-10:00	Silent	9:00-10:00	Silent	9:00-10:00	Silent	9:00-10:00	CYD	Pittsburgh	409	750	500	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	10:00-11:00	CYD					
KDKA	315.6	950	600	6:00-9:00	9:00-10:15	9:00-9:00	6:00-9:00	6:00-9:00	6:00-9:00	6:00-9:00	KDKA	Pittsburgh	315.6	950	600	9:00-10:15	9:00-10:15	9:00-10:15	9:00-10:15	9:00-10:15	9:00-10:15	9:00-10:15	9:00-10:15	9:00-10:15	9:00-10:15	KDKA				
KFAB	319	940	2000	5:30-10:00	9:00-10:00	5:30-10:15	5:30-10:00	5:30-10:00	Silent	5:30-10:00	KFAB	Lincoln	319	940	2000	6:30-11:00	10:00-11:00	6:30-11:15	6:30-11:15	6:30-11:15	6:30-11:15	6:30-11:15	6:30-11:15	6:30-11:15	KFAB					
KFDM	483.6	620	500	Silent	8:00-9:00	Silent	8:00-10:00	Silent	8:00-10:00	Silent	KFDM	Bloomington	483.6	620	500	Silent	9:00-10:00	Silent	9:00-10:00	Silent	9:00-10:00	Silent	9:00-10:00	Silent	KFDM					
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	8:30-9:30	8:30-9:30	8:30-9:30	KFT				
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	9:15-2:00	9:15-2:00	9:15-2:00	9:15-2:00	KFI			
KFJF	272.8	1000	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	272.8	1000	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	8:15-9:30	8:15-9:30	8:15-9:30	8:15-9:30	8:15-9:30	KFJF		
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# STATE AND CITY INDEX

