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 Final Standings and Photos of Winning Announcers; Putting Up Aerials; Pictures and Story of Station KGO; How to Build a 100-Meter Receiving Set

# Radio Digest

EVERY  
WEEK

PROGRAMS  
**Illustrated**

TEN  
CENTS

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

Vol. X Copyright 1924 By Radio Digest Publishing Co. SATURDAY, SEPTEMBER 27, 1924 No. 12

## HOOVER ASKS RADIO AID

### NEW SUPER STATION WILL OPEN SHORTLY

CROSLY PLAN ENORMOUS  
STRUCTURE NEAR CITY

Operated by Remote Control; Many  
Special Features Embodied in New  
Building at Cincinnati

CINCINNATI.—Christmas will see the opening of the new Crosley Radio corporation five-kilowatt station.

This new super-power station, containing all the most modern improvements known to the science, is nearing completion on its commanding hill position adjacent to the city.

Operated by remote control, the station will be one of the most completely outfitted and equipped in existence. The operating building is being built in the form of one of the country's foremost astronomical observatories. Two steel towers, each 200 feet in height, will carry the aerial. A home will be provided for the resident operating engineer.

Special wires will be used to carry the voice or music from the studio or theaters miles away. By means of line amplifiers the broadcast sounds will be kept of the same quality as though it were being sent out from the same room with the artists.

Several innovations will make it possible to limit the waits between program numbers to five seconds.

Many new features of interest to Radiophans will be broadcast from this station during the coming winter when operations get under way. Fred Smith, the popular announcer, when asked of his plans, merely winked his eye.



### CALLS MEET TO DECIDE ON BEST POLICY

Want More Larger Stations  
and Fewer Small Ones  
—Center of Discussion

*Delegates Being Named*

WASHINGTON, D. C.—With plans for the coming Radio conference called by Secretary of Commerce Hoover rapidly being whipped into shape, the future policy of broadcasting hangs in the balance.

On October 6 the conference, which will according to all indications, be one of the largest ever held, will go into session.

The much mooted question of many small stations versus a few large, powerful ones will claim the center of attention. During the past few years the plea for the latter has been coming more and more insistent. By re-vamping the present regulations the commerce department

(Continued on page 2)



On the left is shown Edith Seewald, soprano, who sang recently from Station WLS when the pupils of Professor Nakutin gave an especially arranged program. Above is Roberta June Maple, pianist, who on a recent visit to Cleveland was kind enough to favor the audience of WJAX, the Union Trust, with her artistry before the microphone. Right, is Marcella Craft, soprano, in the role of "Salome" at Station WOE.

# THIRD CONFERENCE OPEN TO EVERYONE

## DELEGATES BEING NAMED BY NUMEROUS FIRMS

### Many Questions Regarding All Phases of the Art Will Be Discussed; Largest Ever

(Continued from page 1)

ment may make service and license requirements so comprehensive that many stations now operating without sufficient financial resources may be compelled to submit to those that can meet the need.

At present the department is receiving the names of delegates to the conference from a number of associations and firms in the discussion. An announcement of the formal advisement committee of the conference is expected shortly. This committee will be composed of thirty delegates interested in all phases of Radio activity.

Insofar as the conference is open to all, participants on both sides of all questions arising are expected. In this manner a more thorough representation for the actual problems in hand is expected than ever before.

The man who prefers the Radio for its cultural and home influences will have the opportunity to discuss the question with his neighbor who prefers the thrill he gets from listening to and tuning in stations at great distance.

### Consider Pay for Talent

Although the question of who shall pay the Radio talent is not immediate it will in all probability be discussed. The swelling flood of demand for better programs and still better programs and its multiform public preference will be considered.

Will this demand be better filled by 50 great stations or 500 small ones? Is a concentration of resource and talent all that is required?

It is believed that steps to solve these questions will occupy the limelight although a direct realization of them whatever the verdict will not be possible until the enactment of legislation empowering the commerce department to cope adequately with the situation.

The point stressed by the commerce department officials is that they are anxious to receive all suggestions possible either in writing or by appearance at the conference.

# FANS OBJECT TO NEW MICROPHONE

## Want to Hear Ringside Noises When Prize Fight Is Being Broadcast

BOSTON, MASS. — Opinion as to whether an announcer telling the story of a sporting event being Radiocast shall be the sole attraction or whether he must share with the tumult of the crowd seems to be divided.

It's all caused by the introduction of the new type "mike," the hushaphone.

When they use it, only the voice of the announcer is heard. In a series of tests made with the instrument a phonograph played within a very short distance of it was absolutely inaudible. According to reports from WBZ, the Westinghouse station at this city, where the tests were made, not a note from the phonograph went on the air.

Then WBZ tried to use it for the announcing of the fight between Rojas and Sharkey. None of the noise or familiar sounds of the combat went out. And immediately there was a shower of letters from fans.

"We can't hear the ringside noises. What's the matter?" they asked. "A fight isn't a fight unless we can have all the hoots and other racket that go with it." Some complained that before, it was possible to imagine you were right at the ringside. Now you couldn't.

Others stated that everything was fine. The voice of the announcer was clear and no difficulty in distinguishing it was encountered as in previous events.

So to find out the exact consensus of opinion both the regular "mike" and the new hushaphone were used. WBZ wonders which is the logical one.

The new hushaphone is described as a tubular affair with the microphone inside the tube. At the front there is a small aperture into which the announcer talks.

# "Senator Shultz" Series Starts; Politics Theme

CINCINNATI.—"Senator Shultz," assisted by his daughter, Marion Klein, starred last week in the first of a series of political episodes from Crosley WLW here. The "Senator" has become so popular a figure at WLW because of his droll

# MOTHERS BROADCAST WELCOME



Proud mothers of two of our dauntless round-the-world flyers, their voices trembling with joy and emotion, but with steadfast belief in the work of their sons, welcomed them back into America from Station KHJ recently. While in Portland, Maine, two tired men listened for the first time in five months to the sounds of familiar and loved voices. P. & A. Photo

witticisms that the station has arranged to feature him once each month in humorous political sketches in which he assumes the leading role.

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# Looking Ahead

**Max Sasanoff Was a Convict When He Sang for WSB.** It was then that his talents attracted the attention of the world outside of the federal penitentiary at Atlanta. He had been the dupe of a counterfeiting plot; he had sinned; he had been incarcerated. But when after hearing his golden voice, the waiting world learned that he was an exceptional painter too, he was given another chance. Read his interesting story in next week's Radio Digest.

**The First's Are Always Debatable—So It Is with the First Radiocast Station.** Which was actually the pioneer station to go on the air with a program designed to entertain the public? Several stations have claimed the honor, but the REAL one has been hiding its light under a bushel. Another Digest feature next issue.

**KYW, an Old Timer and Premier Broadcaster of Opera,** will be pictured in detail next week. Two full pages of photos will introduce you to the many people responsible for the excellent programs radiated from this popular Westinghouse station.

**Wave Trap Effects in Antennas** have been observed carefully by Ray Blain who will tell you his experiences in eliminating interference by proper aerial construction next week. Now is the time to repair your outside aerial.

**Inductances and Tuning** is the subject of the next article in Thomas Benson's helpful series for Radiophans. Trace the electromagnetic waves through your receiving set with Mr. Benson.

Newsstands Don't Always Have One Left

WHEN YOU WANT

# Radio Digest

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City.....State .....

# HIGH POWER WORKS BEST ON LONG WAVE

## CLAIM OF SARNOFF, AFTER STUDING CONDITIONS

### Introduces Super Power Broadcasting Idea in England, France and Germany with Excellent Results

NEW YORK.—Just returned from Europe where he visited leading Radio engineers and scientists abroad, David Sarnoff, of the Radio Corporation of America, is still a champion of long wave length for trans-oceanic Radio communication after making a thorough analysis of the developments which have gone forward in short waves in Europe, under governmental and private supervision and initiative.

"While in England," said Mr. Sarnoff, "I saw a good deal of Mr. Marconi and his experiments with short waves. To my mind, one of the greatest advantages which will result from experiments now being conducted, is the increased knowledge we shall gain of the behavior of different wave lengths in the conducting medium between the sending and receiving stations.

**U. S. Methods Superior to Europe**  
"My conclusions, after investigating the broadcasting systems of England, France and Germany, are that broadcasting, which was initiated in our own country, has advanced in the United States, both as a public service, and as an industry, to so great an extent as to make comparisons with European countries almost impossible. In France it is just beginning, and in Germany it has hardly begun.

"In England greater progress has been made than in other European countries. About 800,000 government licenses have been issued permitting British listeners to receive programs from the air. But even in England, broadcasting cannot be said to compare favorably with the United States, either as to quality or variety of programs, or small cost of receiving apparatus, manufactured and sold for home use.

**Less Freedom Abroad**  
"Nor is there to be found abroad the same freedom from censorship and restriction which exists here. For example, in England, where freedom of speech has been such a heralded tradition, political broadcasting is forbidden over the Radio stations, which are all controlled by the British post office. In other European countries, governmental regulations and restrictions are even more severe, and these, in a large measure, restrict and retard the growth of the broadcasting art in Europe, and at the same time deprive their listening public of the freedom, enjoyment, and instructive information available to all in the United States.

**Reradiocasts Programs**  
"I endeavored to interest the British, French and German broadcasters in the idea of increasing the power of their sending stations, so that the programs of London, Paris and Berlin might be easily heard by the American listening public. At the same time I suggested the possibility of American stations sending over their programs, which could be regularly heard abroad. Much interest was shown in these proposals, and I believe that an era of trans-oceanic broadcasting is near at hand. Realization of such a plan, would greatly enhance the value of broadcasting to the public on this side as well as on the other side of the Atlantic ocean; and help to bring the old and the new world a little closer together."

# Describe Fight from Ringside; Is Big Hit

## Wills-Firpo Battle Given Public Blow by Blow

SCHENECTADY, N. Y.—When Harry Wills met Luis Firpo at Boyles' Thirty Acres on September 11, thousands of listeners heard a blow-by-blow description of the fight broadcast by WGY, General Electric station here.

The fight story which came to the listeners almost as glove touched body was broadcast by WGY by way of a land wire through the co-operation of WJZ of New York.

J. Andrew White, the man who reported the Democratic convention, the recent Epinard race at Belmont and the fight between Dempsey and Firpo, told the story of the battle between Firpo and Wills.

Part of the preliminary bouts were also announced to allow time for all the fight fans to tune to a fine point for the reception of the main bout.

### Swiss Open Station

ZURICH.—The new broadcasting station was recently opened here. M. Haab, minister of posts and railroad, made the opening speech.

# ANNOUNCE FINAL STANDINGS FOR GOLD CUP AWARD RACE

**Witten Second, Bill Hay Third, Hired Hand Fourth, Fitzpatrick Fifth—Fourteen Carat Trophy to Be Presented at New York Show**

(Winners' Pictures on Pages 4 and 5)

J. M. Witten, WOS, W. G. (Bill) Hay, KFKX, the "Hired Hand," WBAP, and Leo Fitzpatrick, WDAF, followed close in the wake of George D. Hay, WLS, winner of the Radio Digest Gold Cup, in the final tabulation of the votes post-marked prior to the close of the exciting contest on the midnight of September 8. Finishing in the order named, the five popular announcers vied with one another for better positions, until the last ballot received, postmarked 11:45 p. m. at Dallas, Texas, September 8, was received and credited to the Hired Hand. Incidentally, this last vote to get under the finish line was cast by a fellow announcer and was a beautiful tribute to the good fellowship existing among the men behind the microphones.

The Gold cup, made entirely of 14-carat gold in the form of a standard microphone, artistically decorated and mounted on an ebony pedestal, will be presented to George Hay Saturday evening, September 27, at the Radio World's Fair, now going on at the Madison Square Garden, New York city. The cup, on exhibit at the Radio Digest booth at the Radio fair, has been insured for \$5,000 against theft.

**Next Fifteen Get Certificates**  
Handsomely engraved certificates of honorable mention will be presented to the fifteen announcers highest in number of votes following the winner.

Besides the many nominees in the race from this country, entries were received in the contest from Switzerland, Australia, France, Cuba, England, Canada, Mexico and New Zealand. The widespread interest aroused, indicated by the more than 1,000,000 votes received, was almost unbelievable.

The Radio Digest Gold Cup Award will be annual. Announcers not winning the award or certificates of honorable mention this year may look forward expectantly to next year's contest, when a new gold cup will be presented to the then most popular Radio announcer.

**Final Contest Standings**  
At the close of the contest the standing of the contestants receiving fifty or more votes was as follows:

Jerry Sullivan	WQJ	2,639
A. R. Herske	WTAM	2,637
Paul Johnson	WLAG	2,440
S. L. Rothafel (Roxie)	WEAF	2,419
N. T. Granlund	WHN	2,334
Howard Milholland	KGO	2,333
F. W. Johnson	CHYC	2,238
Otto Becker	WGR	1,857
Chas. Erbstein	WTAS	1,726
Jennings Pierce	KGO	1,704
N. D. Cole	WHO	1,659
C. R. Emery	WGI	1,621
Harold Selyer	WHAS	1,368
Joseph Sartory	WCAE	1,206
Major Andrew White	WJZ	1,183
Milton J. Cross	WJZ	1,145
Paul A. Greene	WSAI	1,045
Johnnie Mack	WJAS	1,035
J. T. Schilling	WHB	986
A. F. Edes	WBZ	894
Henry Field	KFNF	839
Walter Wilson	KYW	821
A. O. Coggesil	WGY	721
C. W. Kirby	WWJ	703
Claire Morrison	KPO	693
John Reilly	WJAR	687
John T. Griffin	WHAH	650
Eddie H. Smith	WGY	630
Paul Reese	KFI	625
R. P. Falcon	PWX	579
C. A. Entreklin	WCAH	567
Victor Martin	WHAM	558

## ISSUE LICENSE FOR PORTABLE STATION

WASHINGTON, D. C.—The department of commerce has just issued a broadcasting license to the Radio Corporation of America for a portable station, to have the call WEBL. The station has a class A license for a wave length of 226 meters and 100 watts power. It is understood that the portable station will be used in connection with exhibitions given by the Radio Corporation throughout the country.

C. A. Gaal	KUO	145
Laigh C. Parker, Jr.	KFFY	143
Art Burroughs	2LO	139
Helen G. Hatfield	WCK	108
Walter Darling	CFCF	103
A. E. M. Bach	WBZ	91
Miss Alberta Bachman	WBAH	91
Earl Buell	WLAG	91
Jacque Cartier	CKAC	91
Chet Gaylord	WDBH	91
Crede Harris	WHAS	91

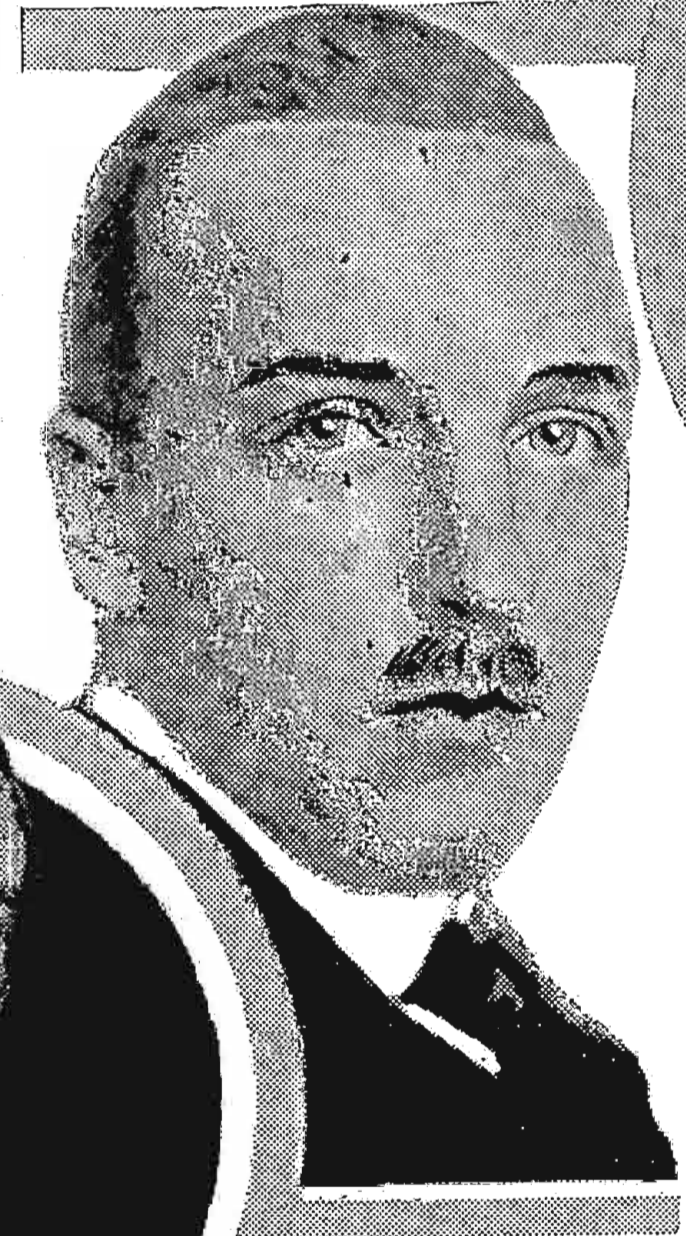
## WIP BROADCASTS TO CHILDREN NEW WAY

**BEDTIME STORY TOLD AT BOTTOM OF ATLANTIC**

Sings Song and Reads List of All "Gold-Star" Children, Each Will Receive Pin

PHILADELPHIA.—Some cynic once said there is nothing new under the sun. He failed to reckon with the ingenuity of the men who direct and operate the broadcasting stations.

On September 13—and notice the number—Uncle Wip, renowned bedtime story teller of Station WIP of Gimbel Brothers department store in Philadelphia descended fifty feet under water to the floor of the Atlantic and from there broadcast his bedtime story and sang the usual lullaby that thousands of youngsters go to sleep by every night. On July 31, Gimbel Brothers proved



Miss Elsie Barge, pianist, who played for Radiophans from Station KYW during a program broadcast from the Congress hotel Saturday evening, September 13. A special wire was run from the hotel to the Westinghouse station on the roof of the Edison building. On the same program were Burton Thatcher and Paul Whitman's famous collegian orchestra.



Above is shown Burton Thatcher, well known baritone. To the left, A. Vincent Gauthier, director of Paul Whitman's collegian orchestra, who are noted entertainers of wonderful ability.

Name	Station	Votes	F. A. Buhlert	KFJC	552
George Hay	WLS	129,651	Robert Weidaw	WGY	527
J. W. Witten	WOS	115,683	Karl Stefan	WJAC	441
Bill Hay	KFKX	111,731	E. J. Bowers	CFCA	389
Hired Hand	WBAP	108,649	Carl E. Hammond	KFOA	385
Leo Fitzpatrick	WDAF	82,341	Don MacPhee	WAAW	380
John Daggett	KHJ	20,606	D. R. P. Coats	CKY	365
Graham McNamee	WEAF	14,678	Morgan Eastman	KYW	322
Richard Haller	KGW	13,707	W. A. Fay	WGY	313
H. W. Arlin	KDKA	13,052	William Ludgate	KSD	301
Fred Smith	WLW	11,535	J. K. Bohanan	WTAR	257
Lambdin Kay	WSB	10,925	Eddie Squires	KDKH	242
Kolin Hager	WGY	10,794	Chas. H. Meester	WCBR	238
Jack Nelson	—	9,588	Steve Trumbull	KYW	234
Gene Rouse	WOAW	9,231	Eleonor Poehler	WLAG	227
E. W. Tyson	WWJ	8,941	Gilson V. Willets	WOC	225
Sen Kaney	WGN	7,339	J. H. DePew	WCBF	224
S. W. Barnett	WOC	4,326	John F. Patt	WDAF	194
Elmer G. Johnson	WJAX	4,318	Lester Palmer	WOAW	183
Major J. J. Fanning	WNAC	3,987	Joseph Nassau	WOO	167
Miss V. A. L. Jones	KSD	3,146	J. Lewis Reed	WJZ	167
H. E. Ehrhart	WDAF	2,970	C. D. Tomy	WCX	152

Bert Hooper	CKCK	91
C. R. Randall	WEAF	91
H. Ernest Stafford	WSAD	91
Helen M. White	WGR	91
Carl Mentzer	WHAA	74
Robert Whitley	WMAQ	52

## New Radiocast Station 2BE Opens at Belfast, Ireland

LONDON, ENG.—According to reports from the British Broadcasting company, the new central station at Belfast (Ireland) is now in operation, with the call letters 2BE, working on 435 meters. A group of professors of Belfast university have already drawn up an interesting program of lectures on popular science which will be broadcast from this station.

## Lone Station Very Poor

ROME.—There is only one broadcasting station in all of Italy, and that one has not given very satisfactory results. This station, at Rome, is having a new transmitter installed, however, which is designed to improve the service. This city, which is only about 150 miles from Naples, has been working on five kilowatts and still has not been able to send the program as clearly as some London stations with only two kilowatts.

that it was possible to broadcast from the depths of the sea when a diver successfully accomplished the feat from a depth of close to 75 feet.

Then Uncle Wip decided that perhaps his following would like to hear a bedtime story interspersed with comments on how the fishes looked in their natural aquarium.

**"Mike" in Special Diving Suit**  
For the occasion a special diving suit was constructed. In his brand new diving helmet a special microphone was installed. From this microphone waterproof cables led to transmitting apparatus which in turn relayed the story along to WIP at Philadelphia where it was broadcast.

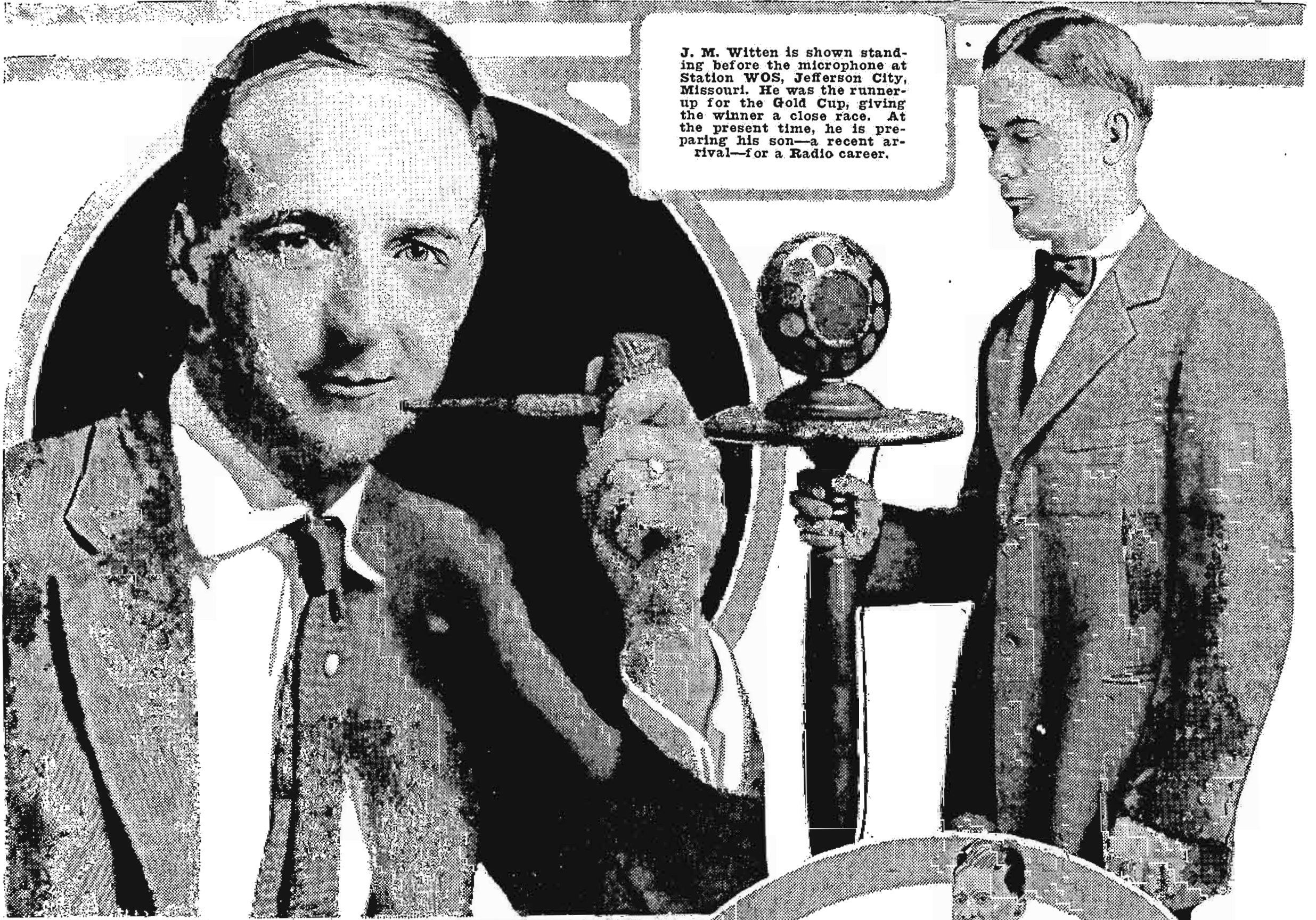
Not only did he tell the much awaited story and sing the twilight song but he read the list of names of all the "Gold Star" children, each of whom will receive a little gold pin in the likeness of a diver's helmet for excellence in school work.

And this was the first time a bedtime story man ever told a bedtime story from such an unusual place.

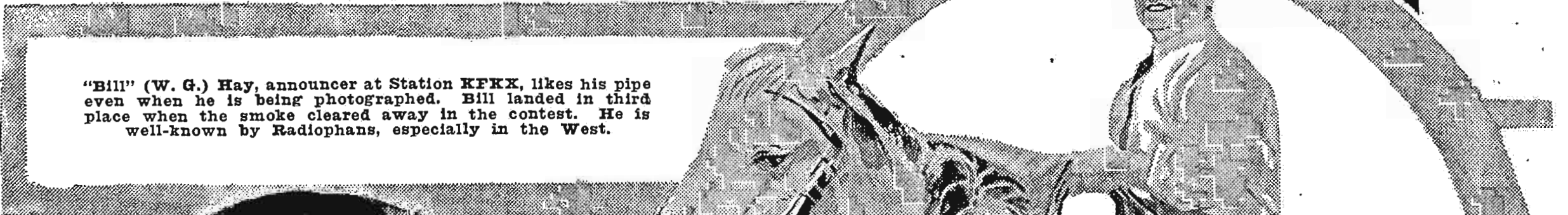
There is something new under the sun.

The new transcontinental and trans-Atlantic commercial station near Gothenburg, Sweden, is almost finished, the receiving station being already in service.

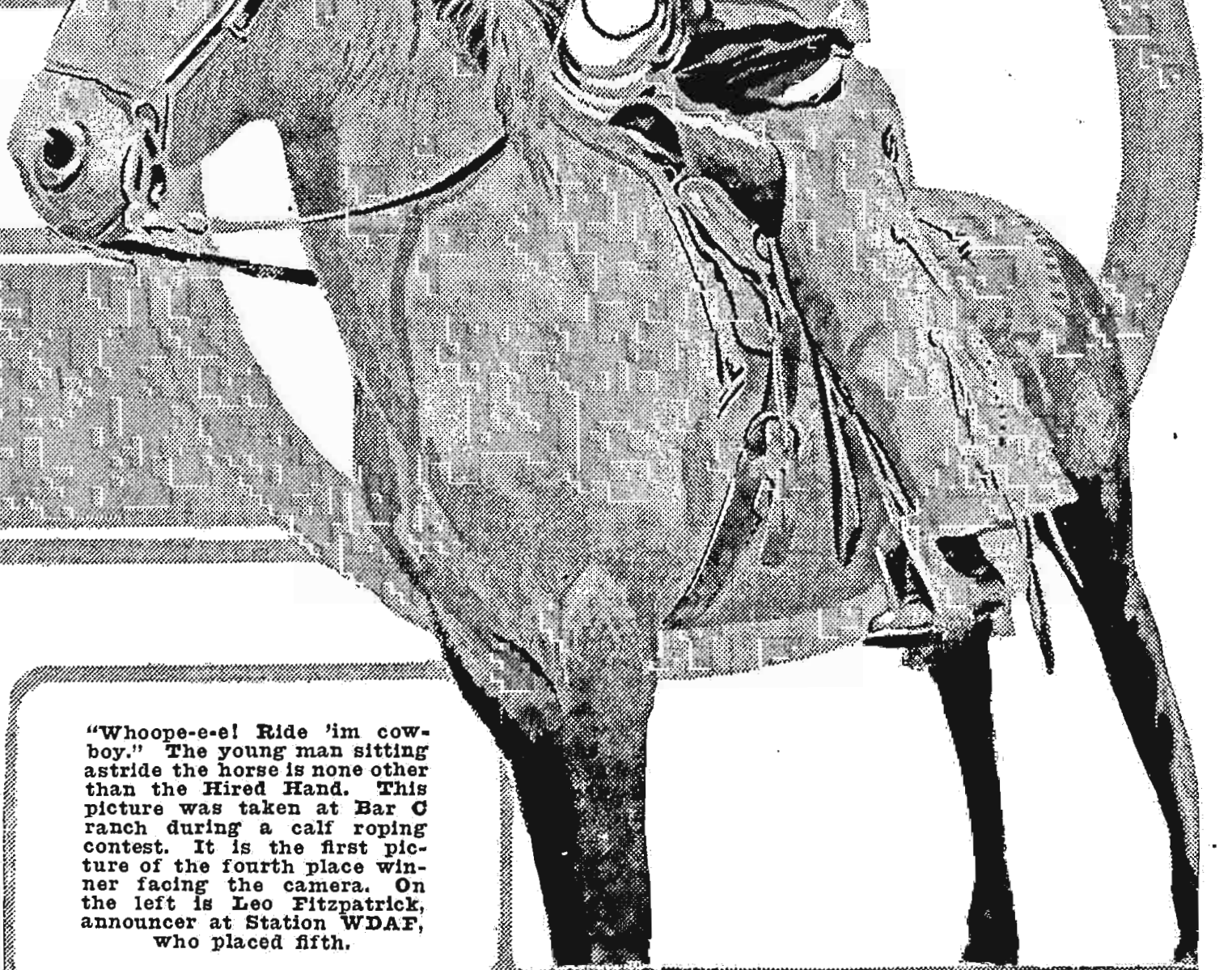
# Four Announcers Finish Close to Winner



J. M. Witten is shown standing before the microphone at Station WOS, Jefferson City, Missouri. He was the runner-up for the Gold Cup, giving the winner a close race. At the present time, he is preparing his son—a recent arrival—for a Radio career.

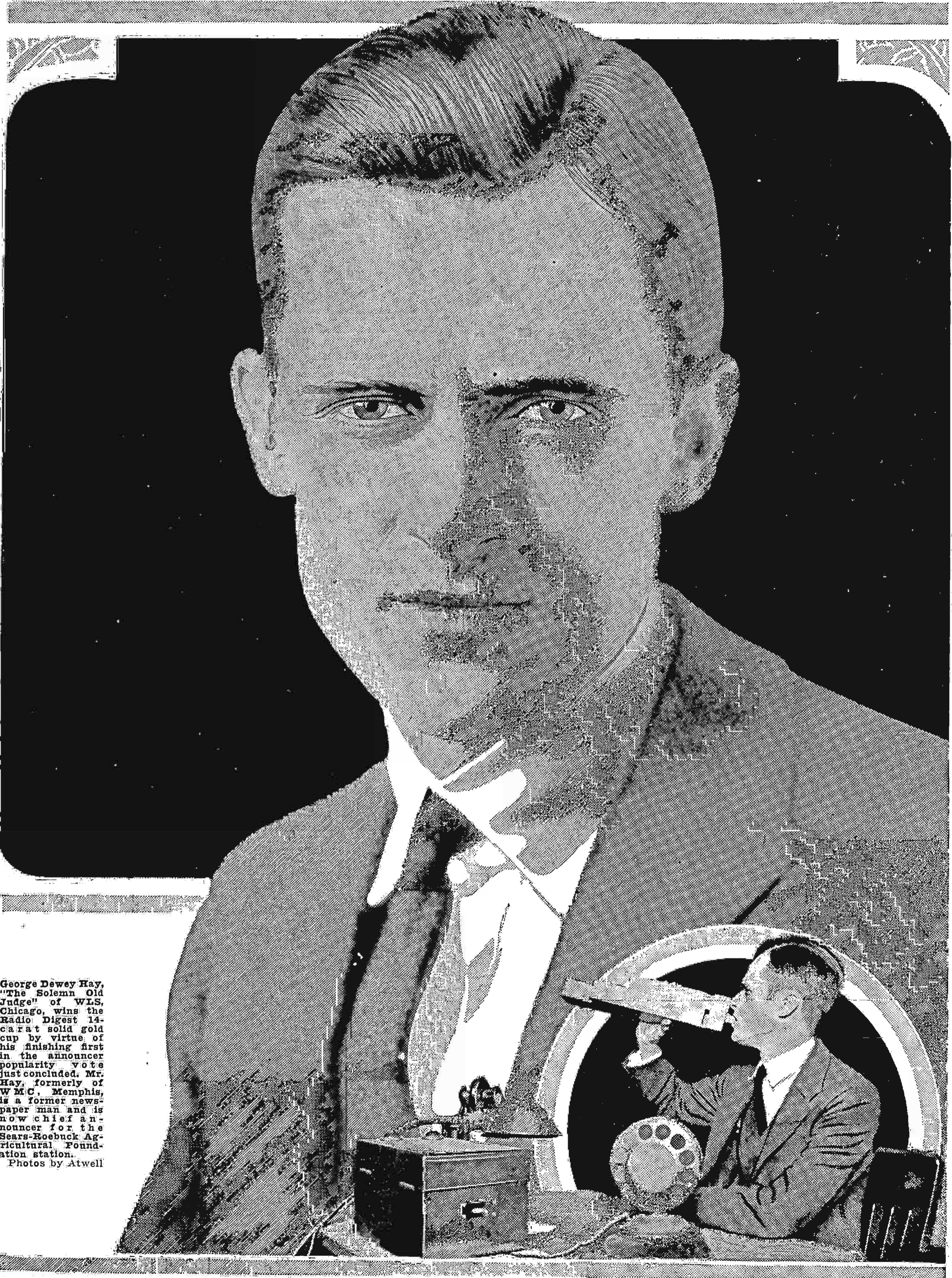


"Bill" (W. G.) Hay, announcer at Station KFKX, likes his pipe even when he is being photographed. Bill landed in third place when the smoke cleared away in the contest. He is well-known by Radiophans, especially in the West.



"Whoop-e-e! Ride 'im cowboy." The young man sitting astride the horse is none other than the Hired Hand. This picture was taken at Bar C ranch during a calf roping contest. It is the first picture of the fourth place winner facing the camera. On the left is Leo Fitzpatrick, announcer at Station WDAF, who placed fifth.

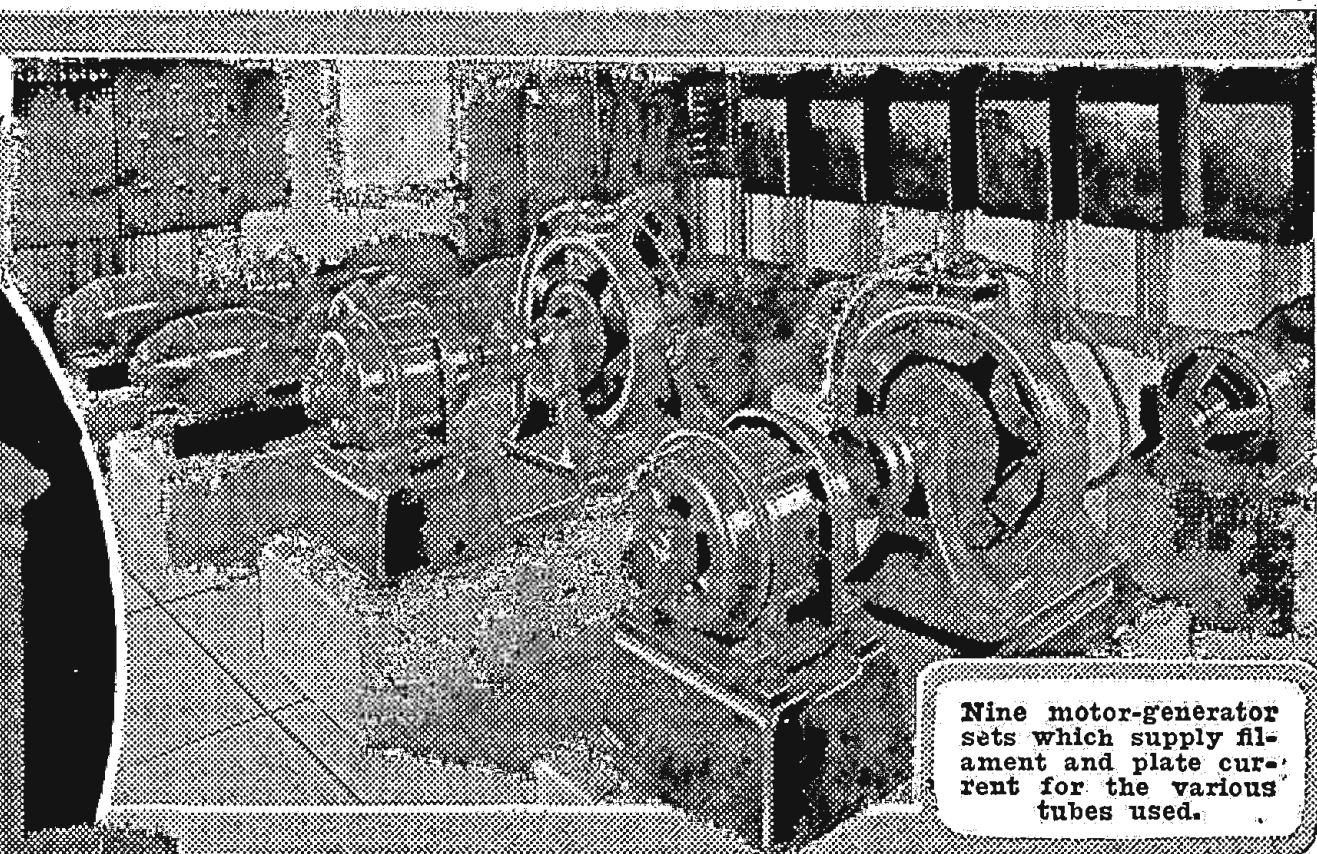
# George Hay, World's Greatest Radio Announcer



George Dewey Hay, "The Solemn Old Judge" of WLS, Chicago, wins the Radio Digest 14-carat solid gold cup by virtue of his finishing first in the announcer popularity vote just concluded. Mr. Hay, formerly of W M C, Memphis, is a former newspaper man and is now chief announcer for the Sears-Roebuck Agricultural Foundation station.

Photos by Atwell

# KGO, Entertainer of the South Pacific



Nine motor-generator sets which supply filament and plate current for the various tubes used.

KGO studio building at night during a program broadcast. This building contains seven main rooms. The reception room, correspondence room, battery and generator rooms, are on the first floor. On the second floor are the large concert broadcasting studio, the artists' studio, or smaller broadcasting studio, the Radio control room, and an artists' waiting room. The latter named room is used by singers, players and others who are on the program. They may listen in over a loud speaker and get ideas before their turn in front of the microphone.



Martin P. Rice, director of broadcasting for the General Electric company.

## How a Great Station Began

By C. W. Rhodehamel

ALMOST the total area of the earth's surface covered by darkness, may be reached by voices and music from KGO when it is midnight on the Pacific Coast.

Speaking before a KGO microphone on the evening of January 8, this year, Martin P. Rice, director of broadcasting of the General Electric company, was heard to say that it would be "the ambition of engineers and studio staff of KGO to send abroad the music and messages of favorite artists and speakers with a greater effectiveness and a wider range than broadcasting had hitherto attained."

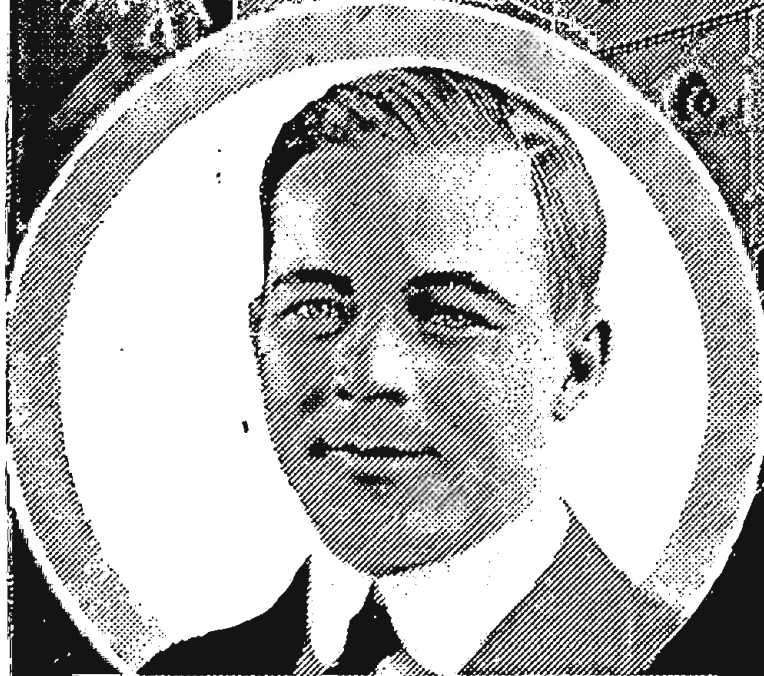
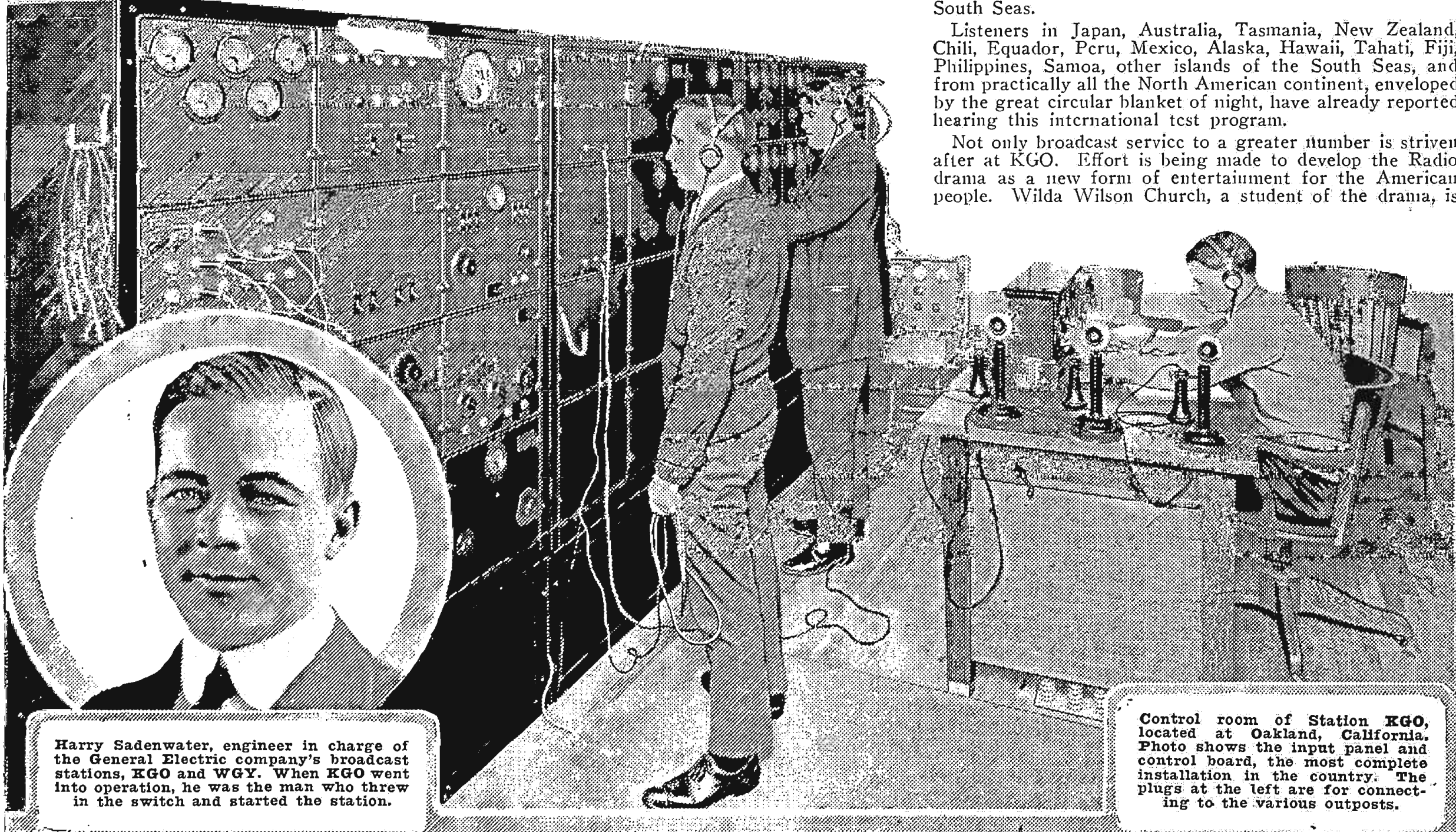
With trembling hand, Harry Sadenwater, engineer in charge of the company's broadcasting stations, plugged into the control board for the initial broadcast. On this same evening Howard I. Millholland, now studio manager of KGO who is known to Radio listeners simply as "HM," was carefully coached by Kolin D. Hager of WGY for his initial bow before the invisible audience of the night.