State	City	Call	Meters	Kc.	Watts			
Alabama	City	Call	Meters	Kc.	Watts			
	Auburn	WAPI	340.7	880	1,000			
	Birmingham	WBFB	218.8	1,370	10			
	Montgomery	WABC	234.2	1,300	15			
	Montgomery	WBCZ	234.2	1,300	15			
	Arizona	Flagstaff	KFXV	705.4	1,460	25		
		Phoenix	KFAD	272.6	1,100	500		
		Phoenix	KFTB	243.8	1,230	12		
		Prescott	KFJM	214.2	1,400	15		
		Tucson	KGAR	234.2	1,280	100		
		Arkansas	Baytown	KLDC	285.5	1,050	50	
			Fayetteville	KUDN	286.9	1,010	500	
			Hot Springs	KTHS	286.0	780	1,000	
			California	Avalon	KFWO	299.8	1,000	250
				Berkeley	KRE	286.3	1,170	100
Burbank				KELW	229.9	1,310	220	
El Centro				KGEN	225.4	1,330	15	
Fresno				KMJ	368.8	820	50	
Colorado				Colo. Spgs.	KFUM	227.1	1,350	1,000
				Denver	KFEL	247.8	1,210	250
	Denver			KFUP	227.1	1,350	250	
	Denver			KFUC	282.3	1,050	250	
	Denver			KGEY	201.2	1,490	250	
	Connecticut			Bridgport	WICC	285.3	1,130	500
				Danbury	WCWS	285.3	1,130	100
		Hartford		WCEB	335.5	560	500	
		Manchester		WCSC	335.5	560	500	
		New Haven		WDRR	282.2	1,060	500	
		Delaware	Wilmington	WDEL	256.9	1,010	100	
			District of Columbia	Washington	WMAL	241.8	1,240	500
				Washington	WDCS	456.5	640	900
				Washington	WRHF	222.4	830	150
				Washington	WTFE	202.6	4,000	10,000
Florida				Gainesville	WBNB	202.1	1,060	10
				Clearwater	WFLA	516.9	580	750
				Jacksonville	WJAX	340.7	880	1,000
				Lakeland	WFLB	228.9	1,310	1,000
				Miami	WQAM	384.4	780	750
	Georgia			Atlanta	WCST	270.1	1,110	500
				Atlanta	WSB	475.9	630	1,000
				Macon	WMAZ	270.1	1,110	500
				Toccoa	WTFI	209.7	1,430	250
				Idaho	Boise	KFAU	385.5	1,050
		Jerome			KRFD	204	1,470	15
		Kellogg	KFEY		232.4	1,290	10	
		Pocatello	KSEI		333.3	900	250	
		Illinois	Atwood		WLDQ	252	1,180	25
			Batavia		WORD	252	1,180	5,000
Bloomington			WNBI		199.9	1,500	15	
Carthage			WLAZ		249.9	1,230	10	
Chicago			KFKX		526	870	2,500	
Indiana			Anderson		WJBO	220.4	1,360	15
			Brookville		WKBY	217.3	1,380	100
	Greene		WJAC		247.4	1,100	10	
	Culver		WCMA		260.7	1,150	500	
	Evansville		WCVB		217.3	1,380	100	
	Iowa		Ames		WOI	265.3	1,130	2,500
			Boone	KFBI	209.1	1,190	10	
			Cedar Rapids	KWCR	239.9	1,250	250	
			Cedar Rapids	KWCR	239.9	1,250	250	
			Clarinda	WJAP	237.1	1,230	500	
		Kansas	Concordia	KCCN	208.2	1,440	50	
			Independence	KFVC	225.4	1,330	50	
			Lawrence	WREN	254.1	1,180	750	
			Lawrence	WREN	254.1	1,180	750	
			Manhattan	KSAB	333.1	900	500	
Kentucky			Hopkinsville	WTFM	260.7	1,150	750	
			Louisville	WHAS	260.7	1,150	750	
			Louisville	WLAP	260.7	1,150	750	
			Louisiana	Cedar Grove	KGGH	212.6	1,410	50
				New Orleans	WABZ	234	1,260	50
	New Orleans			WABZ	234	1,260	50	
	New Orleans			WIBO	263	1,140	100	
	New Orleans			WIBO	263	1,140	100	
	Maine			Bangor	WABI	389.4	770	100
				Bangor	WLBZ	208.2	1,440	150
		Portland		WCSE	365.6	820	500	
		Maryland		Baltimore	WBAL	285.5	1,050	5,000
				Baltimore	WBAL	285.5	1,050	5,000
				Baltimore	WBAL	285.5	1,050	5,000
				Baltimore	WBAL	285.5	1,050	5,000
Baltimore				WBAL	285.5	1,050	5,000	
Massachusetts				Babson Park	WBOS	364.4	650	100
				Boston	WBOS	364.4	650	100
			Boston	WBOS	364.4	650	100	
			Boston	WBOS	364.4	650	100	
			Boston	WBOS	364.4	650	100	
			Michigan	Battle Creek	WKBP	212.6	1,410	50
				Bay City	WKBC	272.6	1,100	250
	Bay City			WKBC	272.6	1,100	250	
	Dearborn			WDFD	230.8	1,300	100	
	Dearborn			WDFD	230.8	1,300	100	
	Minnesota	Minneapolis		KFZZ	215.7	1,390	10	
		Minneapolis		KFZZ	215.7	1,390	10	
		Minneapolis		KFZZ	215.7	1,390	10	
		Minneapolis		KFZZ	215.7	1,390	10	
		Minneapolis		KFZZ	215.7	1,390	10	
Mississippi		Columbus		WCOC	230.6	1,300	250	
		Utica		WQBC	215.7	1,390	100	
		Missouri		C. Clarendon	KFVS	223.7	1,340	50
				Cartersville	KFPW	263	1,140	50
				Cartersville	KFPW	263	1,140	50
			Cartersville	KFPW	263	1,140	50	
			Cartersville	KFPW	263	1,140	50	
			Montana	Hardin	KGHP	263	1,140	50
				Haure	KFBB	251.1	1,090	50
				Haure	KFBB	251.1	1,090	50
	Haure			KFBB	251.1	1,090	50	
	Haure			KFBB	251.1	1,090	50	
	Nebraska			Central City	KGES	204	1,470	10
				City Center	KMMJ	285.5	1,050	750
				Grand Island	KGDS	205.4	1,460	100
Grand Island				KGDS	205.4	1,460	100	
Grand Island				KGDS	205.4	1,460	100	
New Hampshire		Laconia		WVW	277.1	1,350	50	
		Manchester		WCOR	238	1,280	100	
		Tilton		WBRL	232.4	1,290	500	
		New Jersey		Asbury Park	WCAP	239.9	1,250	500
				Arlene City	WFG	272.6	1,100	5,000
			Camden	WCAM	223.7	1,340	500	
			Camden	WCAM	223.7	1,340	500	
			Camden	WCAM	223.7	1,340	500	
			New Mexico	Raton	KGFL	50	2,221	1,500
				State College	KOB	394.5	750	5,000
	New York			Astoria	WGBS	348.6	960	500
				Auburn	WMAO	220.4	1,360	100
				Bay Shore	WBST	211.1	1,400	500
				Brooklyn	WBBC	227.1	1,320	500
				Brooklyn	WBBC	227.1	1,320	500
North Carolina				Asheville	WNCN	286.9	1,010	1,500
				Charlotte	WBT	258.5	1,300	750
				Charlotte	WBT	258.5	1,300	750
		Charlotte		WBT	258.5	1,300	750	
		Charlotte		WBT	258.5	1,300	750	
		North Dakota		Aneta	KCFN	199.9	1,500	500
				Bismarck	KFYR	249.9	1,200	500
				Mandan	KCCU	239.9	1,250	100
			Devils Lake	KDLR	230.6	1,300	15	
			Grand Forks	KFJM	333.1	900	100	
	Ohio		Akron	WADC	238	1,260	1,000	
			Akron	WADC	238	1,260	1,000	
			Akron	WADC	238	1,260	1,000	
			Akron	WADC	238	1,260	1,000	
			Akron	WADC	238	1,260	1,000	
Oklahoma			Alva	KGFF	285.3	1,190	25	
			Chickasha	KCCW	282	1,190	250	
			Norman	WNAO	289.9	1,250	500	
			Oklahoma City	KFBC	272.6	1,190	750	
			Oklahoma City	KFBC	272.6	1,190	750	
		Oregon	Astoria	KFJI	249.9	1,200	15	
			Corvallis	KFBI	270.1	1,110	500	
			Corvallis	KFBI	270.1	1,110	500	
			Medford	KMED	249.9	1,200	500	
			Medford	KMED	249.9	1,200	500	
	Pennsylvania		Allentown	WCDA	287.7	1,120	100	
			Allentown	WCDA	287.7	1,120	100	
			Allentown	WCDA	287.7	1,120	100	
			Allentown	WCDA	287.7	1,120	100	
			Allentown	WCDA	287.7	1,120	100	

# State and City Index Continued

Texas (Continued)		
City	Call Meters	Kc. Watts
Dallas	KRLD 461.3	650 500
	WFAA 565.1	550 500
	WDR 461.3	650 500
Dublin	KFFL 275.1	1,090 15
El Paso	WJAH 234.2	1,280 100
Fort Worth	KFTZ 249.9	1,200 50
	KQOB 333.1	900 1,000
	WYAP 429.7	1,400 500
Galveston	KFLX 270.1	1,110 100
	KFUL 258.8	1,160 500
Greenville	KKFM 230.6	1,300 14
Harrison	KHMC 236.1	1,270 100
Houston	KFTV 230.1	1,270 100
	KPRC 283.9	1,200 500
	KTUE 212.6	1,410 5
San Angelo	KGFI 220.4	1,360 100
San Antonio	KGCI 229.4	1,360 100
	KGDR 206.8	1,450 15
	KGBC 229.4	1,360 100
	KTAP 228.9	1,310 20
	KTSA 285.3	1,130 2,000
	WDAI 499.7	900 5,000
Waco	WJAD 333.1	900 500
Utah		
Ogden	KFUR 225.4	1,330 500
Salt Lake C.	KDVL 234.2	1,200 500
	KPUT 249.9	1,200 50
	KSL 302.8	900 1,000
Vermont		
Burlington	WCAX 254.1	1,160 100
Springfield	WNBX 249.9	1,240 10
Virginia		
Arlington	NAA 434.5	690 1,000
Norfolk	WBWB 236.1	1,270 100
	WRCV 236.1	1,270 100
	WTAR 236.1	1,270 500
Petersburg	WLBG 214.2	1,400 100
Richmond	WBFL 234.2	1,260 100
	WMBC 220.4	1,360 15
	WBL 234.2	1,260 100
	WTA 234.2	1,160 15
Roanoke	WDBJ 230.6	1,300 250
Va. Beach	WSEA 1,140	500
Washington		
Bellingham	229.7	1,430 50