Early in the morning of August 30, many enthusiastic Pacific Coast Radiophans, lulled to sleep with ear phones on the pillows, were to be startled by this announcement: "Station KGO, General Electric company, Oakland, California, United States of America."

This last phrase, "United States of America," was too much for one listener. She jumped completely out of bed. But quickly regaining her presence of mind she heard KGO broadcasting a program for the Orient, Australia and the South Seas.

Listeners in Japan, Australia, Tasmania, New Zealand, Chili, Equador, Peru, Mexico, Alaska, Hawaii, Tahati, Fiji, Philippines, Samoa, other islands of the South Seas, and from practically all the North American continent, enveloped by the great circular blanket of night, have already reported hearing this international test program.

Not only broadcast service to a greater number is striven after at KGO. Effort is being made to develop the Radio drama as a new form of entertainment for the American people. Wilda Wilson Church, a student of the drama, is



Harry Sadenwater, engineer in charge of the General Electric company's broadcast stations, KGO and WGY. When KGO went into operation, he was the man who threw in the switch and started the station.

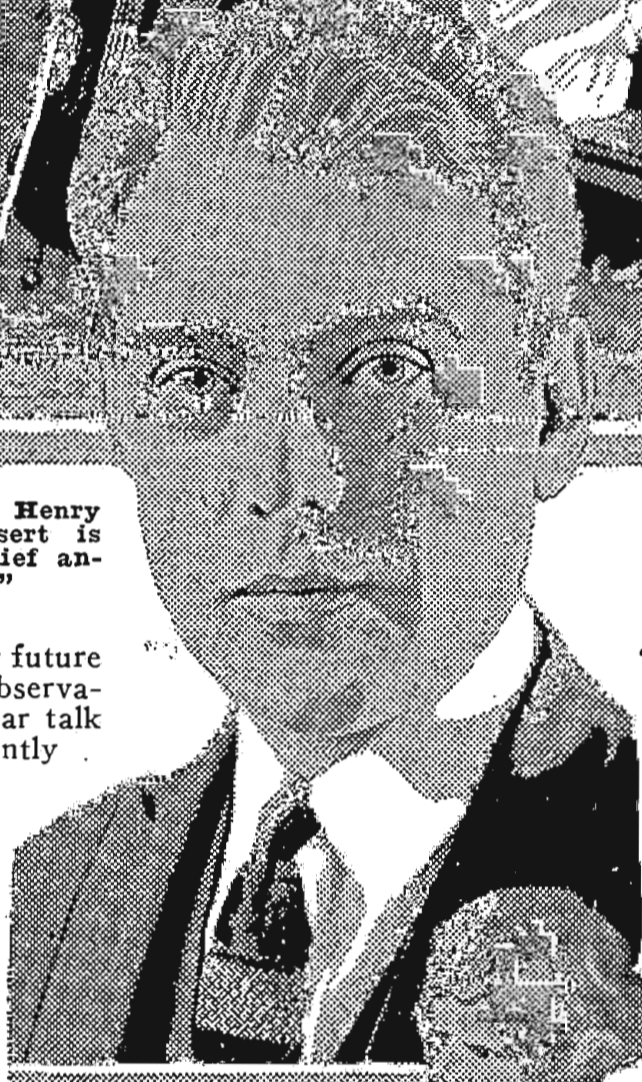
Control room of Station KGO, located at Oakland, California. Photo shows the input panel and control board, the most complete installation in the country. The plugs at the left are for connecting to the various outposts.

# Heard in Countries on Both Hemispheres



**KGO Little Symphony orchestra.** Bottom row, left to right: Wilhelmina Wolthus, Josephine Holub, Edward Towler, C. W. Rhodehamel, Edward Leslie, Margaret Avery, Joyce Barthel-son. Second row: C. L. Chapman, Elwyn Rimmel, Merril

Remington, A. T. Baker, Howard Everett. Top row: Henry Spies, Genevieve O'Hare, Ray Becker. Right insert is Howard I. Millholland, KGO studio manager and chief announcer, better known to the Radio public as "H.M."



directing this work. Thirty-three plays have already been broadcast, and many improvements made in the technique of play presentation.

The grand operas "Il Trovator," "Cavalleria Rusticanna," "Carmen" and the Mendelssohn "Oratoria Hymn of Praise" have been broadcast. These musical productions were given under the direction of Carl Anderson. Other operas, including "Faust," "Rigoletto," "La Traviata" and the oratorio "Elijah," are scheduled to be given at KGO this winter.

The KGO Little Symphony orchestra, a combination of string, wood-wind, brass and percussion instruments, representing complete orchestration, contributes Sunday afternoon programs selected from the great works of the masters of music.

Aside from all these preparations for the entertainment of the Radio public, KGO offers educational opportunities regularly on Monday nights. A course in pictorial Spanish has just been completed. Twenty thousand people enrolled themselves in this class, using pictorial charts illustrating the lessons broadcast.

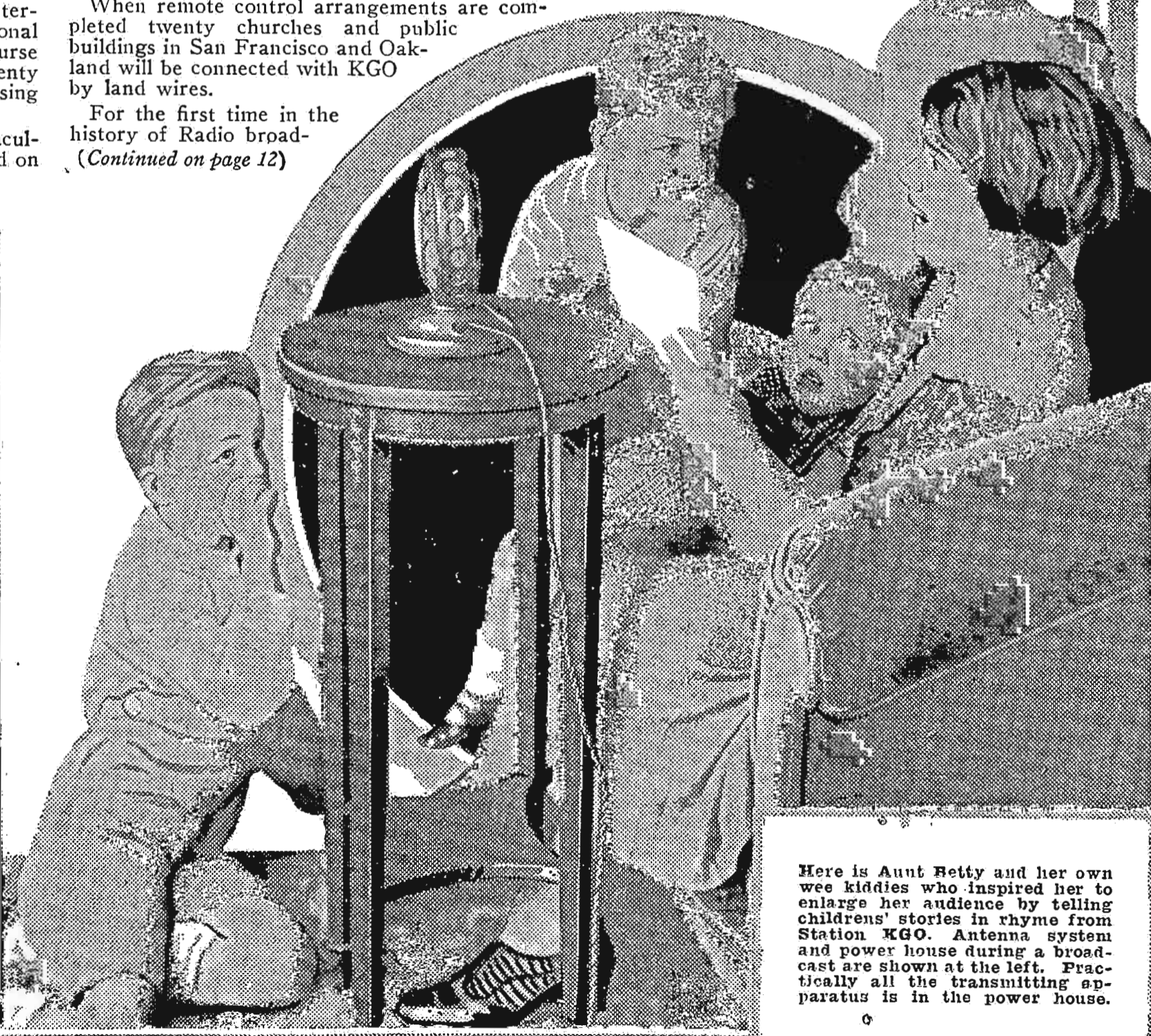
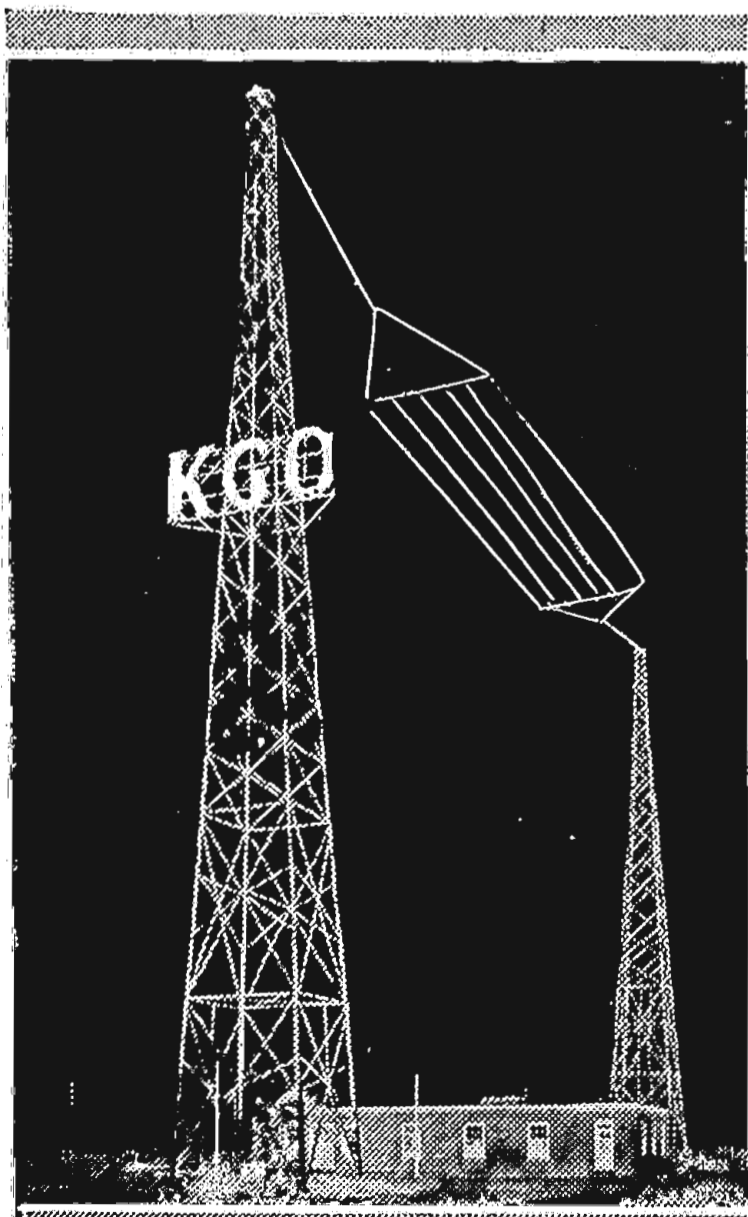
Among the educators and scientists from the faculties of Pacific Coast universities who will be heard on

the KGO Monday night educational programs in the near future will be Dr. Robert G. Atkin, assistant director of Lick observatory on Mt. Hamilton, California. He will give a popular talk on astronomy and tell some very interesting things recently discovered on the planet Mars.

That no interruption of programs may take place, there are three studios at KGO. One large concert studio can accommodate a choir, orchestra, or band comprising fifty people. A smaller studio is used for speakers and small groups of instrumentalists and singers. And ten miles away, connected by ground wires under the San Francisco bay, there is a third station in the Hotel St. Francis, San Francisco, where famous people may speak into the KGO microphone without leaving the hotel.

When remote control arrangements are completed twenty churches and public buildings in San Francisco and Oakland will be connected with KGO by land wires.

For the first time in the history of Radio broad-  
(Continued on page 12)



Here is Aunt Betty and her own wee kiddies who inspired her to enlarge her audience by telling childrens' stories in rhyme from Station KGO. Antenna system and power house during a broadcast are shown at the left. Practically all the transmitting apparatus is in the power house.

# WORLD SERIES SOON FOR BASEBALL FANS

PLANS READY FOR BROADCAST OF SPORT EVENT

Star Air Reporters Tell How Ball Games Are Put on Air—Special Technique

NEW YORK.—Plans are already laid for broadcasting of the world's baseball series. Preliminary reports have indicated that the audience of fans that will "attend" the contests by Radio will be greater by many millions this year than ever before, and broadcasters are determined to make a corresponding advance in the quality of their service.

Inquiries made, show that only "star reporters of the air" will be chosen to describe the banner sporting event of the year. Exceptional qualifications and a highly specialized technique, experience has shown, are required for the reporting of baseball games, and capable studio announcers have frequently found themselves at a loss when confronted with the problems of the diamond.

### Has Developed New Technique

"Few people realize the extent to which practice has developed the technique of describing a world's series baseball game to the Radio audience," says one air reporter of national reputation. "The announcer must report the moves in the game the instant they occur, whereas the newspaper man writes his description after the play is completed.

"The crowd in the stands is constantly competing with the Radio reporter for the microphone, which means that if, in his anxiety to give a full description of everything that goes on, his report is not completed simultaneously with the completion of the play, the spectators will break in with cheers or booing. The Radio audience, ignorant as yet as to whether a hit has been made or a man put out, will be confused by the clamor from the field. The effect is like applause in the wrong place at a theater or during a speech."

### Radio Reporter Grows Sixth Sense

Discussing the same point, another popular air reporter says that the announcer, in his effort to keep ahead of the crowd, develops a sort of sixth sense. He judges from the characteristic movements of the

# SCORE NOW STANDS 3-1, FAVOR VISITORS



Joe Toye, noted sports announcer of Station WBZ, as he looks when announcing a baseball game. © U. & U.

umpire whether a given pitch will be called a ball or a strike and is able to put it into words. Sometimes he makes a mistake, and then he must correct himself with some jesting remark, usually at the expense of the umpire.

"The method of the air reporter is to tell every move in the game in brief, staccato phrases," continued the announcer. "The expert newspaper writer endeavors in his description to paint a picture of a play; the Radio man by giving the moves

# Prevent Panic by Use of Amplifier at Rodeo

Fire Startles Crowd but Announcer Pacifies Them

SALT LAKE CITY, UTAH.—Nine huge amplifiers installed at the rodeo here for announcing events proved of considerable value recently in quieting the crowds and probably saving many lives when a shout of "Fire!" went up from persons sitting in the grandstand at one of the afternoon shows.

"Everybody keep moving north. 'Don't stop to watch the flames.' 'You're blocking some one else from getting away from the heat and flames.' 'Keep moving north—everybody!'" These were some of the messages which echoed with startling clearness over the whole arena. And it was all accomplished by a lone individual speaking into a delicate little instrument.

More was accomplished in this way than a score of strong lunged men could have accomplished in the old way. The amplifiers also helped parents to find their lost children who had been separated in the mad rush for safety. It was a remarkable demonstration of the amplifier and its value as a life saver.

in consecutive order leaves the picture to the imagination of his audience.

### How Double Play Would Sound

For example, the description of a double play by Radio might be broadcast as follows:

Pitcher winding up—Batter crouches at plate—Pitcher throws ball—Bang! He hits it—Fast grounder between short and third—Groh's got it; Williams out at third—Throws to first; batter out—Double play retires the side.

"But these are the mere mechanics of Radio reporting. There is art as well as skill in it. The crowd at the field supplies the dramatic background for the spoken description of the plays. There are times when the yells from the spectators will add the vital 'punch' to the words of the announcer; at other times they may be meaningless or confusing. When to give the crowd the microphone and when to keep it out are things which every good reporter knows instinctively.

"Most important, however, is the ability of the announcer to imagine himself one of the Radio listeners and to describe the game as the far-off baseball fan would see it, were he at the field."

# WOMAN SENATOR IS ARDENT RADIOPHAN



Mrs. William H. Felton

ATLANTA.—Mrs. William H. Felton, only woman in American history to serve as United States senator, is an ardent Radiophan, and is deeply interested in the modern miracle of Radio. The distinguished Georgian delivered her second Radio message at WSB on her 89th birthday, and played on the piano two or three old time songs popular in her girlhood days. She is the oldest person ever to play at WSB.

Mrs. Felton has seen the coming of every scientific development of the twentieth century, and she is a great enthusiast of the greatest of them all—Radio. Though 89 years young, Mrs. Felton is extremely active. She takes a vital interest in every current issue, politics, and anything pertaining to public welfare.

Mrs. Felton's home is in Cartersville, Ga. She was a dear friend of former Senator Thomas E. Watson, whose place she was appointed to fill, following his death.

FROM smallest screw or binding post to condensers, vario couplers and transformers, each of the 130 Federal Standard Radio Parts are made to give maximum service and are backed by the iron-clad Federal performance guarantee.

Federal Telephone Mfg. Corp.  
Buffalo, N. Y.



For a quarter century Federal has specialized in tone qualities. Today the rare beauty of Federal Tone and also the simplicity of Federal operation are spoken of as ideals in the field of radio.

Federal sets may now be purchased on easy payments. Ask your dealer.



When assembling your set, insist that each part be of Federal manufacture

# Federal

## Standard RADIO Products

- Boston
- New York
- Philadelphia
- Pittsburgh
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- San Francisco
- Bridgeburg, Canada



**DIRECTS WLS THEATER, NEW RADARIST GROUP**

Henry D. Saddler, director and producer, who heads the WLS Theater, a newly formed Radarist organization which promises many entertaining evenings to Radiophans. He is an exponent of very simple plays for broadcasting.

Photo by Atwell



**Organize WLS Theater to Give New Form of Drama Perfect Expression**

**Sears-Roebuck Agricultural Foundation Radiocaster Begins Regular Friday Night Radarios with Henry D. Saddler Heading Company —Makes Scientific Studio of "Radio Words" and Personality**

**T**HE invisible curtain of the Radio dramatic world has raised a new permanent theatrical company of the air. The WLS Theater, as the group is to be known, has been organized for the production of "sound" dramas to be broadcast each week on Friday evening over the Sears-Roebuck Agricultural Foundation's broadcasting station, WLS. Henry D. Saddler, of Bloomington, Ill., playwright and producer, has been secured to head the company.

Rebuilding plays to fit the ear is the unique task of this company of players. Tragedy, pathos, humor, all of the emotions that drama portrays by color, lighting effects, settings, and facial expression, as well as voice, must be transmitted by one agent—sound. Great actors know how to draw out the human emotions, to bring tears or laughter by the turn of a hand, the dropping of an eyelid. They have learned a hundred stage tricks outside the world of sound to make the unreal live. By Radio they must touch the same emotions; but by sound alone. To make the drama live by sound, is the work the new theater company has set out to accomplish.

**Even Words Are Substituted**

The WLS production company is now at work writing plays that will particularly lend themselves to "sound" acting. Old plays of one act are being rebuilt around both sound and color and are strong with feeling are being substituted for meaningless adjectives that might go well enough on the legitimate stage, but fall flat when sent naked of costume or stage effects to stand on their own merit in a country living room.

It is the hope of the company to develop a Radio stage vocabulary so forceful as to stir the duller imagination. "The imagination can paint settings steeped in colors richer to the eye, than any artist can paint on canvas," Mr. Saddler, head of the theater, declared.

"The hangings of the imaginary stage are softer to the touch, more delicate of line and pattern, than the old hand-woven fabrics of the Orient. Characters of the Radio drama when re-touched by the imagination of their listeners, are made the perfect hero, the perfect heroine, providing their voice is trained to travel the spaces of the air.

**Will Rid Stage of Cheap Vulgarly**

"Radio drama can be made the most subtle type of acting, he believes. "Like truly great writing, the play of the air must be simple in construction in wording. It is a stripping bare of the emotions and letting them stand at face value."

He believes that the Radio drama as WLS theater is attempting to handle it, will eliminate sticky sentimentality and rid the stage of cheap vulgarly. A comedy to be a comedy must be more than ridiculous costumes and faces masked in paint. It must be humor of line in its truest sense. It is the job of the imagi-

nation to supply such accessories as costume and makeup."

Grace of figure, beauty of face have no money value on the invisible stage. Personality will be at a premium, in the WLS theater, according to Mr. Saddler. Personality can be broadcast. Radio experience has proved that. For this reason WLS theater will be composed of actors and actresses of strong personalities, capable of transmitting something of their own vivacity, of their own vividness, through the ether.

**Personality, Not Beauty, Broadcast**

Personality, plus words; that is the framework around which a series of more than a hundred experiments with sound will be made over Station WLS during the coming year. Already the station has made numerous sound tests preliminary to the opening of the theater proper. One of the most successful of these was staged July 4 when the spirit of the wars of the American History were made to live again in a pageantry of sound. Paul Revere again traveled the green roadways of Lexington and Concord but this time the click of his horse's hoofs could be heard from coast to coast.

The first shot of the Revolutionary war again traversed the Globe. But it was the program in memory of the recent world war that startled listeners by the realistic tricks of the microphone, in producing those never-to-be-forgotten sound

symbols of a new age in warfare. There was the sharp crack of the machine gun, the whir of the winged army of aeroplanes fading to a low melody as they sped across the blue windows of the sky. The bursting of bombs echoed from the rugged hills of Maine to the sleepy sun-baked stretches of the arid West, to the valleys and heights of the Rockies, into the timber lands of Canada.

**"Merchant of Venice" Coming**

"The Merchant of Venice," first Shakesperian play to be adapted to Radio, will be given under the supervision of the WLS Theater during the first week of October over the Sears-Roebuck Agricultural Foundation's broadcasting station. The play is now being rebuilt by Mr. Saddler to fit the "sound" idea. If Shakespeare proves popular by air, a group of the old classics will be given.

With the opening of the opera season the WLS Theater plans to give over one evening a week to the presentation of the big scenes of the most popular operas of the winter. No performance will be more than thirty minutes in length. A short synopsis will be given of the scenes not presented. Later in the winter a series of plays written around the modern farmer and his family will be prepared for the entertainment of farm listeners.

The WLS Theater is giving three programs a week. On Tuesday evenings vaudeville skits and one-act comedies are scheduled. Sound poems given by professional readers are heard on Wednesday evenings. Friday night programs are devoted to the drama proper and to opera.

**Many Short Plays Await Radio**

In speaking of the material available for the Radio plays, Mr. Saddler says: "There is a wealth of artistic material on hand in the form of one-act plays, which heretofore have found no suitable medium of expression. Vaudeville has not used them to any great extent and the legitimate stage has not been able to

**THEATER OVERTURE RADIOCAST NIGHTLY**

**ADOLPHE DUMONT FAMOUS MUSICIAN, CONDUCTOR**

**Preparing Overtures with Popular Arrangements in Addition to Great Classical Concert Numbers**

CHICAGO.—Announcement is made by Edgewater Beach Hotel station WEBH, of the completion of arrangements whereby they will soon start the nightly Radiocasting of the concert overture played by the Balaban & Katz "Riviera Theater" concert orchestra. This will be hailed with delight by Radiophans because the overture will be sent out twice nightly, the first one will come just about the time when most folks can tune in and let the orchestra play while the evening meal proceeds.



Adolphe Dumont

Installation of the necessary equipment is now proceeding, and it is expected that the Riviera orchestra will be on the air within the next few days. The orchestra is under the direction of Adolphe Dumont, a notable figure among the great conductors of America. Mr. Dumont, who was educated in Paris and Berlin, matriculated in conservatories there in both violin and composition. Shortly after his arrival in America, many years ago, he joined the Minneapolis Symphony orchestra, where he had considerable experience conducting and as a principal musician. Later he became a member of the Chicago civic opera company orchestra, under the directorship of the late Cleofonte Campanini. Shortly after the death of the illustrious Campanini, Mr. Dumont resigned to join the musical organization of the Balaban & Katz theaters.

**Will Redesign Programs**

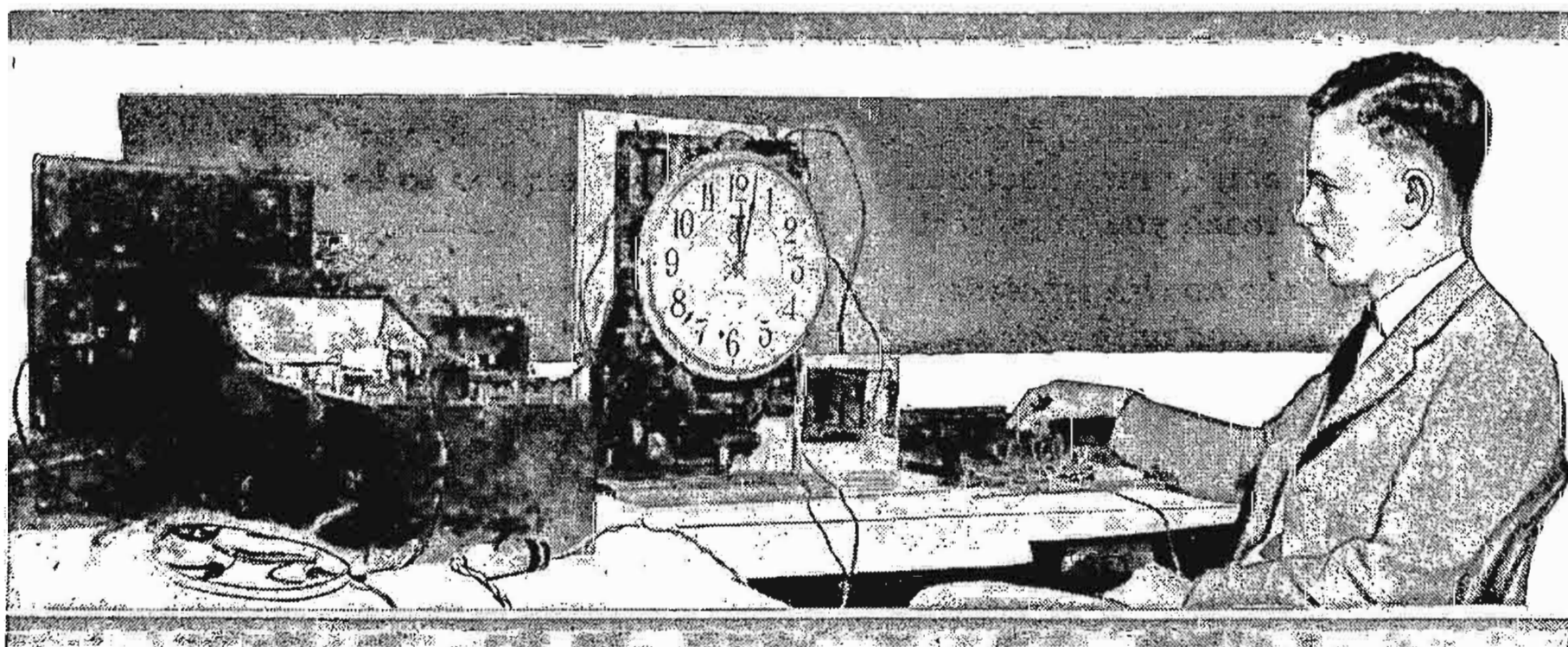
Music lovers accord Mr. Dumont and his organization a high place among American orchestras, and in presenting the orchestra to Radiophans, WEBH will offer one of the greatest Radio attractions in America. Mr. Dumont declares that in selecting overtures, he will bear in mind that his audience consists of millions now, where heretofore 2,500 persons only could enjoy his music. He will balance his selection of overtures with many popular arrangements, in addition to the great classical concert numbers. Also he will frequently introduce various instrumental and vocal soloists during the overtures.

**Crosley at Radio Conference**

CINCINNATI, O.—Powel Crosley, Jr., president of the Crosley Radio corporation, will represent the Radio Manufacturers' association at the Hoover conference, to open September 30 in Washington.

adjust the one curtain play to box office demands. The picture industry has passed them up. There are hundreds of these short plays waiting the fertile field of Radio."

**RADIO IMPULSES CAN REGULATE COOK STOVE**



The electrically wired clock above is one connected with a Radio relay system by bureau of standards experts so that it is automatically set by Radio time signals from the large station at Arlington, NAA. H. J. Walls of the bureau's staff is at the table. Clocks can be set to correct time, alarms rung, lights turned on or off, and cook stoves can be regulated—all by Radio impulses received on the same apparatus as is used in conjunction with the clock. United Photo



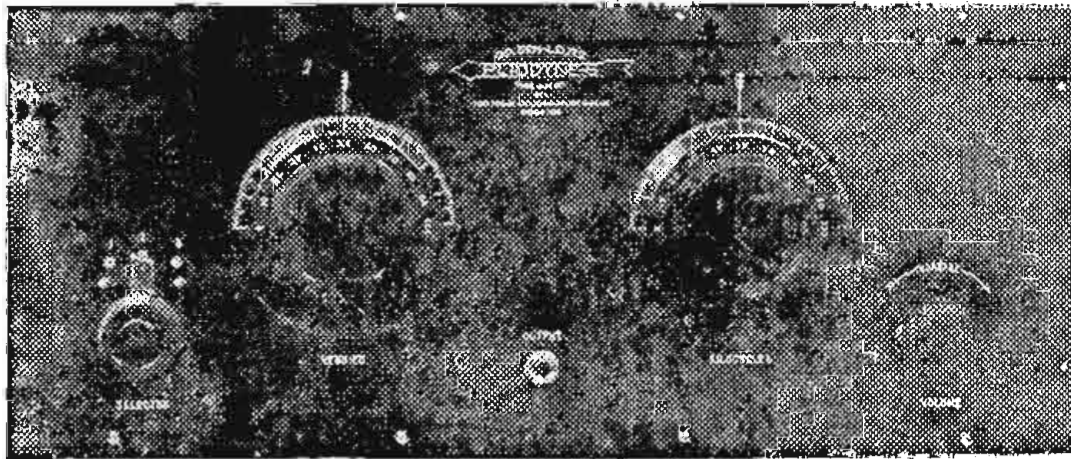
## A New Superior Broadcast Receiver

SIMPLE            LONG RANGE            HIGHEST QUALITY  
NON RADIATING            NON REGENERATIVE

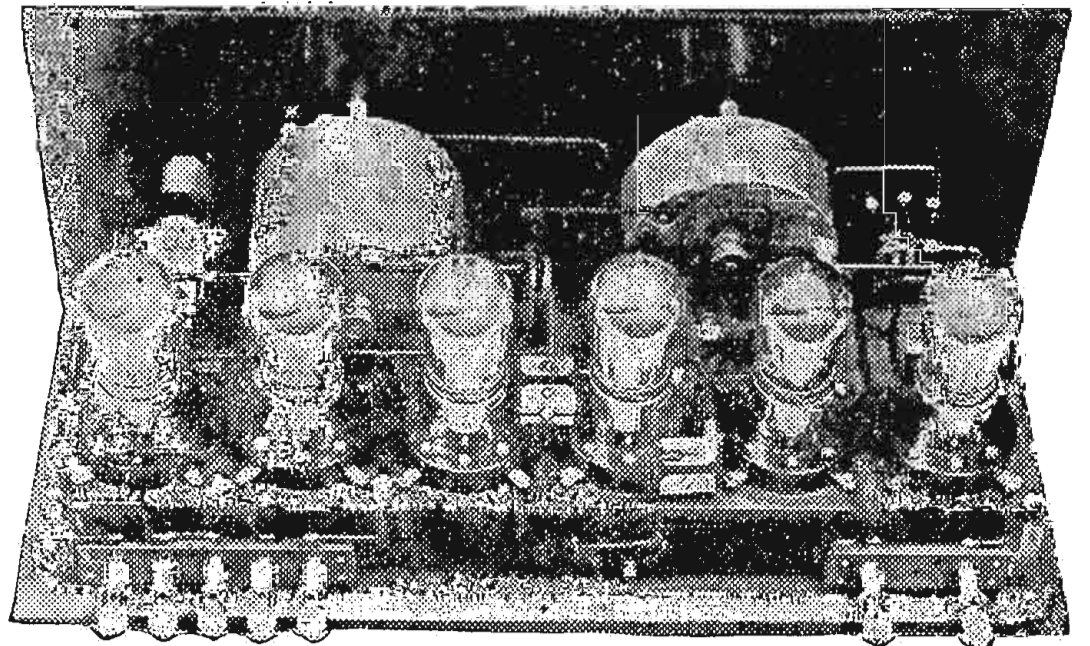
# \$95<sup>00</sup>

Completely Constructed  
TRANSPORTATION PREPAID

*Two Stages Tuned Radio Frequency, Detector and  
Three Stages of Audio Frequency Amplification*



PLIODYNE 6  
Front View Showing Simplicity of Control



PLIODYNE 6  
Interior View Showing Compact and Efficient Design

## A NEW MARKETING PLAN

Rather than sell this high grade receiver to wholesalers at \$190.00 less 50% discount we are going to sell it direct to you at wholesale, saving you \$95.00 and at the same time giving you the finest set that can be bought for twice the amount.

## Inspect the "PLIODYNE 6" at Our Expense

We will send the "Pliodyne 6" C. O. D., transportation prepaid, with privilege of inspection. If it does not appeal to you as the finest medium priced broadcast receiver you ever saw, return it to us at our expense. Otherwise take advantage of

## A FREE TRIAL

Accept the C. O. D. and try the "Pliodyne 6" for five days, if you are not satisfied in every way return it at our expense and we will return your money.

## OUR GUARANTEE

We guarantee every GOLDEN-LEUTZ "Pliodyne 6" to be the finest broadcast receiver that can be manufactured using 6 tubes or less and to be satisfactory to you in every way and to reach you in perfect condition.

*You take no risk whatever in sending us your order, for unless you are completely satisfied with the receiver and with your saving you may return the receiver to us and we will refund your money.*

# GOLDEN-LEUTZ, INC.

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NEW YORK CITY

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NOTE: We reserve the right to withdraw the Free Trial Offer if our Factory Production is exceeded. Golden-Leutz, Inc.

## BRING SUIT TO STOP MAKING NEW TUBES

NOTED INVENTOR IN COURT TO ESTABLISH CLAIMS

A. T. & T. vs F. S. McCullough; Seeking Injunction to Prevent Manufacture of Water-Cooled Tubes

PITTSBURGH.—Seeking to prevent the manufacture of water-cooled tubes by others than themselves, the American Telephone and Telegraph company, with the De Forest company as co-plaintiff, has brought suit against F. S. McCullough of Wilkensburg, Pa., in order to get an injunction to prevent him from making these tubes.

The tubes are of a special, water-cooled type, invented in 1914 by Mr. McCullough, now being made by both the plaintiff and the defendant. At the time of inventing this tube, Mr. McCullough also invented a method for welding glass to metal.

Owing to the fact that both the parties concerned hold patents on the water-cooled tube, the judge has reserved decision until a later date. The A. T. & T. company is using McCullough's method of sealing the glass container to the metal chamber.

### Will Manufacture in Canada

The parties holding the McCullough patents in Canada are now going to manufacture the tubes there on a large scale. Among the tubes to be manufactured will be the famous 500-watt transmitting tubes, to sell for about \$100 to the public. They will also put on the market a new 3-kilowatt tube which has the inductance inclosed in the tube and works on 10-meter and lower waves. This tube is McCullough's latest contribution to Radio science. Patent number 1,496,243, issued on June 3, this year, has been assigned to it.

Mr. McCullough is being sued upon the fact that he is using a grid in his water-cooled tube. The patent covering the grid in a vacuum tube, expired in January, this year, thereby making "King Telephone's" claim null and void. The patents covering the construction of the entire tube expire February 13, 1925. It is expected at this time that many manufacturers will take up the making of tubes.



MARY RENNELS, the "booklady of Cleveland," who broadcasts weekly book chats for the Cleveland News from Station WJAX, The Union Trust company. She is one of the few Radio speakers who knows just how long to talk (and that is almost paradoxical for a woman) and whose talks are always followed by a deluge of encores for more. Mrs. Rennels opened the new WJAX station by broadcasting from a glass cage in the lobby.

This unusual portrait of Mrs. Rennels was made especially for Radio Digest by the famous magazine illustrator, C. D. Batchelor, in New York. Besides being famous for her Radio talks, Mrs. Rennels has the distinction of having gone to New York with two pages of a novel written and having sold the book to Putnam's on the strength of it. Moreover, they contracted for her two next books. Bearding Broadway meant nothing to this little woman from Main street, Cleveland, middle west.

## FREE RADIO SERVICE AT TOURIST CAMPS

CONNECTIONS FOR AERIAL AND GROUND PLACED

Station WBAV Develops Scheme for Campers Using Portable Sets; In Use Every Night

By Alton D. Spencer

COLUMBUS, O.—A service to tourists who are Radiophans which is likely to become general has been inaugurated by the Erner & Hopkins Co., operators of Station WBAV. This service is in the form of free antenna and ground connections at two of the Columbus free tourist camps.

"We believe," said R. C. Bohannon, WBAV, "that many tourists who would like to carry portable sets with them, refrain from doing so because of the difficulty in erecting aerials and finding good ground connections in their camping places. We have started this service in Columbus and hope that it will be taken up in other communities. The expense is small and dealers who provide such service are certain to win the gratitude of a multitude of tourist-fans."

The antenna systems have been placed in convenient locations and all the Radiophan has to do is snap his leads onto the terminals provided and tune in. In the short time that the systems have been in place they have been in use practically every night.

## Station WMAN Installing New 50-Watt Transmitter

COLUMBUS, O.—The new 50-watt Radiophone transmitter to displace the old 10-watt station at the First Baptist church, is now being installed. The set is the gift of W. E. Heskett, a friend of Dr. Daniel F. Rittenhouse, pastor of the church. The station's call letters are WMAN. R. C. Bohannon of the Erner & Hopkins company is superintending the installation.

Sixty seconds after the finish of the great Derby race in England, the results were known in Australia, China and Singapore, thanks to Radio.

# Fultone

TRADE MARK

## The Loud Speaker to Use On Super-Heterodyne or Reflex

The volume obtained from these receivers is far greater than that encountered with other sets. To satisfactorily handle this energy, a speaker should have not only a correctly spaced diaphragm but also a throat of sufficient diameter to let the sound out. Fultone is much shorter than other loud speakers and undesirable long, narrow length that chokes back powerful sound waves has been eliminated.

Horn and base are constructed in one piece from a non-metallic composition of such a nature that it cannot ring or sound "tinny"—yet it does not deaden and take the live vibrant quality out of musical selections. Rattle, due to loose fitting of a horn to base, cannot occur to mar an evening's pleasure. Black in color, with a full rounded, graceful symmetry, Fultone fits harmoniously and unnoticed—anywhere.

## HALL & WELLS

Manufacturers' Representatives and Exclusive Distributors of FULTONE Loud Speakers

128 N. Wells Street, Chicago, Ill.

We have a money-making proposition on Fultone for Jobbers and Dealers. This loud speaker, because of its quality at such a low price, is destined to be the biggest seller in Radio. Better wire today. Prompt and immediate delivery assured.



## ORCHESTRA LEADER USES NOVEL STUNT

FEATURES INDIVIDUAL'S IN NUMBERS DURING WEEK

This Will Enable Public to Distinguish Different Instruments in Any Orchestra with Ease

BUFFALO, N. Y.—Harold Gieser, director of the Vincent Lopez Hotel Statler dance orchestra, broadcasting from WGR, has hit on to a new stunt for the interest of the Radio public. This will be put into effect about October 1. The exact date has not yet been set, so the best thing to do will be to listen for WGR at the times this orchestra is on the air.

No entertainer has made more of a study of the Radio audience than has Harold Gieser and this stunt which he is going to do is shown in a change in the manner of announcing selections by his orchestra.

Each week, for the benefit of his Radio audience, he will feature a different instrument among the ten of the orchestra. There are two objects in doing this.

The first is to educate the public into an ability to distinguish the different instruments in any orchestra. This is expected to be of direct educational value to the public as well as adding to their enjoyment of the music.

The second object is to inject more personality into the work of this particular orchestra by announcing the name of the artist whose work is to be featured during the week. Mr. Gieser knows from his Radio letters that the average listener is extremely curious about the people who entertain them.

### Boost Individual Players

For instance, the public will hear an announcement something like this: "This is Station WGR, at Buffalo, broadcasting the supper-dance music of the Vincent Lopez Hotel Statler dance orchestra, direct from the Hotel Statler. Mr. Gieser, the director, asks that the Radio audience this evening, note particularly the saxophone strain, which will be prominent in all of the selections played. The saxophone in this orchestra is played by So-and-So."

If decisions can be made sufficiently far in advance as to the instrument to be featured from week to week, an advance announcement will be made in the Radio Digest, accompanied by the photograph of the member of the orchestra playing the instrument.

It is expected that this stunt will be pulled over a period of ten weeks, which is the time which will be necessary to make the round of the orchestra, whether it will be continued beyond that time depends on how the public reacts to it. At the least, Mr. Gieser considers it an interesting experiment from both a Radio and a musical standpoint.

## CONGRESSMAN AVERS ENORMOUS MONOPOLY

Candidates Who Desire to Broadcast Must Pay \$200

NEW YORK.—Samuel Celler, congressman for the tenth congressional district here, will appear at Secretary Hoover's third Radio conference, opening September 30 in Washington, to denounce the "monopoly" which he declares now controls many of the stations.

Just recently one of the New York stations asked him, he says, to pay \$200 for the privilege of making a ten-minute talk. As a result he claims there is a "monopoly" against candidates who desire to broadcast.

## STATION KGO, OAKLAND

(Continued from page 7)

Use All Improvements  
Casting an entire building has been constructed to house a great station and its equipment to be used exclusively for broadcasting. Its studio, control room and power station embodies the latest developments in the art. Its power and antenna systems, a thousand feet away from the studio building, include all the mechanical and technical refinements that have marked the new achievements in broadcasting. The engineering resources of a great electrical organization have been brought into the problem of making this station one which every listening Radiophan may enjoy.



Harold Gieser

## WTAM Celebrates First Anniversary

Favorite Artists Will Appear for Special Performance; Big Time Promised to All Radiophans

CLEVELAND.—One year ago Radiophans were buttonholing one another with the question, "Have you heard the new Willard station, WTAM?"

Now they take WTAM as a matter of course as its signals have been heard throughout the United States, Canada and Mexico, as well as across the Atlantic, in South America and the Islands of the Pacific.

WTAM broadcast its first concert as a class B station on September 26, last year. Now, at the end of a year it will celebrate its first birthday with a concert played and sung by a group of artists who have endeared themselves to the Radio public through this station.

Some of these favorites are Dorothy Lenz and Florence Wasson, soloists; Mildred Harter, of Akron, O., and Elsie Young of Lorain, O.; Mrs. H. A. Davies, woman baritone; Robert Patrick, Scotch tenor and Arthur Parry, baritone.

These and many more artists will pass in review for the Radio friends they have made at WTAM. For the instrumental background, the Tall Cedars' Band of Cleveland will eke out the vocal numbers.

In its first year, WTAM has made some interesting records, along various lines. It has been heard farther from home than any station broadcasting on battery power alone. It was the first broadcasting station to operate solely on batteries.

No special efforts for distance or any other stunts will mark the anniversary program on Sept. 29. It will be just a regular concert, with, possibly more than the ordinary number of artists and maybe it will last a trifle longer than usual.

## AIRPLANE SET GIVES GREETING TO FLIERS



This portable airplane Radiophone transmitter, held in the hands of Lient. Franklin L. Rash, was used by him flying in a plane above Boston to note the approach of the world flyers and report to Radiophans their progress. The transmitter has a power of fifty watts. K. & H. Photo

### July Exports \$297,686

WASHINGTON, D. C.—Exportations of Radio apparatus during July totaled 160,993 pounds, valued at \$297,686, according to the department of commerce. Of this apparatus the largest quantity went to Australia. Mexico took the second largest amount.

## NEW DIRECTOR AT DENVER STATION

Frank J. McEniry Appointed to News Bureau by General Electric Company

DENVER.—Appointment of Frank J. McEniry, Denver newspaper man and publicity expert as the news bureau director of the new station being erected here by the General Electric company has been announced.

McEniry will take the new position immediately upon completion of the station which is expected to be in active operation within a month.

Although no permanent plans and policies for the station have been drawn up as yet, nor a director appointed, it is understood that a permanent orchestra, soloists and other artists have been provided for. In addition the company will engage the world's greatest artists, both singly and in groups to provide entertainment for the great Radio audience of that region.

Roofing and finishing of the buildings is nearly complete. The studio building will measure 25 by 40 feet and will house the waiting rooms, the general offices and the artists rooms. The power building, 25 by 75 will house all the actual machinery used in broadcasting. Two steel towers, 150 feet high and placed 150 feet apart will carry the aerials. Arrangement has been made whereby high amperage can be sent into the aerial in cold weather to melt off all snow and ice.

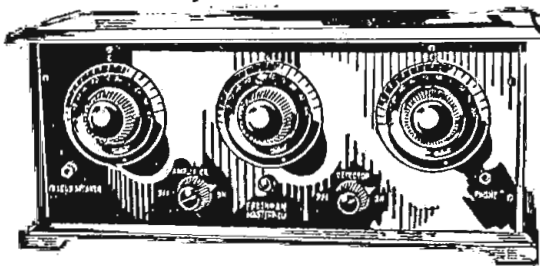
### To Buy Radios for Hospitals

WASHINGTON, D. C.—One of the latest wrinkles here in connection with Radio is the so-called hospital fund which is being raised by popular subscription for the installation in hospitals and institutions of Radio receiving sets for shut-ins. Those in charge are trying to collect \$50,000 for this purpose.