Washington (Continued)		
City	Call Meters	Kc. Watts
Everett	KFBL 223.7	1,340 50
Leavenworth	KGY 243.8	1,230 50
Pullman	KWOC 284.5	760 500
Seattle	KFOA 447.5	670 1,000
	KGCI 230.6	1,300 100
	KXA 344.6	860 500
	KJR 348.6	860 2,500
	KGL 230.6	1,300 100
	KMP 253.3	1,155 15
	KOMO 309.3	1,000 100
	KPCB 230.6	1,300 50
	KRSC 211.1	1,420 50
	KTW 234.2	1,260 50
	KUJ 199.9	1,500 100
	KVL 202.6	1,480 100
	KYA 348.6	860 500
Spokane	KFIO 245.8	1,220 100
	KFPY 245.8	1,220 250
	KGA 269.7	1,150 2,000
	KHQ 370.2	810 1,000
	KVI 234.2	1,260 50
Taroma	KMO 254.1	1,180 250
West Virginia		
Charleston	WOBU 267.7	1,120 50
Clarksburg	WOB 239.9	1,260 65
Huntington	WSAZ 249.9	1,240 100
Wheeling	WVVA 516.9	880 250
Wisconsin		
Appleton	WAJ 221.1	1,320 100
Beloit	WEBW 258.5	1,160 500
Eau Claire	WTAO 254.1	1,180 500
Fond du Lac	KFJZ 267.7	1,120 100
Kenosha	WCLO 227.1	1,320 100
La Crosse	WKBH 220.4	1,360 500
Madison	WHA 313.1	900 750
Sheila	WKDR 239.9	1,260 100
Manitowoc	WOMT 222.1	1,350 100
Millwaukee	WGWB 218.8	1,370 500
	WISN 270.1	1,110 250
	WISN 270.1	1,110 250
	WISN 270.1	1,110 250
Poyntette	WIBU 217.3	1,380 20
Racine	WRRS 247.8	1,210 50
Superior	WBAK 270.1	1,110 500
Stevens Point	WLB 302.8	900 1,000
W. De Witt	WBCB 241.8	1,240 250
	WV 249.9	2,500 50

Wyoming		
City	Call Meters	Kc. Watts
Laramie	KFBU 483	620 500
Alaska		
Anchorage	KFOG 344.6	870 100
Juneau	KFIU 225.4	1,330 10
Ketchikan	KGBU 225.4	1,310 500
Hawaii		
Honolulu	KGHB 227.1	1,320 25
Philippines		
Manila	KZIB 249.9	1,200 20
	KZRM 413	726.1 1,000
Puerto Rico		
San Juan	WKAQ 322.4	930 500
Canada (Continued)		
Bowmanville	CKCW 312.7	960 5,000
Calgary	CFAC 434.6	690 750
	CFCN 434.6	690 1,800
	CNRC 434.6	690 500
Charlottetown	CFYC 312.3	960 100
Edmonton	CHMA 516.9	580 250
	CJ 516.9	580 250
	CKUA 516.9	580 250
	CNRE 516.9	580 250
Edward Park	CJ 516.9	580 250
Fredrickton	CFNB 247.8	1,210 25
Halifax	CHNS 322.4	930 100
Hamilton	CHCS 340.7	880 50
Kingston	CKOC 340.7	880 50
London	CFCH 267.7	1,120 15
King	CFRB 291.1	1,030 1,000
Kingston	CFMC 267.7	1,120 20
	CFRC 267.7	1,120 500
London	CF 329.5	910 500
Midland	CKPR 267.7	1,120 50
Moncton	CNRA 222.4	930 100
Montreal	CFCE 410.7	730 1,650
	CHVC 410.7	730 750
	CKAC 410.7	730 1,200
	CNRM 410.7	730 1,600

Canada (Continued)		
City	Call Meters	Kc. Watts
Moose Jaw	CFRM 286.9	1,010 50
Burnaby	CFYC 410.7	730 500
Ottawa	CKCO 434.6	690 100
	CNRO 434.6	690 100
Prescott	CFCL 296.9	1,010 50
Preston	CKCF 249.9	1,210 7/8
Quebec	CHRC 340.7	880 45
	CKC 340.7	880 45
	CKV 340.7	880 100
	CNRO 340.7	880 100
Red Deer	CKLC 359.9	840 1,000
Regina	CHRC 312.3	960 500
	CJBR 312.3	960 500
	CKC 312.3	960 500
	CNRR 312.3	960 500
Saskatoon	CFQC 329.5	910 500
	CHUC 329.5	910 500
	CJWC 329.5	910 250
	CNRS 329.5	910 500
Scarboro	CJYC 291.1	1,030 500
	CKXC 291.1	1,030 500
Sea Island	CJOR 291.1	1,030 100
St. Hyacinthe	CKSH 312.3	960 50
Summerside	CHGS 287.7	1,120 25
Toronto	CFCA 356.9	840 500
	CHNC 356.9	840 500
	CHNC 356.9	840 500
	CJBC 291.1	1,030 500
	CHRC 356.9	840 500
	CKCC 291.1	1,030 500
	CKCX 356.9	840 500
	CKNS 291.1	1,030 1,000
	CNRT 356.9	840 500
Unity	CHST 267.7	1,120 10
Vancouver	CF 410.7	730 10
	CHFC 410.7	730 1,000
	CHRV 410.7	730 1,000
	CKPC 410.7	730 50
	CKWX 410.7	730 50
Victoria	CJCT 329.5	910 500
Winnipeg	CKK 384.4	400 500
	CNRC 384.4	400 500
Yorkton	CJXC 475.9	630 500

Canada (Continued from Page 43)		
City	Call Meters	Kc. Watts
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. 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, 7:30-8:30 pm. music. 7:45 pm. 9:30 pm. Sun, 11 am. Daily ex service. Mon, 7:45 pm. Sun, 11 am. Thurs, 10:11 am. Fri, 9:11 pm. Pacific.
CKMC		
Cohalt	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. Neuge. Slogan, "The Voice of Hamilton." Mon, Wed, Fri, 8:12:15 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.
CKPC		
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. Swan.
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. orgn; 5:45, dinner music; 6:30, children; 8:30, Thurs, 8:4 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. time; 3-4:30. music. Mon, Thurs, 7:15-11 pm. Eastern. On the air Feb. 27, 1924.
CNRT		
Quebec City	Que. 340.7m-890kc.	100 watts. C. N. R. Thurs, 8:30 pm.

CNRR		
City	Call Meters	Kc. Watts
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, 9:12-9:45 am. Thurs, 10-11 am. Fri, 9:11 pm. Pacific.
CNRW		
Winnipeg	Man. Can. 384.4m-780kc.	500 watts. Canadian National Railways. Announcer, R. H. Roberts. Mon, 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		
2JT		
Havana	Cuba. 46m-650kc.	5 watts. Jose A. Terry.
2JL		
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. Upliano 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 Porta.
2TW		
Havana	Cuba. 270m-1110kc.	20 watts. Roberto E. Ramirez.
2UF		
Havana	Cuba. 355m-644kc.	20 watts. Roberto E. Ramirez.
2XA		
Havana	Cuba. 230m-1300kc.	Lecuna Music Co.
2XX		
Havana	Cuba. 225m-1333kc.	5 watts. Antonio A. Ginard.
5DW		
Matanzas	Cuba. 270m-1110kc.	100 watts. Ramon Sarrila Calderon.