# FRESHMAN MASTERPIECE

## The Greatest Value Ever Offered in a Radio Receiving Set

Here it is at \$60.



CLARITY  
BEAUTY  
VOLUME  
DISTANCE  
ECONOMY  
SELECTIVITY

## A Five Tube Radio Frequency Set

Built of the finest low loss material and in a beautiful genuine solid mahogany cabinet. A receiver that will bring even the most distant stations to your home with surprising clarity and volume. So selective that you can pick up any station you want, night after night, at the same dial setting, and what's more, it's the easiest set in the world to operate.

If you want to Build your Own, we have made Set Building Easy

FRESHMAN MASTERPIECE Tuned Radio Frequency Kit

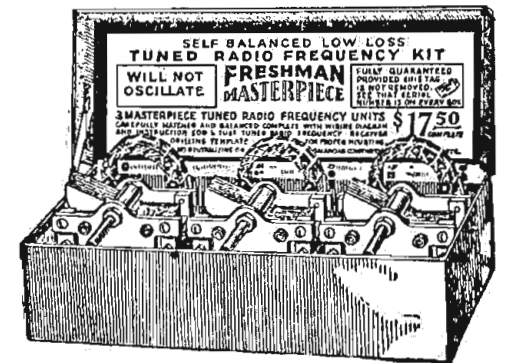
No Neutralizing or Balancing Condensers Required

With these marvelous units you can easily build a five tube Radio Frequency Receiver that will be highly selective as well as a remarkable distance getter, bringing in all stations with pleasing clarity and volume.

Kit consists of 3 Masterpiece Tuned Radio Frequency Units carefully matched and balanced. Complete with wiring diagram and instructions for building any 5 tube tuned radio frequency receiver and also drilling template for proper mounting.

\$17.50

CHAS. FRESHMAN CO., INC., 106 Seventh Avenue, New York City



## RELATES TRUE TALE OF AMAZING BATTLE

### FEROCIOUS FISH ATTEMPTS TO DROWN DIRECTOR

M. A. Rigg, Jr., of Station WGR Tells Strange Story Without Frills or Illustrations

BUFFALO, N. Y.—Every time M. A. Rigg Jr., general manager of WGR, gets out of sight of the studio he always has the most amazing adventures. Fifty weeks of the year he eats, dreams, sleeps, and inhales Radio. The other two weeks he cuts himself off from the world radiolily speaking.



A year ago when he took his vacation Mr. Rigg and his better half headed their gasoline steed in the direction of the Adirondack mountains and kept on going. He tells an amazing story of following little-used trails until they came out at the end of the road at the end of a little wharf on a mountain lake. The way he tells it this lake is a veritable fairy land. The water sparkles. The sunshine exceeds that of California. The prettiest islands. The biggest fish. He calls the place Racquette Lake, something to make a racket about.

**Goes Back to Lake Again**  
This year he also went to Racquette Lake and camped for two weeks on one of its matchless islands. Naturally he did a little fishing. Everything went all right until one day he got something on the hook end of his fish line that seemed to have the playful proclivities of a giant locomotive, running away on a down grade mountain line. He fought the fish for hours and finally mastered it.

No one around WGR has been able to get Mr. Rigg to tell how large the fish was, either in weight or inches. He looked like a trout but he would not tell its size because he felt that no one would believe him. He planned to bring it home and show them. A farmer on the island had a little ice house for his own use. Pulled the ice out of the lake in the winter because he had a little boy with a constant craving for ice cream.

**Freezes Fish in Ice**  
Mr. Rigg got permission to pry around in this ice house until he found an especially large cake of ice, that is, a long cake. With the help of the farmer who wielded a skillful hatchet, the ice cake was split the long way. Then a space was hollowed out inside to receive the fish. If they had been able to put this fish in a straight jacket things might have been different but they were not and the fish persisted in living.

The two men had quite a struggle getting the fish in its ice casket but finally accomplished the feat, placed the two pieces of ice together as they had been when one and tied a rope around them to hold them in place.

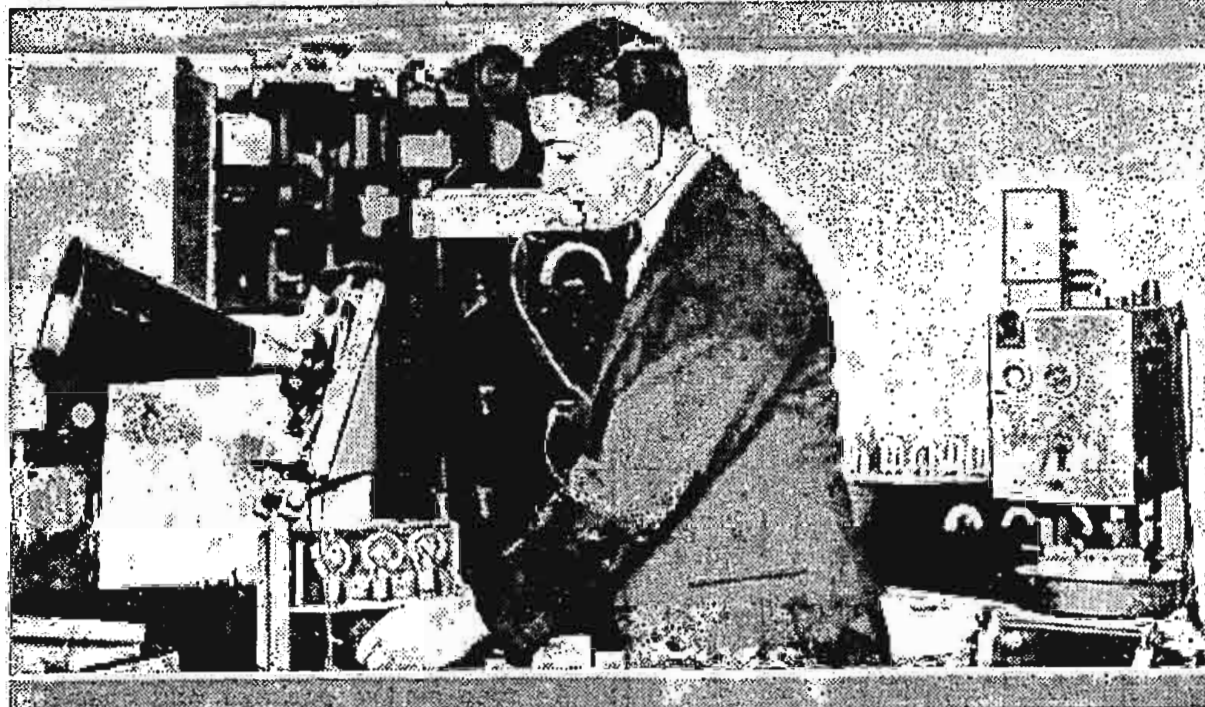
It was such a struggle that Mr. Rigg dreamed about the fish that night. He had a vision of the fish laughing at him and saying: "This is Station WGR, at Buffalo. I am signing off for the night. Every blooming tube in the place is busted. I am on the air by my reputation." Mr. Rigg woke up then.

**Terrific Struggle with Fish**  
The next day, pestered by the bad dream Mr. Rigg got the farmer to row him with the ice-caked fish to the mainland. All the time the fish seemed to be alive and leering at him through the ice. It got on his nerves but he would ship the fish home for the amusement and amazement of the people about WGR. It would be direct evidence that he was some fisherman. He would be glad to get it out of the way.

When they got to the famous wharf where the road began and ended, they tied up carefully and began to lift the ice-caked fish out to carry to the railroad station. As the fish saw he was in danger of leaving his native element forever, he opened his gills ferociously, gave a prodigious slap of his tail, cracked the ice and slipped into the water. Mr. Rigg and the farmer watched in amazement. A few yards away the fish arose to the surface, slapped the water derisively with his tail and swam away. That was the last they saw of it.

Unfortunately Mrs. Rigg as well as Mr. Rigg forgot to take a picture of the fish either in or out of the ice cake so there is no real proof of the size and prowess of this fish except what Mr. Rigg said. Everyone knows, however, that he is a man of veracity in everything, even about fish.

## "DEATH RAY" INVENTOR AT WORK



F. A. Grindell Matthews, the English inventor of the famous "death ray" with which he stops airplane engines, etc., is seen at work in his laboratory. He left this country recently and is now on his way back to England. U. & U. Photo

### NEW DEVELOPMENTS TO FEATURE AT SHOW

#### Armstrong to Explain New Super-Heterodyne Set

NEW YORK.—Many new and striking Radio developments will be exhibited at the third annual national Radio exhibition at the Grand Central Palace here, November 3 to 8, inclusive.

Among the many features to be shown at the exposition will be the mystery set invented by E. H. Armstrong. In a specially enclosed glass case Armstrong will operate his new laboratory model super-heterodyne in full view of spectators.

S. L. Rothafel, "Roxy," will direct an exceptional program of entertainment to be broadcast from the mezzanine gallery.

A series of motion pictures will be shown to illustrate graphically problems of Radio transmission and reception.

### Airship ZR-3 Using Radio on Trip Across Atlantic

WASHINGTON.—A week from today the 650-foot German-built airship, the ZR-3, is expected to start on her cruise from Friedrichshafen for the United States. Today three U. S. Naval ships took station in the North Atlantic to guard her course and keep in touch with her on the long trans-Atlantic cruise by Radio, maintaining a sharp watch for S. O. S. signals.

With the co-operation of the weather bureau, the navy department has laid out the most extensive and complete plans every completed for aiding an aircraft cruise. Radio is the essential feature and it is planned first to keep communication constantly open between this greatest rigid airship and either the ships or land stations during the 3,000-mile flight.

A new broadcasting station near Copenhagen (Denmark) will soon be opened, it is reported from that country.

## SOVIET RUSSIA TO LIFT BAN ON SETS

### Government to License Individuals Who Pay Small Annual Fee; Tax Is Compulsory

MOSCOW RUSSIA.—Soviet Russia has joined Europe and America in public broadcasting.

For a small annual fee the government will license and permit private individuals to install and use manufactured and home-made receiving sets for private and commercial purposes. The registry will be in charge of the Postal Commissariat and the license will be compulsory. The interception of all official government matter is forbidden as is also matter handled by the Rosta and its branches and news from foreign stations.

Despite the fact that government factories will make most of the apparatus, all sets, either homemade or factory product, must be inspected and approved by the Postal Commissariat.

The new order will undoubtedly open a new Radio field. Both broadcasting and receiving were practically unknown, outside of official government business of the Soviet and the Communists.

A public information station has been practically besieged by information seekers. Information concerning everything from the simplest to the most complex sets is asked. It is expected that more information bureaus will be opened because of the tremendous public interest.

### Open New Station in Hollywood; 500-Watt

#### Owned by Large Newspaper; Call Letters Unassigned

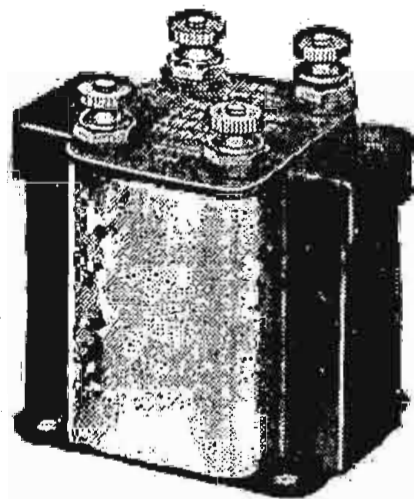
HOLLYWOOD, CALIF.—With the completion of the new Radiocast station of the Los Angeles Evening Express just in the offing, southern California will add another name to her list of broadcasters.

This latest addition will be known as the "Associated Broadcast Station." It is located at the corner of Hollywood boulevard and Gower street on the Hoffman building in this city. The set and equipment is being supplied by the Western Electric company, and will be their standard 500-watt set.

When you find a better Transformer it will bear the name

# THORDARSON

- 2-1 Ratio \$5.00
- 3 1/2-1 Ratio \$4.00
- 6-1 Ratio \$4.50



The mirror of the Broadcasting Studio

## SUPER TRANSFORMER—2 to 1 Ratio (audio frequency)

The Thordarson 2 to 1 ratio amplifying transformer is indeed the mirror of the broadcasting studio. It seemingly brings the artists direct to your home. Install a pair—it will take you but a few moments—and you will marvel at the richness of the musical qualities obtained.

THORDARSON ELECTRIC MFG. CO.

500 W. HURON STREET

CHICAGO, ILL.



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

Table with columns for Station and City, Met., Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday. Lists various radio stations and their broadcast times.

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

STATIONS IN ORDER OF WAVE LENGTHS USED

Table with columns for Meters Call, listing stations in order of wave lengths used.

572 Stations Quit Game U. S. Radio Records Show

WASHINGTON, D. C.—Figures which have just been compiled by the Radio section of the department of commerce show that since broadcasting stations were first licensed in September, 1921, 572 stations have given up broadcasting. This is more than the stations which are now licensed and which number, according to the latest figures, 537. No reason is assigned by officials of the department of commerce for these stations going out of existence, but it is especially noted by them that only three out of the 572 were in class B, which seems to indicate that the class B stations are of a more permanent nature than the others.

More Progress Reported with Pilotless Airplanes

FARNBOROUGH, ENG. — Enormous progress has been made in the control of pilotless planes by Radio through experiments carried out at the Royal Aircraft establishment. Another problem under consideration is the launching of winged bombs from aircraft in flight and their control over a limited distance on to the desired object. Great secrecy is being observed by the air ministry regarding the experiments which are regarded as of importance in view of the large measure of success already achieved. J. E. Whittemore has been named secretary of the third Radio conference opening September 30 in Washington.

Receiving Set Mailed Via Airplane to Coast

Purchaser Surprised at Novel Method of Delivering Goods

SAN FRANCISCO.—The first complete Radio receiving set to be shipped across the American continent through the avenue of the air mail was recently delivered to the addressee in New York city fifty-three hours after it was dispatched from this city. The total cost of mailing the set amounted to \$69.46. The receiver which was mailed in this unique manner was addressed to A. R. McConnell of 225 West 57th street. In order that it come within the postal regulations, the receiver had to be shipped without its cabinet in a special container designed to prevent any possibility of its being damaged while in transit. The receipt of the package was a complete surprise to McConnell, as he had not been informed of its dispatch. It was delivered by a special letter carrier, who remarked, in a nonchalant way, "Here's an air mail package for you." As soon as the package was opened, a hurried examination was made, which revealed that the receiving set had been transported across the American continent without the slightest of damage of whatsoever nature, despite the fact that the set had no cabinet to protect the delicate wiring.

RADIOPHANS REFUSE TO BE HOODWINKED

SPRINGFIELD, MASS. — Alwyn Bach, senior announcer at Station WBZ, Springfield, Mass., will have to wear false whiskers to hide his identity when he sings into his microphone under an assumed name again. Despite the fact that he was announced as John Harrigan, baritone, he completely failed to fool his listeners, and hundreds of letters arrived to compliment "Alwyn Bach on his excellent voice."

Professor Talks About Whitman

NEWARK, N. J.—Prof. E. Holloway, many years one of the best authorities on "Walt Whitman" and his work, talked on the life and art of the poet from Station WOR recently. Professor Holloway is the author of the chapter on Whitman in the Cambridge History of American Literature.

Noted Author Interests Fans

NEWARK, N. J.—Blair Niles, author of one of the six best current sellers among non-fiction books, talked from WOR last Wednesday. She recounted an "Air Flight to the Heart of the Andes." Mrs. Niles is known also in the magazine world as a writer of short stories and travel articles.

Advertisement for 'SIX TUBES' radio receiver. Features a large illustration of a hand turning a dial labeled 'Single Control' with 'METERS' and '4500' markings. Text includes 'SIX TUBES - a turn of the Single Control to the desired wave length - the station SNAPS IN that's Thermiodyne Performance'. Includes 'TF6' logo and '14 Points of Thermiodyne Supremacy'.

Advertisement for 'SHEPARD-POTTER CO., Inc.' featuring a radio receiver. Text includes 'The ONLY six tube radio receiver to bring in any desired station by a single turn of a single dial to a single pre-determined dial setting. Tone purity and clarity unmatched by any other receiver. Used with any type antenna, or, under favorable conditions, with none; with dry or storage batteries and with any make tubes.' Price '\$140'. 'Insist on a Demonstration'. 'Made and Fully Guaranteed by SHEPARD-POTTER CO., Inc. Dept. D., 35 So. River St. Plattsburgh, N. Y.' Includes an illustration of the radio receiver.

# WHB WILL RESUME LADIES' MATINEES

Wednesday, September 24

Silent night for: CKAC, KGO, WAAW, WFI, WGY, WIP, WMC, WOAW, WRC, WSAI.

CKAC, Montreal, Can. (Eastern, Daylight, 425), 1:45 p. m., Mount Royal hotel luncheon concert.

CNRM, Montreal, Can. (Eastern, Daylight, 341), 9 p. m., quartet, Canadian National railways; Mrs. R. W. Blackbird, soprano; Mrs. L. Hartley, contralto; J. A. Brown, tenor; Mildred Page, reader; A. Fry, baritone; "Living on the Limited," Walter Pratt; L. Gould, baritone.

CNRO, Montreal, Can. (Eastern, Daylight, 435), 8 p. m., Chateau Laurier hotel orchestra; Orpheus male quartet; William Goad, baritone; L. S. Verr, pianist; H. A. Underwood, tenor; "Living on the Limited," Walter Pratt; H. H. Clarke, bass; Cliff McAdams, tenor.

KDKA, E. Pittsburgh, Pa. (Eastern, 326), 11:15 a. m., Daugherty's orchestra; 5:30, dinner concert, Pittsburgh Athletic association orchestra, Gregorio Scalzo, conductor; 6:30, "Richard the Riddler," 8, "The Daisy Chain," Liza Lehman, Pitt-Penn Operatic quartet, Amanda Vierhelle.

KFAE, Pullman, Wash. (Pacific, 330), 7:30 p. m., Eber Nasuyth, baritone; Mrs. Louise Nasuyth, pianist; "The Bee Keeper's New Year," B. A. Slocum; "The Practical Education," Dr. Holland.

KFI, Los Angeles, Calif. (Pacific, 469), 6:45-7:30 p. m., detective stories; vocal concert; 7:30-8, "Mammy," Simmons and Crosby sisters; 8-9, Evening Herald, Kennedy broadcast; 9-10, Examiner studio concert; 10-11, Hollywoodland community orchestra; 11-12, Ambassador hotel Coconut Grove orchestra.

## Headliners of the Week

**S**H! WSB is putting on a burlesque Wednesday night of broadcasting foibles. Let's hope the censors and Radio supervisors are all sound asleep at 10:45 p. m., central standard time.

Southern moonlight, noted as being much more potent than northern moonshine, will be interpreted by the WFAA Moonlight Serenaders, Thursday. President Coolidge, whose voice is a household sound, will be heard again tonight over WIP. He will speak at the celebration in commemoration of the anniversary of Carpenter's Hall in the Academy of Music, Philadelphia.

Friday night the WGY Light Opera company will sing "The Fire Prince," an operetta by the popular American composer Henry Hadley. Two well known "Dixie Stars" will entertain at WOC.

A merry Mardi-Gras of latest song hits and old time barn dance tunes will please everybody at WLS Saturday night. This is the first Mardi-Gras of this season.

The Jewish New Year's services will be given from WGY, Sunday evening and Monday morning. This music is very beautiful.

Monday night brings another birthday party. WTAM is one year old and all the popular artists of the year will please the listeners in. Four of the artists appear on the next page.

KLX has something new. On Tuesday evening at twilight Aunt Elsie's Sunset matinee will keep the housewives from getting dinner.

WHB will favor the ladies again this year with a special matinee program to enjoy when their husbands cannot monopolize the headphones.

7:30, Meyer Davis Bellevue Stratford concert orchestra; 7, Sunny Jim, the children's pal. p. m., George Albert Bouchard, organist; 6:30-7:30, dinner music; 8:50-9, address, "The Motor Vehicle Operators' License Law," Henry Sellheimer; 9-11, concert, Music Shop of Niagara Falls, N. Y., direction of Blanche Garrow; 11, supper-dance music; Vincent Lopez Hotel Statler dance orchestra, Harold Bieser, director.

WHAS, Louisville, Ky. (Central, 400), 4-5 p. m., Alamo theater orchestra; readings, Courier-Journal and Louisville Times; 7:30-9, K. & I. Terminal railroad orchestra, J. Clark Martin, director. Program closes 9 p. m.

WHB, Kansas City, Mo. (Central, 411), 2-3 p. m., ladies' hour program, Sweeney Radio orchestra; 7-8, educational hour; music, Sweeney Radio trio. Program closes 8 p. m.

WHN, New York, N. Y. (Eastern, Daylight, 360), 2:15-2:45 p. m., Jimmy Clark entertainers; 2:45-3:15, Original Louisiana Five, Al King, leader; 4-4:30, Fay Milbar, pianist; Edna Frandine, soprano; 4:30-4:45, Samuel Shankman, pianist; 5-5:30, California synopsators; 6:30-7:30, Olcott Vail's Trio and Paul Specht's Alamac orchestra; 7:30-7:45, Emily Shop's style talk; 7:45-8:15, Al Raymond and his orchestra; 8:30-8:45, Boy's Perlo conducted by Kiwanis club; 8:45-9, Jos. C. Wolfe, baritone; 9-9:15, Alfred Dullin, pianist; 9:15-9:30, Vincent Lane, tenor; 9:30-10, Gem Razor orchestra; 10-11, Clover Gardens orchestra.

WHO, Des Moines, Ia. (Central, 52), 7:30-9 p. m., Bankers Life Radio orchestra, W. L. Marsh, director; Mrs. F. F. McArthur, soprano; Mrs. A. E. Taylor, accompanist. Program closes 9 p. m.

WJAR, Providence, R. I. (Eastern, Daylight, 360), 10 a. m., housewives Radio exchange; 10:45, "Styles of Today," Marie C. Koester; 7:30 p. m., program, New York studio.

WJZ, New York, N. Y. (Eastern, Daylight, 455), 10-10:20 a. m., daily menu; 10:20-10:30, "Have a Heart, Says the Butcher," John C. Cutting, Meat Council of New York; 10:35-10:45, Review of Susan Ertz' "Nina," Grace Isabel Colbron; 10:50-11, Eleanor Gunn's fashion talk; 4-5 p. m., College Club orchestra; 5:30-6:30, New York stock exchange reports, etc., Evening Post News; 7-8, Irving Seizer's Cafe Boulevard orchestra; 8-8:15, Wall Street Journal review; 8:15-9, specialty numbers; 10:30-11:30, Billy Wynne's Greenwich Village Inn orchestra.

WMAQ, Chicago, Ill. (Central, 360), 6-8 p. m., municipal band.

WMAQ, Chicago, Ill. (Central, Daylight, 447.5), 4:10 p. m., beauty talk, Grace Earl; 4:30, program; 6, Chicago theater organ; 6:30, stories for children, George Faulkner; 8, weekly lecture, Northwestern university; 8:30, WMAQ "play-night," William Ziegler Nourse, director; 9:15, Margaret Smetacek, soprano; 9:45, talk, Chicago charities.

WMH, Cincinnati, Ohio (Central, Daylight, 309), 8 p. m., piano-accordion solos, Charles H. Partington; duets, Charles Partington and Neal Korb; 8:20, violin solos, Helen Kilb, Mazie McClure, accompanist; soprano solos, Marguerite Konitz; 9, vocal duets, Marguerite and Mabel Konitz; talk, "The Value of Building Associations," Judge W. Mercedith Yeatman; piano solos, Mazie McClure; 9:30, Junnie Dearing's orchestra, Joe Renghausen, director.

WDC, Davenport, Ia. (Central, 484), 12 m., chimes; 7 p. m., sandman's visit; bedtime story, Val McLaughlin; 8, Erwin Swindell, organist; Jessie M. Howell, reader.

WOD, Philadelphia, Pa. (Eastern, Daylight, 509), 11 a. m., organ recital, Harriet G. Ridley; 12:02 p. m., Wanamaker crystal tea room orchestra; Robert E. Golden, director; 4:45, organ recital, Harriet G. Ridley; 7:30, A. Candelori and his Hotel Adelphia Roof Garden orchestra; 8:30, organ recital, Harriet G. Ridley; 9, WOO orchestra, Robert E. Golden, director; 10, Hotel Adelphia roof garden dance orchestra.

WDR, Newark, N. J. (Eastern, Daylight, 405), 2:30-2:45 p. m., Lillian Wechs, soprano; 2:45-3, Norman Curtis, pianist; 3-3:15, Lillian Wechs; 3:15-3:30, Norman Curtis; 6:50-7, sports, Jolly Bill Steinke; 8-8:45, Gene Ingraham and his orchestra; 9:15-10, Louis A. Rielly; 10:15-11, program, Star Lyceum bureau.

WDS, Jefferson City, Mo. (Central, 440.9), 8 p. m., agricultural address, Missouri College of agriculture; 8:20, old time "fiddlin'" program, string trio, Louie

Josns Tigueroa (below) is the director of the municipal band heard every Wednesday night from WEAQ. The Radio Franks (right) will sing at WAAW Monday and Tuesday. They are popular composers.



Marie Boutin is the instructor of the French course given once a week at KPO, San Francisco.

KFN, Shenandoah, Ia. (Central, 266), 7:30 p. m., band concert, New Point.

KFSG, Los Angeles, Calif. (Pacific, 278), 2:30-4:30 p. m., auditorium service, organ; congregational singing; prayer; deeper Bible teaching on divine healing, Almer Sampels McPherson; altar call; 6:30-7:30, Gray studio children's program, courtesy, Mrs. Edward Hughes, Eagle Rock city, assisted by her little daughters, Mary Elizabeth and Betty; Mrs. Rose, pianist and assisting artists.

KGD, Oakland, Calif. (Pacific, 312), 3 p. m., musical program, speaker Cora L. Williams; 4-5:30, concert orchestra, Hotel St. Francis.

KGW, Portland, Ore. (Pacific, 492), 3:30 p. m., talk, Jeannette P. Cramer; 8, concert; 10, dance music, George Olsen's Metropolitan orchestra.

KHJ, Los Angeles, Calif. (Pacific, 395), 12:30-1:15 p. m., Oaks Tavern orchestra, Frank Relter, innkeeper; Fred C. McNabb of Aggeler & Musser Seed Co.; 2:30-3:30, the Filipino String orchestra; 6-6:30, Art Hickman's concert orchestra, Edward Fitzpatrick; director; 6:30-7:30, children's hour, "American History," Prof. Walter Sylvester Hertzog; "Baby" Muriel MacCormic, screen juvenile; Dick Winslow, screen juvenile and reporter; bedtime story, Uncle John; 8-8:45, news items; lecture, Dr. Mars F. Baumgardt; 8:45-10, concert, courtesy, Paul G. Hoffman Co.; the Russian string quartet, Calmon Lubovskil, first violinist; Morris Stoloff, second violinist; Phillip Cohen, violist; Naum Dinger, cellist; 10-11, Art Hickman's dance orchestra.

KLX, Oakland, Calif. (Pacific, 509), 8-10 p. m., Eastbay Serenaders Sunset club, Peralta singers, Walter Bundy, director; American theater orchestra.

KPD, San Francisco, Calif. (Pacific, 423), 1-2 p. m., Rudy Selger's Fairmont hotel orchestra; 2:30-3:30, Garru Fisher's Amphians; 4:30-5:30, Rudy Selger's Fairmont hotel orchestra; 5:30-6:30, children's hour stories, Big Brother; 7-7:30, Rudy Selger's Fairmont hotel orchestra; 8-11, B. Max Bradford's Versatile band. Program closes 11 p. m.

KQV, Pittsburgh, Pa. (Eastern, Daylight, 270), 9-10 p. m., artists' program, Lyman Almy Parkina audio; Claudia Schenck, contralto; Cyril Schenck, baritone; Arthur Davis, tenor.

KSD, St. Louis, Mo. (Central, 548), 6:45 p. m., Aborzh's concert ensemble; Arne Arnesen, violinist; 9, Margaret Hertel, soprano; Leopold Von Kuehlman, tenor; Florence Spiegel, Claudine Venahle, pianists; Edward Campbell, violinist.

KYW, Chicago, Ill. (Central, Daylight, 536), 11:35 a. m., table talk, Mrs. Anna J. Peterson; 6:35-7, children's bedtime story, Uncle Bob; 7-7:30, dinner concert, Congress hotel; 7:30-8, program, Duncan Sisters Music Publishing company; 8-8:30, musical program; 8:30-8:45, "Around the Town with KYW in Chicago"; 8:45-9, music; 9:15, talk, H. Archibald Harris; 9:45-12:30, midnight revue. Program closes 12:30 midnight.

PWX, Havana, Cuba (Eastern, 400), 8:30 p. m., concert, general staff band of the Cuban army.

WBAF, Fort Worth, Tex. (Central, 476), 7:30-8:30 p. m., concert; 9:30-10:45, concert. Program closes 10:45 p. m.

WBAV, Columbus, Ohio (Eastern, 423), 12 m., Ila Lorch Owens, pianist.

WBBR, New York, N. Y. (Eastern, 273), 8 p. m., Dr. Hans Haag, violinist; 8:20, "The Progression of the Divine Plan," 8:45, Dr. Haag, violinist.

WBZ, Springfield, Mass. (Eastern, Daylight, 337), 6 p. m., dinner concert, WBZ trio; 7:10, "How Country and City Women Co-operate," Mrs. W. G. Dwight; 7:30, bedtime story for the kiddies; 7:40, WBZ trio; Winifred Beaver, pianist; 8:30, McEnelly's orchestra; 9, Marla de Pisa, soprano; 9:30, Harold Garsbedlan, violinist; 11:30, Leo Reisman and his Hotel Brunswick orchestra; songs, Violet Gridley, Jack Armstrong, Bill Coxy.

WCAE, Pittsburgh, Pa. (Eastern, 462), 6:30 p. m., dinner concert, William Pann hotel; 7:30, Sunshine club; 8:30, musical program.

WCAY, Milwaukee, Wis. (Central, 266), 6:30-7:30 p. m., Boston store night; Hazel Cullen, violinist; Cecelia Cullen, pianist; Lawrence Wente, baritone; Bradley Sisters, Ruth Lowe, soprano.

WCX, Detroit, Mich. (Eastern, 517), 4:15 p. m., musical program; 6, dinner concert; 7, musical program.

WDAF, Kansas City, Mo. (Central, 411), 3:30-4:30 p. m., in, the Star's string trio; 6-7, school of the air, piano tuning in number on the Duo-Art; address, speaker, auspices of the Health Conservation association; address, speaker from the Meat council; the Tell-Me-a-Story Lady; music, Carl Nordberg's Plantation players; 8-9:15, program, vocal puppets of Mrs. Marjorie Rose Ryan and Edoardo Saerodote, Chicago; 11:45-1 a. m., Nighthawk frolic, the "Merry Old Chief" and the Plantation players; Eddie and Bobbie Kuhn's K. C. A. C. orchestra. Program closes 1 a. m.

WDAR, Philadelphia, Pa. (Eastern, Daylight, 395), 11:45

a. m., dally almanac; 12:02 p. m., Stanley theater organ recital; 12:30, services, auspices Philadelphia Federation of churches; Arcadia cafe concert orchestra; 2, Arcadia cafe concert orchestra; "Care of Children," Mrs. Louis Love; 4:30, Edna Finestone, pianist; 7:30, Dream Daddy's bedtime stories; 7:55, Arnold Abbott's conversation corner; 8, Arcadia cafe concert orchestra; 8:30, Green Hill Farm dance orchestra; 10, Arcadia cafe dance orchestra.

WEAF, New York, N. Y. (Eastern, Daylight, 492), 11-11:15 a. m., Minnie Weil, pianist; 11:15-11:30, young mothers' program; 4-4:15 p. m., Marion Schott, jazz pianist; 4:15-4:30, Grace Salaff, soprano; 4:30-4:45, talk, Stephen S. Tutbill of Street Safety division of Brooklyn; 4:45-5, Victor Young, baritone; 6-7, dinner music, Waldorf-Astoria hotel; 7-7:30, services, United Synagogues; 7:30-7:45, talk, American Agriculturist; 7:45-8, Amphion Male Quartet; 8:15-8:30, Three Peasants; 8:30-8:45, talk to mothers, Mrs. Sidney; 9-9:15, Sadie Eskin, pianist; 9:15-9:30, talk, U. S. Sugar association; 9:30-10, Hotel Graystons orchestra.

WEAD, Columbus, Ohio (Eastern, 360), 1:30 p. m., educational lecture, member Ohio State university faculty; 4 p. m., farm talk, faculty member; music, university talent.

WEBB, Chicago, Ill. (Central, Daylight, 370), 7:30-8:30 p. m., Ann Kelly, soprano; "Everyday Songs," Edgar A. Guest; Merrick Foster, pianist; Edgewater Beach Oriole orchestra; 9:30-10:30, Langdon Brothers, Hawaiian steel guitarists; Edna Benson, soprano; 11:30-12, special songs, George Little, Larry Shay; Edgewater Beach Oriole orchestra; songs, Nick Lucas; Edgewater Beach trio.

WFAA, Dallas, Tex. (Central, 476), 12:30-1 a. m., music, Dallas theater.

WFI, Philadelphia, Pa. (Eastern, Daylight, 395), 12:30 p. m., Banquet, Philadelphia Chamber of Commerce from Bellevue Stratford hotel; 3, report closing prices, Chicago grain market; 3:05, Loretta Kerk, pianist;

Barton, first fiddler, George Schrlumpf, bass fiddler, Bryan Williams, guitarist.

WQJ, Chicago, Ill. (Central, Daylight, 448), 11-12 m., program, Helen Harrington Downing; "Woman's New Responsibility," Mrs. Thomas Starr Harper; "The Art of Making Jolly," Mrs. Bertha Harris; 3-4 p. m., "Buying Your Groceries," Helen Harrington Downing; "Seedy Meals," Martha Logan; 4-8, Ralph Williams and His Rainbo Garden orchestra; Lillian Older Ball, reader; Orla Pike Lester, soprano; Mary Howe, pianist; 10-2, Ralph Williams and His Rainbo Garden orchestra; Sandy Meek, Scotch tenor; Harmony singers, George A. Little, Larry Shay, Jack Stanley; Senior Manual Rodriguez, Spanish tenor; Grace Wilson, contralto; Melodians, Laurie, Eddie, Bennie.

WRC, Washington, D. C. (Eastern, 469), 3 p. m., fashion developments, women's wear; 3:10, songs; 3:30, songs; 3:45, piano; 3:50, sports for woman; 6, stories for children, Peggy Albion.

WSAI, Cincinnati, Ohio (Central, Daylight, 309), 10 p. m., evening of vocal and instrumental solos.

WSB, Atlanta, Ga. (Central, 429), 10:45 p. m., Burlesque of broadcasting foibles, Addo Britt, Dick Finch.

WTAM, Cleveland, Ohio (Eastern, 390), 8 p. m., program arranged by Cleveland Plain Dealer; Cleveland male choir, Albert Downing, director; Carl Rupp and his Hotel Hollenden orchestra.

WTAS, Elgin, Ill. (Central, 286), 7-12 midnight, Arcady orchestra; Charley Hughey, pianist; Zeligler sisters, Charles Harrison, Eddie Cavanaugh, Fanny Cavanaugh.

WTAY, Oak Park, Ill. (Central, Daylight, 283), 6:45-7:45 p. m., George Clark, organist; 9-9:45, popular music, Axel Christensen; Guyon's Paradise orchestra; 10, technical talk, member of Radio Age; 10:15-11:15, Guyon's Paradise orchestra.

WWJ, Detroit, Mich. (Eastern, 517), 8 a. m., setting-up

(Continued on page 16)

# STARS CELEBRATE WTAM'S FIRST

## Where to Hear Concerts

Central Standard Time

THESE are the stations for music lovers to dial, and you can hear, providing you dial correctly and read the programs carefully, everything from jazz to opera.

**Wednesday 6, CNRO, KLX, KYW, WBBR, WCAE, WQJ; 6:15, WFAE, WJZ; 6:30, WCAJ, WEBH, WLS, WOO; 6:45, KSD, WBBR, WHN, WLS; 7, CNRM, KDKA, KQV, KYW, WBZ, WCAP, WFAE, WFB, WHN, WLW, WMH, WTAM, WTAS; 7:15, WHN, WOR; 7:30, KFNF, WBAP, WBZ, WHAS, WHO; 7:45, KYW; 8, WDAF, WLW, WMH, WOC, WOR, WTAY; 8:15, WCAP, WMAQ; 8:30, WCAP, WEBH, WLW, WOS; 8:45, KFI; 9, KSD, WQJ, WSAI; 9:15, WLS; 9:30, KFAE, KFI, WBAP; 9:40, WLS; 10, KFI, KGW; 10:30, WEBH; 10:45, KHJ, WSB; 11:45, WDAF.**

**Thursday: 6, CNRM, WQJ; 6:30, KYW, WBZ, WCAE, WFAE, WEBH, WFI, WJZ, WLS; 7, KDKA, WBBR, WBZ, WCAP, WFAE, WFAO, WHK, WJAX, WMH, WRC, WSAI, WTAS; 7:30, KFNF, WBAP, WHAS, WHN, WMH, WRC; 7:45, WBBR, WFAO, WRC; 8, KYW, WHB, WRC, WSB, WTAY; 8:15, WMAQ; 8:30, WCAP, WEBH, WFAA, WMC, WRC; 9, WHN, WLW, WOAW, WOC, WQJ; 9:15, WHN, WLS; 9:30, WBAP, WHN; 10, KHJ, KPO, WLW; 10:10, WLS; 10:30, WCAJ, WEBH; 10:45, WLS, WSB; 11, KFI, KPO, WLS, WSAI; 11:30, KHJ, WSAI; 11:45, WDAF; 12, KFI, WOAW.**

**Friday: 6, KLX, WFAE, WQJ, WOR; 6:15, WFAE, WJZ; 6:30, WCAE, WEBH, WLS; 6:45, WLS; 7, KDKA, WFAE, WGY, WHK, WOR, WTAS; 7:15, KQV, WBAV, WBB, WHN, WJAX, WJZ, WLS; 7:30, KFNF, KYW, WBAP, WHAS, WHO; 7:45, WOO; 8, KSD, WBZ, WCAJ, WDAF, WMAQ, WOC, WOR, WSB; 8:15, KGW; 8:30, WEBH, WFAA, WMC, WOS; 8:45, KFI, KYW; 9, WBZ, WDAR, WHN, WOAW, WQJ; 9:30, WBAP; 9:40, WLS; 10, KFI,**

**KHJ; 10:30, WEBH; 10:45, WSB; 11, KFI; 11:30, KHJ; 11:45, WDAF; 12, KFI; 12:30, KGW.**

**Saturday: 6, CNRO, KYW, WBBR, WBZ, WHN, WIP, WQJ; 6:15, WFAE, WHN, WJZ; 6:30, WCAE, WFAE, WHN; 6:45, WBBR; 7, KDKA, WIP, WLS, WLW, WRC, WTAS; 7:15, WHN, WIP; 7:30, KFNF, WBZ, WEBH, WHAS, WHN, WJZ, WRC; 7:45, WHN, WRC; 8, KSD, WHK, WHN, WMAQ, WSB, WTAY; 8:15, KYW, WHN; 8:30, WFAA, WMC; 8:45, WHN; 9, WHN, WMH, WOAW, WOC, WQJ; 9:15, WIP; 9:30, WEBH, WMH; 10, KFI, KGO, KHJ; 10:30, KFNF; 11, WLS, WSB; 11:30, WEBH, WLW; 11:45, WDAF; 12, KFI, WOAW.**

**Sunday: 6, WLS; 6:15, WJZ; 6:30, KFNF, WJAR; 7, CHYC, WEBH, WGY, WJZ, WTAS; 7:15, WFAE; 7:30, WHO; 7:45, WLW; 8, WHK, WQJ; 8:15, WJAR; 9, WFAA; 9:30, WFAA, WHN, WOC.**

**Monday: 6, KLX, WHN, WJZ; 7, WCAJ, WGY, WJAR, WLW, WMH, WTAM; 7:15, WTAS; 7:45, WLW, WTAS; 8, KQV, WCAJ, WDAF, WDAR, WGY, WHN, WLW, WMH, WOC, WSB; 8:20, WOS; 8:30, WFAA, WTAS; 8:45, WJZ; 9, WOAW, WTAS; 9:30, WBAP; 10, KGW, KPO, WHN, WOC, WTAS; 10:45, WSB; 11, WHO; 11:45, WDAF.**

**Tuesday: 6, WLS, WLW; 6:30, CKAC, WJAX, WLS, WLW; 6:45, WGY, WJZ; 7, WJAR, WLW, WQJ, WRC, WTAS; 7:15, WLS; 7:30, KFNF, WAAW, WBAV, WHAS; 8, WHB, WJAR, WLW, WTAY; 8:15, WMAQ, WRC; 8:30, WFAA, WMC, WSB; 9, WCAJ, WLS, WOAW, WSAI; 9:15, WCAJ, WIP; 10, KGO, WLS, WLW, WQJ; 10:15, WGY; 10:45, WSB; 11, WLS, WMC; 11:45, WDAF.**



Arthur Parry, baritone, is one of the artists who will celebrate WTAM's birthday, Monday, September 29. Mildred E. Harter's sweet soprano voice will also be heard.



p. m., George Albert Bouchard, organist; 6:30-7:30, dinner, music.

**WGY, Schenectady, N. Y. (Eastern, 380), 5:30 p. m., Stephen E. Boisclair, organist; 7:45, book talk, L. L. Hopkins; 8 "The Happiness Experts," WGY players.**

**WHAS, Louisville, Ky. (Central, 400), 4-5 p. m., Alamo theater orchestra; 7:30-9, concert, auspices, Helen I. Mitchell. Program closes 5 p. m.**

**WHB, Kansas City, Mo. (Central 411), 2-3 p. m., ladies' hour program, Sweeney Radio orchestra; 8-9, classical program, Sweeney Radio orchestra; 9-10, popular music, Sweeney orchestra. Program closes 10 p. m.**

**WHK, Cleveland, Ohio (Eastern, 283), 8 p. m., program arranged by the Cleveland Press; Ray Stillwell's orchestra; Oscar Young, yodler.**

**WHN, New York, N. Y. (Eastern, Daylight, 360), 2:15-3:15 p. m., Bob Schaefer and his entertainers, assisted by Ralph Feigin and his orchestra; 4:45, Alfred Dullin, pianist; 4:15-4:45, Genevieve Williams, soprano, with Charles Strickland, pianist, and Sam Steinberg, violinist; 4:45-5, "Tea Time Talk," Loretta C. Lynch; 5-5:30, Hickey Hickson's jazz artists; 6:30-7:30, Olcott Vall's trio and Paul Specht's Alamac orchestra; 9:30-10, musical program; 10-10:30, Snee's dance orchestra; 10:30-11, Fletcher Henderson's Rose-Land dance orchestra; 11-11:15, Wright and Bessinger, singers; 11:15-11:30, Arthur Stone, blind pianist; 11:30-12, Ted Lewis and his symphonic clowns from the Parody club.**

**WIP, Philadelphia, Pa. (Eastern, Daylight, 509), 7 p. m., Uncle Wily's bedtime stories; 8, speech, President Calvin Coolidge, from Academy of Music, Philadelphia; 10, Harvey Marburger's dance orchestra from Cafe L'Aliglon.**

**WJAX, Cleveland, Ohio (Eastern, 390), 8 p. m., program arranged by Standard Drug company, celebrating 25th anniversary; Carl Rupp's Hollanden hotel orchestra; Mrs. Jean Webster Erlman, soprano; Marljona Claus-las, soprano; Phil Barker, "The Harry Lauder of Cleveland," Scotch songs.**

**WJY, New York, N. Y. (Eastern, Daylight, 405), 7:30-8 p. m., weekly French lesson, Berlitz school; 9-10, Al Reiser's Club Ferreri orchestra.**

**WJZ, New York, N. Y. (Eastern, Daylight, 455), 10-10:30 n. m., daily menu; 10:10-10:20, "The Progress of the World," Review of Reviews talk; 10:50-11, fashion talk, Eleanor Gunn; 1-2 p. m., Nathan Abas Hotel Pennsylvania orchestra; 5:30-6:30, New York stock exchange reports, etc., Evening Post News; 7:55-8, Collier's Weekly, John B. Kennedy; 8-8:15, Wall Street Journal review; 8:30-9:30, Wanamaker organ concert; 9:30-10, "The Outline of Radio History," John V. Hogan; 10:30-11:30, Waldorf-Astoria dance orchestra.**

**WLS, Chicago, Ill. (Central, Daylight, 345), 1-2 p. m., Tommy Laife and Jack Little; "Woman's Part in Rural Development," Mrs. Verna Hatch; 6:30, Ralph Emerson, organist; 6:45, Ford Rush, Glenn Rowell; 6:50, Ralph Emerson, organist; 7:05, Isham Jones and his Hotel Sherman College Inn orchestra; 7:20, Ziegler twins; 7:35, orchestra; 7:45, lullaby time, Ford Rush, Glenn Rowell; 10:15, Nubs Allan, Frankie Sulvano; 10:30, Isham Jones and his orchestra; 10:40, Ford and Glenn time; 11, Isham Jones and his College Inn orchestra; 11:15, Hawaiian string music, Worth, Krueger, Worth; 11:30, orchestra; 11:45, Hortense Siminsky, vocalist; 12, Ralph Emerson, organist.**

**WLW, Cincinnati, Ohio (Central, Daylight, 423), 10 p. m., civil service message; 10:03, Minor instrumental trio; 10:30, Doherty Melody orchestra; 11, Minor trio; 11:30, Doherty orchestra.**

**WMAQ, Chicago, Ill. (Central, Daylight, 447.5), 4:10 p. m., household hour, Mrs. Elizabeth O. Hiller, director; 4:30, musical program; 6, Chicago theater organ; 6:30, Hotel LaSalle orchestra; 8, "Oriental Rugs," Arthur U. Dillroy; 8:45, talk on watches, Fred M. Lund; 9, "Automobile Trails," Rockwell R. Stephens; 9:15, music.**

**WMC, Memphis, Tenn. (Central, 500), 8:30 p. m., program, Louise Brown, director.**

**WMH, Cincinnati, Ohio (Central, Daylight, 309), 8 p. m., piano solos, Dorothy Waldman; mezzo soprano solos, Tecla Richards; Marie Houston, accompanist; soprano solos, Marie Houston; 8:30, "Half Hour with Two of Our Neighbors' Children," George Conner and Earl Wintersole; 9, Avon dance orchestra.**

**WOAW, Omaha, Neb. (Central, 526), 6 p. m., every child's story hour, conducted by Grace Sorenson; 6:30, dinner program, Randall's Royal orchestra of Brandels store restaurants; 9, Scribner, Neb.**

**WOC, Oavenport, Ia. (Central, 484), 12 n. m., chimes; 7 p. m., sandman's visit, Val McLaughlin; 8:15, "The Use of Lye in the Household," Otto Von Schrader; 9, the Palmer School Itadio orchestra; Ralph W. Fuller, baritone.**

**WOO, Philadelphia, Pa. (Eastern, Daylight, 509), 11 a. m., organ recital, Harriet G. Liddle; 12:02 p. m., Wanamaker crystal tea room orchestra, Harriet E. Golden, director; 4:45, organ recital, Harriet G. Liddle.**

**WOR, Newark, N. J. (Eastern, Daylight, 405), 2:30-2:45 p. m., Katharine Granberry, soprano; 3-3:15, Katherine Granberry; 3:45-4, Hoe Economics, Miss Moses, Charm Magazine; 6:15-6:30, "Radio for the Layman," Albert E. Sonn; 8:15-7:30, "Music Willing You Dine," Cooper's Country Club orchestra; 7:30-7:45, sports, Jolly Bill Steinke.**

**WOL, Chicago, Ill. (Central, Daylight, 448), 11-12 n. m., home economics program, Helen Harrington Downing;**

"Sixty Ways of Serving Ham," Erna Bertrams; "The Spice of Life," Mrs. Wilbur E. Fribley; "Choosing Your Daughter's School Wardrobe," Eleanor Chalmers; 3-4 p. m., "Mah Jongg Suppers," Cora Beemen, 7-8, Ralph Williams and his Reinbo Garden orchestra; Kathryn Snyder, reader; Mrs. Lydia Lochner, contralto; Marlon Henry, accompanist; Manuel Rodriguez, Spanish tenor; 10-2, Ralph Williams and his Reinbo Garden orchestra; Axel Christensen, pianologist; Malle and Little, song writers; harmony singers, Hill, Hirsch, Gorn; "She Loves Me," Lew Butler.