5EV		
City	Call Meters	Kc. Watts
Colon	Cuba. 360m-833kc.	5 watts. Leopoldo V. Fruto. Sun, 9-11 pm. Eastern.
6BY		
Cienfuegos	Cuba. 260m-1153kc.	200 watts. Jose Gandux.
6EV		
Calbarien	Cuba. 250m-1200kc.	50 watts. Maria Josefa 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.
6KP		
Sancti Spiritus	Cuba. 195m-1540kc.	20 watts. Antonio Galguera.
6KW		
Tuinuca	Cuba. 340m-880kc.	100 watts. Frank H. Jones. Slogan, "If You Hear the Koo of the Cuckoo, You're in Tune With Tuinuca." Daily 11:30-12:15 am. Eastern.
6LO		
Caibarien	Cuba. 335m-920kc.	250 watts. Manuel A. Calbarien.
6RG		
Sancti Clara	Cuba. 290m-1500kc.	20 watts. Rafael Garcia Perez.
6JX		
Tuinuca	Cuba. 278m-1080kc.	100 watts. Frank H. Jones.
6YR		
Camaguey	Cuba. 200m-1500kc.	20 watts. Diego Izorra.
7AZ		
Camaguey	Cuba. 225m-1333kc.	10 watts. Pedro Nogueras.
Mexico		
CYA		
Mexico City	Mex. 265m-1130kc.	500 watts. Mon. Fri, 6:45-8 pm. Sun, 6 pm. Partido Liberal Avanzado. Mexican.

CYB		
City	Call Meters	Kc. Watts
Mexico City	Mex. 270m-1110kc.	500 watts. El Buen Tono. Tues, Thurs, Sat, 7:30-9 pm. concert. Mexican.
CYF		
Oaxaca	Oax., Mex. 270m-1110kc.	Federico Zorrilla. "The Voice from South of Mexico." Tues, Thurs, 7-8 pm. Sun, 8:30-10 pm. Mexican.
CYG		
Mexico City	Mex. 300m-1000kc.	1000 watts. Secretaria de Guerra y Marina.
CYH		
Monterrey	Mexico. 311m-964kc.	1000 watts. Tarnava & Cia. Slogan, "The Industrial Center of the Mexican Republic." Daily ex Sun, 7:55-9:10 pm. Wed, Fri, 8:30-10 pm. Sun, 8-10 pm. Mountain.
CYJ		
Mexico City	Mex. 410m-730kc.	1000 watts. General Electric Co. Daily ex Sun, 8 pm. Mountain.
CYL		
Mexico City	Mex. 480m-625kc.	500 watts. La Casa del Radio. Announcer, George Navarro. Slogan, "The Land of Eternal Summer." Daily ex Sun, 1:30-2 pm. weather, financial reports, music. Tues, Fri, 8:30-9 pm. Sun, 8:30-9 pm. church. Mexican.
CYR		
Mazatlan	Sin., Mex. Rosseter y Cia.	
CYX		
Mexico City	Mex. 333m-500kc.	500 watts. Excelsior & Revista de Revistas. Announcer, Rafael Hernandez. Slogan, "Mexico, Land of the Aztecs." Mon, 8:30-9 pm. Mexican.





Table with 12 columns: Wave length, Frequency (kilohertz), Power (watts), Call signal, Location. It lists various radio stations across the United States, including CFAC Calgary, KFRC S. Fran., KFBU Larmie, WYCA Boston, and many others.

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 E. Me, 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

The new and improved Proof of Reception Cards are the most practical and convenient proof of reception of those distant stations. Contains spaces for complete reception record, dial settings, call letters, stamps and signature of announcer. Handy size, 3x5 inches. 150 for \$1 or send 25 cents (stamps or coin) for sample package. Shopping Service, Radio Digest, 510 N. Dearborn St., Chicago, Ill.

Radio Liars! You know one. Send dime and stamp for sure cure. Laugh! Leads of fun. Sterling Sales, Cedar Rapids, Iowa.

Motorcycles

USED MOTORCYCLES. All models. Easy payments. Free catalog. Western Motorcycle Co., 801 E. 15th, Kansas City, Mo.

Musical Instruments

Learn to play! Famous "Liken" rebuilt instruments. Saxophones, trumpets, trombones, clarinets, sousaphones, etc. All leading makes. Lowest prices. Beautiful folder, bargain list, free. Watersford, Instrument Rebuilders, Creston, Iowa.

If you want to buy radio sets, parts, logs, stamps or books, you will find them advertised in the classified columns—where buyers and sellers meet.

RAISE BELGIAN HARES advertisement. Includes text about raising hares for profit and a small illustration of a hare.

Patent Attorneys

PATENTS. Booklet free. Highest references. Best results. WATSON E. COLLEMAN, Patent Lawyer, 734 Ninth St., N. W., Washington, D. C.

Inventors who derive largest profits know and heed certain simple but vital facts before applying for patents. Our book Patent-Sense gives those facts; free. Lacey & Lacey, 721 F Street, Washington, D. C. Established 1869.

PATENTS—Write for Instructions. Carl Miller, Registered Patent Attorney (foreign and domestic), 211-R McGill Building, Washington, D. C.

Patents

INVENTIONS COMMERCIALIZED. Patented or unpatented. Write Adam Fisher Manufacturing Company, 655 Enright, St. Louis, Missouri.

Radio

DIRECT FACTORY SALE

Wholesale prices. Tremendous savings. Selling direct to you. Here are some of our many items: 30 Henry Choke, 400 M. A., \$2.19; 10 Henry Choke, 400 M. A., \$2.48. Power Transformers for all kinds of Eliminators and for all types of A. C. Tubes, at Special Low Prices. EVERY ITEM FULLY GUARANTEED. Promptly shipped, upon receipt of order. Send for free illustrated catalog today. Todd Electric Co., Inc. (Manufacturers), 36 West 20th Street, Dept C, New York City.

EDISON "A" BATTERIES—3 cell, 20 ampere hour, in neat metal cases. Price \$3.50 each, ten or more \$3.00 each. Cash with order. Department B, 25 East Street, Indianapolis, Indiana.

Change your photograph into a loud speaker with the Pultone Unit for only \$2 C. O. D. or postpaid if cash accompanies order. Bronstein's Pharmacy, 4600 Lincoln Ave., Chicago.

Ship a "No Hum" over your detector tube. Stops that disagreeable hum. Price 60c. Write Patent Post charges. Samuels Radio Parts, 622 Middle Ave., Ellyria, Ohio.

Attention, Radio Buyers. We are closing out our radio stock. Highest cash offer takes it. No correspondence. Stock consists of all sizes of variable condensers, fixed condensers, resistors, potentiometers, loud speakers, etc. Bronstein's Pharmacy, 4600 Lincoln Ave., Chicago.

Charging Batteries Starts You. \$75 to \$125 Weekly. Let me show you how to make big money right from the start. I've prepared a FREE book explaining all details. First week's profit pays for all equipment. You can get all the battery charging business in your community with my Service Station Chargers—12 years ahead of ordinary chargers—handles 50% to 70% more batteries. I explain everything—start you in a business of your own and put you on the way to big money. Write for FREE BOOK. C. F. HOLMES, Chief Engineer, Dept. R.D., Independent Electric Works, 5215 Ravenswood Ave., Chicago, Ill.

Stop Using a Truss. Free-Trial Plapao-Free. STUART'S ADHESIVE PLAPAO-PADS are surprisingly different from the truss—being medicated-chemical applicators—made self-adhesive purpose—to keep the muscle-tonic PLAPAO applied continuously to the affected parts, and to minimize painful friction and dangerous slipping. It is stress-resisting or spring attached. Awarded Gold Medal San Francisco—Grand Prix—Inexpensive. For almost a quarter of a century satisfied thousands report success without delay from work. Process of recovery natural, no subsequent use for a truss. Awarded Gold Medal and Grand Prix. Trial of "PLAPAO" will be returned to you upon request absolutely FREE. Write name on coupon and send TODAY. Plapao Co., 176 Stuart Bldg., St. Louis, Mo.