**WRC, Washington, O. C. (Eastern, 469), 6 p. m., children's hour, Peggy Albion; 8, violin recital, Leopoldo Alvarado; 8:15, "Leadership," Major General E. A. Helmick; 8:30, Ethel Holtzlow Gawler, soprano; 9:15, Steve M. Wright, pianist; Jimmy Harris, banjoist; 9:30, Columbian male quartet, W. E. Brathwaite, director.**

**WSB, Atlanta, Ga. (Central, 429), 8 p. m., Dr. Charles A. Sheldon, organist; 10:45, Warner's Seven Acc.**

**WTAS, Elgin, Ill. (Central, 286), 7-12 midnight, Arcady orchestra; Cherlie Hughes, pianist; Zeigler sisters; Charles Harrison, Eddie Caranough, Fanny Caranough.**

**WTAY, Oak Park, Ill. (Central, Daylight, 283), 6:45-7:45 p. m., Bob Briggs, entertainer; Tillie Thorpe, soprano; Sydney Blirstrom, tenor; Edward Barry, pianist; 9-9:45, Siloam Knight Templar band; Roland Hinkle, tenor; Guyon's Paradise orchestra.**

**WWJ, Detroit, Mich. (Eastern, 517), 8 a. m., setting up exercises, R. J. Horton; 9:30, talk, women's editor, Detroit News; 12 n., Detroit News orchestra; 8:30 p. m., Detroit News orchestra; Graeme Gillies, bass; 10, Goldkette's orchestra; 11, Detroit News orchestra.**

**Friday, September 26**

Silent night far: CKAC, KGO, KPO, WAAW, WBBR, WFI, WIP, WLW, WMH, WOR, WRC, WSAI.

**CKAC, Montreal, Can. (Eastern, Daylight, 425), 1:45 p. m., Mount Royal hotel luncheon concert.**

**KOKA, E. Pittsburgh, Pa. (Eastern, 326), 11:15 a. m., Daugherty's orchestra; 5:30, organ recital, Paul Flecker; 6:30, "The Poetry Lady"; 7:30, "Organized Labor, Bureau of Mines, and Accident Prevention," Francis Feehan; 8, June Call, William Cook, violinists; Edith Lucile Hall, pianist; Edward Call, guitarist; Mrs. Edith O. Lyle, reader.**

**KFAE, Pullman, Wash. (Pacific, 330), 7:30 p. m., Music Students School of Music; "Minerals for Dairy Cows," Don Magruder; new books, Alice Webb.**

**KFI, Los Angeles, Calif. (Pacific, 469), 6:45-8 p. m., Aeolian organ recital; 8-9, Evening Herald, Carl Edward Hatch; 9-10, Examiner studio concert; 10-11, concert, pupils, Myra Belle Vickers; 11-12, Ambassador hotel Cocoonut Grove orchestra.**

**KFNF, Shenandoah, Ia. (Central, 266), 7:30 p. m., concert, Henry Field Seed company.**

**KFSG, Los Angeles, Calif. (Pacific, 278), 3:30-4:30 p. m., organ recital, courtesy Roy Reid Brignall; vocal selections by assisting artists; 7:30-9:15, auditorium service, organ; silver band; crusaders chorus; special music; address, Judge Carlos S. Hardy, superior court; sermon, Alnce Sempie McPherson; organ call; 9:15-10, Gray studio program; 10-11, organ recital and program, courtesy, B. Earnest Ballard and assisting artists, vocal numbers.**

**KGO, Oakland, Calif. (Pacific, 312), 3 p. m., "The Health of Children," Dr. Agnes Fay Morgan; 4-5:30, concert orchestra, Hotel St. Francis. Program closes 5:30 p. m.**

**KGW, Portland, Ore. (Pacific, 492), 8:15 p. m., studio concert, George Olsen's Metropolitan orchestra; 10:30, Hoot Owls, George Olsen's Hoot Owl orchestra and pantages frolic.**

**KHJ, Los Angeles, Calif. (Pacific, 395), 12:30-1:15 p. m., concert, Al Schiller and his Friar's Inn orchestra; 6-6:30, Art Hickman's concert orchestra, Edward Fitzpatrick, director; 6:30-7:30, children's program, "American History," Prof. Walter Sylvester Hertzog;**

## Wednesday, September 24

(Continued from page 15)

exercises, R. J. Horton; 9:30, talk, women's editor, Detroit News; 12 n., Detroit News orchestra; 8:30 p. m., Detroit News orchestra; Victoria Davis, contralto; Templeton Moore, tenor.

**WLS, Chicago, Ill. (Central, Daylight, 345), 1-2 p. m., "Co-operative Marketing," Mrs. Verna Hatch; 6:30, Ralph Emerson, organist; 6:45, Ford Rush, Glenn Rowell; 6:50, Ralph Emerson, organist; 7:05, Isham Jones and his Hotel Sherman College Inn orchestra; 7:20, Lewis Sullivan, baritone; 7:35, Isham Jones' orchestra; 7:45, lullaby time, Glenn Rowell, Ford Rush; 8, WLS Radio tribe of lone scouts; 9-10, Itadio questions and answers, Matt Friedman; talk, "The Farm Bureau," Mrs. Verna Hatch; talk, Charles Stewart; 10, Isham Jones and his Hotel Sherman College Inn orchestra; 10:15, Ceri Dillberg; 10:20, poems; 10:40, Ford and Glenn time.**

**WLW, Cincinnati, Ohio (Central, Daylight, 423), 8 p. m., Virginia Entertainers; 9, Werner & Swope Coon Dog orchestra; 9:30, voice selections.**

## Thursday, September 25

Silent night far: KQV, KSO, WCAP, WOAR, WHO, WOO, WOR, WOS.

**CKAC, Montreal, Can. (Eastern, Daylight, 425), 8 p. m., special entertainment.**

**KDKA, E. Pittsburgh, Pa. (Eastern, 326), 11:15 a. m., Scallo's orchestra; 3:30, dinner concert, KDKA Little Symphony orchestra, Victor Saudek, conductor; 6:30, Little Miss Merry Heart; 6:45, address, representative, Automobile club; 8, KDKA Little Symphony orchestra, Victor Saudek, conductor; Edith McConnell Enoch, director; Helen Hallen Wolff, soprano; William I. Carson, tenor; Margaret Haymaker, accompanist; 10, concert.**

**KFI, Los Angeles, Calif. (Pacific, 469), 6:45-8 p. m., Y. M. C. A. lecture; Bon Ton dance orchestra; 8-9, Ambassador hotel Cocoonut Grove orchestra; 9-10, Examiner concert; 10-11, vocal concert, Harry Girard.**

**KFSG, Los Angeles, Calif. (Pacific, 278), 3:30-4:30 p. m., organ recital, courtesy B. Earnest Ballard; assisting artists in program; 7:30-9:15, auditorium service, organ; congregational singing; prayer; announcements; sermon, Alnce Sempie McPherson; water baptismal service; 9:15-10, Gray studio, featuring the silver band, direction G. N. Nichols, 10-11, organ recital and program, courtesy Esther Fricke Green, and assisting artists.**

**KFNF, Shenandoah, Ia. (Central, 266), 7:30 p. m., concert, Hanburg, Ia., J. S. Allen, director.**

**KGO, Oakland, Calif. (Pacific, 312), 4-5:30 p. m., concert orchestra, Hotel St. Francis; 8, "Twinedek," KGO players; 10-1, dance music, Henry Halstead's orchestra.**

**KGW, Portland, Ore. (Pacific, 492), 3:30 p. m., children's program; 10, dance music, George Olson's Metropolitan orchestra.**

**KHJ, Los Angeles, Calif. (Pacific, 395), 12:30-1:15 p. m., concert, Almine West and Greenwich orchestra; 6-6:30, Art Hickman's concert orchestra, Edward Fitzpatrick, director; 6:30-7:30, children's program, "American History," Prof. Walter Sylvester Hertzog; Dlekle Brandon, silver-sheet juvenile; bedtime story, Uncle John; 8-8:30, program, courtesy Dramatic Order Knights of Klorsant; band concert, Maj. Arthur Balue, conductor; 9:30-10, concert program, Charlie Wehman, tenor, and Bill Hatch, pianist; 10-11, Art Hickman's dance orchestra, Earl Burnett, director.**

**KPO, San Francisco, Calif. (Pacific, 423), 1-2 p. m., Rudy Selger's Fairmont hotel orchestra; 2:30-3:30, musical matinee; 4:30-5:30, Rudy Selger's Fairmont hotel orchestra; 5:30-6:30, children's hour stories, Big Brother of KPO; 7-7:30, Rudy Selger's Fairmont hotel orchestra; 8-9, Theodore J. Irwin, organist; 9-10, French program, Alne. Andre Ferrier; 10-11, E. Max Bradfield's Versatile hand. Program closes 11 p. m.**

**KYW, Chicago, Ill. (Central, Daylight, 536), 11:35 a. m., table talk, Mrs. Anna J. Peterson; 2:35-4 p. m., "Afternoon Frolic"; 6:25-7, children's bedtime story, Uncle Bob; 7-7:30, dinner concert, Congress hotel; 8-8:20, "Twenty Minutes of Good Reading," Rev. C. J.**

Pernin; 8:20-9:15, musical program; 10-11:30, "At Hoove" program. Program closes 11:30 p. m.

**WAAW, Omaha, Neb. (Central, 266), 7:30-9 p. m., Union Pacific Radio orchestra; talks, W. J. Kriss, Rev. E. M. Brown. Program closes 9 p. m.**

**WBAP, Fort Worth, Tex. (Central, 476), 7:30-8:30 p. m., concert; 9:30-10:45, old time fiddlers of Grapevine, Texas. Program closes 10:45 p. m.**

**WBAV, Columbus, Ohio (Eastern, 423), 12 m., religious service, Columbus Council of Churches, Rev. Clyde Xander, Indianola Lutheran church, speaker; sacred music.**

**WBBR, New York, N. Y. (Eastern, 273), 9:10 p. m., Gustav E. Jensen, violinist; 9:25, International Sunday school lesson, S. M. Van Sipma; 9:45, Gustav E. Jensen, violinist.**

**WBZ, Springfield, Mass. (Eastern, Daylight, 337), 6 p. m., Leo Reisman's Hotel Lenox ensemble; 6:30, songs, Violet Gridley, Jack Armstrong, Bill Coty; 6:40, Leo Reisman and his Hotel Brunswick orchestra; 7:10, "At the Theaters," A. L. S. Wood; 7:30, bedtime story for the kiddies; 7:45, Charles R. Hector with his St. James theater orchestra; 8:20, Olga Mansfield, contralto; Walker Chamberlain, accompanist; 9, Ruth Paley, contralto; Edith Paley, pianist.**

**WCAE, Pittsburgh, Pa. (Eastern, 462), 6:30 p. m., dinner concert, William Penn hotel; 8:30, Moore's cafeteria weekly radio review, E. T. Moores, manager.**

**WCBO, Zion, Ill. (Central, Daylight, 345), 8 p. m., mixed quartet; P. B. Newcomer, cornetist; Carl Newcomer, saxophonist; Chester S. Begg, baritone; Hermann Becker, cellist; Mrs. S. D. Inman, soprano; Alexander DePew, Ervin Rendell, flutists; L. J. Hire, violist; Esther Cray, reader.**

**WGAY, Milwaukee, Wis. (Central, 286), 10:30-12 m. frolic; Arcadia ball room orchestra; Ben Bortelson, violinist; Harry Rubin, flutist; Bill Benz, piano accompanist; Adeline Skobis, soprano.**

**WCX, Detroit, Mich. (Eastern, 517), 4:15 p. m., musical program; 6, dinner concert; 7, musical program.**

**WOAF, Kansas City, Mo. (Central, 411), 3:30-4:30 p. m., the Star's string trio; 6-7 p. m., school of the air, piano tuning in number on the Duo-Art; travelogue, Edgar Allen Linton; readings, Cecile Burton; the Tell-Me-a-Story Lady; music, Carl Nordberg's Plantation players; 11:45-1 a. m., Nighthawk frolic, the "Merry Old Chief" and the Plantation players; Eddie and Bobbie Kuhn's K. C. A. C. orchestra. Program closes 1 a. m.**

**WOAR, Philadelphia, Pa. (Eastern, Daylight, 395), 11:45 a. m., daily almanac; 12:02 p. m., Stanley theater organ recital; 12:30, Arcadia cafe concert orchestra; 2, Arcadia cafe concert orchestra; 4:30, Magazine corner; Edna Finestone, pianist; 7:30, Dream Daddy's bedtime stories.**

**WFAE, New York, N. Y. (Eastern, Daylight, 492), 11-11:15 a. m., talk to housewives; 4-4:45 p. m., children's stories; 4:45-5, George Gordon, baritone; 6-7, dinner music, Waldorf-Astoria hotel; 7-7:30, services, Greater New York Federation of churches; 7:30-7:45, Father Octavian Muresen, Roumanian basso; 8-8:15, talk, Bank of America; 8:15-8:30, "Touring with the Packard Eight," Charles D. Isaacson, conductor; 8:30-8:45, Col. John A. Pattee, old soldier fiddler; 9-9:15, Adam Carroll, pianist; 10-11, Vincent Lopez and his Hotel Pennsylvania orchestra.**

**WEAO, Columbus, Ohio (Eastern, 360), 1:30 p. m., educational lecture, member Ohio State university faculty; 8 p. m., chimes music, Prof. A. P. McManis; recital, Prof. Norman Ebeling, pianist; Gertrude Suter, contralto; 8:45, chimes music, Prof. A. B. McManis; recital, Clark Kilworth, pianist; Walter Sloan, baritone.**

**WFAA, Dallas, Tex. (Central, 476), 12:30-1 p. m., "The Body, the Temple," Charles E. Osborne; 8:30-9:30, Wednesday morning choral club; 11-12, moonlight serenaders, William A. Sutherland, Jr., director.**

**WEBH, Chicago, Ill. (Central, Daylight, 370), 7:30-8:30 p. m., songs, Johnson trio; "Everyday Songs," Robert Bonell; Merrick Foster, pianist; Edgewater Beach Oriole orchestra; 9:30-10:30, Mae Rose Lander, soprano; Marie Gerdes Testa, pianist; Edgewater Beach Oriole orchestra; 11:30-12:30, Harry Davis, baritone; Edgewater Beach Oriole orchestra; songs, Nick, Frank, Ted; late revue. Program closes 12 midnight.**

**WFI, Philadelphia, Pa. (Eastern, Daylight, 395), 1 p. m., Meyer Davis Bellevue Stratford concert orchestra; 3, report closing prices Chicago grain market; songs, John Vandersloot; 8:30, Meyer Davis Bellevue Stratford concert orchestra; 7, Sunny Jim, the children's pal; 8, meeting, Boy Scouts radio corps; 8:30, Loretta Ayck, pianist.**

**WGR, Buffalo, N. Y. (Eastern, Daylight, 318), 12:30-1**







WEDNESDAY MONDAY SEPTEMBER 20

on-10, art, of or-in-an-

), 6 orchestra; 6:30, Hotel Kimball Delancey Cleve-irigham, reader; Catherine White,

3 p. m., Prof. oncert, William, popular songs, m. Veterans of

:15 p. m., mu-

411), 3:30-4:30 7, school of the uo-Art; address, Star; the Tell-erg's Plantation die, the "Merry ers; Eddle and Program closes

Daylight, 395), p. m., Stanley cafe concert or-tra; 4:30, Ednaaddy's bedtime

ight, 492), 4-5, dinner music, iling Adventure l Young, tenor; yer; 8:15-8:30, Hazel Fleener and his Hotel

), 1:30 p. m., State university

370), 7:30-8:30 thay; Oriole or-Dr. Herbert W. :0-10:30, Oriole in steel guitar-and orange tale, s, Paul Locker; aille and Little;

30-1 p. m., ad-l Romborg, vio-Program closes

1 p. m., Meyer tra; 3, Loretta illetue Stratford; children's pal; andersloot, bass;

t, 319), 12:30-1st.

0), 9:30 p. m.,

-5 p. m., Alamo ilway Inspector's derson, Samuel ses 9 p. m.

p. m., Carnival w room, Hotel Ruth Sponseller, y Bloom; Jessie Scotty Middleton, and Dede Fitz-n vocal and in-

ight, 360), 2:15-Iters; 2:30-2:45, Tom Banks and ue Cross Concert prano; 4:30-4:45, Carrie Cohen, tern harmonists; l Specht's Ala-tenor; 8:15-8:30, 5, Tom Bracken t Harmony Four t, pianist; 9:15-Where Are We National Security old time songs; st; 10:15-10:45, Adeline Killeen, Clarke and his orchestra.

t, 509), 7 p. m., il, faculty Brau eve celebration ol of Music pro-e orchestra from organist.

ylight, 360), 7:10

orn, Daylight, 455), 1-2 orchestra, Jos. Strisof, di-otion of International horse ruse featuring Epinard, direct from the Aqueduct Race track, announcer, Major J. Andrew White; 4:30-5:30, Roger Wolfe's Hotel Blumoro tea orchestra; 5:30-6:30, New York stock exchange reports, etc., Evening Post News; 7-8, Waldorf-Astoria dance orchestra; 8-8:15, "Planting in the Fall," Thomas V. Peck, Peter Henderson company; 8:30-9:30, Lelf Ericson Day Celebration, American Scandinavian Foundation; 9:30-10:30, program arranged by the French Line, music, S. S. Paris orchestra; 10:30-11:30, Hotel Astor Dance orchestra.

WLS, Chicago, Ill. (Central, Daylight, 345), 8-1 a. m., Mardi-Gras, the Harmony Girls, Isham Jones and his College Inn orchestra, Ralph Emerson, Jerry Bruie and his troop of trained barn dance fiddlers, Tommy Mullo (Continued on page 15)

S. "Morning Glory Club" program, songs, Carl Zoehms, Lou Herscher, Harry E. Erhardt. WEAF, New York, N. Y. (Eastern, Daylight, 492), 11-11:30 a. m., musical program; 11:30-11:45, health talk; 4-5 p. m., club women's program; 6-7, dinner music, Waldorf-Astoria hotel; 7-7:30, children's stories, G. K. Kluney company; 7:30-8, "The Happiness Boys, Billy Jones and Ernest Hare; 8-8:15, Florence Steele, contralto; 8:15-9, musical program, G. Schirmer, Inc.; 9-10; B. Fischer and company, "Astor Coffee" orchestra. WEAD, Columbus, Ohio (Eastern, 360), 1:30 p. m., educational lecture, member Ohio State university faculty; 4, farm talk, faculty member; music, university talent. WEBB, Chicago, Ill. (Central, Daylight, 370), 7:30-8:30 p. m., Helen Myrdor, soprano; Ruth Buhl, reader;

of U. S. Scouting Fleet, music by Navy band; 10:30-11:30, Harold Stern's Belleclair Towers orchestra. WLS, Chicago, Ill. (Central, Daylight, 345), 1-2 p. m., Lewis Sullivan, baritone; "Cash Incomes for Farm," Mrs. Verna Hatch; 6:30, Ralph Emerson, organist; 6:45, Ford and Glenn; 6:50, Ralph Emerson, organist; 7:05, Isham Jones and his Hotel Sherman College Inn orchestra; 7:20, Lewis Mecham, tenor; 7:35, orchestra; 7:45, lullaby time, Glenn Howel and Ford Rush; 8, orchestra; 8:15, Runners' Jubilee quartet; 9-10, "Building for the Future," Mrs. Verna Hatch; 10, orchestra; 10:15, H. D. Saddler's Radio drama; 10:30, orchestra; 10:40, Ford and Glenn time. WJD, Philadelphia, Pa. (Eastern, Daylight, 509), 11 a. m., organ recital, Harriet G. Ridley; 12:02 p. m., Wanamaker crystal tea room orchestra, Robert E.

m. concert; 6-6:30, Art Hickman's concert orchestra, Edward Fitzpatrick, director; 6:30-7:30, children's program, "American History," Prof. Walter Sylvester Hertzog; Vondelle Dar, silver-sheet juvenile; bedtime story, Uncle John; 8-10, concert, courtesy of the Golden State Electric company, R. A. Sedwell, director; 10-11, Art Hickman's dance orchestra, Earl Burnett, director. KPD, San Francisco, Calif. (Pacific, 423), 1-2 p. m., Rudy Solzer's Fairmont hotel orchestra; 2:30-3:30, musical matinee; 4:30-5:30, E. Max Bradford's Versatile band; 8-12, Art Weidner and his popular artists. KSD, St. Louis, Mo. (Central, 546), 8 p. m., Grand Central theater. KYW, Chicago, Ill. (Central, Daylight, 536), 11:35 a. m., table talk, Mrs. Anna J. Peterson; 6:35 p. m., chil-

### Saturday, September 27

(Continued from page 17)

and Jack Little, Ford and Glenn, Walter Peterson. Program closes 1 a. m.  
**WMAQ, Chicago, Ill.** (Central, 447.5), 6:30 p. m., Hotel LaSalle orchestra; 8, Auburn Park "Lions" boys band; 8:40, travel lecture, Ellis Prentice Cole; 9, weekly Babalan & Katz Chicago theater review.  
**WMC, Memphis, Tenn.** (Central, 500), 8:30 p. m., St. John's male quartet.  
**WMM, Cincinnati, Ohio** (Central, 447.5), 10 p. m., special program arranged by Leonora Pilgrini Schweb, soprano soloist; 10:30, Schubert's mixed quartet; reading, Mrs. Beryl Mae Gross; 11, Auburn orchestra.  
**WOAW, Omaha, Nebr.** (Central, 526), 6 p. m., popular half-hour; 6:30, dinner program, Southern Ragged Jazz orchestra; 9, program, auspices of Hannon-Van Brunt company, Ford dealers.  
**WOC, Davenport, Ia.** (Central, 484), 12 m., chimes; 7 p. m., sandman's visit, Val McLaughlin; 9, the Palmer School Radio orchestra; Ralph W. Fuller, baritone.  
**WOO, Philadelphia, Pa.** (Eastern, 509), 11 a. m., organ recital, Harriet G. Ridley; 12:02 p. m., Wanamaker crystal tea room orchestra, Robert E. Golden, director; 4:15, organ recital, Harriet G. Ridley.  
**WOR, Newark, N. J.** (Eastern, 405), 2:30-2:45 p. m., Edward Beckman and Oscar Magnuson, pianist; 3:30-3:45, Edward Beckman and Oscar Magnuson; 4:15-4:30, Music While You Dine, Cluderella Ballroom orchestra; 7:20-7:30, Jolly Bill Steinke; 8-8:20, Neighborhood trio; 9-9:15, Mollie Chaplin Kly, contralto; 9:45-10, Mollie Chaplin Kly; 10-11, Ben Friedman entertainers.  
**WRC, Washington, D. C.** (Eastern, 469), 6 p. m., children's hour, Peggy Albion; 7:45, Bible talk; 8, songs; 8:15, "Reception of the Very Short Wave Broadcasting Stations," I. A. Wells; 8:30, piano recital; 8:45, Capitol male quartet.  
**WQJ, Chicago, Ill.** (Central, 448), 11-12 m., Chicago Herald-Examiner food show; 3-4 p. m., "Koffee" Klatski; 7-8, Grace Wilson, contralto; Dorothy Schubert, Jugo Slav soprano; Arthur Ward, baritone; 10-2, Ralph Williams and his Rainbo Garden orchestra; songs, Jerry Sullivan; Ned Miller, tenor; Melodians, Laurie, Eddie, Bonnie; Mallo and Little, song writers; Dolores Edwards, contralto; Sandy Meek, Scotch tenor; Harmony singers, George A. Little, Larry Shear.  
**WSAI, Cincinnati, Ohio** (Central, 448), 8 p. m., 8 p. m., chimes concert; 8:15, mixed musical program; 9, weekly news review, Rutherford H. Cox; 9:20, Hawaiian guitar duets, Collins & Hubbard; 12, Midnight Entertainers; 12:30, Freda Sanker's Ragstuffed.  
**WSB, Atlanta, Ga.** (Central, 429), 8 p. m., Georgia Sacred Harp quartet, Porterdale string band; 10:45, Journal Week End Skyland.  
**WTAM, Cleveland, Ohio** (Eastern, 390), 9 p. m., WTAM dance orchestra, Ev Jones, director; solos, popular entertainers.  
**WTAS, Elgin, Ill.** (Central, 286), 7-12 midnight, Arceady orchestra; Charley Hughes, pianist; Ziegler sisters, Charles Harrison, Eddie Cavanaugh, Fanny Cavanaugh.  
**WTAY, Oak Park, Ill.** (Central, 448), 6:45-7:45 p. m., Frank Sorlini, accordionist; Dean Remick, pianist; Dr. W. P. Zimmer, tenor; 9-9:45, 10:15-11:15, Art Linck, the original Mrs. Schlegenhaur; Guyon's Paradise orchestra.  
**WVJ, Detroit, Mich.** (Eastern, 517), 8 a. m., setting-up exercises, R. J. Horton; 9:30, talk, woman's editor, Detroit News; 12 m., Detroit News orchestra.

### Sunday, September 28

Silent night for: CKAC, KGW, KQV, WAAW, WBAP, WOAR, WHN, WLW, WMH, WOO, WRC, WTAY, CHYC, Montreal, Can. (Eastern, 341), 9 p. m., studio program, Ernest Kerr and party.  
**KFI, Los Angeles, Calif.** (Pacific, 469), 10-10:45 a. m., L. A. church federation service; 6:45-8 p. m., Metropolitan theater concert; 8-9, Ambassador hotel concert; 9-10, Examiner studio concert; 10-11, Packard six orchestra.  
**KFNH, Shenandoah, Ia.** (Central, 266), 3 p. m., religious services, U. P. church; 6:30, regular sacred song service.  
**KFSG, Los Angeles, Calif.** (Pacific, 278), 10:30-12:30 noon, morning service, organ, Esther Fricke Green; congregational singing; prayer; choir; anthem; triple male quartet; announcement; vocal solo; sermon, Aimce Semple McPherson; 2:30-4:30 p. m., afternoon service, organ, Roy Reid Brignall; silver band; congregational singing; invocation; reception of members; announcements; silver band; vocal solo; sermon, Aimce Semple McPherson; after call; 7-10, musical hour, congregational singing; choir; silver band and special vocal and instrumental; sermon, Aimce Semple McPherson; after call; 10-11, organ recital, courtesy, Roy Reid Brignall; vocal selections by assisting artists.  
**KGO, Oakland, Calif.** (Pacific, 312), 11 a. m., service, First Presbyterian church; 3:30, KGO Little Symphony orchestra; 7:30, service, First Presbyterian church.  
**KGW, Portland, Ore.** (Pacific, 492), 6 p. m., church service.  
**KHJ, Los Angeles, Calif.** (Pacific, 395), 10 a. m., organ recital from KHL studio; 10:30-12:30, noon organ recital and morning service from First Methodist Episcopal church; Arthur Blakeley, organist; Rev. Elmer E. Helms, pastor; 6:30-7 p. m., Art Hickman's concert orchestra, Edward Fitzpatrick, director; 7-7:30, organ recital from First Methodist Episcopal church, Arthur Blakeley, organist; 8-10, de luxe concert program.  
**KYW, Chicago, Ill.** (Central, 536), 11 a. m., Central church service, Dr. E. F. Shanon, pastor; 2:30 p. m., studio chapel service.  
**WCBZ, Zion, Ill.** (Central, 345), 8 p. m., ecstasial bells, Mehaffey, Rendall, Sach, McElroy; violin duo, Richard F. Hine, Sydney Stewart; Alexander DePew, flautist; E. P. Paxton, baritone; soprano and tenor duo, Mrs. R. M. Steel, H. M. Steel; Florence Farrar, contralto.  
**WCX, Detroit, Mich.** (Eastern, 517), 7:45 p. m., services, Central M. E. church, Dr. Lynn Harold Hough; Hudson quartets.  
**WOAF, Kansas City, Mo.** (Central, 411), 4-5 p. m., program, the Newman theater.  
**WOAR, Philadelphia, Pa.** (Eastern, 395), 2:30 p. m., Arcadia cafe concert orchestra.  
**WEAF, New York, N. Y.** (Eastern, 492), 4-5 p. m., services, Greater New York federation of churches; 7:20-9:15, Capitol theater; 9:15-10:15, Skinner organ recital.  
**WEBB, Chicago, Ill.** (Central, 370), 7-9 p. m., William Bahachet, tenor; Elsie Schley, contralto; songs, Nick Lucas; Merrick Foster, pianist; Orlofe orchestra.  
**WFAA, Dallas, Tex.** (Central, 476), 6-7 p. m., Radio Bible class, Dr. William M. Anderson; 9-9:55 a. m., sacred song recital, Mann Singers of Van Alstyne; Ica A. Nunnallee, director; 9:30-11, Dick Richardson's orchestra. Program closes 11 p. m.  
**WFI, Philadelphia, Pa.** (Eastern, 395), 7:30 p. m., services, Arch street Presbyterian church.  
**WGR, Buffalo, N. Y.** (Eastern, 319), 3 p. m., vesper service, the Rev. L. A. Gates of the South Presbyterian church.  
**WGY, Schenectady, N. Y.** (Eastern, 380), 11 a. m., service, First Presbyterian church, Rev. Robert W. Anthony; 8 p. m., program, Temple Beth Emeth, evening service for the New Year, "Rosh-Hashanah."  
**WHAS, Louisville, Ky.** (Central, 400), 9:55 a. m., organ music; 10, Warren Memorial church, Rev. Dr. Samuel I. Callen, pastor; 4-5 p. m., sacred concert, auspices, Mrs. Jane Webster Murrell, Rev. Dr. Robert J. Bryant. Program closes 5 p. m.  
**WHB, Kansas City, Mo.** (Central, 411), 9:45-11 a. m., services, Linwood Boulevard Christian church, Dr. Burris Jenkins, pastor; 8-9:30 p. m., religious services. Program closes 9:30 p. m.  
**WHK, Cleveland, Ohio** (Eastern, 283), 8 p. m., chapel service, auspices Cleveland Federated churches, Rev. E. R. Wright, conductor; current religious topics; sacred music, sermon; 9, O. A. Bryan, Leonard Z. Bryan, Jr., Mrs. Mary B. Black, Hautzinger string trio, in an hour of chamber music; 10, dance program.  
**WHN, New York, N. Y.** (Eastern, 360), 3-4 p. m.,

## Where to Hear Dramas

Central Standard Time

**DRAMAS**, humorous, serious, musical comedies and even operettas are broadcast during the week. Below are the stations and dates.

**Wednesday:** WMAQ, play-night.  
**Thursday:** KGO, "Dweedles," KGO players; WGY, "The Happiness Expert," WGY Student players.  
**Friday:** KFLX, "Weighed in the Bal-

ance;" KFX players; WGY, operetta, "The Fire-Prince," WGY light opera company.  
**Saturday:** KSD, light opera, Grand Central theater.

Queens County Christian Endeavor union; 11:30-12, Ted Lewis and his Symphonic Clowns from the Parody club.  
**WHO, Oes Moines, Ia.** (Central, 526), 7:30-9 p. m., Bankers Life Radio orchestra, W. L. Marsh, director; Myrtle Williams, soprano. Program closes 9 p. m.  
**WIP, Philadelphia, Pa.** (Eastern, 509), 7:30 p. m., services, Holy Trinity chapel, Rev. Floyd D. Tompkins, D. D., rector.  
**WIAR, Providence, R. I.** (Eastern, 360), 7:20 p. m., "Roxy" and his Capitol theater gang; 9:15, organ recital, Skinner organ company.  
**WJZ, New York, N. Y.** (Eastern, 455), 9-11 a. m., children's hour, original stories by authors, music, by composers; 11-12, St. Thomas Episcopal church services; 2:30-3:30 p. m., Radio Bible class, Greater N. Y. federation of churches; 3:30-3:45, Norina Gradshten, pianist; 7-8, Nathan Abas' Hotel Pennsylvania orchestra; 8:15-8:30, Captain Chas. H. Longbottom, swinging harpist; 9-11, "Rigoletto," Grand Opera society of New York.  
**WLS, Chicago, Ill.** (Central, 345), 6:30 p. m., Ralph Emerson, organist; 7-8, Harmony male chorus of the Christ church of Oak Park. Program closes 8 p. m.  
**WLW, Cincinnati, Ohio** (Central, 423), 9:30 a. m., Sunday school; 11, sermon, Dr. Frank Stevenson, Church of the Covenant; 7:45 p. m., sermon, Rev. Frederick McMillin, First Presbyterian church of Walnut Hills; 8:45, Western and Southern orchestra, William Kopp, director.  
**WOAW, Omaha, Nebr.** (Central, 526), 9 a. m., Radio chapel service, conducted by Rev. R. R. Brown; 9 p. m., musical chapel service, First Methodist church, Dr. J. E. Wagner, pastor.  
**WOO, Philadelphia, Pa.** (Eastern, 509), 10:30 a. m., services, Bethany temple; 2:30 p. m., Sunday school services, Bethany temple; 3:15, organ recital, Clarence K. Bawden.  
**WOC, Davenport, Ia.** (Central, 484), 9 a. m., sacred chimes concert; 1:30 p. m., The Palmer School Radio orchestra, Erwin Swindell, conductor; 7, "Abraham Lincoln," Henry R. Rathbone; 8, Methodist Episcopal church, Rev. M. D. Obenshain; 9:30, The Palmer School Radio orchestra.  
**WOS, Jefferson City, Mo.** (Central, 440.9), 7:30 p. m., Central Evangelical church, Rev. E. W. Berlekamp, pastor; Nellie Ellis, organist.  
**WQJ, Chicago, Ill.** (Central, 448), 8-10 p. m., Ralph Williams and his Rainbo Garden orchestra; Langdon brothers, steel guitarists; Grace Nelson, 14-year-old pianist; Dorothy Davie Dillow, soprano; Lancaster Smith, bass; Mrs. Lancaster Smith, accompanist; Shepherd Levine, tenor; Marion Morgan, prima donna in "Around the Rainbow."  
**WSAI, Cincinnati, Ohio** (Central, 309), 3 p. m., sermonette; 3:10, sacred chimes concert.  
**WSB, Atlanta, Ga.** (Central, 429), 11 a. m., First Presbyterian church.  
**WTAS, Elgin, Ill.** (Central, 286), 2-5 p. m., WTAS orchestra: Hawaiian melodies, William Anderson, Orpha Twingstrand; Charley Hughes, pianist; Ziegler sisters, Charles Harrison; 7-12 midnight, Arceady orchestra; Charley Hughes, pianist; Ziegler sisters, Charles Harrison, Eddie Cavanaugh, Fanny Cavanaugh.  
**WVJ, Detroit, Mich.** (Eastern, 517), 11 a. m., services, St. Paul's Episcopal Cathedral; 2 p. m., Detroit News orchestra.

### Monday, September 29

Silent night for: CKAC, KFNH, KHJ, WEBH, WHAS, WIP, WLS, WMAQ, WQJ, WRC, WTAY.  
**CKAC, Montreal, Can.** (Eastern, 425), 1:45 p. m., Mount Royal hotel concert orchestra.  
**KFAE, Pullman, Wash.** (Pacific, 330), 7:30 p. m., William Hanson, cornetist; Ivar Malander, pianist; "Making the Lunch Box Attractive," Mary Sutherland; "Spontaneous Combustion as a Fire Hazard," H. V. Carpenter.  
**KFI, Los Angeles, Calif.** (Pacific, 469), 8-9 p. m., Evening Herald, Those Boys dance orchestra; 9-10, Examiner concert; 10-11, Ambassador hotel Cocoonet organ orchestra.  
**KGO, Oakland, Calif.** (Pacific, 312), 3 p. m., studio musical program, Parent-Teacher association speaker; 4-5:30, Henry Halstead's dance orchestra; 5:30-6, Aunt Betty stories, KGO kiddies club; 8, educational program; Arion trio; 10-1, Henry Halstead's orchestra. Program closes 9 p. m.  
**KGW, Portland, Ore.** (Pacific, 492), 3:30 p. m., literary program, Portland Library association; 8, concert.  
**KHJ, Los Angeles, Calif.** (Pacific, 395), 12:30-1:15 p. m., special concert program.  
**KLX, Oakland, Calif.** (Pacific, 509), 8-9 p. m., program, Associated students; 2, University of California.  
**KQV, Pittsburgh, Pa.** (Eastern, 270), 9-10 p. m., Pittsburgh artists.  
**KYW, Chicago, Ill.** (Central, 536), 10:35 a. m., table talk, Mrs. Anna J. Peterson; 5:35-6 p. m., children's bedtime story, Uncle Bob.  
**WAAW, Omaha, Nebr.** (Central, 266), 7:30-9 p. m., instrumental music, Frank Wright, Frank Bessinger, "The Radlo Franks." Program closes 9 p. m.  
**WBAP, Fort Worth, Tex.** (Central, 476), 7:30-8:30 p. m., features, Majestic theater; 9:30-10:45, talent from Strawn. Program closes 10:45 p. m.  
**WBAV, Columbus, Ohio** (Eastern, 423), 12 m., Ila Lorbarch Owens, pianist.  
**WCAY, Milwaukee, Wis.** (Central, 266), 8-9 p. m., Holeproof night; Margaret Fechner, soprano; Sidney Gross, violinist; Lawrence Waite, baritone; Armond Muth, pianist; Constance and Sydney Swindells, piano duets.  
**WCX, Detroit, Mich.** (Eastern, 517), 4:15 p. m., musical program; 6, dinner concert, K. musical program.  
**WOAF, Kansas City, Mo.** (Central, 411), 3:30-4:30 p. m., the Star's string trio; 5-5:30, weekly Boy Scout program; 6-7, school of the air, piano tuning-in number on the Duo-Art; personal message, Roger W. Babson, statistical expert; the Tell-Me-a-Story Lady; music, Carl Nordberg's Plantation players; 8-9:30, program arranged, Mary E. DeBernard; 11:45-1 a. m., Nighthawk frolic, the "Merry Old Chief" and the Plantation players; Eddie and Bobbie Kuhn's K. C. A. C. orchestra. Program closes 1 a. m.  
**WDAR, Philadelphia, Pa.** (Eastern, 395), 11:45 a. m., daily almanac; 12:02 p. m., Stanley theater organ recital; 12:30, Arcadia cafe concert orchestra; 2, Arcadia cafe concert orchestra; Edna Finestone, pianist; 7:30, Dream Daddy's bedtime stories; 7:50, moving picture review, James A. Nassau; 9:10, overture, Stanley theater symphony orchestra; 10, Arcadia cafe dance orchestra.  
**WEAO, Columbus, Ohio** (Eastern, 360), 1:30 p. m., educational lecture, member Ohio State university faculty.  
**WFAA, Dallas, Tex.** (Central, 476), 12:20-1 p. m., "History in Texas Rocks," Dr. Ellis W. Shuler; 8:30-9:30, Mozart choral club, Earle D. Bohrends, director. Program closes 9:30 p. m.  
**WFI, Philadelphia, Pa.** (Eastern, 395), 1 p. m., Meyer Davis Bellevue Stratford concert orchestra; 3, report closing prices Chicago grain market; Loretta Kerk, pianist; 6:30, Meyer Davis Bellevue Stratford concert orchestra; 7, Sunny Jim, the children's pal.  
**WGR, Buffalo, N. Y.** (Eastern, 319), 12:30-1 p. m., George Albert Bouchard, organist; 6:30-7:30, dinner music; 9-11, concert, featuring I. W. McLean and the North Presbyterian church ladies' quartet, directed by Lucille Wilson; 11, supper-dance music, Vincent

Lopez' Hotel Statler dance orchestra, Harold Giesler, director.  
**WGY, Schenectady, N. Y.** (Eastern, 380), 10 a. m., Temple Beth Emeth, morning service for "Rosh-Hashanah"; 1 p. m., "Putting the Garden to Bed"; 7:15-7:25, "Farm Credit," W. I. Myers; 7:30-7:40, "Cooperation the Next Step," S. L. Strivings; 7:50, musical program, WGY orchestra; Hepzibah C. James, soprano; Signe Timmerholm, accompanist.  
**WHAS, Louisville, Ky.** (Central, 400), 4-5 p. m., Alamo theater orchestra, Program closes 5 p. m.  
**WHB, Kansas City, Mo.** (Central, 411), 2-3 p. m., ladies' hour program, Sweeney Radio orchestra; 7-8, educational hour; music, Sweeney instrumental trio. Program closes 8 p. m.  
**WHN, New York, N. Y.** (Eastern, 360), 3:45-4 p. m., Uncle Robert's chats with children; 4:45-5, "High Points of Life," Mrs. Middleton Aitken; 6:30-7:30, Olcott Yall's trio and Paul Specht's Alamo orchestra; 7:30-7:45, "Goodnight, Children," Elizabeth Morrison Jones; 7:45-8, screen celebrities; 8-8:30, Roseland dance orchestra; 9:30-10, Dan Gregory's Crystal Palace orchestra; 10-11, Radio Shack; 12-2 a. m., Midnight Bohemia show.  
**WHO, Oes Moines, Ia.** (Central, 526), 7:30-9 p. m., Drake university conservatory of music, Dean Holmes Cooper, director; 11:15-12, L. Carlos Meier, organist. Program closes 12 midnight.  
**WIP, Philadelphia, Pa.** (Eastern, 509), 7 p. m., Uncle Wip's bedtime stories.  
**WIAR, Providence, R. I.** (Eastern, 360), 10 a. m., housewives Radio exchange, Mrs. Wood; 10:45, McCall talk; 1:05 p. m., studio program; 8, musicale.  
**WJZ, New York, N. Y.** (Eastern, 455), 10-10:10 a. m., daily menu; 10:10-10:20, "Household Equipment," Ethel R. Peyser; 10:20-10:30, "Fashions of the Stage," Cora Moore; 10:30-10:50, Tribune Institute; 10:50-5:30, Fred Hall's Royal Terrace orchestra; 5:30-6:30, New York stock exchange reports, etc.; Evening Post; 8-8:10, Wall Street Journal review; 8:10-8:30, Kathika Narinska, pianist; 8:30-8:45, "Philosophy of Nutrition," Alfred W. McAnn; 9-9:15, Field and his Club Deauville orchestra with Clarks' Deauville Hawaiian.  
**WLW, Cincinnati, Ohio** (Central, 423), 8 p. m., Roelir's orchestra; 8:30, theatrical review; 8:45, cello solos, Oscar Kirsch; 9, Cooper orchestra and male quartet.  
**WMAQ, Chicago, Ill.** (Central, 447.5), 4-10 p. m., mothers in council, Mrs. Frances M. Ford; 4:30, musicale; 6, Chicago theater organ; 6:30, Hotel LaSalle orchestra.  
**WMC, Memphis, Tenn.** (Central, 500), 8:30 p. m., Hotel Gayoso orchestra.  
**WMM, Cincinnati, Ohio** (Central, 309), 8 p. m., flute solos, Ronald McFarlan, Muriel McFarlan, accompanist; string trio, Evelyn Read, piano; Ruth Donnerberg, cello; Elizabeth Medders, violin; 9, Horton-Hotel Alms dance orchestra.  
**WOAW, Omaha, Nebr.** (Central, 526), 6 p. m., popular half-hour; 6:30, dinner program, Randall's Royal orchestra of Grandis store restaurants; 9, opera program arranged by Madame Moeller-Hornis.  
**WOO, Philadelphia, Pa.** (Eastern, 509), 11 a. m., organ recital, Harriet G. Ridley; 12:02 p. m., Wanamaker crystal tea room orchestra, Robert E. Golden, director; 4:45, organ recital, Harriet G. Ridley; 7:30, A. Candelari and his Hotel Adelpia roof garden orchestra; 9:10, Fox theater grand orchestra; 10, Hotel Adelpia roof garden dance orchestra.  
**WOC, Davenport, Ia.** (Central, 484), 10 a. m., household hints; 12 m., chimes; 7 p. m., sandman's visit, Val McLaughlin; 8, orchestra; 10, musical program.  
**WOR, Newark, N. J.** (Eastern, 405), 3:45-4 p. m., talk, "Interior Decorating," Sewell; 6:15-7, "Music While You Dine," Elite orchestra; 7:20-7:30, sports, Jolly Bill Steinke; 8:15-8:30, swimming talk, Frank J. Dalton; 8:45-9, "See by the Papers," Alfred E. McCosker; 9:30-10:30, WGT Monday nighters.  
**WOS, Jefferson City, Mo.** (Central, 440.9), 3 p. m., address, Arthur T. Nelson, state marking commission; 8:20, band concert, Missouri State prison concert band; Harry M. Snodgrass, pianist; Clyde Edwin Tuck, poet.  
**WQJ, Chicago, Ill.** (Central, 448), 11-11 p. m., Chicago Herald Examiner food show; 3-4, "New Salads for Old," Helen Harrington Downing.  
**WRC, Washington, D. C.** (Eastern, 469), 3 p. m., fashion developments of the moment, women's wear; 3:25, current topics, Editor of the Outlook; 3:35, piano; 4:10, book review, auspices of the League of American Penwomen; 6, stories for children, Peggy Albion.  
**WSAI, Cincinnati, Ohio** (Central, 309), 10 p. m., popular program, Royal Garden orchestra.  
**WSB, Atlanta, Ga.** (Central, 429), 8 p. m., vocal classics; 8:45, radiofun entertainment.  
**WTAM, Cleveland, Ohio** (Eastern, 390), 8 p. m., WTAM first anniversary program; "Tall Cedars" band; Dorothy Smith Lenz, soprano; Florence Wasson, contralto; Mildred Harter, soprano; Elsie Young, contralto; John Malnwright, tenor; Arthur Parry, baritone; James McMahon, baritone; Robert Patrick, tenor.  
**WTAS, Chicago, Ill.** (Central, 286), 7:15 p. m., Charley Hughes, organist; 7:20-7:45, WTAS orchestra; 7:45-8, Mary Jayne, singer; Albert Malotto, composer; Lucky Wilbur, writer; Egbert Van Alstyne, Clem Daey, popular singers; 8-8:30, WTAS orchestra; 8:30-8:45, trio, Hill, Hirsh, Gorny; Vernon Buck, Jimmy Eggert; 8:45-9, WTAS orchestra; 9-9:30, Hawaiian numbers, William Anderson, Orpha Twingstrand; Walter Donovan, Carmi Romane, Ziegler sisters, Charles Harrison, 9:30-10, WTAS orchestra; 10-11, request numbers, Charley Hughes; old-fashioned medley, Hill, Hirsh, Gorny; Mary Jayne, Ziegler sisters; WTAS orchestra.  
**WVJ, Detroit, Mich.** (Eastern, 517), 8 a. m., setting up exercises, R. J. Horton; 9:30, talk, women's editor, Detroit News; 12 m., Detroit News orchestra; 7 p. m., Detroit News orchestra.