Radio

We have an oversupply of the famous Fultone loud speakers which we are disposing of at only \$4.95 C. O. D., or postpaid if cash accompanies the order. Bronstein's Pharmacy, 4600 Lincoln Ave., Chicago.

High grade Radio parts for sale. Earn Fry, Box 187, Earlham, Iowa.

Wanted to Buy

Crosley buys—Crosley No. 51 Radiolas Model III. Advise how many you have and what price. Lambert Mfg. Co., Wichita, Kans.

Radio Books

Press and public concede it to be the best ever produced. "Radio Theory and Operating" by Mary Texanna Loomis, member Institute of Radio Engineers. Lecturer on Radio, Loomis Radio College, 886 pages, 700 illustrations. Used in all Government and private radio schools and many universities and technical high schools. Comprehensive, up to date, the standard on radio, third edition, revised. Price \$3.50 postage paid. At book dealers or order direct from Loomis Publishing Company, Dept. K, Washington, D. C.

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New 1928 RADIO ATLAS and STATION LOG ready. 32 pages. Lists of nearly 800 stations by call letters and wave lengths with simple logging space. Stations listed also by states, cities and provinces. Four double page maps—special distance finding map; Radio map of the U. S.; Radio map of Canada; Radio map of the world. Maps and data of American Relay League, Federal Radio Commission and Radio zones. Wave length conversion table for kilocycles and meters; comparative time chart in principal cities; international call assignments—\$25 35 cents (stamps or coin) to Shopping Service, Radio Digest, 510 N. Dearborn Street, Chicago, Ill.

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Now! in form, light in weight, great volume, sharpest possible tuning, unusual clearness, non-directional. Shipped entirely assembled, ready to unroll and attach. It is the best aerial yet invented for general reception. Price low. Send for my treatise on aerials.

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We guarantee this tube to double your range and distance or your money refunded. This tube has proven to be 6 times as sensitive as an ordinary 201A tube. The Presto tube is setting records for distant reception. Increases selectivity 50%. Tested by Radio World, Radio Digest and other leading laboratories. Insert tube in detector socket, and set it ready for operation. One year of use guaranteed. Try at our risk, 50,000 users today. You to be the judge. Money refunded if not satisfied. The latest in tubes. Order Today. Price, \$3.00 Postpaid.

Verified Statements of Users: "You are right, the Presto tube does bring the distant stations closer, and noticeably clearer. Would like to buy four more." George A. Scott, Denver, Colorado. "I use about half as much current. Would like to buy four more." Robert W. Brown, Chicago, Ill. "I have obtained from your Presto tube, even through static on band number, what would take \$10.00 for Presto tube elsewhere." J. E. Henderson, Detroit. "Have added station on my list." D. G. Foster, Asheville, N. C. "I have used your tube." J. E. Henderson, Detroit. PREXTO MFG. & SALES CO. Dept. 2—Beaumont, Texas

B BATTERY ELIMINATOR. Only \$1.95. MONEY-BACK GUARANTEE. No more worry with "B" Batteries! Hook up a "B" Battery Eliminator and forget battery troubles forever. This wonderful new invention means better reception, sharper tuning. Give you more real pleasure from your set. Completely Equipped—No "Extras" to Buy. Operates perfectly on direct or alternating current, giving up to 30 volts current, and using the full wave of the power supply. Simple directions enclosed—anyone can plug it in to any kind of set up to six tubes. Constant voltage gives set more power. Costs no more than set of "B" Batteries. Solidly built in beautifully finished metal case with genuine Bakelite top. SEND YOUR ORDER NOW. Don't blame your set because run down "B" Batteries won't let it work right. Order your Eliminator NOW. Write name and address on a piece of paper, plus a dollar bill to it, and mail it TODAY. Pay postage balance (\$1.95 plus a few cents postage) when he delivers your Eliminator. Use it ten days. If not more than satisfied, return it and get your money back. THE ROLL-RADIO CO. Dept. B-220, 3d & Sycamore, Cincinnati, O.

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