### Tuesday, September 30

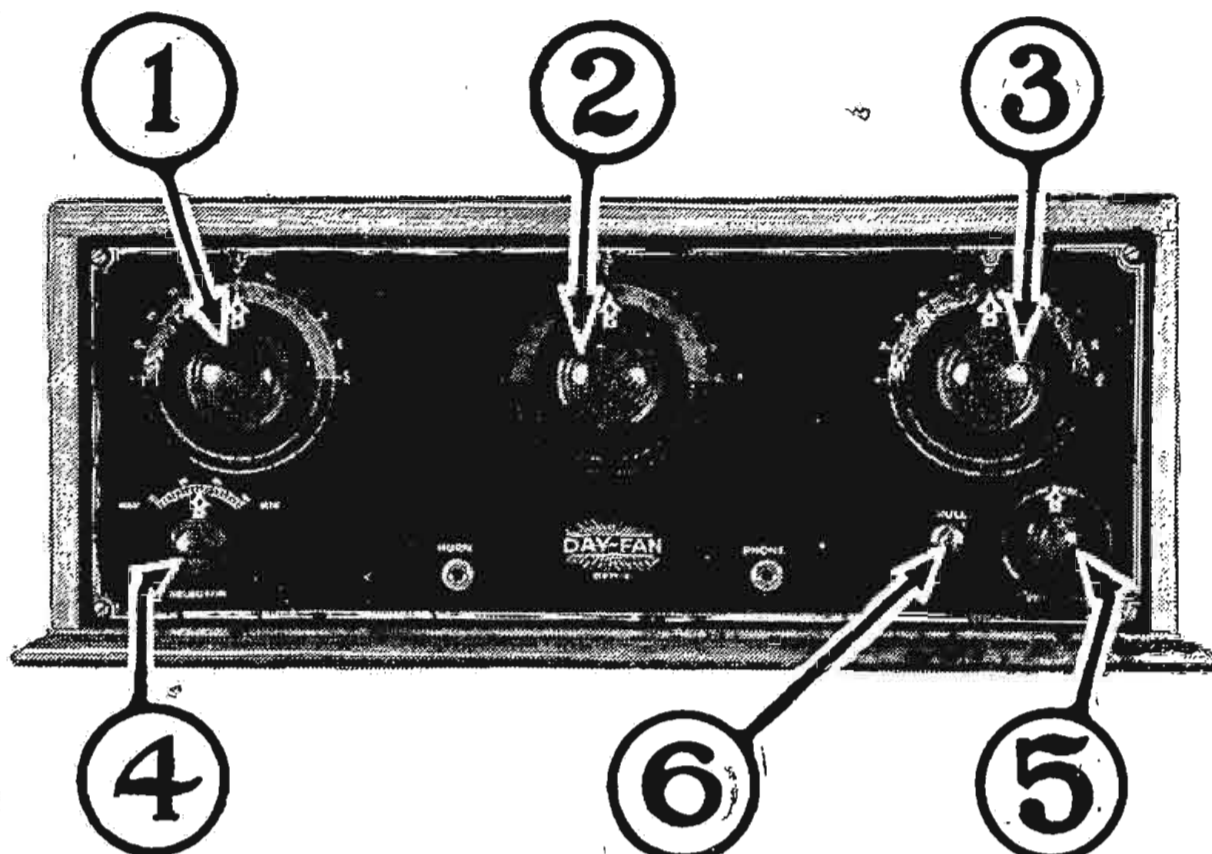
Silent night for: KQV, WBBR, WHO, WMM, WOC, WOO, WOR, WOS.  
**CKAC, Montreal, Can.** (Eastern, 425), 7 p. m., m., "Kiddie" stories in French and English; 7:30, Rex Battle and his Mount Royal hotel concert orchestra; Ben Scherzer, violinist; 8:30, H. K. Megausic concert party; 10:30, Joseph C. Smith and his Mount Royal hotel dance orchestra.  
**KFI, Los Angeles, Calif.** (Pacific, 469), 6:45-7 p. m., Aeolian organ recital; 8-9, Ambassador hotel Cocoonet Grove orchestra; 9-10, Examiner studio concert; 10-11, popular concert.  
**KFNH, Shenandoah, Ia.** (Central, 266), 7:30 p. m., program, Degree of Honor Lodge, Mrs. Howard Ross, director.  
**KGO, Oakland, Calif.** (Pacific, 312), 4-5:30 p. m., concert orchestra, Hotel St. Francis; 8, Lucy Latham Valpey, pianist; Virginia Turner, pianist; Lulu E. Preece, soprano; Mary Webster Mitchell, contralto; Jerome Damonte, pianist; Lawrence Ellis, Roger Matthews, clarinetists; Mrs. Cyrus A. Anderson, contralto; Dena Cavanaugh, soprano; Eugene Stefan, tenor; Trio Concertant, Feste G. Aspre, violinist; Arthur Landeson, cellist; Gertrude Zimet, pianist; 10-11, Henry Halstead's orchestra. Program closes 1 a. m.  
**KGW, Portland, Ore.** (Pacific, 492), 3:30 p. m., children's program; 8, concert.  
**KFSG, Los Angeles, Calif.** (Pacific, 278), 3:30-4:30 p. m., organ recital, courtesy Esther Fricke Green; Sarah Kacher, violinist and assisting artists; 6:30-

7:30, Gray studio children's hour, courtesy, Harry J. Beardsley (Cousin Jim) and associates; Eugene Lamb, pianist and accompanist.  
**KHJ, Los Angeles, Calif.** (Pacific, 395), 12:30-1:15 p. m., concert, the Higley-Wiggly girls; 6-6:30, Art Hickman's concert orchestra, Edward Fitzpatrick, director; 6:30-7:30, children's hour, "American History," Prof. Walter Sylvester Hertzog; the Sandman and Queen Titania; bedtime story, Uncle John; 8-10, special de luxe concert; 10-11, Art Hickman's dance orchestra, Earl Burnett, director.  
**KLX, Oakland, Calif.** (Pacific, 509), 6-7 p. m., Aunt Elsie's Sunset matinee.  
**KYW, Chicago, Ill.** (Central, 536), 10:35 a. m., table talk, Mrs. Anna J. Peterson; 1:35-3 p. m., afternoon frolic; 3, "Bringing the World to America," Our World; 3:55-6, children's bedtime story, Uncle Bob; 6-6:30, dinner concert, Congress hotel; 7-7:20, Chicago Musical college; 7:20-7:45, speeches, auspices, American Farm Bureau federation; "Please Help Yourself," John A. Kotat; "Observations of the Growth of Boys' and Girls' Club Work," John W. Covardale; 8:30, Chicago Musical college; 9-10:30, at home program.  
**WAAW, Omaha, Nebr.** (Central, 266), 7:30-9 p. m., "The Radlo Franks." Wright and Bessinger. Program closes 9 p. m.  
**WBAP, Fort Worth, Tex.** (Central, 476), 7:30-8:30 p. m., Presley Moore's Black and Gold serenades orchestra; 9:30-10:45, Jackson family, French harp artists. Program closes 10:45 p. m.  
**WBAV, Columbus, Ohio** (Eastern, 423), 12 m., Ila Lorbarch Owens, pianist; 8 p. m., popular selections, WBAV orchestra, Frances Handicau, director.  
**WCAY, Milwaukee, Wis.** (Central, 266), 8-9 p. m., musical program, WYAY's Sun doggers; Harry Rubin, flautist; Eddie Lezarus, baritone; Claude Kelly, tenor.  
**WCX, Detroit, Mich.** (Eastern, 517), 4:15 p. m., musical program; dinner concert; 10, Red Apple club.  
**WOAF, Kansas City, Mo.** (Central, 411), 3:30-4:15, the Star's string trio; 5-5:30, weekly Boy Scout program, piano pupils of Virginia Tisdale Stroud, violin pupils of Wot S. Morse; 6-7, school of the air, piano tuning-in number on the Duo-Art; address, Mrs. Helen Littlefield, first of a second series of Radio piano lessons; the Tell-Me-a-Story Lady; music, Carl Nordberg's Plantation players; 11:45-1 a. m., Nighthawk frolic, the "Merry Old Chief" and the Plantation players; Eddie and Bobbie Kuhn's K. C. A. C. orchestra. Program closes 1 a. m.  
**WOAR, Philadelphia, Pa.** (Eastern, 395), 11:45 a. m., daily almanac; 12:02 p. m., Stanley theater organ recital; 12:30, Arcadia cafe concert orchestra; 2, Arcadia cafe concert orchestra; 4:30, Edna Finestone, pianist; 7:30, Dream Daddy's bedtime stories; 7:50, "Both Sides of the Bed," Arnold Abbott.  
**WEAO, Columbus, Ohio** (Eastern, 360), 1:30 p. m., educational lecture, member Ohio State university faculty.  
**WFAA, Dallas, Tex.** (Central, 476), 12:20-1 p. m., address, DeWitt McMurray; 8:30-9:30, Tancred male quartet; 11-12, Grady Gilder's Heavenly seven. Program closes 1 p. m.  
**WFI, Philadelphia, Pa.** (Eastern, 395), 1 p. m., Meyer Davis Bellevue Stratford concert orchestra; 3, report closing grain prices Chicago grain market; Carroll Hoffman, pianist; 6:30, Meyer Davis Bellevue Stratford concert orchestra; 7, Sunny Jim, the children's pal; 10, Weymann Phila. concert orchestra.  
**WGR, Buffalo, N. Y.** (Eastern, 319), 12:30-1 p. m., George Albert Bouchard, organist; 6:30-7:30, dinner music.  
**WGY, Schenectady, N. Y.** (Eastern, 380), 1 p. m., "Why We Should Vote," Mrs. T. K. Taylor; 7:45, WGY orchestra; Margaret J. Little, soprano; Edward Rice, Violinist; "Just Boy," American Boy; talk, "The New Outdoor and Indoor Sport," Ollie G. Yettru, pianist; 11:30, Stephen E. Boisclair, organist.  
**WHAS, Louisville, Ky.** (Central, 400), 4-5 p. m., Alamo theater orchestra; 7:30-9, Carl Zoeller's Melodists. Program closes 9 p. m.  
**WHB, Kansas City, Mo.** (Central, 411), 2-3 p. m., ladies' hour program, Sweeney Radio orchestra; 8-9, classical music, Sweeney orchestra; 9-10, popular music, Sweeney orchestra. Program closes 10 p. m.  
**WHN, New York, N. Y.** (Eastern, Standard, 360), 2:15-3:15 p. m., Broadcasting Overture and Vaudeville from Loew's State theater, New York; 5-5:30, Original St. Louis rhythmic kings, Louis Maisto, leader; 9:30-10, Bertram J. Goodman orchestra; 11:30-12, Club Alabam orchestra.  
**WIP, Philadelphia, Pa.** (Eastern, 509), 7 p. m., Uncle Wip's bedtime stories; 10 p. m., Harvey Marburger's dance orchestra from Cafe L'Aiglon; 11:15, Karl Bonawitz, organist.  
**WIAR, Providence, R. I.** (Eastern, 360), 1:05 p. m., Providence-Biltmore hotel concert orchestra; 8, Peerless orchestra; 9, Everready entertainers.  
**WJAX, Cleveland, Ohio** (Eastern, 390), 7:30 p. m., program arranged by the Cleveland News-Leader; E. G. Johnson, bedtime story; Don Palmer, Radio talk cartoon; 8, Hotel Cleveland orchestra, Ivan Francisel, director; Temple quartet, Albert Downing, director; "Tom Donohue's Rainbow Village dance orchestra."  
**WJZ, New York, N. Y.** (Eastern, 455), 10:10 a. m., daily menu; 10:10-10:20, "Home Beautifull," Dorothy Ethel White; 10:20-10:30, "WOT Monday nighters," 10:30-10:40, fashion talk, Cleopatra Gunn; 1-2, Nathan Abas Hotel Pennsylvania orchestra; 4-4:15, Margaret Reilly, pianist; 4:45-5, Bernard A. Alreus; 5:30-6:30, New York stock exchange reports, etc.; 7-7:15, Frank Dole, "Dogs, St. Bernards"; 7:15-8, Hotel Vaudeville orchestra, Jos. Strissof, director; 8:15, Wall Street Journal review; 8:30-8:45, "How Uncle Sam Backs Business with Information," Dr. Roland Dr. Faulkner, University of the Air; 8:45-9:30, Estey organ recital; 9:30-10, talk, National Republican committee; 10:15-11, Plaza theater concert orchestra, Eugene Conle, director; 11-12, Roger Wolfe Kahn's Biltmore Cascades orchestra.  
**WLS, Chicago, Ill.** (Central, 345), 6:30 p. m., Ralph Waldo Emerson, organist; 6:45, Ford Rush, Glenn Rowell; 6:50, Ralph Emerson, organist; 7, Isham Jones and his College Inn orchestra; 7:20, Will Rossiter and the Ziegler Twins; 7:30, College Inn orchestra; 7:45, lullaby time, Ford Rush, Glenn Rowell; 8, College Inn orchestra; 8:15, H. K. Megausic, orchestra; 9:30-10, Red Apple club.  
**WMAQ, Chicago, Ill.** (Central, 447.5), 4:10 p. m., lecture, Red Cross Home Nursing Service; 4:30, program, pupils Glenn Dillard Gunn School of music; 6, Chicago theater organ; 6:30, Hotel LaSalle orchestra; 8, Harry Hansen, literary editor; 8:20, travel talk, Clara E. Laughlin; 8:40, ten-minute talks, Association of Commerce; 8:50, talk, U. S. civil service commission; 9:15, Lyon & Healy program.  
**WMC, Memphis, Tenn.** (Central, 500), 8:30 p. m., Ethel Backus; 11, midnight frolic, Charles Vanhoosen.  
**WOAW, Omaha, Nebr.** (Central, 526), 6 p. m., popular half-hour; 6:25, dinner program transmitted from WAAW studio; 9, May Seed & Nursery company bldg., Shenandoah, Iowa; 9, Colome, So. Dakota.  
**WOO, Philadelphia, Pa.** (Eastern, 509), 11 a. m., organ recital, Harriet G. Ridley; 12:02 p. m., Wanamaker crystal tea room orchestra, Robert E. Golden, director; 4:45, organ recital, Harriet G. Ridley.  
**WOR, Newark, N. J.** (Eastern, 405), 6:15-6:30, p. m., Halsey Miller and his orchestra; 6:30-7, Man in the Moon stories; 7-7:20, Halsey Miller and his orchestra; 7:20-7:30, sports, Jolly Bill Steinke.  
**WQJ, Chicago, Ill.** (Central, 448), 11-11 p. m., Chicago Herald-Examiner food show; 3-4, "Diet for a Nervous Person," Cona Brown; 7-8, dinner concert, Ralph Williams and his Rainbo Garden orchestra; Merrie Ely-Wood Mitchell, soprano; James Mitchell, baritone; Carl G. Linner, pianist; 10-2, Ralph Williams and his Rainbo Garden orchestra; Harry Geise and his "How Do You Do" song; Paul Lougher, tenor; Nuhs Allen, soprano.  
**WRC, Washington, D. C.** (Eastern, 469), 6 p. m., children's hour, Peggy Albion; 9, political talk; 9:15, Irving Boernstein's Wurdman Park hotel trio.  
**WSAI, Cincinnati, Ohio** (Central, 309), 7 p. m., Hotel Gibson orchestra; 7:30, chimes concert; 7:45, child stories; Ethel Knapp (Bobman) & Gibson orchestra; 9, special musical program.  
**WTAS, Chicago, Ill.** (Central, 286), 7-12 midnight, Arceady orchestra; Charley Hughes, pianist; Ziegler sisters, Charles Harrison, Riddle Cavanaugh, Fanny Cavanaugh.  
**WVJ, Detroit, Mich.** (Eastern, 517), 8 a. m., setting up exercises, R. J. Horton; 9:30, talk, women's editor, Detroit News; 9:45, Fred Shaw, pianist and songster; 12 m., Detroit News orchestra; 7 p. m., Detroit News orchestra.

# OPERATING AND TROUBLE SHOOTING

## For the Owner of a Day-Fan OEM Receiver

**O**PERATING and Trouble Shooting" is a Radio Digest feature whose purpose is to study the late models of various standard receiving sets and to show the newly initiated Radiocast listener, who has purchased such a set, how he can operate it to get the best there is in it and how he can overcome minor difficulties which may be causing some trouble. On page 19 this week the Day-Fan Receiver is described. Radiophans with other sets will also find these worth while reading, particularly the notes on trouble finding.



in the OEM-11. The detector tube is, of course, the fourth tube.

### Outdoor Receiving Aerial

The antenna wire should be No. 12, No. 14 or No. 16 solid or stranded wire. Finer wire may be used with good results, but may be blown down by strong winds. If the aerial and "lead-in" wires are well insulated with insulators equal results will be obtained with either bare or covered wire.

The antenna should be kept at least 5 feet from a metal roof. The "lead-in" wire connecting the antenna to the Radio receiver should be well insulated from side of the building or grounded objects.

The antenna and "lead-in" wires should not parallel telephone or power line—thereby reducing induction noises.

The antenna should be put up as high and as far from grounded objects as possible.

Always be sure that all conductor wires are well cleaned at the ends where connections are made and securely tightened down.

### Setting Up

Place the receiver on a table or other piece of furniture on which it is to be permanently located. Keep the set at least 1 foot away from large metal objects such as radiators, bronze vases, metal cabinets, etc.

Connect two 45-volt or four 22½-volt B batteries in series, i. e., plus to minus, plus to minus, which will leave a plus connection open at one end and a minus at the other. Looking at the set from the rear, the minus terminal is con-

nected to the center of the five battery binding posts. From the next post to the right, a wire is connected to the 22½-volt tap on the B battery, and from the second binding to right on the set a wire goes to the plus end of the B battery.

Connect the storage battery. Precaution must be taken to make these connections exactly right—i. e., positive of storage battery must be connected to terminal marked plus A and negative side of storage battery to terminal marked minus A on the back of the set. If these connections should be reversed nothing would be damaged but little amplification would occur. In connecting storage battery to receiver use wire heavy enough to carry the current and minimize the voltage drop. It is suggested that No. 16 gauge insulated flexible wire be used for the A battery connections.

Connect the antenna and ground to binding posts in rear marked antenna and ground.

Do not put any tubes into the receiver until the set is completely connected to aerial, ground and batteries. Pull out switch knob (6) and try one tube in each of the tube sockets in turn, turning up rheostat knob (5) and the one inside just enough to see that tube lights. If tube lights dimly, it indicates that connections were properly made. Then insert all tubes.

Turn rheostat knob, inside the cabinet so that the arrow on top of knob points approximately to the center of the detector tube. Slight adjustment on this knob can be made after a station is tuned in, and once it is set for best results, need not be changed until battery is practically discharged.

When a UV-200 or C-300 tube is used as a detector, turn the detector rheostat knob 5 so that the pointer sets approximately horizontal pointing to the right. When a UV-201A or C-301A tube is used as detector, turn the detector rheostat knob 5 so that pointer sets horizontal pointing to the left. Slight re-adjustment in either case after signals have been tuned in once will be necessary.

After the above connections and adjustments have been made, plug the head receivers in jack marked "Phone" and set is ready for tuning in stations.

### Tuning the Set

In tuning either OEM-11 or OEM-7, proceed as follows:

Pull out the filament switch (6) which will close the circuit between the storage battery and the tubes. If the rheostats have been turned as outlined above, tubes will all light. If not, adjust rheostats to points stated under paragraphs (6) and (7) above.

Now set the selector knob 4 at 60 and, after referring to the log sheet, set dials 1, 2 and 3 at the points given after the wave length of a station nearby. Bring to maximum volume and clear up the voice and music by adjusting the selector knob 4. Then make final adjustments on the set for best reception by varying the position of detector rheostat (knob 5) and selector (knob 4). A slight change in knob 4 may make desirable a slight shift of dial 1. When close to a Radiocasting station the selector (knob 4)

(Continued on page 24)

**T**HE Day-Fan OEM receivers are very selective, yet easy to tune as they have practically been tuned at the factory. A calibrated log sheet accompanies each set and gives the dial settings for any wave length desired between 210 and 600 meters, the broadcasting range. The Duo-plex circuit utilized in these sets was developed after long experimentation by Major O. E. Marvel, who for fourteen years was engaged in Radio research and development work in the commercial field.

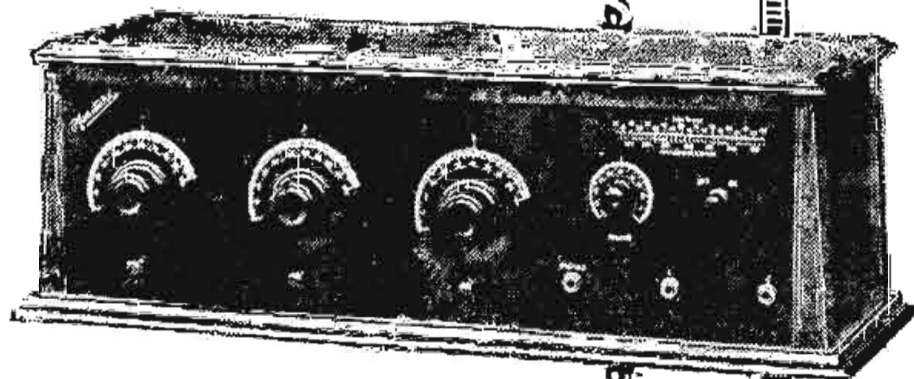
OEM-11 three tube Duo-plex set uses two amplifying tubes and one detector tube. The amplifying tubes do double duty; first amplifying music or voice at Radio frequencies and, at the same time, the music and voice at audio frequencies. The detector tube is operated only as a standard detector without regeneration. By operating the tubes in this method, the volume and range in miles is equivalent to the average five tube Radio set using two tubes for Radio frequency amplification and two tubes for audio amplification.

The OEM-7 four tube Duo-plex is the same circuit as the OEM-11 three tube circuit except that one amplifier tube is used to amplify at Radio frequencies and the third does double duty in the same manner as do the amplifying tubes

## Pfanstiehl See The New Model 7 Receiver at the Show

Embodying the most recent advance in radio reception, the Pfanstiehl Non-Oscillating System of Tuned Radio Frequency

The simplicity of one dial control because the dials match

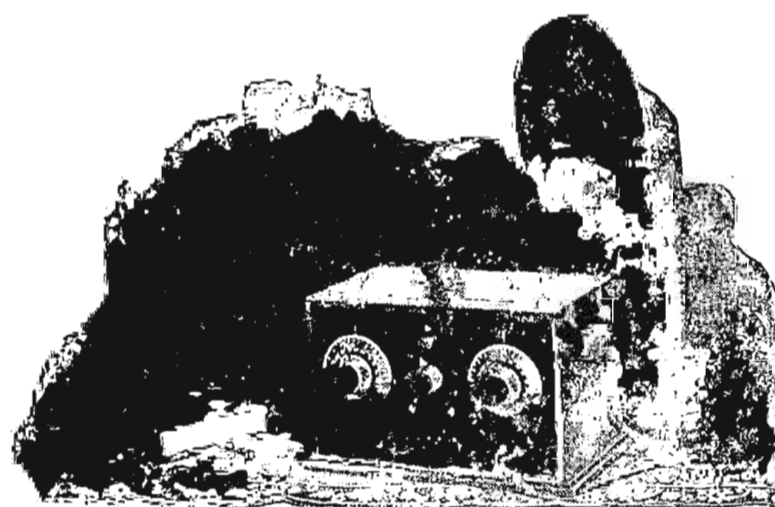


The ease with which you read is the ease with which you tune. See the unique station "selector." It tells you where to find any station.

Jobbers and Dealers who are interested may write

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Highland Park, Illinois

## The LATEST and BEST!



## The Sensational Shamrock-Harkness Receiver

THE Shamrock-Harkness Reflex has created a sensation among experimenters and amateurs by its amazing performance. Combines the best features of the most powerful circuits in use today. A set that you can build yourself in a half-day—and get results equal to a standard five-tube receiver.

Operates a loud speaker.  
Two tubes do the work of five.  
Cuts battery cost 60 per cent.  
Does not squeal or radiate.  
Stations can be logged—and come in with amazing clearness and wonderful volume.

THE amazing performance of the Shamrock-Harkness Receiver depends as much on the use of specially designed parts and the mechanical arrangement of these parts—as upon the wonderful circuit itself. Shamrock engineers have spent months perfecting a set of these parts. The Shamrock Kit contains genuine, guaranteed Harkness parts. Avoid imitations—accept only the genuine.

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Dept. 20-B, Market St. Newark, N. J.

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FOR SELECTIVE TUNING

### Shamrock-Harkness

Kit contains all parts to build the Shamrock-Harkness Reflex.  
Licensed under U. S. Patent Office, Serial No. 719,264 for Radio Receiver Stations.



LIST PRICE

**\$35**  
Complete

The set for the masses, as well as the classes!

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Dept. 20-B, Market St., Newark, N. J.

I enclose 10 cents (U. S. Stamps or coin) for copy of "Shamrock Radio Builder's Guide Book," containing log record. Also diagrams and complete instructions for building 10 sets at prices ranging from \$15 to \$50.

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# Radio Digest

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## Again the Public Pays

### New Litigation May Increase Price of Tubes

ACCORDING to reports, it seems that the American Telephone and Telegraph company is beginning to tighten up the strings around the various patents which they control, or hold a controlling interest in.

Not satisfied with closing down a large number of stations for not paying the license fee required, the A. T. & T. company with the DeForest company as co-plaintiff are bringing suit against F. S. McCullough to prohibit him from manufacturing water-cooled tubes—his own invention.

It seems a pity that after all the contributions that Mr. McCullough has made toward the betterment of Radio science, he should be hampered by numerous suits which are enough to dishearten any inventor.

The case has been tried in the courts of Pittsburgh, and the judge is withholding his decision until a later date.

The public is warned of the fact that if expensive litigation takes place, they are the ones who will suffer, as the price of the tubes will naturally increase, and in the end—the public pays.

## Increasing Demand for Good Music

### Radio Brings About Change for the Better

RADIO is largely responsible for the increased interest on the part of the general public in better music. Give the best music adequate performance and its appeal is immensely extended. Most wrong notions about classical music are based upon singing or playing that is so poor that the ideas of the composer are not evident.

Just as a scratch or soiled copy of a great painting obscures or conceals the original conception, so a poorly played Beethoven symphony prevents the listener from hearing the sublime beauty of the master.

Radio by bringing to communities throughout the nation performances of the great masters by fine organizations, is doing music to acquaint our people of the beauties of music.

Largely through the influence of Radio, jazz music has become more refined, complex and harmonious. Jazz is changing with the change in the musical demands of the public. There is no need for the substitute for jazz music because it is losing the barbarous characteristic which it first possessed.

## Fast Growing Industry

### Thirty-fifth Place Taken in Nation's Business

WITHIN three years Radio has increased thirty-five fold in value. Such is a sample of the remarkable growth of the industry. Yet it is still in its swaddling clothes.

While investors are searching for means to develop this science toward even a semblance of maturity and stability, the industry based on their ingenuity is progressing far ahead of them. It is a phenomenon that has never been equalled in commercial history, not even in the automobile field.

Three years ago, just about the time wireless telegraphy was becoming popular as Radio, production of Radio apparatus and wireless telegraph supplies amounted to less than ten millions for the entire year of 1921 and was only about half that at the beginning of that year.

Production of Radio tubes in 1921 was little over one hundred thousand. Today it is far into the millions. One laboratory alone, turns out from eleven thousand to thirteen thousand tubes a day.

Broadcasting had about started in 1921, with only a dozen or more stations on the air. Now between 500 and 600 stations are filling the air nightly with programs and talks, which are becoming somewhat congested.

Three million homes today have Radio receiving sets—practically all converts since 1920 and 1921. At that time practically all who tinkered with Radio were classed as amateurs. Today there are many times more amateurs and a host of novices, those fans who know little or nothing about the science.

## RADIO INDI-GEST

### Seven Ages of Man—Up-to-Date

1. Sneers at Radio talk.
2. Takes a chance and buys a crystal set—"for the kid."
3. Warms up and buys a one tube set.
4. Adds two-stage amplifier.
5. Wants to hear California and buys six-tube set. Hears it.
6. Wants to hear Delhi, India, and buys nine-tube set. Lemon.
7. Gets a single circuit regenerative and lives happily ever after.

THE THIRD TROMBONE PLAYER.

### You Have Plenty of Company

The day is cold and dark and blue,  
The sun don't shine as it used to do.  
I tear my hair in misery dumb,  
My Radio set is on the bum.

From life has gone all vim and pep,  
No more the happy blissful step,  
No more to me sweet songs will come,  
My Radio set is on the bum.

No more I hear the neighbor spin  
The dials as he's tuning in.  
I might as well be blind and dumb;  
My Radio set is on the bum.

A. M. GRAY.

### As Clear as Mud

Dear Indi: I have been a regular of your colyum for some time and I feel that I am capable of answering "Signing Off's" question of August 30.

An easy rule to follow is: "If it takes a dog 27 minutes to eat a three-pound steak which has been cooled seven hours, how far is it to the nearest neighbors?"

Having found the distance, multiply same by the number of minutes it takes a grasshopper with a wooden leg to kick the seeds out of a dill pickle.

This will give you the answer correct to .000005 mfd. ANTI-WISE.

### Mrs. Partington Speaks Out

Dear Indi: Mizz Partington says a lot of high wave listening's been done, a trying for DX from old man Mars' station, but Prof. Todd and the British Hams got nothing they could transform into English or United States language, and he has quit talking Dutch so they had to give it up.

Venus got jealous and come right out by daylight, and maybe broadcasted some, but the Hams had been up so late listening to Mars that they missed it; daylight receptions is weak anyhow this hot weather. The professors didn't probly even notice whether she was bobbed or not, not being interested in this kind of details.

She says that enduring the next fortnight Radio will forget science pretty much and get back to more important subjects for the fans, such as John W. high-jacking Cal., while at same time he is flirting with Labor at their holiday picnic, and General Jack a doing the George W. "Soldiers Farwell;" the French hoss winning back his steamer ticket, and the lucky announcer a taking his drinks out of the Digest Gold Cup.

SIGNING OFF.

### Sudden Spasms by WBP

There seems to be less static since so many women have bobbed their 'air.

My set is on the bunk since the Democratic convention. Is the convention over?

I sent to a Chicago house for a tube and the man replied that was what Chicago wanted themselves—that the Mayor was swamped with petitions for one.

The Radio will never supplant the newspaper. You can't start a fire with a Radio set.

The best friend I have is the one who will let me tell what stations I am getting, when he wants to tell me what stations he is getting.

A Radio set at a picnic takes your mind off the red bugs.

Campaign Speaker: "My dear unseen audience—"  
Radiophans: "Good night."

### Hastening the End

"We'll be friends to the end."  
"Lend me your Radio set."  
"That's the end." BLIND BAGGAGE.

### S. O. S.

Hostess: "Must you be going, Mr. Dugan?"  
Absent-Minded Radio Announcer: "Er, yes, good night."  
WZOK signing off at 11:15 p. m. BROWN JUG.

### It's Not His Meal Ticket

Dear Indi: I see by the papers that Thomas Edison claims Radio would be a good thing for the President to use, but he gave this new science a good knock. "The speeches are mutilated by transmission over the Radio," he said. What do you think can be the trouble? SPIDER WEB.

## Make Your Reservations Now



## Condensed

By DIELECTRIC

Those able to tune to station WHAS of the Courier-Journal and the Louisville Times were offered, last month, an unusual feature, one never before offered through any Radiocasting station. Camp Knox was besieged in mimic warfare with National Guardsmen from Indiana, West Virginia and Kentucky taking part and for a half-hour in the evening, listeners to WHAS were afforded the novel experience of hearing a report of the battle's progress as given by Colonel Mark E. Hamer from the field, supplemented by the sound of small arms fire and the roar of artillery. Anyone listening to this part of the program could easily imagine what was transpiring at the battle front. Perhaps you dodged, too.

There is another side to this Radiocasting of political matter which occurred to me the other evening. Don't you find yourself listening to topics over the Radio which would hardly receive your attention from the newspapers? I tuned in a Canadian station to find a political meeting going on and remained to hear most of what was said. Undoubtedly citizens of other countries are listening to the speeches made by representatives of the various parties in this country. While contradictions galore exist in these Radio speeches, nevertheless, some notion of our political and economic problems are bound to impress the "outsiders." Radiophans of all countries have an opportunity to better inform themselves.

Communication between amateurs of this and other countries of necessity calls for an understanding of the language used. We in this country capable of conversing in two or more languages are numerically less than the citizens of almost any other land. The desirability then of using a universal language is perfectly patent and, to my mind, the choice of Ilo to fill this need is the obvious thing. Its advocates are becoming more numerous each day.

The great work accomplished by Dr. Grenfell in Labrador during the years he has devoted to the physical welfare of those people is well known to most of us. It is not surprising to learn of his intention to install Radio receivers in each of the hospitals established with his aid in that northern country. Is it the lack of energetic sponsors which accounts for the limited efforts being put forth in the United States to provide diversion to hospital inmates? Our efforts in behalf of the wounded war veterans while gratifying are none the less belated. Surely there are men and women enough who enjoy good health and more than sufficient incomes to whom an appeal for equipment for the bedridden shall not go unheeded. If to you a Radio receiver means so much, think what it would mean to the helpless cripple or chronic invalid!

Beauty is not transmittable through a Radiocasting mike so that each listener might see and delight therein, but the next best thing is to hear beauty described by one competent to judge of it, which was the case during the beauty parade at Atlantic City recently. As each contestant for beauty honors passed the boardwalk studio of Station WIP we heard the announcer (specially chosen for the occasion) depict costume, float and "the beauty" in such manner as to make it seem as though we were actually present. The cheering and whistling from the crowds audible to the Radio "spectators" heightened the effect. One of the asides which crept into the mike was the solicitous query of a lady to the announcer "are you fairly comfortable?" Apropos of what? Effect of so much beauty?

# Helpful Hints to Get Most From Radio

## Chapter II—Two Classes of Antenna Systems

By Thomas W. Benson

**I**N THIS series of articles set operation will be told in so simple a manner that the uninitiated can follow instructions and get the most out of reception, whether or not he knows anything about electricity or its application to broadcasting and reception. The series consists of thirteen chapters, of which the six next will be:

- Chapter III—Radio Inductances and Tuning, Part 1.
- Chapter IV—Radio Inductances and Tuning, Part 2.
- Chapter V—Variable Condensers.
- Chapter VI—Crystal and Tube Detectors.
- Chapter VII—Sockets and Rheostats.
- Chapter VIII—Grid Leaks and Biasing.

**T**HE aerial system of a Radio installation is that part of the apparatus used to pick up the electromagnetic waves that radiate from the broadcast stations. Since the aerial system is really the collector of the energy that actuates the receiver the more efficient the aerial the greater the amount of energy reaching the receiver with a corresponding increase in range and volume of the set.

The Radio waves will induce a current or difference of potential in any conductor they pass and for that reason any metallic body insulated from the ground will serve as some sort of an aerial system. But makeshift devices are not to be recommended for everyone is in a position to utilize one or more of the following methods of building efficient aerial systems.

### Two Classes of Aerials

All aerials may be divided into two classes, namely capacity or inductance aerials. The Radio waves effect these two types of aerials in a different manner but with the same result at the set. On striking a capacity aerial, which is usually an elevated wire or other conductor insulated from the earth and with which

it forms a capacity or condenser, the waves create a difference of potential between the elevated conductor and the

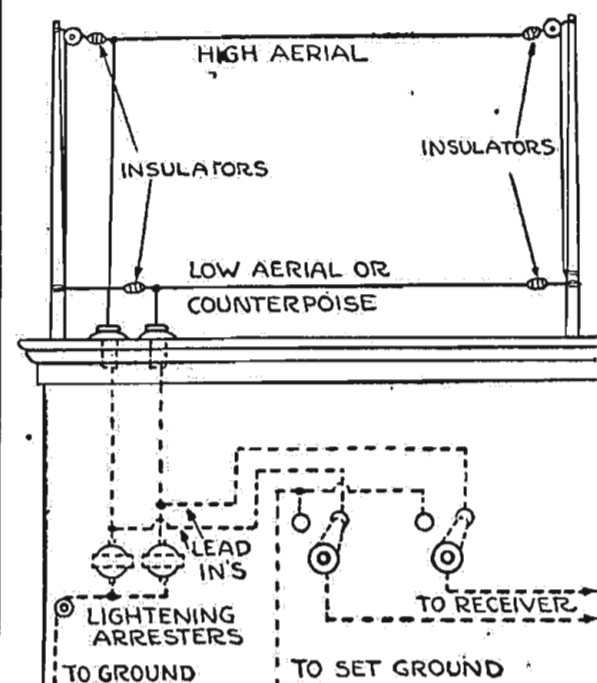


Figure 1—The ideal aerial system with switches to control the type of aerial in use

earth causing a current flow between them.

In the inductance or loop aerial the current is induced directly and flows into the set. Since in both cases a current flow is set up every effort should be made to give as good a conducting path as possible so they will not be weakened by having to overcome resistance in the circuit. To that end use only stranded wire for aerial construction because high frequency Radio currents flow only on the surface of the wire. Do not reduce the size of the wire at any section of the aerial, lead-in or ground wire. The usual practice is to use No. 14 solid wire for lead-in and ground wires, the writer has found it pays to use No. 10 stranded for this purpose.

In a capacity aerial the earth is used as one plate of a condenser and the ground connection is a vital part of the installation. By all means make a good ground. Use a heavy ground clamp, clean the water pipe well and tighten the clamp securely after soldering the ground wire to it. The practice of using radiators, gas pipes, etc., is not the best, though it will give results the improvement with a good ground will be noticed at once.

To protect the system from lightning some method of draining the heavy static charges that collect on the aerial is necessary and most forms of lightning arresters are simply small air gaps across which the static charge will jump to ground and will not flow through the receiving set. Always test an arrester before installing by seeing if a spark results when leads from a battery are touched to its terminals. If no spark is seen it can be safely connected to the aerial lead-in where it enters the house with a separate wire run from the other terminal of the arrester to ground.

### Aerial Insulation

The insulation of an aerial is likewise important for no current leaks are to be permitted. An insulator is placed at each end of the aerial proper of course, but it

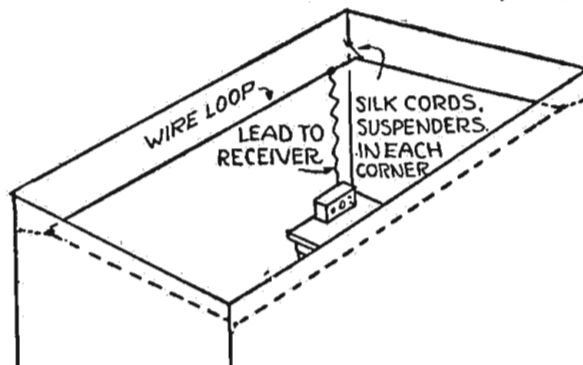


Figure 2—Suspending indoor aerial

is safe to say that fifty per cent of the lead-ins are inefficient.

Do not run the lead-in closer than 1 foot from walls or other parts of the building and keep it in the clear as much as possible for energy is absorbed by all

masses in the neighborhood or wires carrying Radio currents. After the lead-in enters the house of course it must

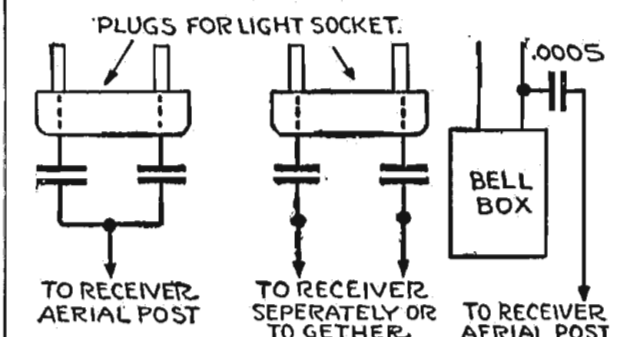


Figure 3—Showing interior of socket aerials and how telephone wires are used as aerial

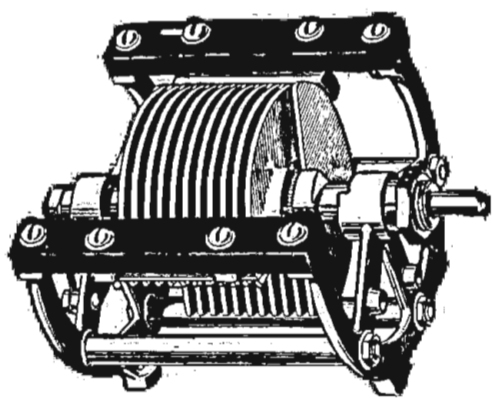
pass close to walls or floor but support it as few places as possible. All these may seem minor items but its the tiny details that count most in Radio.

As to the arrangement of the aerial. Where an outdoor aerial can be built raise it at least 10 feet from any part of the supporting structure and keep its length down to 75 feet. Such an aerial will pick up appreciable energy and give good range and volume but it also picks up static and will cause interference from local broadcast stations. Lowering the aerial gives greater selectivity by decreasing the interference but likewise reduces the range and volume. Therefore a high aerial is desirable when locals are off the air and static is at a minimum. When conditions are reversed a lower aerial is desirable.

To meet such conditions the writer recommends the arrangement shown in Figure 1, where two aerials are supported from the same masts, two lead-ins used, two lightning arresters with a switching device that permits the use of either aerial and ground or using the both wires as aerial and counterpoise. This is the ideal aerial arrangement and permits of ready adjustment to meet every condition. The counterpoise connection is particularly valuable in giving selectivity and good volume.

(Continued on page 22)

# BUWELL E. J. Flewelling RADIO APPARATUS



**T**HE Flewelling Condenser brought out a year ago is one of the first deserving of the name "Low Loss!" It has all the desirable electrical characteristics that insure holding the signal brought in by your antenna at its greatest strength. It gives your set selectivity. It is the heart of your set and the one place where it does not pay to economize.

This condenser has features that are being widely copied. Its heavy 1/16-inch aluminum plates will not warp. The quality of the workmanship is above usual standards. It is a piece of Radio apparatus you will be glad to own. Ideal for Super Heterodyne or other circuit.

"Hook up with Flewelling and you will have good Radio."

- 23 Plate .0005 Mfd., \$7.00, Vernier included
- 11 Plate .00025 Mfd., \$6.00, Vernier included
- Flewelling Low Loss Tuner, \$7.25
- Flewelling Sockets, 75c

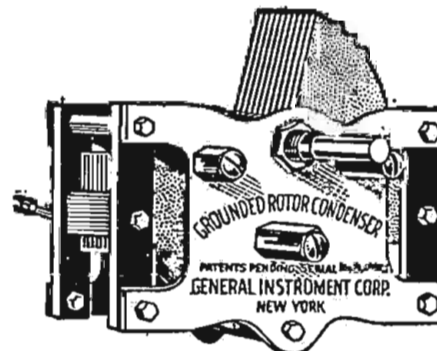
## BUWELL MANUFACTURING CO.

2977 Cottage Grove Ave., Chicago, Ill.

Write for circular on our entire line

## for your set's sake

If you want power from your set, treat it right. Minimize energy losses! Our Low Loss Condenser comes close to eliminating loss entirely. That is why we offer it without reservation as a marvelous condenser. Try it for your set's sake. It acts like a tonic.



Actual tests have proved that dielectric losses have been practically eliminated by this marvelous condenser. Greater selectivity, more distance and a remarkable increase in volume naturally follow its use.

## THE LOW LOSS GENERAL INSTRUMENT CORPORATION GROUNDED ROTOR CONDENSER

Type	Minimum	Maximum	Price
Type 46X 11 Plate	5 MMFD.	.00025 MFD.	\$4.50
Type 46A 13 Plate	6 MMFD.	.0003 MFD.	4.50
Type 46D 21 Plate	9 MMFD.	.0005 MFD.	5.00
Type 46F 43 Plate	15 MMFD.	.001 MFD.	5.50

AT YOUR DEALER

Otherwise send purchase price direct to us and you will be supplied.

## GENERAL INSTRUMENT CORP.

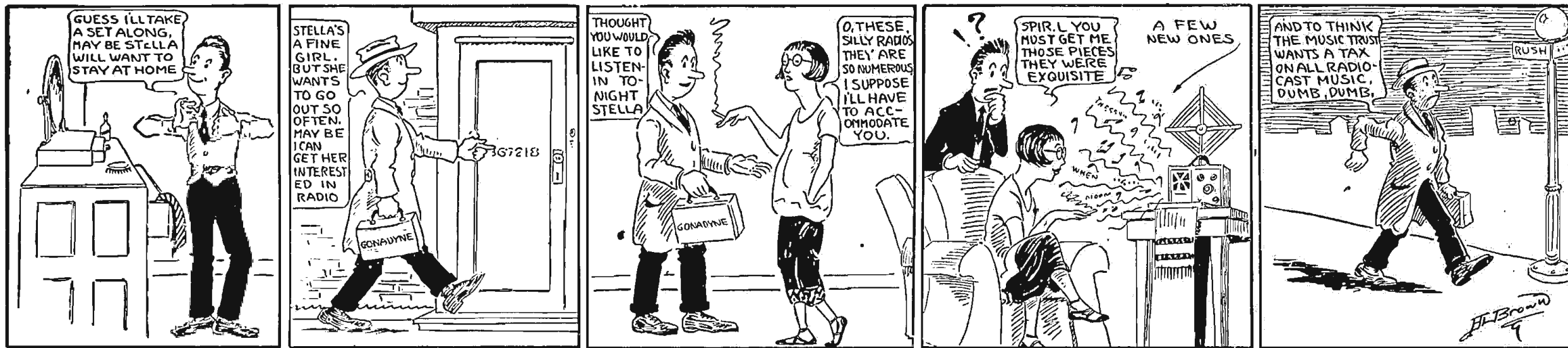
423 Broome Street  
NEW YORK CITY



THE ANTENNA BROTHERS

Spir L. and Lew P.

Write Your Own Moral



GET MOST FROM RADIO

(Continued from page 21)

Indoor aerials are used to a great extent with powerful receivers and here also there is one best method of installing them. The so-called spring aerials are simply mounted with an insulator at each end and a piece of flexible lamp cord of the same length gives equivalent results. A better indoor aerial is made by forming a loop of stranded wire that is 2 feet shorter both ways than the room it is to be mounted in and then suspending the wire 1 foot from the ceiling by silk cords attached to screw eyes in the corners of the room as shown in Figure 2.

Less Static Picked up

A lead can be brought down from this loop to the set. Such an aerial will not pick up as much static as one outdoors, is more selective and is not unsightly when installed in an upper room of the house. They function very satisfactorily but some range and volume must be sacrificed when they are used.

The use of the electric wiring for an aerial can only be proven possible by actual test in each case. The plugs furnished for the purpose are simply an arrangement of two small condensers, one in the lead to each side of the circuit as shown in Figure 3. These condensers permit any Radio frequency currents in the lightning wires to flow into the set but if the wires are shielded by metal

conduit or have only a short run to the step down transformer there is little Radio currents induced in them and the plug is of little use. As a rule a connection made to a telephone line through a .0005 fixed condenser will give better results than lightning wires but the tele-

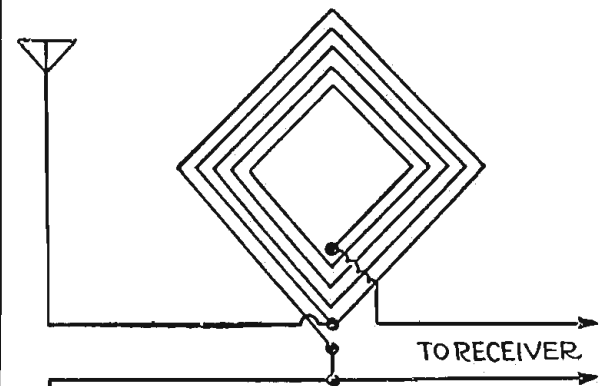


Figure 4—Showing how set with loop aerial may have outdoor aerial used in connection with it

phone companies do not like this practice and prevent it whenever possible.

Inductance Type Loop

There remains the inductance type or loop aerial extensively used with sets employing two or more stages of Radio frequency amplification. The advantages gained in the loop is selectivity by reason

of the small amount of energy picked up and the directional effect obtainable by rotating the loop.

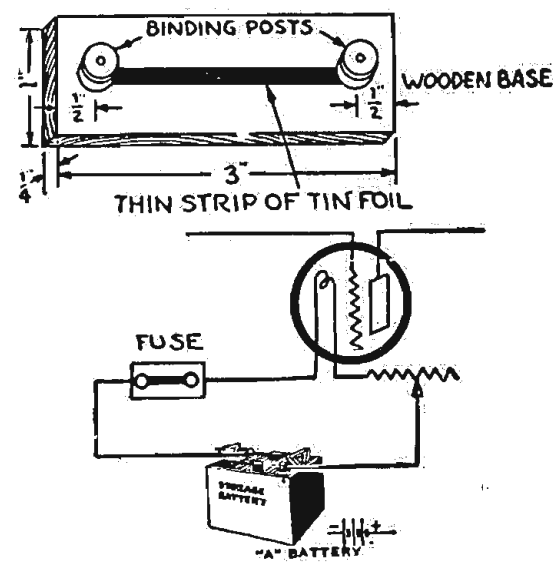
Its portability makes it desirable for certain purposes but any receiver that functions satisfactorily with a loop aerial will work better with an indoor aerial and if the tuning arrangement permits, better still with an outdoor aerial. When a set is to be permanently mounted by all means use an indoor or outdoor aerial in preference to the loop when good range and volume is desired. If the tuning circuit will not permit direct use of an aerial improved reception will result by grounding one side of the loop and connecting the aerial lead to the first or second turn as shown in Figure 4. This will give increased volume and range and the aerial and ground can be removed if interference becomes excessive or static bad.

By remembering to keep the resistance of the aerial system low by using stranded wire and soldering all joints, insulating it well by keeping it clear of all obstacles to prevent leakage or loss of energy, applying these features to the type of aerial selected an energy collector results that will assure satisfaction.

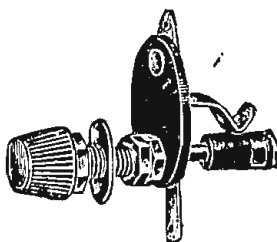
(The first part of Radio inductances and tuning will appear in the following issue. This will give you the first lessons in tuning and how to get the best of reception by knowing how to handle the set you have.—Editor's Note.)

How to Make a Battery Fuse

An efficient and inexpensive battery fuse may be made as follows: The base may be of wood; however, one of bakelite is better. It is 3 inches long and 1 inch wide.

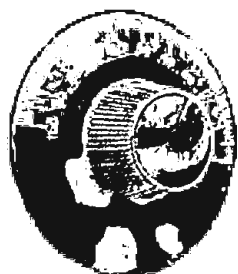


Holes are drilled in this 1/2 inch from each end and centrally for width. Two binding posts are used in these holes. A piece of tinfoil 1/4 inch wide is run between the binding posts. The illustration shows the construction and where it is used in the circuit.—Ralph Mellon, Pottstown, Pa.



Walnart Filament Switch. One hole mounting. Bakelite-dielectric base. Push and pull type. 30c.

Your Guide to Good Goods

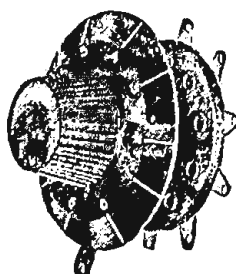


Walnart Bakelite Dials, moulded with tapered knobs. 2", 25c; 3", 35c; 3 1/2", 45c; 4", 50c.

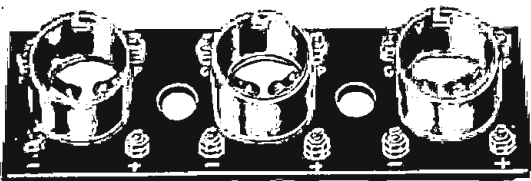
The name "Walnart" on your radio purchases guarantees reliable apparatus and "trouble-proof" service.

Ask your dealer first, please. Illustrated folder mailed on request.

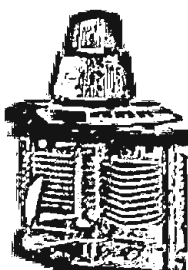
GREEN ST. AT JACKSON BLVD., CHICAGO



Walnart Ten Point Inductance or "B" Battery Switch, with dial. One hole mounting. \$1.25.



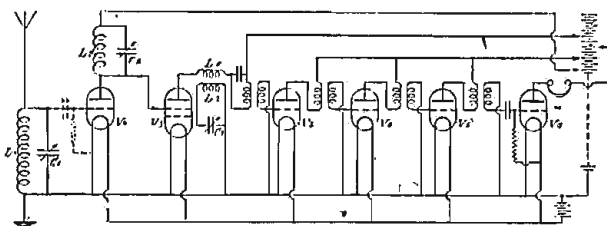
Walnart Multiple Gang Sensible Sockets, insulated with Bakelite-dielectric, come in two or three gang types for standard or UV-199 tubes. Single sockets, 50c.



Walnart Variable Condensers do not "cut out" or develop wobbliness. Plain types, \$1.25 to \$3. Vernier, \$4 to \$5.50.

WALNART

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Greater Results Than Ever!

Send for this diagram

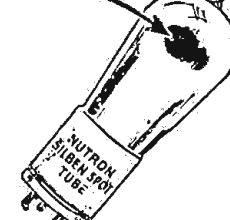
The Nutron Solodyne (double-grid) Tube acts as both oscillator and modulator in the Super-Heterodyne Circuit, thereby not only eliminating one of the tubes but obtaining greater efficiency as well. In Reflex Sets the Nutron Solodyne (double-grid) Tube can be used as both detector and amplifier (dual amplification) thereby doing away entirely with the crystal or detector tube.

The Nutron Solodyne (double-grid) Tube made possible the No. "B" Battery (Solodyne) Circuit. Thousands are now enjoying this smooth reception and its rapid gain in popularity, is ample proof of its unusual qualities.

Send at once for Nutron Solodyne (double-grid) Tube and diagram illustrated above or for Tube and diagram of 2-tube reflex circuit, or for Tube and No. "B" Battery hook-ups. See them for yourself. If your dealer does not yet carry these tubes, order direct from us. Always look for the Silben Spot (Pat. Pending). It is your assurance of tube perfection. Each Nutron Tube is rigidly tested and guaranteed. Price \$6.00.

Nutron Matched Tubes (Silben Spot Pat. Pend.)

This Silben Spot Does it—



Use Silben Spot Tubes (Pat. Pending)

Mr. Set Manufacturer: You can now guarantee every one of your sets working perfectly on tube operation. Our Service Department will match tubes for your particular set, pack them in cartons of three or six, as required, each tube individually marked and guaranteed correct for your set. Complete specifications for each tube will be packed in each carton. This is a service that will be welcomed by your distributors, dealers and customers. Nutron Matched Tubes—matched to your set requirements—identified and improved further with the Silben Spot (Pat. Pending)—tested and guaranteed—can be made available to your customers if you say so.

A Real Service

We can accommodate a few reliable set manufacturers with this service and furnish Nutron Matched Tubes in sufficient quantities to meet all their requirements. Mr. Set Manufacturer, this represents tube insurance to you. Write, wire or phone for consultation.

NOTE

We recommend to owners of Super-Heterodyne and reflex sets the use of Nutron Matched Tubes in conjunction with the Nutron Solodyne (double-grid) Tube—the Silben Spot (Pat. Pending) on all these tubes is your guarantee of perfect satisfaction with your set. Nutron Matched Tubes: Set of 3, \$12.00; set of 6, \$24.00; Nutron Solodyne (double-grid) Tube, \$6.00.

After years of chemical and electrical research a startling process of tube treatment has been discovered! What appears to be an ordinary 6-volt storage battery tube actually works like a \$12 power tube. It makes weak reception strong and good reception stronger.

The "Rendement"

Ordinary tubes have three measurements. The Silben Spot Tube 1-A has a fourth, known as the "rendement." The secret is in the Silben Spot (Pat. Pending). Furthermore, every Silben Spot Tube is DEPENDABLE because each one is rigidly tested before it leaves our factory. Each Silben Spot Tube gives known results. Price \$4.



Nutron Mfg. Co., 731 Main Ave., Passaic, N. J.



# How to Make an Inexpensive Three Tube Set

## Part I—Circuit Diagram and Tuner Details

By Harry J. Marx

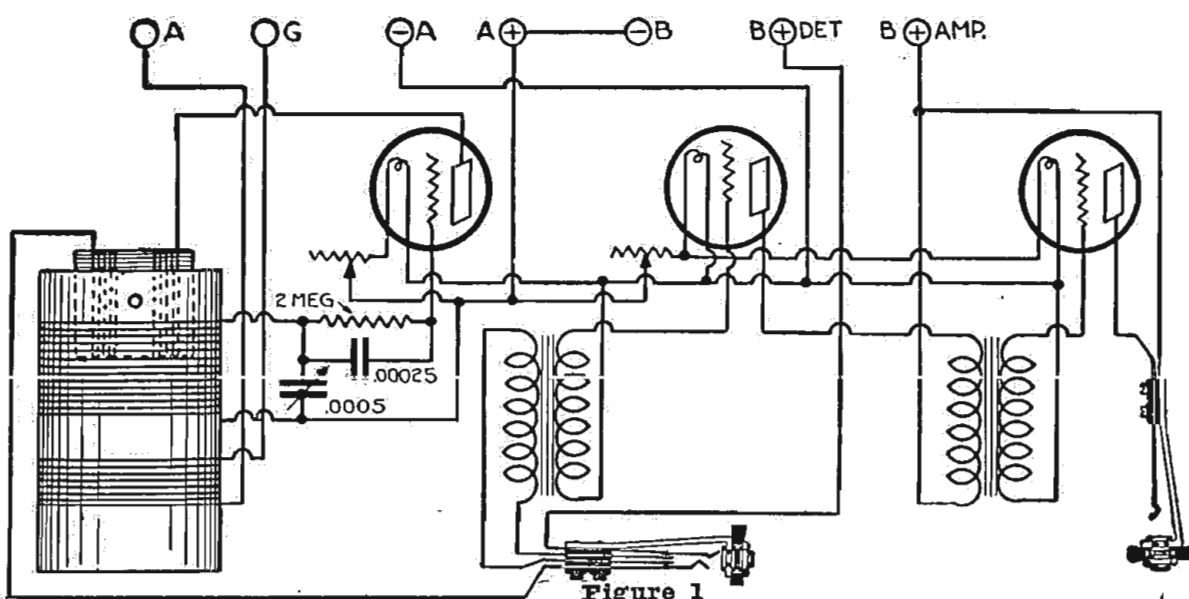


Figure 1

WITH the advent of fall accompanied by cooler and better Radio weather, a number of the former crystal set fans begin to aspire to a tube set that will give them loud-speaker results. Super-neutrodyne are still to come. They want a plain and inexpensive three tube outfit that will be easy to build, simple to operate yet have efficiency in reception. Instead of Radio frequency with its characteristic problems, the best solution would be the regenerative circuit with two stages of Audio frequency amplification. The tuning should be kept as simple as possible, yet for efficiency a three circuit hook-up is desirable. Therefore a triple circuit tuning unit is advisable. By combining a fixed coupled primary and secondary with a rotor winding as the tickler or plate circuit this can be accomplished. The primary circuit is aperiodic but the secondary is tuned by means of a .0005 mfd. variable condenser. In this manner a two control receiver can be evolved, the hook-up of which is shown in Figure 1.

### Three Circuit Coupler

Details of the three circuit coupler are shown in Figure 2. The primary winding consists of sixteen turns of number 22 double silk covered wire. The sec-

ondary winding is  $\frac{1}{4}$  inch away and has forty turns of the same wire and wound in the same direction. The secondary

winding should come as close as possible to the shaft hole for the rotor.

The rotor has forty-two turns, twenty-one on each side of the shaft. Both sides to be one continuous winding in the same direction. Pigtail connections should be made from the rotor winding to terminals on the fixed tube, so as to assure perfect electrical connection.

The panel size has been kept as small as possible and by use of a triple gang socket the use of a sub-panel has been eliminated. The strip brass is bent up to support both the gang socket and the binding post terminal strip, but this will be indicated in the next article.

One 6-ohm rheostat is used for a soft detector tube, while the 25-ohm rheostat

### LIST OF PARTS

1 Panel 3/16x7x10	\$1.25
1 Triple gang socket	2.00
1 Variable condenser .0005	2.50
2 Dials, 3-inch	1.00
2 Rheostats, 6 ohm and 25 ohm	2.00
2 Audio frequency transformers	7.00
1 Grid condenser, .00025 mfd.	.40
1 Grid leak, 2 megohms	.35
1 Double circuit jack	.50
1 Open circuit jack	.75
7 Binding posts	.70
1 Panel strip, 3/16"x1"x6 1/2"	.20
1/2-lb. Spool No. 22 dsc. wire	.75
1 pc. Tubing, 2 1/4" diam. x 1 3/4" long	.25
1 pc. Tubing, 3 1/2" diam. x 3 1/2" long	.60
1 Shaft and bearing for rotor	.75
4 ft. Strip brass, 1/16" thick x 1/2" wide	.50
Miscellaneous wire, screws, terminals, etc.	1.00
Wood for cabinet	2.00
<b>Total cost</b>	<b>\$24.50</b>

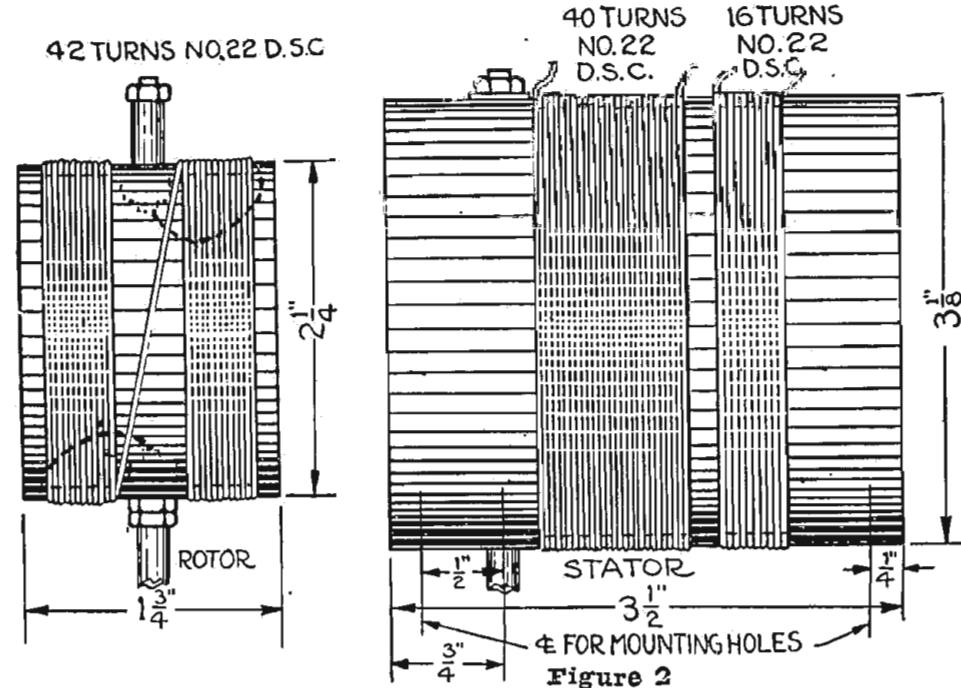


Figure 2

A 3/16-inch hole  $\frac{1}{4}$  inch from each end on one side of the large tube, provide for convenient mounting to the panel (Figure 3) through the countersunk holes marked C and D. The hole marked A is for the rotor shaft.

The proper connections to the windings of this coupler are indicated in the hook-up diagram Figure 1.

### Parts Required

The list of parts gives not only the apparatus and material required, but quotes the approximate list prices with a total cost of same. This will be found convenient for the fan who is in doubt as to the probable expense of, the set, but still wants to know in advance how hard the pocketbook will be flattened out.

controls both the audio frequency amplifier tubes. The two rheostats are mounted with the shafts through the holes J and K in the panel layout.

The two audio frequency transformers should be of small size for compact assembly.

The double circuit jack is mounted through hole G and the open circuit jack through H in the layout of Figure 3.

The tubing material can be hard rubber, bakelite or fiber, depending on which can be most easily obtained. The rotor assembly can be taken care of through the ingenuity of the constructor or an entire unit can now be obtained on the market for about 75 cents.

(Continued on page 24)

### NEW MODELS

## Bristol Radio Receivers

Incorporating the Patented Grimes Inverse Duplex System

Watch for further announcements in all leading radio publications.

Improved Bristol Audiophone Loud Speakers—gives greater volume, is more sensitive and still maintains its round, full tone and its distinctive freedom from distortion.

Ask for Bulletin No. AY-3017

Manufactured by

**THE BRISTOL COMPANY**

Waterbury, Connecticut

GRIMES SYSTEM INSURES NATURAL TONE QUALITY



Senior Audiophone 15-inch Bell Price.....\$30.00  
 Junior Audiophone 11-inch Bell Price.....\$22.50  
 Baby Audiophone With Fibre Horn Price.....\$12.50



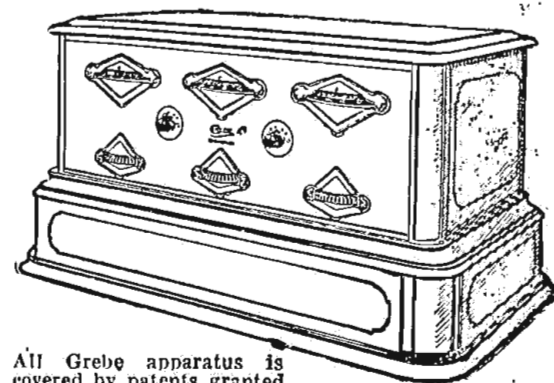
## The GREBE SYNCHROPHASE

(Trade Mark)

A BROADCAST Receiver that marks another long step forward in radio design and establishes a new set of standards in craftsmanship.

"It is only when the cold season comes that we know the pine and cypress to be ever-green."  
—Confucius

In the coming cold season be not surpassed by thy neighbor—set the pace with your Grebe Synchronphase.  
Doctor Mu



All Grebe apparatus is covered by patents granted and pending.

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**THREE TUBE SET**

(Continued from page 23)  
The strip brass can be obtained at any hardware supply house. As to the wood required for the cabinet complete details will be shown in the next article.

**Panel Layout**

The location of some of the apparatus

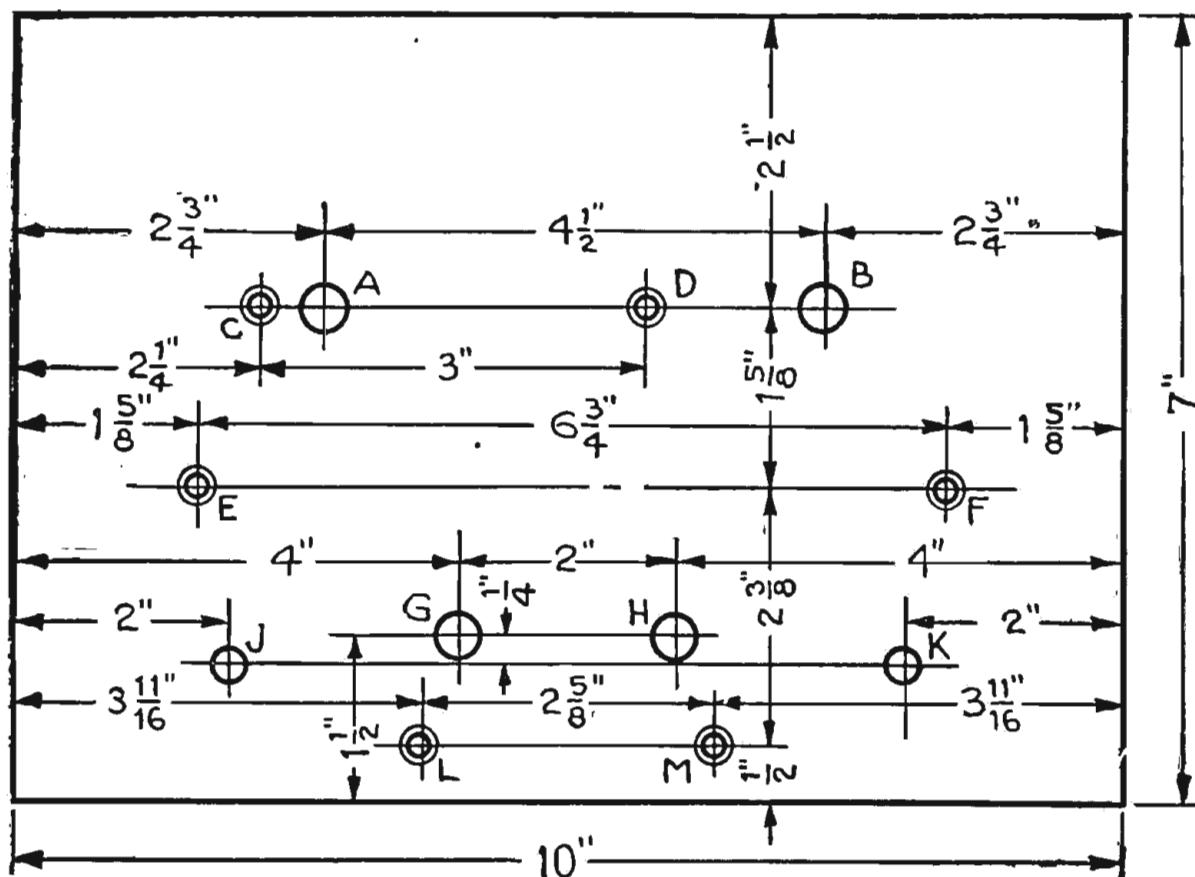


Figure 3

has already been explained. Since different makes of parts effect the location of the mounting holes only the shaft locations are shown in the panel layout.

The hole B indicates the position of the variable condenser. The usual mounting holes will have to be added.

The holes E, F, and L, M, take care of the brass supporting strips which will be shown in the next issue.

After the panel has been drilled, it can be engraved if desired, before any of the apparatus is mounted.

(In the next part, the rear view, side view and cabinet details will be illustrated and described.—Editor's Note.)

**When Phones Rattle**

If there is a rattle in one of the phones, carefully remove the shell cap and the diaphragm and see that there is no dust or filings between the magnet and the diaphragm. Filings will stick to the magnet sometimes and, as the diaphragm vibrates, will cause noise.

**Useful Honeycomb Data**

The following data has been compiled as an aid to the user of honeycomb coils. Table A gives the wave length range of the various size coils with standard capacity condensers, .001 (43-plate), .0005 (23-plate), and .00025 (11-plate).

The value .0001 is taken as the approximate capacity of a secondary circuit when the tuning condenser is set at minimum capacity (plates apart) and can be considered as the lowest wave length that may be reached.

It is possible to reach lower wave lengths than shown in table by using less turns on the coils; however, it is not advisable unless the primary and secondary

are rewound with heavier wire (number 18 or larger).  
Table B lists the correct primary, secondary ratio between the primary and secondary circuits.—J. A. Callanan, Chicago, Ill.

Use of a smaller primary offers greater selectivity and gives an advantageous step

**TABLE A**  
Wave Lengths in Meters with Following Capacities Connected in Parallel with Coils

Number of Turns in Coil	.001mf.	.0005mf.	.00025mf.	.0001mf.
25	372	267	193	131
35	528	378	277	188
50	743	534	391	270
75	1007	770	560	379
100	1470	1055	771	532
150	2160	1546	1110	746
200	2870	2050	1470	980
250	3910	2800	2020	1355
300	4900	3490	2510	1670
400	6160	4400	3160	2095
500	8070	5750	4140	2740
600	11600	8300	5980	3980
750	13300	9500	6830	4540
1000	17600	12500	9000	5950
1250	20100	14300	10250	6780
1500	24200	17200	12350	8150

**TABLE B**  
Proper Honeycomb Coils for Various Wave Lengths

Wave Length Meters	Primary Coil Turns	Secondary Coil Turns	Tickler Coil Turns
150-250	25	25	35
200-350	25	35	50
250-500	35	50	75
300-650	50	75	100
400-850	75	100	150
800-1850	100	150	150
1500-2750	150	200	150
2500-4200	200	300	200
4000-6350	300	400	300
6200-42500	400	750	400
13000-20000	750	1250	400
18000-25000	1250	1500	500

**HOW TO OPERATE SET**

(Continued from page 19)

should be set very close to O in order to tune out nearby stations and bring in those more distant.

**The Proper Tubes to Use**

The Day-Fan OEM receivers will operate best on UV-201A or C-301A amplifier tubes and UV-200 or C-300 detector tube. A UV-201A or C-301A tube may be used as a detector tube in the place of the UV-200 or C-300 tube with very nearly the same volume and range. The set will, however, work on dry cell tubes such as the UV-199 or WD-11 or 12, but will not give the volume on dry cell tubes as when working with the wet battery tubes. The reason for this is that the UV-201A and C-301A has a higher amplification factor and will carry more volume than the dry cell tubes.

**Interference**

The Day-Fan OEM sets are not regenerative and therefore do not radiate. As many as twelve of these receivers have been hooked up on one antenna and tuned in on twelve different stations at the same time, getting perfect reception without interference from each other.

If howls or whistles are heard it is proof that there is a radiating set in the neighborhood. This is usually caused by the owner of the radiating receiver endeavoring to tune in on the same station which one is listening to and not properly operating his set.

Quality reception is dependent upon the proper operation of the broadcasting station as well as upon the proper operation of the receiving set. A poor tube operating at the broadcasting station will give an inferior modulation and therefore inferior transmission of the voice and music—just the same as is caused from operating a receiver with poor tubes. Occasionally, during the course of a concert, a tube at the broadcasting stations will become defective, which naturally effects reception because the receiver can only receive and reproduce that which is sent out by the broadcasting stations.

**Trouble Shooting**

Be sure that tubes are inserted in the proper sockets, i. e., the detector tube in the socket in right rear of set and the amplifier tubes in other sockets.

If the filaments of tubes do not light after inserting, then see that the filament switch (d) is pulled out and the rheostats turned on. If they still do not light, look for an open connection on the storage battery or in the leads.

If the tubes are burning and no sound is heard in the loud speaker when plugged in the jack, look for an open connection on the B battery. If still no sound in the loud speaker and loud speaker is O. K., then check over B battery connections again, for it is very important that B batteries are wired with tight connections.

If set refuses to operate after being in perfect operation for some time, first look for trouble in B battery, going over connections to make sure that they are tight and properly made and that no one has inadvertently disconnected or shorted B battery by laying a piece of metal across the terminal posts. Always be sure that B batteries are in good condition.

Make sure that your A battery is properly charged so as to give the proper filament temperature. This can easily be tested with a hydrometer such as is used on the automobile battery, which will indicate whether or not battery shows readings as per instructions which come with the battery.

Make sure that ground connection is tight and has not become corroded. This is another reason for soldering ground connections in making installations.

Be sure that antenna is not grounded by coming in contact with a tree, building, etc., as this will cause a loss of energy which will affect the received signal.

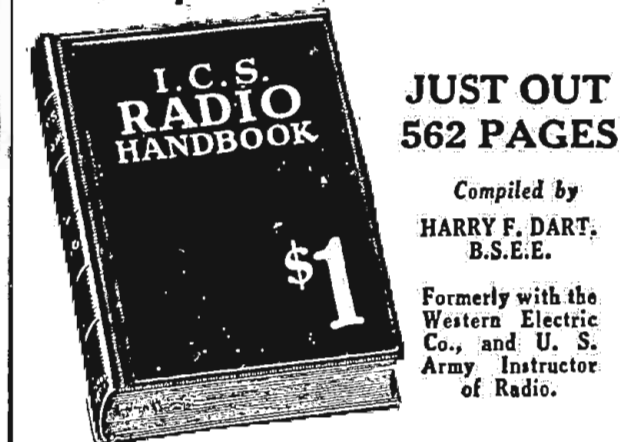
Make sure that the connection from loud speaker to the plug is not open as this often occurs in pulling the plug out from the set by jerking the cord rather than catching hold of the plug itself.

**Use of Phone Condenser**

A phone condenser is not absolutely necessary for the proper operation of a regenerative receiver, but its use in a reflex set is necessary, so that the Radio frequency currents can be by-passed through the condenser, instead of passing through the resistance of the phones.

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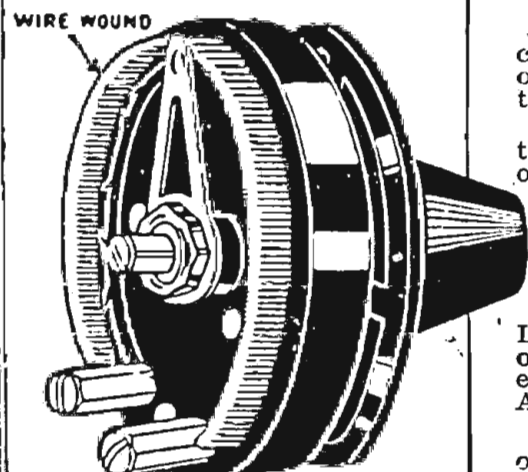
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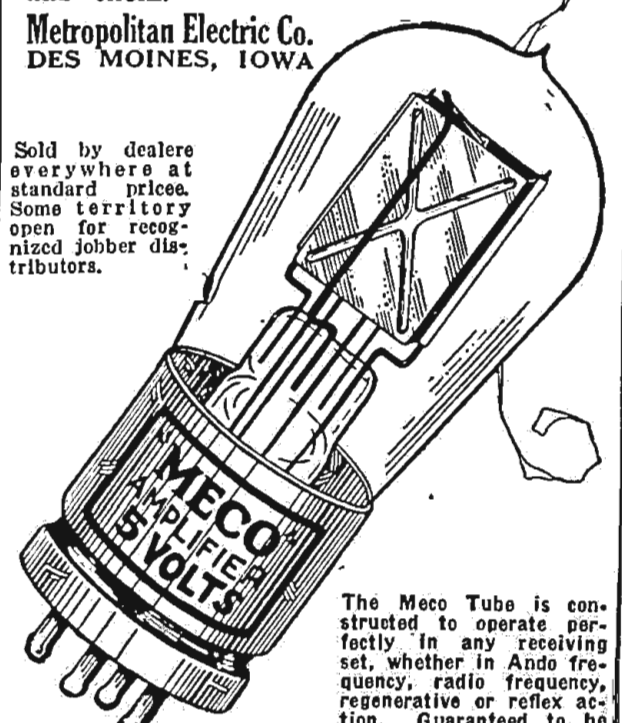


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# Amplidyne Type Radio Frequency Amplifier

## Part III—Layout of Panels for the Amplidyne

By Thomas W. Benson

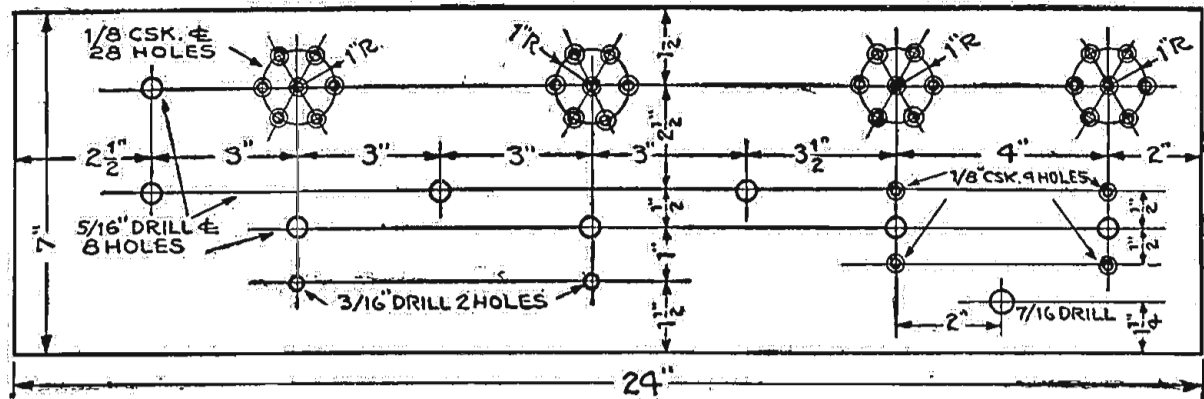


Figure 8—Layout of front panel of the amplidyne

THE layout of the amplidyne follows closely the usual layout of a neutrodyne as will be seen from an examination of the accompanying illustrations. In Figure 8 is given the front panel layout. At the left end of the 7 by 24-inch panel we have the three tuning condensers mounted in a row on 6-inch centers.

In the sketch no holes are shown for

mounted the two small midget balancing condensers. These mount in one hole by means of a threaded sleeve on the condenser. Directly below the balancing condensers are two holes for the brackets supporting the sub panel mounting the Radio frequency tubes which is to be described later.

At the right end of the panel are the rheostats. Between the rheostats and a

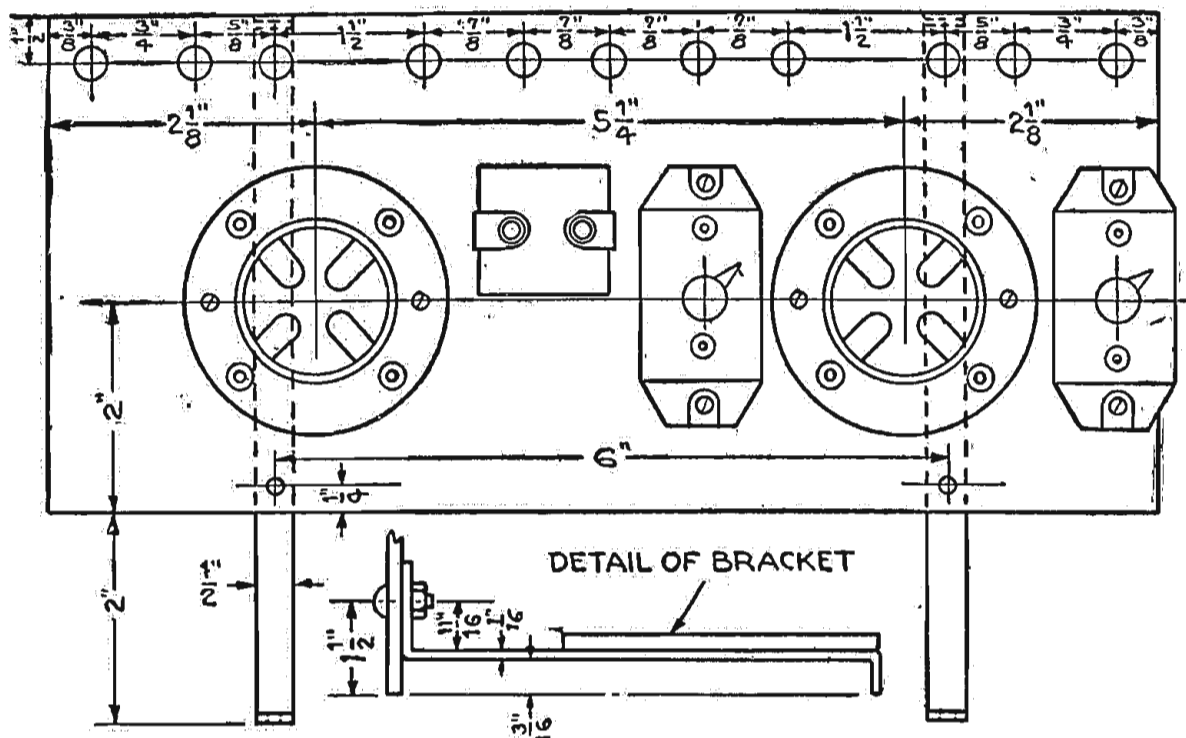


Figure 9—Layout of sub-panel for Radio frequency amplifiers with bracket

the mounting screws for these will vary with the make of condenser used and can be located by means of the template usually accompanying the condensers when purchased. The condensers are of the 23-plate type having a capacity of .0005 mfd.

little lower is the hole for the single circuit closed jack of the anti capacity type.

Four sets of peep holes are shown but the builder can use his own judgment here and employ bezels or other desired arrangement. The peep holes are countersunk as well as the mounting holes for the rheostats. The writer has found it

**Location of the Instruments**  
Between the tuning condensers are

good practice to countersink slightly all holes in a panel both front and back. This smooths off the edges of the holes and permits the instruments to fit snugly against the panel. The hole sizes are given on the sketch and some will be found a trifle large, this is done to reduce the number of drill sizes necessary and detracts not at all from the ease and solidity of the mountings.

At Figure 9 is shown the layout of the sub panel mounting the Radio frequency amplifier tubes and binding posts. It is good practice to eliminate entirely all wood from the construction of a set and use bakelite for mounting all apparatus. This gives higher efficiency and a more lasting piece of apparatus as well as simplifying wiring.

In this and the succeeding layout no attempt has been made to give actual hole positions for apparatus. This is impossible because builders will use different makes of apparatus the dimensions will vary. Therefore the relative positions of the instruments are given and the maker can readily layout his own holes.

### Radio Frequency Sub Panel

The Radio frequency sub panel mounts two sockets, two grid leaks, one fixed condenser and nine binding posts. The center of the sockets come 2 inches from the lower edge of the panel and are on 5 1/4 inch centers.

Grid leaks are shown but make sure they are good leaks before mounting them. When one has a number of different leaks and can experiment for proper leak sizes the use of fixed leaks is advised but the arrangement shown has worked out in practice nicely.

It will be noted that two brackets are used to support this sub panel. They are made from 1/2 by 1/16-inch strip brass and bent to the dimensions given in the insert detail view of the bracket. The bent up end is drilled for a bolt passing through the front panel and the other end bent down to form a rear leg to stiffen the panel. The dimensions given raises the top of the sub panel 1 inch above the surface.

The remaining illustration, Figure 10,

shows the layout of the detector tube and audio frequency amplifiers. Here again only holes to attach the panel to the front panel are given, the other holes depending upon the instruments used. The main feature is the grouping of the tubes and transformers.

In laying out for the transformers holes are drilled below the negative A and positive B terminals of the transformers so these leads can be run under the panel

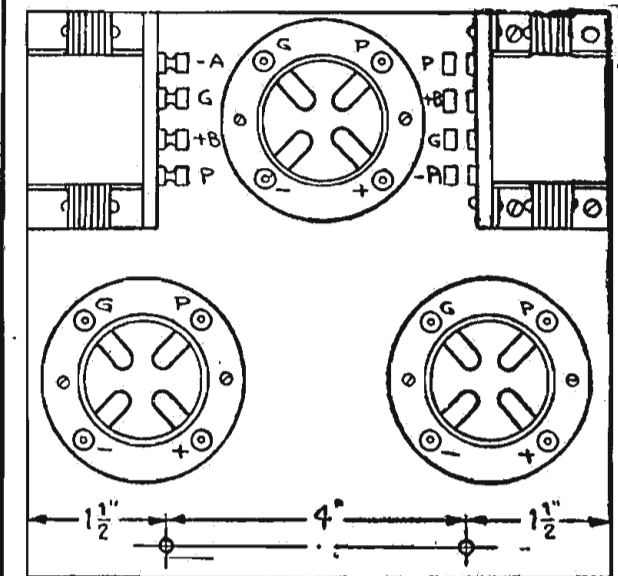


Figure 10—Layout of sub-panel for detector and audio frequency amplifiers

thus simplifying the wiring. This method of grouping audio frequency transformers is recommended in all amplifier arrangements because of its compactness and reduction of wiring.

The method of attaching this sub panel differs from that employed with the Radio frequency mounting. Here, two holes near the front edge permits of it being bolted to the lower part of the rheostats.

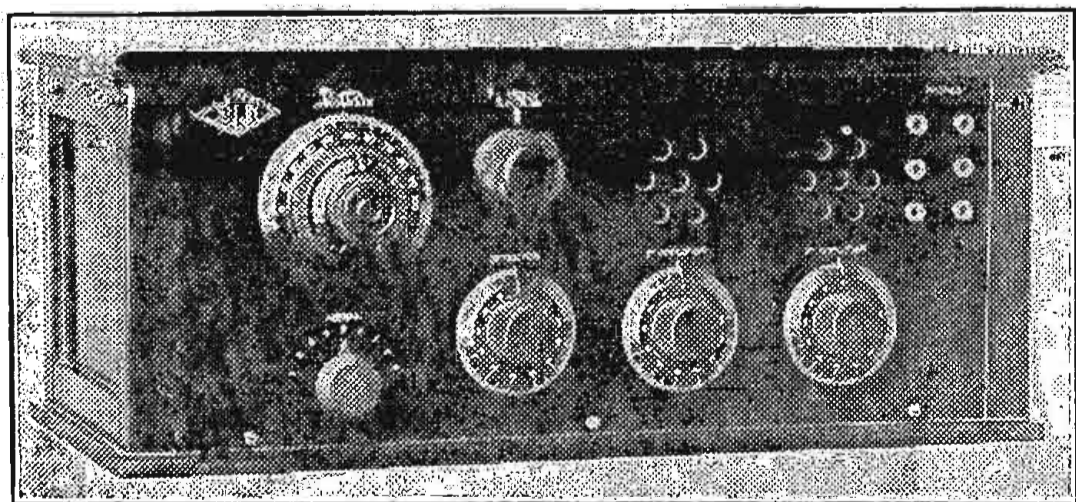
It will be found that the 6 ohm rheostat is shorter than the 30 ohm and small washers should be inserted between the panel and rheostat so the sub panel is level when attached. To support the rear end of the sub panel 1 1/4 inch flat  
(Continued on page 26)

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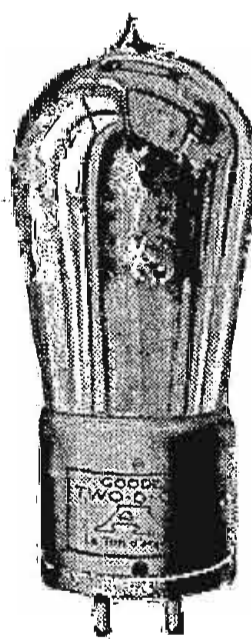
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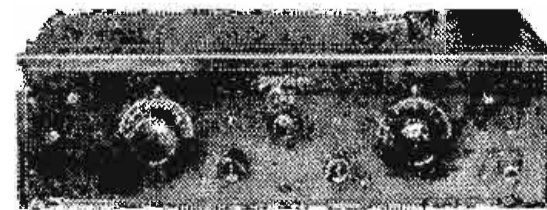
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### R. F. AMPLIFICATION

(Continued from page 25)

head machine screws is run up through the rear corner holes mounting the transformer with two nuts on the screws, one below the panel and the other above. By properly locating the lower nut and tightening the top one down, a leg is formed that will support the panel rigidly.

When the panels are all drilled the instruments can be attached to the sub panels and each one wired as far as possible before attaching to the front panel.

(The next article will cover the assembly of the instruments and their wiring.—Editor's Note.)

### Finishing, Drilling and Marking Panel Faces

It is a difficult game for the builder of homemade receivers to vie with some of the commercial sets now on the market, but there is one way in which this difficulty may be lessened to some degree, and that is in improving the appearance of the panel. The layout, drilling, etc., will not be taken up here, as each particular hook-up requires a different arrangement of the panel mountings. It is the aim in this article to offer a few hints on engraving and rubbing down the otherwise plain and shiny surface of the panel material.

Manufactured sets usually have panels engraved on what is shown as a pantograph machine, the cutting or engraving tool following the outlines of straight and curved lines, circles, semi-circles, and other characters engraved in a metal template. This method of engraving is, of course, not available to the constructor of homemade sets. To engrave a panel at home proceed as follows:

#### Hand Engraving

For the straight line work procure a small flat file and grind off the cutting teeth or ridges at the end until the file is between 1/64 inch to 1/32 inch thick and has two sharp square corners. A screwdriver will answer the purpose, but being of a softer material will soon dull. It may, however, be simpler to use the screwdriver, as this can be filed sharp, whereas the file would necessarily have to be taken on an emery wheel. For the circles and semi-circles a small piece of steel that will fit in a pair of dividers similar to a piece of lead is ground or filed to a sharp blunt at one end, so that when scribing a circle it will act in a similar manner to the file on straight lines. The sharpened end should measure about 1/64 inch square. This, with the file, a rule and a soldering iron constitutes the necessary tools for doing the engraving. At the hardware store purchase a stick of white marking crayon. This kind of crayon is much used by lumbermen and is of a wax composition.

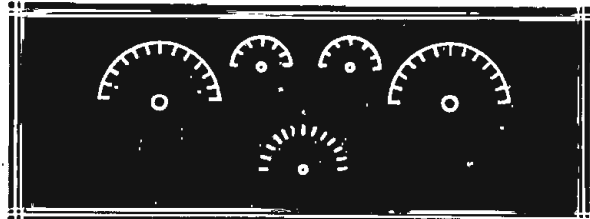
#### Rubbing the Surface

It is taken for granted that all the necessary holes have been drilled in the panel and that it is now ready for the mountings. But the rubbing process precedes the mountings. Lay the panel face up on a smooth table or bench and mark lightly with a pencil where you wish to do the engraving. In the illustration is shown a neat design and is very simple to do. The border lines are about 3/4 inch from the edge of the panel and are spaced about 1/4 inch apart. The semi circles are marked off wherever a pointer is used, such as on rheostats, potentiometers, etc. The graduations may be marked equal distance apart by using a protractor or spacing with a pair of dividers.

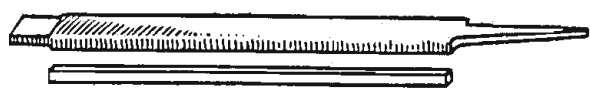
#### Making the Marks

After the layout is completed in pencil lay the rule along one of the outside border lines and hold firmly in place with one hand while with the other follow the line with the sharp cutting edge of the

file or screwdriver. This will cut a square cut path the width of the tool, which, as mentioned above, should be between 1/64 inch to 1/32 inch. Do not try to cut too deeply the first time over. The file might slip and ruin the panel. Go over the same line a number of times until it has reached a depth of about 1/64 inch. Then proceed with all the other straight lines in the same manner. On the circles or semi-circles the dividers are used instead of the file resulting in a curved instead of a straight line path being cut. A small wooden plug placed in each shaft hole in the panel will afford a place for the pivot side of the dividers. It will be found that a small furrow has been raised on each side of the lines made. Rub these furrows down smooth with the surface with a piece of sandpaper, but always rub lengthwise of the panel. Brush all dust out of the grooves thus made and proceed to heat a soldering iron. When the iron has attained a heat sufficient to melt the crayon run the crayon and



SIMPLE BORDER OUTLINE AND POINTER MARKING



GROUND FILE AND STEEL CUTTER FOR DIVIDERS

soldering iron over all the lines cut in the panel. Of course, the melted wax will run over quite a broad surface, but in a minute or two the wax will have set and by using the edge of a smooth wooden block or piece of baledite this can be easily removed without effecting that which is embedded in the grooves. Clean the surface as thoroughly as possible in this manner. That is all there is to the engraving.

#### Finishing the Panel

Now to rub down the panel to give it that soft velvety appearance. Use a very fine grit sandpaper, about 00 size. Wrap a piece of this around a flat wooden block and going back and forth lengthwise of the panel press rather firmly and rub until all shine has disappeared. Remember to always rub absolutely parallel with the longer sides of the panel. Brush all dust off lightly with a clean cloth. Moisten a piece of cloth or cotton with olive oil and rub over the entire surface. Follow this by wiping as dry as possible with a soft dry cloth. That is all, but if you have taken care to do a neat job you will be surprised and more than pleased with the panel's appearance.

#### Vertical Aerials

What is the advantage of a vertical aerial? With a vertical aerial there is a two-fold advantage. First, because it is a good, high wave getter. Second, because a vertical aerial is not so inductant with the ground as is a horizontal aerial which tends to get worse and worse with length.

With the vertical aerial this inductance with the ground and consequent tendency to choked reception is practically overcome. This can be noticed in connection with the grid-leak which can be discarded or just used on very low resistance. This shows you that with a vertical aerial you are using your tubes to better advantage without having to drown them down with so many megohms. It is understood, then, that this local buzzing is caused by the inductance between horizontal aerial and the ground.

The vertical aerial system is obtained by the use of an umbrella aerial, or for peak reception, the balloon aerial. It has

been found that this vertical aerial functions with the same intensity whether it be a fine wire or a heavy gauge wire, for the reason that this vertical aerial does not lose its charge of high frequency Radio currents like the horizontal aerial does.

It is remarkable the natural amplitude of such an aerial. In comparison with the regular horizontal aerial 100 feet long and 30 feet high, the initial amplitude of the respective aerials was five times as great on the vertical aerial, which was 200 feet high.

This initial amplitude without any particular "directional hard pan" is what is wanted the same as in photography. If you have a good, full negative you can enlarge indefinitely, but a deformed or faded negative is very difficult to enlarge. —Everett Scanlon, Lakewood, R. I.

#### Always Use Short Lead-in

Never run the antenna lead-in any long distance through the house. Make it as short as possible from the window where the wire is brought in. If the lead-in is long inside the house the walls and ceilings will absorb most of the Radio-frequency energy that should be used in the set for producing signals; in other words, the signals will be much reduced in strength.

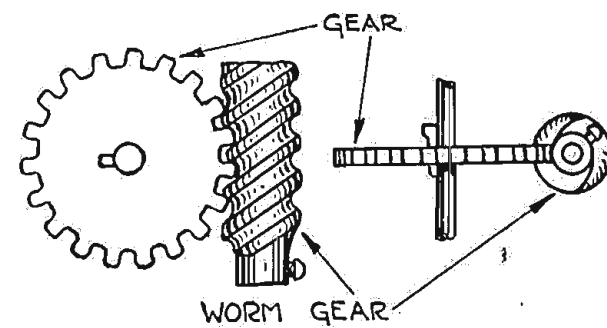
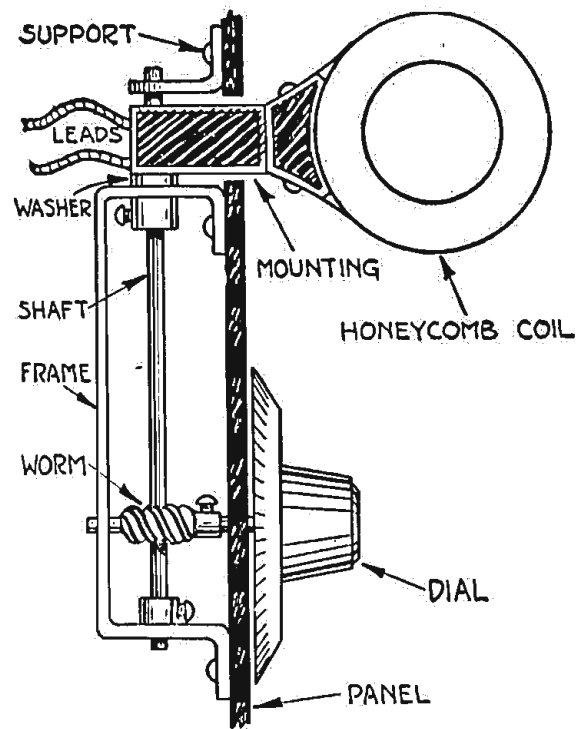
Place the receiving apparatus near the window and run the ground wire to a water pipe.

#### Vernier Coil Mounting

Herewith is a honeycomb coil mounting with a vernier mounting, which will no doubt prove a vast improvement over the old type. As is known, the ordinary method of mounting honeycomb coils the tuning is rather broad and it is sometimes hard to separate two stations operating on nearly the same wave length; but with the mounting herewith described a very fine adjustment may be made and it is possible to separate two interfering stations.

Two openings are cut in the panel as shown. The top opening is made in the form of a rectangle so the coils will have plenty of room to move. On the back of the panel is arranged a metal frame as shown. This should be made of non-magnetic metal and bent in the shape as in the illustration. Also above this is another small support, this being bent in the form of a right angle. A special coil mounting will no doubt have to be made. This may be made of any good insulating

material. A hole is drilled through the back of this and the shaft passed through the hole. The shaft is made of a threaded



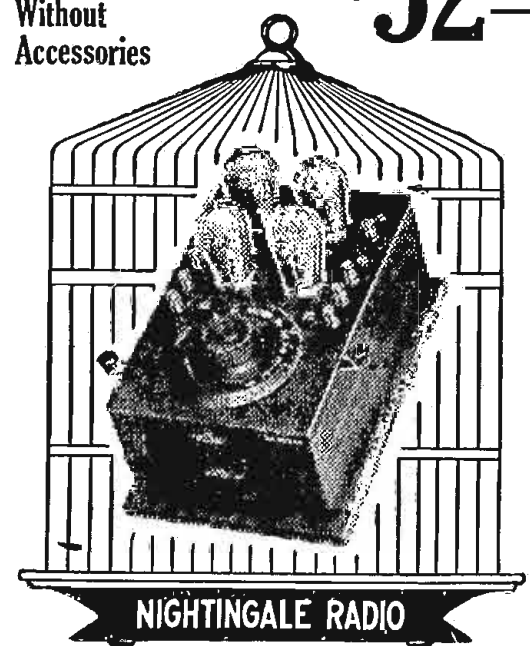
brass rod, and two nuts lock the coil mounting on it. Two small parts taken from a model building set are slipped on the shaft and fastened by means of set screws as shown; these prevent the shaft from slipping. A small gear wheel (preferably brass), taken from the building set or other means is slipped on the shaft and fastened.

Another shaft, shorter than the first, is located at right angles to the other as shown. This has a "worm gear" fastened on it so that it meshes with the small gear on the other shaft. This shaft passes through the panel and has a dial mounted on it. This arrangement, I think, will prove far superior to the ordinary method of coil mounting if properly made.—Evermont Fisel, Lebanon Junction, Ky.

#### Hansen "BIRD-CAGE" Radios



4 Tube Radio Set \$32.50  
Without Accessories



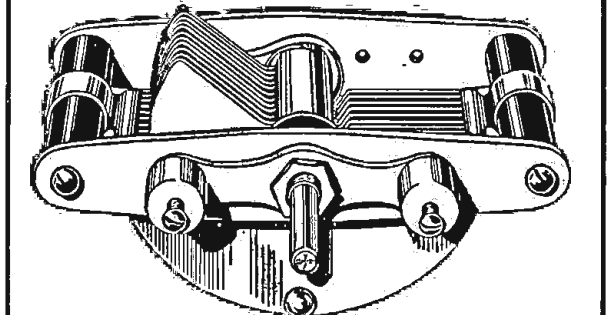
A simplified, loud speaking, long range set at a price within the reach of all.  
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# Console and Cabinet Making for Receiving Sets

## Chapter II—Cabinets with Recessed Joints

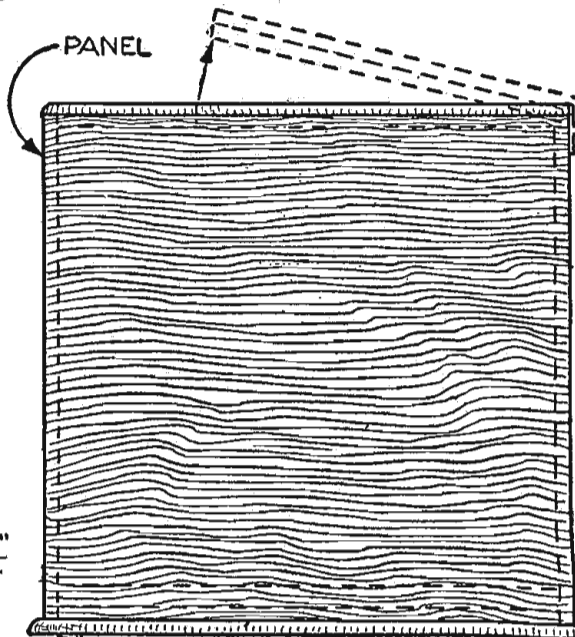
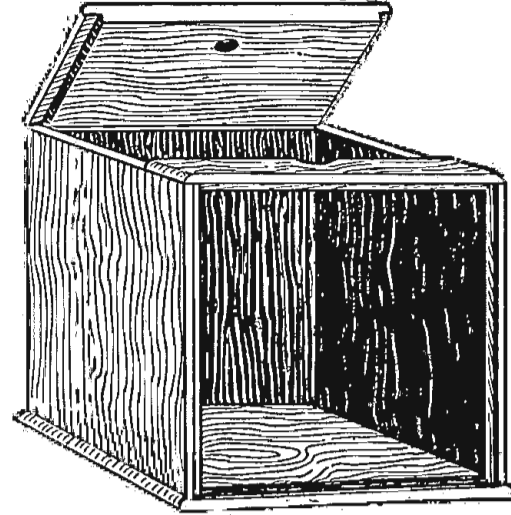
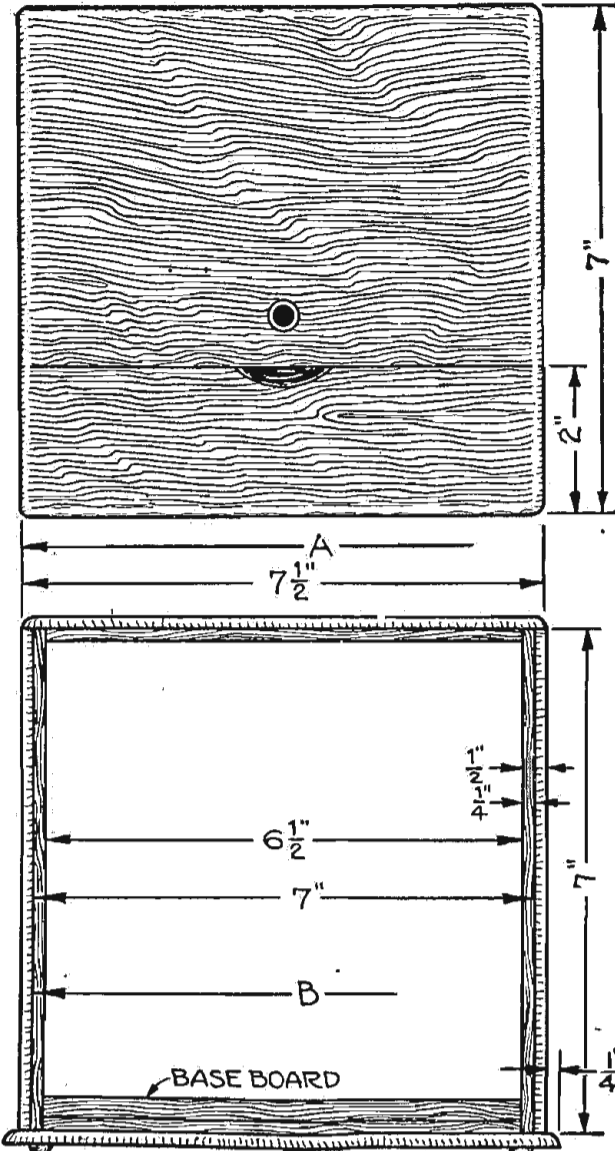
By Charles F. Smisor

THERE are several kinds of woods that can be used in cabinet making, but for the uninitiated the softer ones are usually selected, ones that will take a stain and give a good finished surface. Oak is one of the hard woods that is difficult to handle and to make a neat joint at the corners. Mahogany works well, also walnut, the latter being a little more difficult in working to get a perfect joint as well as a smooth surface.

The cabinets described in the first chapter of these series were of ordinary construction, requiring only a good saw, hammer, plane and some sandpaper. The cabinet shown in the illustration has better constructional details and will produce a better appearance when properly finished than the ones described in the first chapter. The builder will need two more tools, a rabbet plane and a chisel. A beveling tool comes in handy, but it is not absolutely necessary; however, the cost of one is very small.

Preparing the wood is the first consideration. Surfaced material coming from a mill is never ready to be worked. It is best to plane the surfaces with a hand plane to remove all the ridges set up by the rotary knife on the surface planer at the mill. Be careful to plane smooth and straight so that the piece will have a uniform thickness when finished. The edges should be planed square and on a perfect angle with the surface. Hold a try-square on the surface and sight over the edge to see if one side of the edge is lower than the other, then, too, you must keep the size given and not plane down too deep to make the width of the piece smaller than the dimensions given for it. When the planing is complete it is best to go over the surfaces with fine sandpaper or old worn sandpaper so that no scratches are produced that will show up in the finished surface.

The ends of the cabinet have a recess taken out with the rabbet plane to make the edge in the form of a lap joint. The recessing is always just half of the thickness of the board but the depth will depend on the thickness of the board or



is made 3/16 inch deep. The back side calls for 1/4-inch material and the depth of the recess should not be more than 1/4 inch.

The top, cover and bottom boards are cut out on the ends to admit the end boards for the depth of the recess and to them. The ends, top board and bottom

part that is to be used in the recess. For instance, the edge to be used for the front or panel part should not be planed out with the rabbet plane for more than the thickness of the panel. If the panel is 3/16 inch thick then the depth of the recess

the inside there is no nail or screw heads to show. In either case apply glue to the corners before fastening them together. The glueing and fastening must proceed simultaneously and while the glue is still wet the holding means is applied.

The frame of the box as finished in this manner should present the appearance of a frame without a back or front, with only a 2-inch ledge for the top at the front. This gives a space back of the top piece of 5 inches for the hinged cover. Be sure to see that the box frame is perfectly square before it is set aside for drying. When the glue becomes dry remove any of it that sticks out of the joint seam with an old knife, but do not injure the wood. When this is done that part of the box is ready for the finishing process.

The back, which consists of a 1/4-inch board, is fastened into the recesses with screws the same as for the panel. The cover is attached with hinges to the backboard, 1 by 1 inch brass hinges are the ones to use. The backboard being thin, it will be quite necessary to fasten the hinge to it with flat head machine screws run through the board, using a nut and washer on the back side of the board. The hinges should be placed evenly from the ends of the cover and also spaced evenly where more than two hinges are used. It will be necessary to place more than two hinges on the covers of the larger sizes or use a piano hinge on the entire length. The latter is preferable for appearance sake. When the back and cover is on, the cabinet is ready for the final sanding and to apply the desired finish.

The corners on the cabinet are beveled. A careful worker can do this with an ordinary hand plane, but a beveling tool will do the work much quicker and the

(Continued on page 28)

Panel	A	B	Baseboard
7 by 7 inches	7 1/2 inches	6 1/2 inches	6 1/2 by 6 1/4 inches
7 by 10 1/2 inches	11 inches	10 inches	10 by 6 1/4 inches
7 by 14 inches	14 1/2 inches	13 1/2 inches	13 1/2 by 6 1/4 inches
7 by 18 inches	18 1/2 inches	17 1/2 inches	17 1/2 by 6 1/4 inches
7 by 21 inches	21 1/2 inches	20 1/2 inches	20 1/2 by 6 1/4 inches
7 by 24 inches	24 1/2 inches	23 1/2 inches	23 1/2 by 6 1/4 inches
7 by 26 inches	26 1/2 inches	25 1/2 inches	25 1/2 by 6 1/4 inches

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from 150 to 700 Meters  
Regardless of external conditions

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The size of the "HEGEHOG" is a revelation. It occupies half the space of any other transformer,—hardly larger than an English Walnut. Mounts anywhere. Easy to connect. Ideal for portables.

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Order by mail if your dealer cannot supply you and we will ship immediately. Written 5-day money back Guarantee with each set. Our next year's production schedule of two million phones UNDOUBTEDLY places us as the

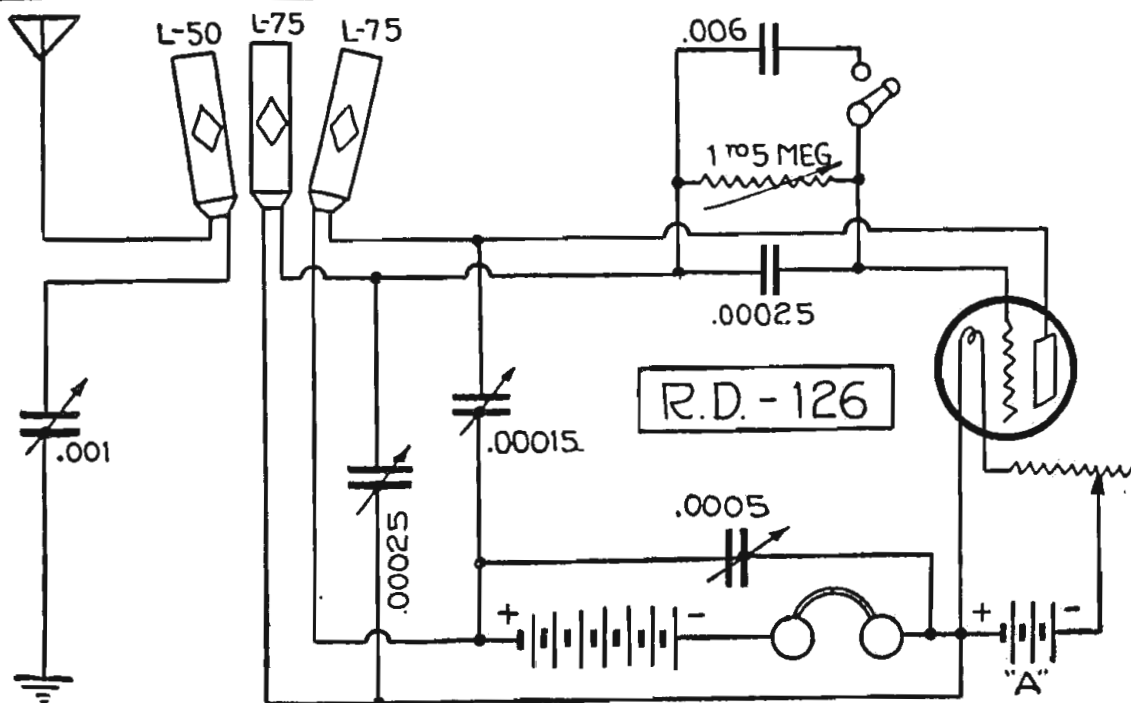
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### IMPROVED HONEYCOMB HOOK-UP



**M**R. CECIL SCOTT, of 2409 North Capitol, Washington, D. C., saw the circuit of Mr. Owen, of Denver, in one of the November issues of Radio Digest. He has gone a little farther with this circuit and sends us his development to pass on to the fans.

You will note the leads in the secondary

are reversed from his; that a variable grid leak, 1 to 5, is used; and a 23-plate condenser is connected across phones and tickler. The position of the B battery, the minus going to phones; and a switch arm connecting a .005 or .006 condenser in parallel with the grid leak, increases and mellows the volume of certain stations.

### CABINET MAKING

(Continued from page 27)

finished corner will be true and even. The panel is applied just the same as in making any other set, that is, the panel is attached to the baseboard so that it will slip into the cabinet and the panel fit into the front recesses where it is fastened with screws.

(The next article coming in the series will be entirely devoted to finishing the surfaces of woods, staining and applying the wax or varnish.—Editor's Note.)

### Sulphur Table Top

Reading in a text book that sulphur was known to be the best non-conducting material so far found, and as I was looking for something upon which I could build a small set with maximum efficiency and minimum leakage, I decided to try out this element.

Selecting a sturdy homemade typewriter table I fastened around the edge of the top cleats of 1 inch-by 1 inch making a tray 1 inch deep. In an old iron pot, out of doors, I melted enough crude sulphur to fill this tray level full. Care was taken in the heating process not to get the sulphur on fire.

Before pouring, the table must be perfectly level so that all sides will be flush with the top of the strips, to make a neat job.

Beside being a perfect insulating table top, sulphur also is an ideal substance to work for mounting parts. (That is for those who like table mounting.) For tubes of cardboard or parts of wood common sealing wax works very well but where a part will have more stress upon it, such as condensers and switches, a nail or screw can be used. It is not necessary nor so good to drill as sulphur when cold is very brittle, but by heating the nail or screw and pressing into the hole of the part to be mounted, it will sink readily into the hard surface and by holding in position for a moment until cool, it will be found very firm. Even a smooth nail will hardly loosen without a very hard pull which will more often crack the

sulphur before loosening.

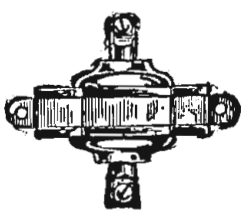
When not in use, a neat cover for the set will keep the dust off just as well as if in a cabinet, while the fan has the pleasure of seeing all the parts in action, when he tunes in.—C. V. Ashbaugh, Brooks, Oregon.

### Use Tinned Lugs in Set

It is surprising how many Radio set builders make the great mistake of soldering the various wires to the heads of screws. The majority will say this is all right, providing the heads of all screws are carefully sandpapered before attempting to solder a wire to them.

If you are desirous of saving yourself a lot of unnecessary work and trouble don't make connections in that way. If you want to make a neat job of the set you are building, use small "tinned lugs,"

## KEYSTONE RADIO LIGHTNING ARRESTERS



\$1.50

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Buy your Keystone Arrester today—install it according to instructions supplied, and forget about lightning. Made of Bakelite—weather-proof. No vacuum to lose. Approved by Underwriters. At all Dealers, \$1.50.

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**I**NTERNAL changes in the MAGNATRON make it even better for radio and audio frequency amplification than ever. And the new list price of \$4 makes MAGNATRON the best vacuum tube buy on the market.

All good dealers sell the MAGNATRON DC-201A, and the MAGNATRON DC-199 (both in standard and large base types).

## MAGNATRON

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# Duo-Reflex

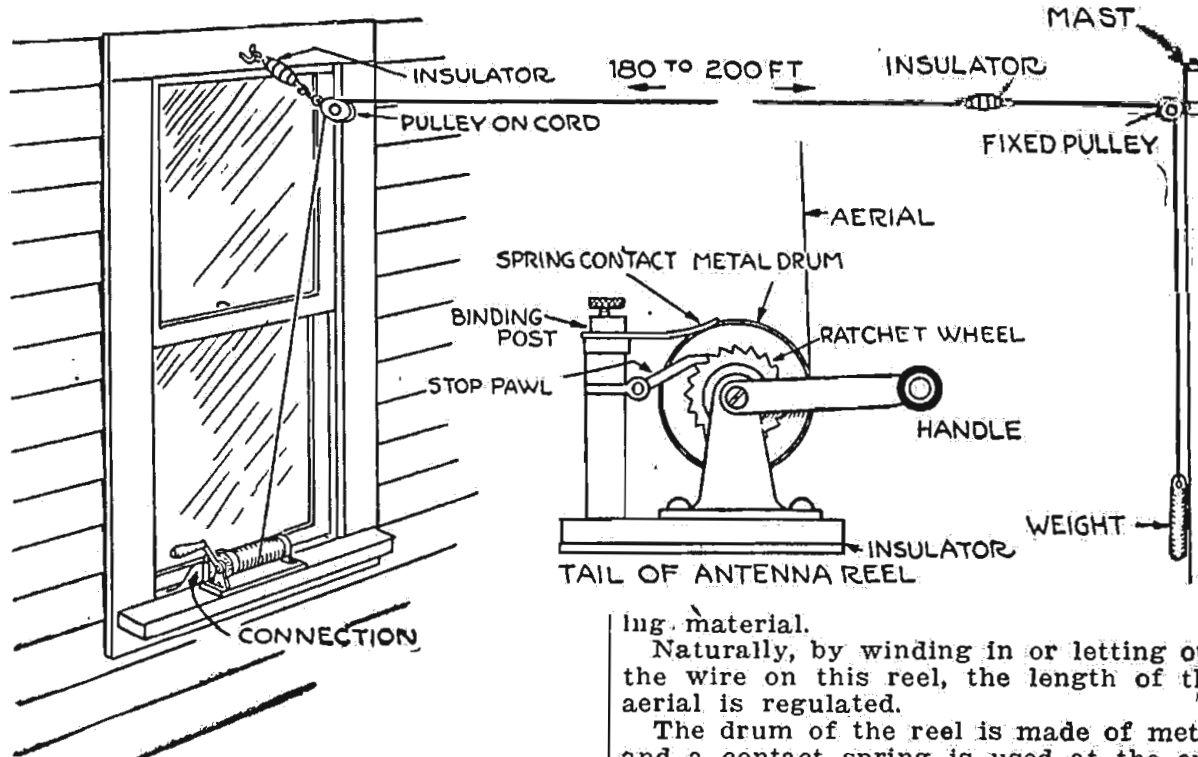
Tube for Tube—the Most Powerful Circuits Ever Built. Write for free Bulletin No. 16

Electrical Research Laboratories  
CHICAGO.

*ERL*

### Adjustable Aerial Length

An idea in the aerial comes from Europe where the difference in wave lengths are great and is shown in the illustration.



For short waves they prefer a short wire, but this will not give good results on the longer wave.

The aerial mast is placed some 60 yards from the house, and on the top is placed a pulley, fastened by a metal bracket to the mast. On the window frame of the house (if the lead-in goes in here) another pulley is fastened, on a cord or wire. In the center of the cord should be placed an insulator.

The actual aerial wire should be about 180 to 200 feet in length. It is fastened by means of an insulator to a cord or another flexible wire which passes through the pulley on the mast. To the other end of this cord is fastened a weight which gives the proper tension to the aerial wire at all times. The aerial wire passes at the other end (near the house) through the pulley on the cord, and is

then rolled onto a reel which in turn should be completely insulated from the wood. This can be done by placing the reel on a plate of ebonite or paraffined wood, or by making up a reel of insulat-

ing material. Naturally, by winding in or letting out the wire on this reel, the length of the aerial is regulated.

The drum of the reel is made of metal and a contact spring is used at the end for the connection to the set.

### Fading Signals

When a station "fades out" after it has been tuned in there is no use trying to find it by shifting the tuning dial. By waiting a few seconds the station will come in again with maximum intensity.

## Nine out of ten sets use MICADONS

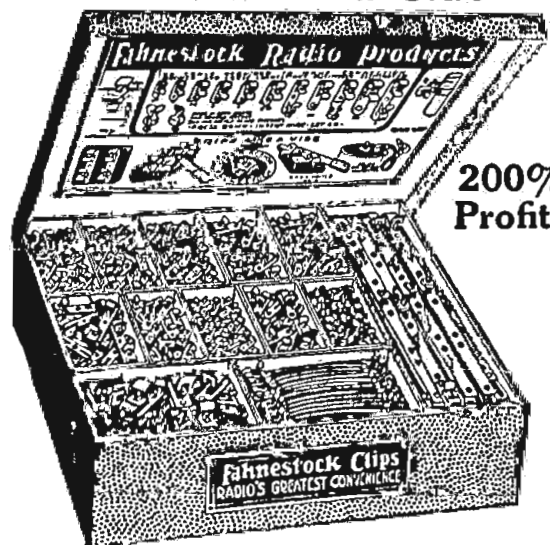
Set builders choose Micadons—standard fixed radio condensers—for many reasons.

They know that the Micadon is a Dubilier product. Supreme in quality and efficiency. They can be obtained in accurately matched and permanent capacities. They can be installed easily—equipped as they are with extension tabs for soldering and eyelets for set screw assembly. Furthermore they are made in types to meet every possible requirement.

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Price to Dealer.....\$17.50  
West of Mississippi..... 18.50  
Transportation prepaid when money order or check accompanies order. Subsequent orders at regular price of \$20.00.  
Contents Retail for \$51.50  
Refills will be supplied at the regular 100 lot prices, shown in catalogue, which comes with case, less discount shown on enclosed sheet. Send check or money order, today.

**FAHNESTOCK ELEC. CO.**  
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90 E. Roosevelt Road Dept. L, CHICAGO, ILL.  
This FREE "B" Storage Battery takes the place of dry cell "B" batteries. Can be recharged and will last indefinitely. To be sold retail for \$6.00. It is the only battery of its kind equipped with solid rubber case—and insurance against acid and leakage. Take advantage of this remarkable introductory offer NOW. To those who prefer it, we will send a handsome nickel finish Auto Spotlite, instead of the "B" Battery. Be sure to specify which is wanted.

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To introduce this new and superior World "B" Storage Battery to the Public



# Homemade Hundred Meter Receiver

## Spider Web Coil Circuit Gives Good Reception

Here is an account of my one hundred meter receiver that may be of interest to many readers. Using the hook-up as shown I have obtained very good recep-

### WORKSHOP KINKS EARN A DOLLAR—

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

RADIO KINKS DEPARTMENT  
Radio Digest,  
510 North Dearborn St., Chicago

tion on stations around 100 meters. KDKA and WGY come in loud on a 15-foot antenna. The three coils L1, L2 and L3 are stationary. They are each 20 turn spider web coils.

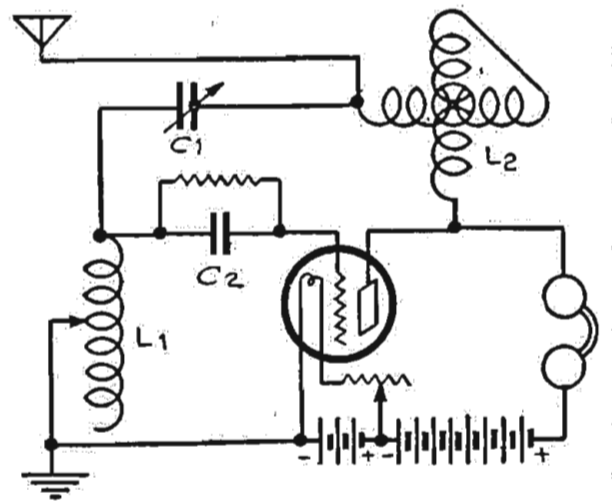
The condensers C1 and C2 are 23-plate, or .0005 mfd. C3 is a variable grid leak and condenser. The best tube for use in this set is the UV-199, although other types may be employed. My set is mounted on a panel 5 1/2 by 8 inches.

The coil L1 is fastened to the base with a small strip of brass bent at right angles. Holes are drilled in the center of the coils and a small bolt put through. The coils with L1 in the center are fastened about 1/4 inch apart by means of washers on the bolt. The condenser C2 is turned until a station is heard and then C1 is adjusted for volume and clearness.

If the set fails to work reverse the tickler leads, reverse the antenna and ground, or try the different spacing of the coils—Charles T. Kirk, Toledo, Ohio.

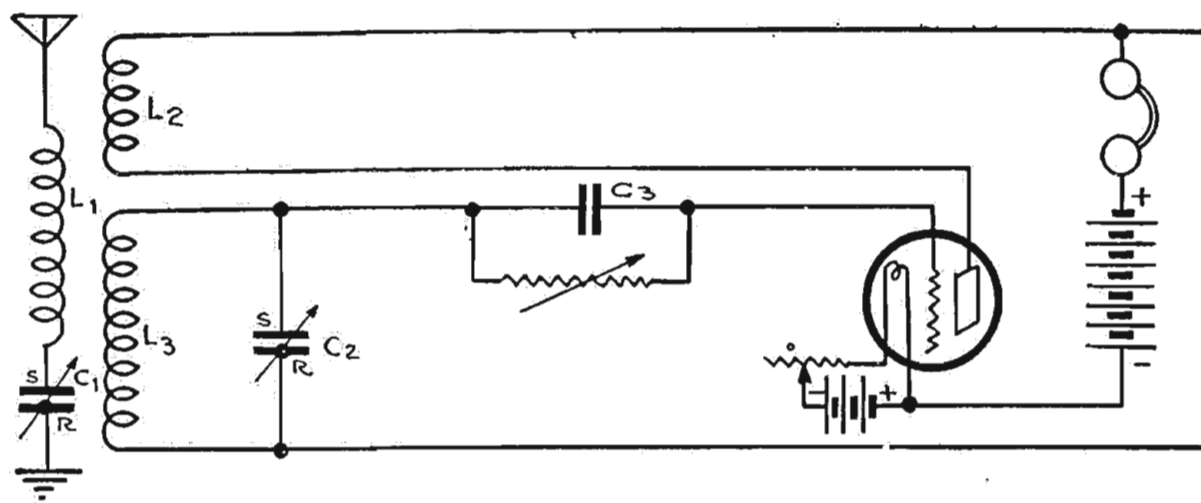
### One Tube Circuit

Here is a circuit that is a little different. It may resemble the famous Reinartz in some respects, but in others it is entirely different. This circuit was found to give louder signals than the



standard regenerative feedback circuit. The primary coil L1 is made by winding 100 turns of number 22 wire on a

## SHORT WAVE LENGTH HOOK-UP



5-inch tube, tapping it every 10 turns beginning with the fiftieth.

The variable condenser C1 is of the ordinary 43-plate type. Care should be taken in connecting this condenser to see that the rotary plates are connected to the aerial. This will cut down body capacity to a great extent.

The variometer should have about 70 turns of wire on both the stator and rotor. Outside of that it need not be of any special kind or make.

C2 is the usual grid leak and condenser. The grid is of 3 megohms, while the condenser is of .0005 capacity.

It was found that this receiver worked best with an aerial of about 75 feet. Longer aerials have the tendency of keeping the receiver from regenerating properly.

This receiver will be found to cover all the present-day Radiocasting wave lengths from 250 to 600 meters.

Strange as it may seem most of the tuning is controlled by the variometer, while the regeneration is controlled by the condenser.

Some of my readers might think that the receiver would work better if a variable condenser were connected across the primary coil L1. It does seem that way, although I found that just as good results were obtained by omitting it, thereby doing away with one extra control.

If the reader has the necessary parts, I am sure this receiver will justify one good tryout.—Charles Bloedorn, Jr., Franklin, Nebr.

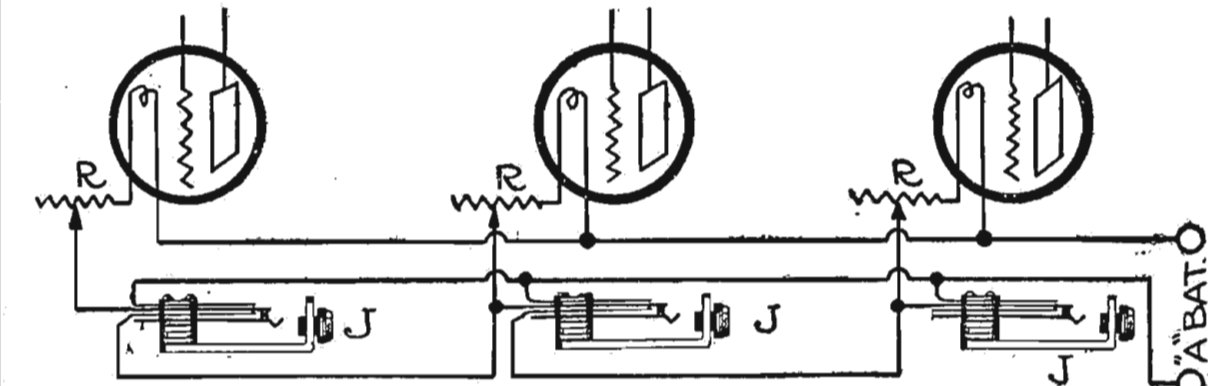
### Grounding Interference

A very annoying Radio interference problem arose in a small country town where the power company had installed a new 3,500-kw. multiple-stage turbine. Lead-covered, single-conductor cables run direct from the unit to the oil switches, a distance of about 75 feet. Since the interference had not existed before its origin was thought to lie in the new equipment. It became so distressing that even the newspapers took up the people's cry for relief.

To overcome this interference much time and effort was spent. It was at first thought that the trouble lay with the faulty insulation of the 75-foot cable, so it was subjected to a high voltage test. But this was successfully withstood, showing that no flaws existed in the cable insulation. Then a further analysis with an oscillograph showed what caused the trouble. On the peak of each voltage wave there appeared a small ripple of a

higher harmonic. Investigation as to the cause of this higher harmonic then led to the complete solution.

Although lead-covered cables were used to transfer energy from the generator to the oil switch, it was found that the



lead sheath had not been grounded. Capacity between the cable and the lead created this harmonic which was dissipated into the air and not to ground as it should have been if proper connections had been made. After grounding the sheath this trouble disappeared entirely.

## Correct Connection for Filament Control Jacks

Do you know the correct way of connecting a filament control jack so that it will operate only one tube when the plug is in the first jack, and two tubes when the plug is in the second jack, etc.? As I have been asked this question I thought many others would be glad to know how to connect them.

This hook-up will work with the ordinary filament control jack and also with the special jack attachment. When the plug is pulled out of all the jacks none of the tubes will light, and when the detector tube is just used, only the detector tube will light. This device is a great saving on batteries because sometimes a person desires to listen in on one or two tubes on a three tube set. Without a jack the third tube must burn and at the same time the listener does not get any use of it, it only draws power from the battery. The rheostats can be turned down but think how simple it is just to change the plug to another jack and not have to touch a control knob. The illus-

tration is clear enough to be understood without further explanation.—A. Anderson, St. Charles, Ill.

## The New STAR Type E. Detector

For Crystal or Reflex Sets



Price \$1.00

We offer the STAR TYPE E Detector which is covered by our guarantee of complete satisfaction and is sold at the LOWEST PRICE of any RELIABLE DETECTOR on the market. This detector is well made and is set with one of our very best rectifying materials. It is made so that in case of necessity it may be adjusted and while it is not especially designed for reflex sets many excellent reports of performance on these sets have been received.

THE TYPE E DETECTOR IS THE BEST BUY IN THE CRYSTAL MARKET TODAY and will be sent subject to exchange for any other item we make.

DEALERS send to-day for our FALL CATALOGUE NOW READY, and get all set for the big season ahead.

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Here You Are Mr. Set-Builder!

Do your soldering with a "Jiffy"—a neater, cleaner job in a shorter time. It's self-blowing—can't explode! Burns with blue hot flame! Complete "Jiffy" outfit—Copper Soldering Iron, Non-Corrosive "Jiffy" Flux, String Solder, "Jiffy" Blow Torch with accessories, \$2.50.

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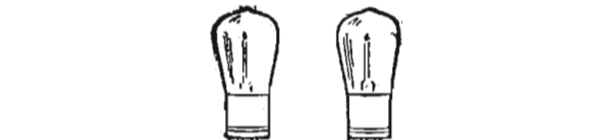
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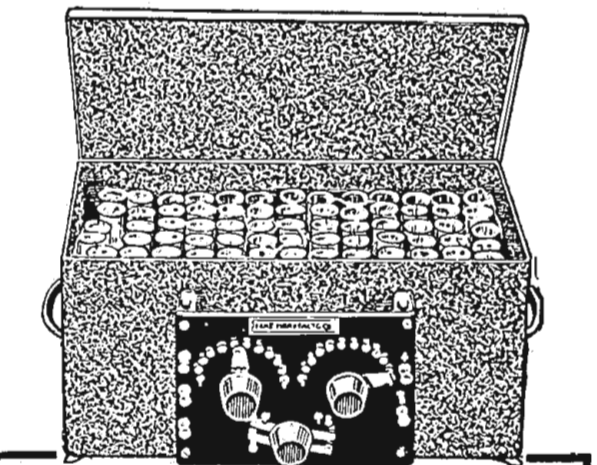


Two tubes do the work of five—

Shamrock-Harkness set does this. Send 10 cents for booklet

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**SHAMROCK**  
FOR SELECTIVE TUNING



## LANE 100 Volt Non-Acid Storage "B" BATTERY

Makes a wonderful improvement in your radio set. Gives it more life and pep. Makes listening in a real pleasure. Gives a clearer reception than you have ever experienced. Brings in more stations louder and clearer, takes the guesswork out of distance reception.

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No deterioration—easiest, quickest to charge—will operate a 3 tube set continually for over 50 hrs. Ordinary use one to four months without recharging.

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A great and necessary improvement on batteries. Gives instantly correct voltage at all times and perfect reception. Allows for charging in two equal parts. Come in handsome \$25 At your dealer's or indestructible case. direct. 150 v. \$37.50.  
Attractive Proposition to Dealers and Jobbers.  
LANE MFG. CO., Dept. 12 2941 W. Lake St., CHICAGO

# Questions and Answers

### Reflex Claims

(8896) BEM, McPherson, Kans.

As I am a reader of your paper, and am following developments of Radio contained in it, thought I would ask some questions about the Erla Duo-Reflex. If it will do what they claim for it, it must be a wonder. What is your opinion of it? Can a tube be used three times, as they claim, without over loading it?

At present I am using a single-circuit regenerative 3-tube set, but it does not give loud speaking volume on coast stations.

As there seems to be considerable objection to the single circuit, and they may be prohibited, would appreciate a recommendation from you as to what circuit to build for distance, volume and selectivity. May be these cannot all be contained in one set without using more than three tubes. I do not care to go into the set with so many tubes to maintain; that's why I am interested in the Reflex.

A.—The principle of single tubes performing dual duty, that is, acting as Radio and audio frequency amplifiers, as exemplified in the reflex circuit is sound. However, such circuits are critical in operation, and depend upon a high grade of efficiency in apparatus involved, and the wide variation in this desired efficiency makes it difficult to say authoritatively what can be consistently expected from an average function reflex. Therefore, in answering your question we can only say the inherent ability is present, but its realization is dependent upon many diverse factors, not the least being the skill of constructor and operator.

It is not without precedent to accomplish loud speaker operation at the range desired with a 3-tube regenerative circuit under favorable conditions. A circuit of this type is equally capable, in the writer's opinion, with any within the ability of the average layman.

A 5-tube neutrodyne is a superior type of circuit and will doubtless meet your requirements, although much care is necessitated in perfecting operation.

### Efficiency of Circuit

(9081) HJ, Montreal, Canada.

May I ask you to answer two or three brief questions through your valuable columns regarding "Old Stand-By, Short Wave Regenerative Hook-Up," by Major R. C. Schoonhoven, appearing in the May 3 and 10 issues. What is the wave range of the set? Is it as selective as a Reinartz tuner? What distance is it capable of receiving?

A.—The standard short wave regenerative circuit is capable of receiving a range of wave lengths from 180 to 755 meters.

It affords a superior and selective receiver capable of a consistent receiving range of 1,500 miles. As a matter of fact, records of exceptional range are reported more often than with any other type.

**BUILD YOUR OWN AUTO AND RADIO Battery Charger.** Uses alternating current. Easy, cheap. Guaranteed plans 35 cents. No stamps. Radio Specialties Co., Box 437, Ashtabula, Ohio.

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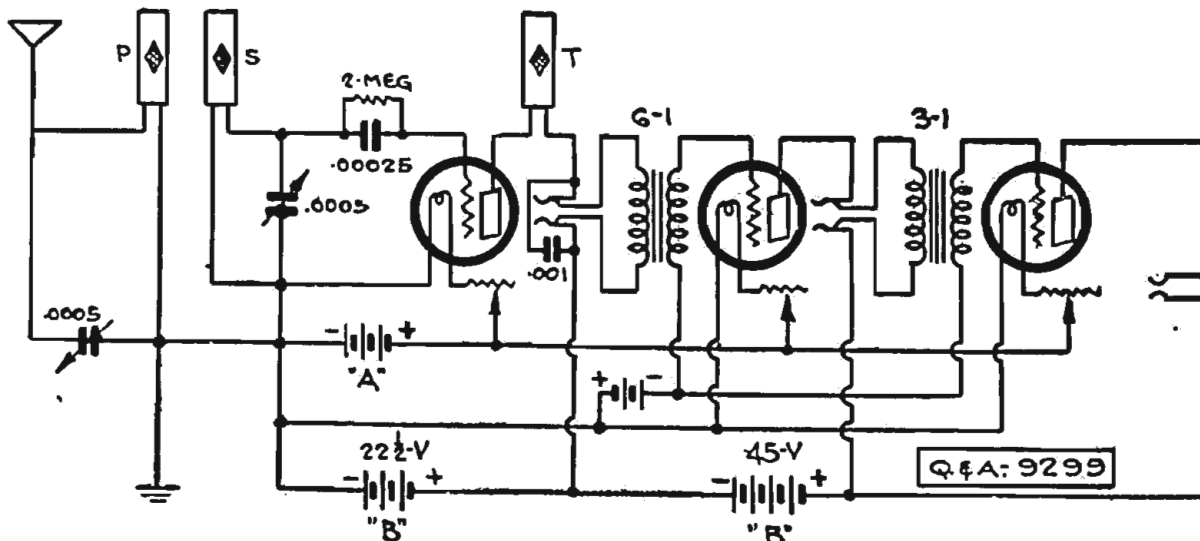
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## SUPERTRON

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Three Coil Circuit (9299) GTP, Doniphan, Mo.

Some time about a year ago you published a diagram of a three honeycomb set that I found about the best of anything. My diagram has been mislaid and I want to make the set up again. I cannot give you much to go on, but maybe you can check it. One thing I remember was that it was much louder than standard and it had two variable condensers.

A.—The circuit mentioned appeared in the issue of March 3, 1923. The diagram is given on this page for your convenience.

### What Set?

(8330) DG, Detroit, Michigan.

I have been interested in your Q. and A. department for a long time and I have gained many valuable ideas from the answers to other fellows' questions. However, I should like to ask a few on my own account. I have had a regenerative set, employing a coupler and two variometers with two stages of audio amplification, for over a year. I have not been at all satisfied with the distance the set gives, or the volume on distant stations which I should like to put on the loud speaker.

The farthest I have ever been able to get was San Antonio, Texas, and that was only once and when the set was new. This winter the farthest west I have been able to get was Hastings, Nebraska.

I am going to dispose of this set and make another one. My question is this: Which of the many circuits in existence, in your opinion, will give me the longest distance reception coupled with a moder-

### PATENT ATTORNEYS

PATENTS. Booklet free. Highest references. Best results. WATSON E. COLEMAN, Patent Lawyer, 644 G Street, Washington, D. C.

**BIG money selling new household cleaner.** Washes and dries windows. Sweeps, scrubs, mops. Complete outfit less than brooms. Over 100% profit. Harper Brush Works, 200 3rd St., Fairfield, Iowa.

## PATENTS

Write for my free Guide Books "How to Obtain a Patent" and "Invention and Industry" and "Record of Invention" blank before disclosing inventions. Send model or sketch of your invention for instructions. Promptness assured. No charge for above information. Clarence A. O'Brien, Registered Patent Lawyer, 2004 Security Bank Building, directly across street from Patent Office, Washington, D. C.

Men to build radio sets for me in spare time. Leon Lambert, 501-H Kaufman Bldg., Wichita, Kansas.

## Don't You Get Tired

of only hearing LOCAL stations on your Crystal Set? There's music on your aerial every night from stations far away. If you want to hear it without buying a tube set, WRITE ME TODAY.

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ate volume. If possible, I would like to get the hook-up of a set that would give me regular reception of the Pacific coast stations.

One Radiophan will tell you to make an Acmedyne, another will insist that you make a neutrodyne, someone else says a super-regenerative and others say, "Make a super-heterodyne." With every one extolling the merits of his particular pet and telling you what is wrong with the circuit the other fellow is advocating, it is hard to determine just which is the best circuit without asking the authority of someone who has used all the sets and is in a position to know. When you are going to put from one to two hundred or more hard-earned dollars into a Radio set you want to know that it is the best that can be obtained for the money invested.

I have just finished reading H. J. Marx's article on super-heterodyne hook-ups. His articles are certainly great for the fan that likes to make his own set and for the fan that likes to learn about other sets besides his own.

I hope I have not bored you with this

## Make \$100 Weekly—sell RADIO

Demonstrate once—results mean sure sale. Coast to Coast, lowest prices, attractive four tube instrument \$39.50. Big commission to you. Exclusive territory to proven salesman. Territory going fast. Write today for large illustrated book No. 100. Don't fail to give name of your county.

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Full instructions and Blue Prints furnished with each Kit. Absolutely guaranteed. These transformers are suitable for any Super-Heterodyne circuit. Put up in handsome Kit display box. Special discount to dealers. Prompt delivery. Write for special circular. SYPHER MFG. CO., 1524 Fernwood, Toledo, O.

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Why experiment—buy the choice of the big majority—they know from experience, and they buy Carter Jacks.

ANY DEALER CAN SUPPLY Insist on the original. In Canada—Carter Radio Co., Limited—Toronto

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long wait concerning my wants, but that you will give it your consideration and if possible lend a helping hand.

A.—No Radio receiver is better than its operator. The argument offered by each individual as to the superiority of his particular circuit which is often demonstrable is a quite conclusive proof of this assertion, evidencing that understanding of the principles underlying, its characteristics and his ability to realize, its inherent ability is proof that for him it is the best. A few basic principles in Radio communication in its beginnings have not undergone any revolutionizing changes, so that the selection of a type of receiver is minimized. When that selection is made its wisdom is proven largely by the ability of its operator to make good.

The superheterodyne principle is inherently superior but dependent upon skill in execution and operation. Radio Digest has offered these discussions to simplify and make a receiver of this type available for the layman, but at best it is not possible yet to take it out of the laboratory class.

In consideration of the above we are commending to your interest a five-tube Neutrodyne receiver as capable of meeting your requirements most effectively.

## NEW RADIO SONG Snappy, catchy, fox trot HIRED HAND'S RADIO BAWL

Words by the Hired Hand of WBAP; Music by Sooner Serenaders

The tune that makes it rain. When played over the air even the skies weep. Actual results three times in Texas during dry August.

Get a copy at your music store, or send thirty cents to The Hired Hand, WBAP, Fort Worth, Texas, and get a copy postpaid. Published by Harold Rossiter, Chicago

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The base-type **Freshman Variable Grid Leak** is the standard for those who build their own sets. It is the most compact and being entirely sealed it always remains unaffected by any climatic conditions. Complete with either .00025 or .0005 Freshman Condenser—\$1.00 without condenser. .75 At your dealer's, otherwise send purchase price and you will be supplied postpaid. Chas. Freshman Company, Inc. 106-7th Ave., New York

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# Radiophone Broadcasting Stations

## Corrected Every Week—Part III

### FIND MISTAKES AND YOU'LL GET DOLLAR

ONE DOLLAR will be paid to the Radiophone reader of Radio Digest submitting the most errors in any one station's listing in the Directory of Radiophone Stations, which appears in four parts, serially continuously, on page 31. Letters must reach Radio Digest's office not later than one week from date of issue corrected. Readers are not limited to correcting one station, but such corrections must be verified by the stations themselves, and NOT by comparison to other so-called accurate Radiocasting directories or lists. Turn in corrections for as many stations as you can find—if you can find errors! Use separate sheet of paper for each station submitted and place name and address on each sheet. In case of tie, duplicate awards will be made.

NOTE.—The third part of the schedule list appears below. The fourth part which consists of the remainder of the list will appear next week.

- WDAS, Worcester, Mass. 360 meters. 10 watts. Samuel A. Waite.
- WDAU, New Bedford, Mass. 360 meters. 100 watts. Slocum & Kilburn.
- WDAY, Fargo, N. D. 244 meters. 50 watts. Radio Equip. Corp. Slogan, "The Biggest Little City in the World." Daily ex Sun, 9:15 am, music, weather, news; 2:30 pm, markets; 5, music, news, baseball scores. Sun, 10:30 am, church service; 5 pm, concert. Central.
- WDBB, Taunton, Mass. 229 meters. 10 watts. A. H. Waite & Co.
- WDBC, Lancaster, Pa. 258 meters. 50 watts. Kirk Johnson & Co., Inc. Mon, Tues, Thurs, 8 pm. Eastern.
- WDBD, Martinsburg, W. Va. 268 meters. 5 watts. H. E. Burns. Announcer, R. W. Etrils. Tues, Thurs, Sat, 9-10:30 pm, talks, music, dance orchestra. Eastern.
- WDBF, Youngstown, Ohio, 246 meters. 50 watts. Robert G. Phillips.
- WDBH, Worcester, Mass. 268 meters. 100 watts. C. T. Sherer Co. Announcer, Chester Gaylord. Slogan, "The Voice from the Heart of the Commonwealth." Daily ex Sun, 11:30-12:30 pm, music, reports; 4-4:30, music, stocks. Mon, Fri, Sat, 8 pm, music. Eastern daylight saving.
- WDBI, St. Petersburg, Fla. 226-300 meters. 10 watts. Radio Specialty Co., Inc. Announcer, M. H. Bewick. Irregular programs.
- WDBJ, Roanoke, Va. 229 meters. 50 watts. Richardson Wayland Elec. Corp. Announcer, Charles E. Stone. Slogan, "The Magic City of the Old Dominion." Daily ex Sun, 11:30 am, music; 5:30 pm, markets. Wed, 8:30 pm, music. Sat, 10 pm, dance music. Eastern.
- WDBN, Bangor, Me. 254 meters. 10 watts. Maine Electric Light & Power Co. Announcer, Paul Watson. "Bangor Radio Club." Daily 3-5 pm, 8-10. Eastern.
- WDBO, Winter Park, Fla. 240 meters. 50 watts. Rollins College, Inc.
- WDBP, Superior, Wis. 261 meters. 50 watts. Superior State Normal School.
- WDBQ, Salem, N. J. 234 meters. 10 watts. Morton Radio Supply Co. Tues, 8-9 pm, music. Thurs, 8:15-8:45 pm, organ. Sun, 7:30 pm, church services. Eastern.
- WDBR, Boston, Mass. 256 meters. 100 watts. Tremont Temple Baptist Church. Announcer, Raymond B. Meader. Fri, 7:30-8:30 pm. Sun, 10:30 am; 6:45 pm, church services. Eastern daylight saving.
- WDBS, Dayton, Ohio. 283 meters. 10 watts. S. M. K. Radio Corp. Announcer, Robert Ewell. Slogan, "Watch Dayton's Broadcasting Station." Tues, Thurs, Sat, 8-10 pm. Sat, 11:45-12:30 am, dance music. Central.
- WDBT, Hattiesburg, Miss. 236 meters. 10 watts. Taylor's Book Store. Announcer, W. P. Sprague. Slogan, "Hattiesburg, the Hub of South Mississippi." Tues, Thurs, Sat, 8-9 pm, music. Eastern.
- WDBU, Skowhegan, Maine. 258 meters. 10 watts. Somerset Radio Co. Slogan, "Only One Skowhegan, the Garden Spot of America." Fri, 7:30-10:30 pm. Eastern.
- WDBV, Fort Wayne, Ind. 258 meters. 100 watts. The Quimby Enterprise, Strand theater.
- WDBW, Columbia, Tenn. 268 meters. 20 watts. The Radio Den. Announcer, F. O. Draughon. Slogan, "The Dimple of the Universe." Daily ex Sun, 1 pm, markets. Tues, Thurs, Sat, 8-9 pm, music. Central.
- WDBX, New York, N. Y. 233 meters. 5 watts. Otto Baur.
- WDBY, Chicago, Ill. 258 meters. 500 watts. North

- Shore Congregational church. Wed, 8-9:30 pm. Sun, 11-12:30 pm; 3:30-5, 7:45-9:30. Central daylight saving.
- WDBZ, Kingston, N. Y. 233 meters. 5 watts. Boy Scouts of America.
- WDM, Washington, D. C. 234 meters. 50 watts. Church of the Covenant. Sun, 11 am, church service; 8 pm, church service. Eastern.
- WDZ, Tuscola, Ill. 278 meters. 10 watts. James L. Bush. Daily ex Sun, 9:30 am, 10, 10:30, 11, 11:30, 12 m, 12:30 pm, 1, 1:15, Chicago Board of Trade quotations. Central daylight saving.
- WEAA, Flint, Mich. 280 meters. 100 watts. Frank D. Fallain. Slogan, "The Vehicle City." Daily ex Sun, 7:15 pm, police broadcasts, music. Eastern.
- WEAF, Blacksburg, Va. 360 meters. Polytechnic Inst. WEAF, New York City, N. Y. 492 meters. 1000 watts. A. T. & T. Co. Slogan, "The Voice of the Millions." Daily ex Sun, 4-5 pm. Mon, Tues, Wed, Thurs, Fri, 11-12 m. Wed, Fri, 6-10 pm. Thurs, Sat, 6-11 pm. Sun, 3-5:20 pm; 7:20-10:15. Eastern daylight saving.
- WEAH, Wichita, Kan. 280 meters. 50 watts. Wichita Board of Trade. Daily ex Sun, 9 am, 10, 11, 12, 1 pm, markets. Tues, Fri, 8-10 pm, music. Central.
- WEAI, Ithaca, N. Y. 286 meters. 500 watts. Cornell Univ. Irregular.
- WEAJ, Vermillion, S. D. 283 meters. 200 watts. Univ. of S. D. Irregular schedule.
- WEAM, North Plainfield, N. J. 286 meters. 150 watts. Borough of N. Plainfield. Announcer, G. Buttfield. Mon, 8-10:30 pm, concert, talks. Eastern daylight saving.
- WEAN, Providence, R. I. 273 meters. 100 watts. Shepard Co. Daily ex Sun, 12-1 pm, 4-5, music, reports, weather, concert. Wed, 10:45 pm, organ. Mon, Tues, Wed, Fri, 8-10, concert. Sat, 9-11 pm, dance music. Sun, 10:45-11:30 am, 7:30-8:45 pm, church service. Eastern daylight saving.
- WEAO, Columbus, O. 360 meters. 500 watts. Ohio State Univ. Daily ex Sun, 9 am, 11, markets. Wed, Fri, 4 pm, lectures, music. Thurs, 8-10 pm, lecture, concert. Eastern.
- WEAP, Mobile, Ala. 360 meters. 100 watts. Mobile Radio Co. Daily ex Sun, 4-5 pm, music. Tues, Thurs, Sat, 7:45-8:45 pm, music. Sun, 11 am, 7 pm, church service. Central.
- WEAR, Baltimore, Md. 261 meters. 100 watts. Evening News Pub. Co. 275 meters. 100 watts. Davidson Bros. Co. Announcer, K. Garnet. Slogan, "The Heart of the Corn Belt." Daily ex Sun, 8:45 am, 9:45, 10:45, 11:45, 12:45 pm, 5, markets, weather. Mon, Wed, Fri, 7:30-8:30 pm, entertainment. Central.
- WEAY, Houston, Tex. 360 meters. 1000 watts. Iris Theater (Will Horwitz, Jr.). Slogan, "Where All the Oceans Meet All the Railroads." Daily ex Sun, 11 am, weather, news; 12 m, music; 2:30 pm, music; 6 pm, news, sports; 10-12 midnight, dance music. Fri, Sat, 8-10. Sun, 10-12 m, 8-9 pm, church services; 9:15-10:45, comedy. Central.
- WEB, St. Louis, Mo. 273 meters. 500 watts. Benson Radio Co. Announcer, N. M. Binns. Mon, Wed, Fri, 8-9:45 pm, 11-12. Sat, 11-1 am. Central.
- WEBA, New Brunswick, N. J. 233 meters. 35 watts. The Electric Shop, George N. DeLaplaine. Mon, Thurs, 8-10 pm, music. Eastern daylight saving.
- WEBC, Superior, Wis. 242 meters. 10 watts. Walter Cecil Bridges.
- WEBD, Anderson, Indiana. 246 meters. 10 watts. Elec. Equip. & Service Co.
- WEBE, Cambridge, Ohio. 248 meters. Roy W. Wallor. Fri, 7:30-9 pm, markets, music. Eastern.
- WEBH, Chicago, Ill. 370 meters. 1000 watts. Announcer, Robert Boniel. Edgewater Beach Hotel Co. Chicago Evening Post. Daily ex Sun, Mon, 7:30-8:30 pm, 9:30-10:30, 11:30-12:30. Sun, 7-9 pm. Central daylight saving.
- WEBI, Salisbury, Md. 242 meters. 15 watts. Walter H. Gibbons.
- WEBJ, New York, N. Y. 273 meters. 500 watts. Third Avenue Railway company. Tues, Fri, 7-9 pm. Eastern daylight saving.
- WEBK, Grand Rapids, Mich. 261 meters. 20 watts. Grand Rapids Radio Co.
- WEBL, (Portable Station). 226 meters. 100 watts. Radio Corp. of Amer.
- WEBO, Hamilton, Ohio. 250 meters. 5 watts. Radio Co.
- WEBP, New Orleans, La. 280 meters. 50 watts. E. Budd Peddicord. New Orleans Public Service, Inc.
- WEEL, Boston, Mass. 246 meters. 100 watts. Edison Elec. Illuminating Co. Announcer, C. R. Emery.
- WEV, Houston, Tex. 263 meters. 100 watts. Huriburt-Stiell Elec. Co.
- WEW, St. Louis, Mo. 280 meters. 100 watts. St. Louis Univ. Daily ex Sun, 9 am, 10, 2, 5 pm, reports. Central.
- WFAA, Dallas, Tex. 476 meters. 500 watts. Dallas News and Dallas Journal. Slogan, "Working for All Alike." Daily, 10:30 am, reports; 12:30-1 pm, address; 2:30-3:30, reports, news; 5:30, bedtime story; 6:45-7, sports, news; 8:30-9:30, concert, weather (silent Wed). Tues, Thurs, Sat, 11-12 pm, music. Sun, 6-7 pm, Bible class; 9-11 pm, music. Central.
- WFAB, Syracuse, N. Y. 234 meters. 100 watts. C. F. Woese. Announcer, William F. Boone.
- WFAM, St. Cloud, Minn. 273 meters. 10 watts. St. Cloud Daily Times. Daily ex Sun, 4:45 pm, markets. Central.
- WFAN, Hutchinson, Minn. 286 meters. 100 watts. Hutchinson Elec. Service Co. Announcer, E. R. Dennis. Slogan, "Gateway to the Ten Thousand Lakes of Minn., Located in the Heart of the Great Butter Belt." Daily 11:55 am-12:30 pm, program, news, time, weather.

- Tues, 8-10 pm, program. Special hours. Central.
- WFAV, Lincoln, Neb. 275 meters. 500 watts. Univ. of Nebr. Announcer, F. J. Moles. Slogan, "The Home of the Cornhuskers." Daily ex Sun, 9:45 am, 12:40 pm, weather, news, road reports. Central.
- WFB, Eureka, Ill. 240 meters. 50 watts. Eureka college.
- WFBG, Altoona, Pa. 261 meters. 100 watts. The Wm. F. Gable Co.
- WFBH, New York, N. Y. 273 meters. 500 watts. Concourse Radio Corp.
- WFI, Philadelphia, Pa. 395 meters. 500 watts. Strawbridge & Clothier. Announcer, Mrs. M. S. Ewer. Daily ex Sat, Sun, 10:15 am, reports; 1 pm, orchestra; 1:50, reports; 3-4:30, concert; 6:30-7, orchestra. Tues, Thurs, 7-7:30 pm, children's hour. Tues, 8, concert. Thurs, 8 pm, Boy Scouts meeting; 8:30, concert. Sun, 10:30 am, 7:30 pm, church services. Eastern daylight saving.
- WGAL, Lancaster, Pa. 248 meters. 10 watts. Lancaster Elec. Supply & Construction Co. Slogan, "World's Gardens at Lancaster." Mon, Wed, Fri, 7:30-9 pm, concert, lectures. Mon, Fri, 5:45-6:30 pm, dinner concert, organ. Wed, 11-1 am, frolic, organ. Eastern.
- WGAN, Pensacola, Fla. 360 meters. 50 watts. Cecil E. Lloyd. Irregular schedule.
- WGAP, Shreveport, La. 263 meters. 300 watts. W. G. Patterson. Mon, 9-12 midnight, dance music. Wed, Sat, 8-9 pm, 10-12. Central.
- WGAW, Altoona, Pa. 261 meters. 100 watts. Ernest C. Albright. Slogan, "The Home of the World's Largest Railroad Shops." Wed, 9 pm. Sun, 10:45 am; 7:30 pm. Eastern.
- WGAZ, South Bend, Ind. 275 meters. 250 watts. South Bend Elec. Announcer, Rudolph H. Hoist. Mon, 7-8:30 pm, concert. Central.
- WGI, Medford Hills, Mass. 360 meters. 500 watts. Am. Radio & Research Corp. Slogan, "Amrad, the Voice of the Air." Daily ex Sun, 7:30-10 pm. Daily ex Sat, Sun, 12 m-1 pm, concert. Daily ex Sun, Mon, 6:30-7 pm, stocks; 7, Big Brother Club. Sun, 4-5 pm, 8:30-10. Eastern Daylight Saving.
- WGL, Philadelphia, Pa. 360 meters. 500 watts. Thos. F. J. Howlett. Irregular schedule.
- WGN, Chicago, Ill. 370 meters. 1000 watts. Chicago Tribune. Announcer, Sen Kanev. Daily ex Sun, 9:35 am, 10:01, 10:31, 11:01, 11:31, 12:01, 12:31 pm, 1:01, 1:25, Chicago Board of Trade; 1:40, luncheon concert; 3:15, Chicago Stock exchange; 6, markets, baseball; 6:30, dinner concert. Daily ex Sun, Mon, 8:30, program; 10:30, news, weather, orchestra music. Sun, 5-6 pm, organ; 9:15-10, music. Central daylight saving.
- WGR, Buffalo, N. Y. 319 meters. 750 watts. Federal Telephone Mfg. Corp. Announcer, Otto Becker. Slogan, "Key City of Industry." Daily, 10:45 am, weather; 12 m, reports; 12:30, organ music. Daily ex Sat, Sun, 12:30 pm, 4. Daily ex Sun, 6:30, music; 7:30, news; Mon, Wed, Fri, 9-11 pm, concert; 11-1 am, orchestra. Sun, 3 pm, vesper services; 4, organ. Eastern.
- WGY, Schenectady, N. Y. 380 meters. 1000 watts. General Elec. Co. Announcer, Robert Weidaw. Daily ex Sun, 11:30-12 m. Daily ex Sat, Sun, 5 pm, reports, news, sports. Mon, Tues, Thurs, Fri, 1-1:30 pm, 7:45, concert. Fri, 10:30 pm, special. Sun, 9:30 am, 6:30 pm, church service. Eastern.
- WHA, Madison, Wis. 360 meters. 500 watts. Univ. of Wis. until Oct. 1.
- WHAA, Iowa City, Ia. 484 meters. 500 watts. Univ. of Iowa, Tues, 8-9:30 pm. Sun, 9-9:30 pm; 4 pm, once each month. Mon, Tues, Wed, Thurs, Fri, 12:30-1 pm. Occasionally Thurs, 7-9:30 pm; Sat, 7:30-9 pm. Central.
- WHAD, Milwaukee, Wis. 280 meters. 100 watts. Marquette Univ. Daily 11 am, weather. Wed, 9 pm, health, reports. Central.
- WHAG, Cincinnati, O. 222 meters. 100 watts. Univ. of Cincinnati. Dept. of Elec. Eng. Announcer, W. C. Osterbrock. No definite schedule.
- WHAH, Joplin, Mo. 283 meter. 250 watts. Hafer Supply Co. Tues, Thurs, 9-11 pm; Sat, 10:30-11:30; Sun, 9-10 pm. Central.
- WHAK, Clarksburg, W. Va. 258 meters. 15 watts. Roberts Hdwe. Co. No definite schedule.
- WHAM, Rochester, N. Y. 283 meters. 100 watts. Univ. of Rochester. Rochester Times-Union, Democrat, and Chronicle. Daily ex Sun, 3:30-4 pm, 5-6, 6:55, 7-7:30, 7:35-8:30. Sat, 10:45 pm-12:30 am, dance music. Sun, 3:15, Radio Chapel. Eastern.
- WHAR, Atlantic City, N. J. 275 meters. 200 watts. Seaside House. Announcer, E. Dennisen. Daily, 2-3 pm, music; 7:30-8, news, markets; 8-9, music. Eastern.
- WHAS, Louisville, Ky. 400 meters. 500 watts. Courier-Journal and Louisville Times Co. Announcer, Credo Harris. Daily ex Sun, 4-5 pm, 7:30-9. Sun, 9:57-10:45 am, 4-5 pm, church service. Mon night, silent. Central.
- WHAV, Wilmington, Del. 360 meters. 100 watts. Wilmington Elec. Spec. Co. Slogan, "The First Broadcasting Station of the First City of the First State." Wed, 10 pm-1 am. Sun, 10-12 pm. Eastern daylight saving.
- WHAZ, Troy, N. Y. 380 meters. 500 watts. Rensselaer Polytechnic Inst. Announcer, Rutherford Hayer. Slogan, "Transcontinental and International Broadcasting Station Located at the Oldest College of Engineering." Club, R. P. I. students. Mon, 9-11 pm, concert, educational talks, features. Eastern.
- WHB, Kansas City, Mo. 411 meters. 500 watts. Sweeney Auto & Electric School. Announcer, John T. Schilling. Slogan, "Heart of America." Daily ex Sun, 8:25 am, 9:25, 11:20, 12:15, 12:20, 12:35, 1:25, markets, weather stocks. Daily ex Sat, Sun, 3-3:05, pm, weather; 3:05-3:20, grain. Mon, Wed, Fri,

- 7-8 pm. Sun, Tues, Thurs, 8-9:30 pm. Tues, Thurs, 10:30-11:30. Central.
- WHK, Cleveland, O. 283 meters. 150 watts. Radiovox Company, Winton Hotel. Daily ex Sun, 12:50-1:50 pm, luncheon concert; 5:30-6, news, sports. Thurs, 7-12 midnight, Cleveland Press program. Fri, 8-12, concert. Sat, 8-12 mid, Carnival night. Sun, 8-9 pm, chapel; 9-10, music; 10-12, concert. Eastern.
- WHN, New York, N. Y. 360 meters. 500 watts. Loew's State Broadcasting Station. Announcer, N. T. Grandlund. Slogan, "The Voice of the Great White Way." Daily ex Sun, 9:30-11 am, 12-1 pm, 2:15-3:15, 3:45-5:30, 6-7. Mon, Wed, Sat, 7:30-12. Tues, Thurs, Fri, 9:30-12. Sun, 3-6 pm, 9:30-12. Eastern daylight saving.
- WHO, Des Moines, Ia. 526 meters. 500 watts. Bankers Life Co. Announcer, N. Dean Cole. Daily ex Sun, 9:30 am, 12 m, 2 pm, markets, weather. Mon, Wed, Fri, Sun, 7:30-9 pm, concert. Mon, 11:15-12 midnight, organ. Central.
- WIAB, Rockford, Ill. 252 meters. 50 watts. Art Johnson's garage.
- WIAC, Galveston, Tex. 360 meters. 100 watts. Galveston Tribune.
- WIAD, Philadelphia, Pa. 254 meters. 100 watts. Howard R. Miller. Irregular schedule.
- WIAK, Omaha, Neb. 278 meters. 250 watts. Daily Journal-Stockman. Announcer, Wm. Kotera. Daily ex Sun, 7:45 am, 9:10, 10:20, 12 m, 1:30 pm, 3:50, markets, weather. Central.
- WIAQ, Marion, Ind. 226 meters. 10 watts. Chronicle Pub. Co. Temporarily discontinued.
- WIAS, Burlington, Ia. 233 meters. 100 watts. Home Elec. Co. Slogan, "Burlington, on the Mississippi." Tues, 8-9 pm, concert. Thurs, 7:15-8:15 pm, concert. Sun, 10:30 am, church services. Central.
- WIK, McKeesport, Pa. 234 meters. 100 watts. K & L Electric Co.
- WIL, Washington, D. C. 360 meters. 5 watts. Continental Elec. Supply Co. Discontinued temporarily.
- WIP, Philadelphia, Pa. 509 meters. 500 watts. Gimbel Bros. Announcer, C. W. Graham. Slogan, "Watch Its Progress." Daily ex Sun, 1-2 pm, 3-4:30, 6-6:45, music; 6:45, markets, 7-7:30 pm, bedtime stories. Tues, Thurs, Sat, 8-12 pm, concert. Sun, 11 am, 1:30 pm, 4:30-6:30, 9:30-12 mid, church services, concert. Eastern daylight saving.
- WIAB, Lincoln, Neb. 229 meters. 100 watts. American Elec. Co. Announcer, W. L. Edmondson. Daily 3 pm. Mon, Wed, Fri, 7:30 pm, music. Central.
- WIAD, Waco, Tex. 360 meters. 150 watts. Jackson's Radio Engineering Lab. Daily ex Sun, 4-4:30 pm, news, music. Mon, Fri, 8-9, concert. Sun, 11-12 am, church service. Sun, 7:30-8:30 pm. Central.
- WIAG, Norfolk, Neb. 283 meters. 250 watts. Norfolk Daily News. Announcer, Karl Stefan. Slogan, "The World's Greatest Country Daily." Daily ex Sun, 12:15 pm, reports. Sun, 3:30-6 pm, music. Central.
- WIAM, Cedar Rapids, Ia. 268 meters. 20 watts. D. M. Perham. Daily ex Sun, 9 am, 10:30, 12:30 pm, markets, reports. Tues, Thurs, Sat, 6-6:30 pm, children's hour; 7:30-8:30, music; 9-12. Sun, 2:45 pm, music. Central.
- WIAN, Peoria, Ill. 280 meters. 100 watts. Peoria Star. Slogan, "The Grandview City of Illinois." Daily ex Sun, 9 am, 9:15, 10:30, 12:30 pm, markets, weather, agriograms; 5:30, baseball. Sun, 11:30 am, church services. Central.
- WIAQ, Topeka, Kan. 360 meters. 100 watts. Capper Publications. Irregular schedule.
- WIAR, Providence, R. I. 360 meters. 500 watts. The Outlet Co. Announcer, J. A. Reilly. Slogan, "The Southern Gateway of New England." Daily ex Sun, 1:05-2:15 pm, weather, reports, music; 7, weather. Mon, Wed, Fri, 10 am, household hints; 10:45, style talk. Mon, Tues, 8 pm, music, talks. Tues, 7:30 pm, baseball; 7:35, music. Wed, Fri, 7:30 pm, New York studio. Fri, 10:45 pm, orchestra. Sat, 7:05 pm, baseball; 7:10, music. Sun, 7:20-9:15 pm, Capitol theater. N. Y. 9:15-10:15, Skinner organ, N. Y. Eastern daylight saving.
- WIAS, Pittsburgh, Pa. 286 meters. 500 watts. Pittsburgh Radio Supply House. Pickering's Studio. Announcer, W. E. Menges. Daily ex Sun, 7:30 pm, baseball; 7:30-10, concert. Eastern daylight saving.
- WIAX, Cleveland, O. 390 meters. 500 watts. Union Trust Co. Announcer, E. S. Johnson. Slogan, "The Wave from Lake Erie." Daily ex Sat pm and Sun, 9:30-10:10 am, women's program; 10:10-10:45, 2:05-2:45 pm, 3:05-3:45, financial reports, news. Tues, 7:30-10 pm; Thurs, 8-10:30 pm, entertainment. First Sat of the month, 12-3:30 am, "Night Caps." Eastern.
- WID, Granville, O. 229 meters. 10 watts. Denison Univ. Announcer, Richard H. Howe. Fri, Sat, 5-6 pm, music, educational lectures. Eastern.
- WIY, New York City. 405 meters. 500 watts. R. C. A. Tues, Thurs, Fri, 7:30-11:30 pm, concert. Sun, 8-10:30 pm. Eastern daylight saving.
- WIZ, New York, N. Y. 455 meters. 500 watts. R. C. A. Daily ex Sun, 10-11 am, 1-2 pm, 4-6, entertainment; 7-11:30 pm, special program. Sun, 11 am-1 pm, church service; 2:30-5 pm, 7-10:30 pm. Eastern daylight saving.
- WKA, Cedar Rapids, Ia. 278 meters. 50 watts. H. F. Paar. Mon, Wed, Fri, 9-10:30 pm. Tues, Thurs, 7:30-8:30 pm. Sat, 9-12:30 midnight. Sun, 10:30 am, church service. Central.
- WKAD, East Providence, R. I. 240 meters. 20 watts. Charles Loeff.
- WKAF, Wichita Falls, Tex. 360 meters. 100 watts. W. S. Radio Supply Co.

(Note—The fourth part of the directory will appear next week.)

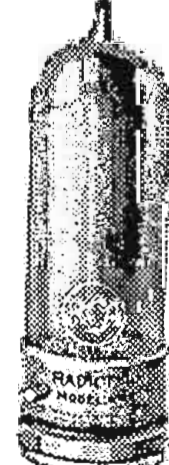
### The Reader's View

**A Boost for Ilo**  
The policy of certain progressive Radiocasts in enlarging their equipment and planning to devote a portion of their time to special programs for listeners—in beyond our borders is, one of the most advance steps ever taken in the history of Radio and should be commended.  
With these announcements we also hear of preliminary steps for Radiocasting of a new "universal" language, Ilo.  
When Esperanto was introduced a few years ago, it was not taken seriously by many because there was no practical, primary incentive that would cause the general public to become interested.  
Radio now supplies this incentive and it seems probable that Ilo may soon become a very popular study.  
Instruction books of this or a similar medium logically would be one of the best sellers in 1925 and probably would be adopted as a standard work, such as our dictionary and encyclopedia.  
It is only a matter of time until the average receiving set will be able to pick up trans-oceanic programs and the need of an international medium of Radiocasting is apparent.  
While Radio would be the primary

means of placing Ilo "on the map," it should "reflex" and would be a great stimulant to the Radio industry.  
Several plans for world peace have been put forward since the Great War.  
When neighbors "speak," they are usually on friendly terms; with the exchange of international programs and the adoption of a standardized medium of Radiocasting such as Ilo, a get-together, get-acquainted spirit should soon be in evidence everywhere and there would be a better understanding among all the nations.  
And behind it all would be—RADIO—Jack King Forrest, Kansas City, Mo.  
**Condenser Across Secondary**  
When using a condenser across the secondary use as small a condenser as possible and as much inductance as possible. The reason for this is that in a circuit containing large inductance and small capacity the voltage induced in this circuit will be greater than if large capacity and small inductance were used.  
Connect the condenser with the rotary plates to that part of the circuit that is at a ground potential; that is, the filament side of the secondary. Again, the construction of the condenser might cause one to use the stationary plates as the filament connection, but this must be tried in order to eliminate hand capacity.

# Radiotron UV-199

## A Small Tube That's a Big Performer



The new UV-199 is proving a mighty popular member of the Radiotron family, particularly for portable sets.  
For quiet operation—great ruggedness—uniform operation Radiotron UV-199 is unsurpassed. Each new Radiotron has marked a big step in radio advancement. The RCA mark is the foundation of radio growth—and your protection when you buy. Ask for Radiotrons—and look for the mark.

**Radiotron UV-199**  
for detection or amplification  
**\$5.00**

This symbol of quality is your protection.

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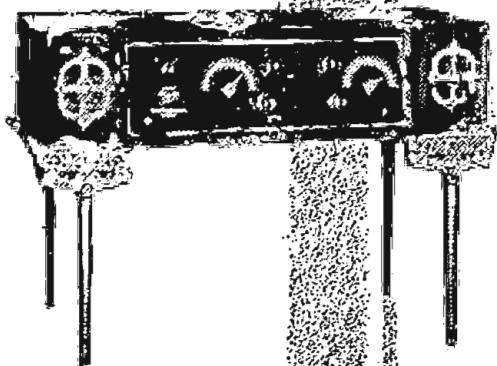
# Radiotron

REG. U. S. PAT. OFF.

# Super-ZENITH VII

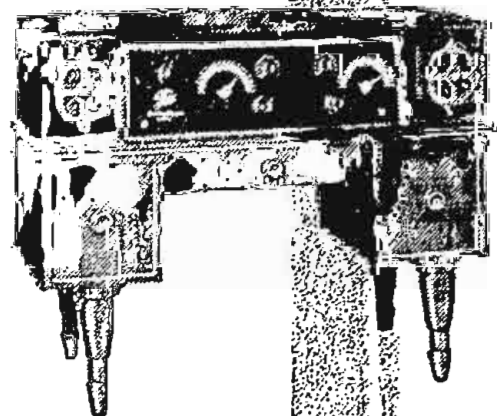


## Right Thru the Locals!

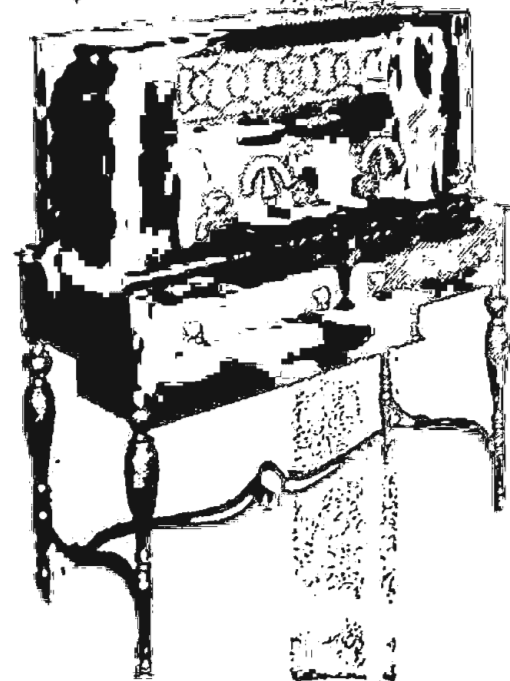


Model VIII \$250

Model IX \$300



Model X  
With light socket power unit \$550  
For use on batteries \$450



*Zenith Costs More  
But Does More*

The new Super-Zenith is a NON-regenerative, six-tube set in four different models ranging from \$230 to \$550, with a new, unique and really different patented circuit controlled exclusively by the Zenith Radio Corporation. Amplification is always at a maximum in each stage for any wave length. *The Super-Zenith line is not affected by moisture.* For the first time, you have a set that—

- 1—tunes through **everything** and selects the station you really want—when you want it.
- 2—requires only **two hands—not three**—to operate.
- 3—brings in each station **at only one point on the dial**—and always at that single point.
- 4—affords such mathematical precision and simplicity that you can run over the entire dial in 1½ minutes and pick up **more** stations with greater clarity and volume than any other set on the market. Direct comparisons invited. The new Super-Zenith was perfected in Zenith's laboratories in the center of the eleven powerful Chicago broadcasting stations. Even under these extremely adverse conditions the new Super-Zenith tunes through everything and "gets the outside" on loop, inside, or outside antenna.
- 5 produces not only the seemingly impossible in perfect selectivity, but also possesses such artistry of design, such finished craftsmanship, that it lends distinction and exclusiveness to any living-room or library.

Write for the name of the nearest dealer from whom you can obtain a demonstration of this outstanding marvel of the radio world.

**Super-Zenith X Exclusive Features**

Contains two new features superseding all receivers. 1st—Built-in, patented, Super-Zenith Duo-Loud Speakers (harmonically synchronized twin speakers and horns) designed to reproduce both high and low pitch tones otherwise impossible with single-unit speakers. 2nd—Zenith Battery Eliminator, distinctly a Zenith achievement. Requires no A or B batteries or charger.

Dealers and Jobbers: Write or wire for our exclusive territorial franchise

**ZENITH RADIO CORPORATION**  
332 South Michigan Avenue, CHICAGO      1269 Broadway, NEW YORK

**Zenith Radio Corporation**  
Dept. 10B  
332 S. Michigan Ave., Chicago, Ill.

Gentlemen: Please send me illustrated literature giving full details of the Super-Zenith.

Name .....

Address .....