

RADIO DOINGS

THE BROADCAST PROGRAM OF THE LEADING BROADCAST STATIONS - LATEST RADIO NEWS



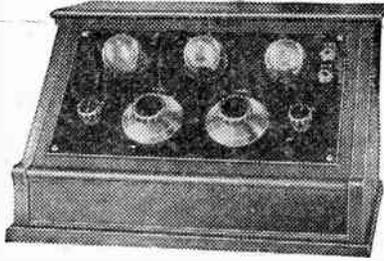
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NATIONAL RADIO WEEK EDITION

WGN
 KGW
 KTN

P.O. Box 1000
 Chicago, Ill.



Model 5—\$125.00 Complete

The Outstanding Value in New Kennedy Radio Sets

The new Kennedy Radio Model V is everywhere acknowledged as the one outstanding value in the radio field today.

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We are the exclusive wholesale distributors for Southern California

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will bring them in

The above photograph shows the SUPERTONE MODEL with upright grand Cabinet. This is Mr. Tanner's latest achievement. It is also equipped with Tone Control. (Now on display at 506 W. Washington)

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A very moderately priced Long Distance Set (On display at both stores)

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If immediate delivery is desired mark X here.....
Or date delivery is desired, here.....

Via Express, Freight or City Delivery

Gentlemen: Please send Radio Set, guaranteed for local and long distance, as advertised, marked X below.

Supertone, upright grand cabinet. \$500.00.....	Hayden's Special Junior.....\$ 60.00.....	Golden Oak
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(Fada, Freed-Eisemann and Workrite Neutro- dyne parts for sale)	Hayden's Monarch Special..... 250.00.....	Finish
	(Prices F. O. B. Los Angeles)	

The above sets are complete—batteries, tubes and loud speaker—and it is understood they are to be regular Hayden's sets as advertised, complete with aerial, ground, ready for installation. For which I agree to pay on delivery.

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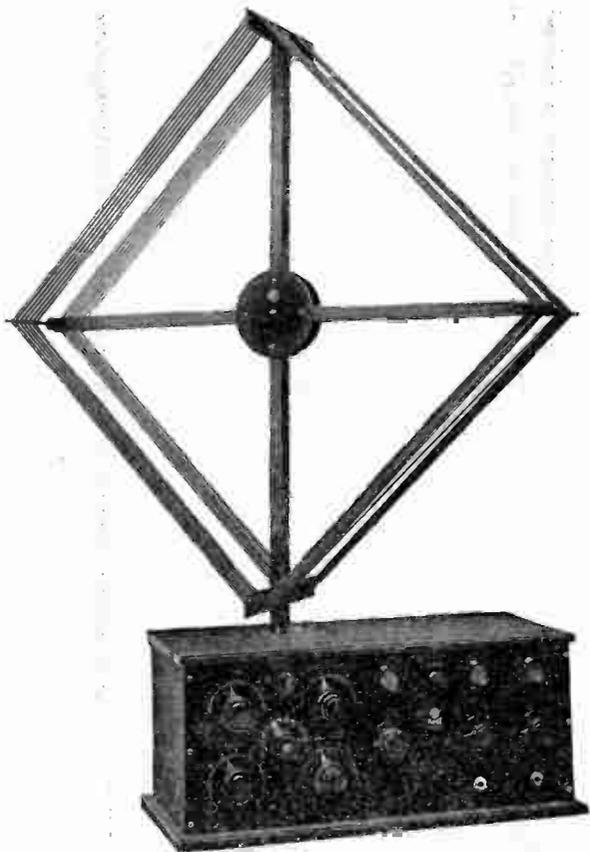
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The Nations Finest

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\$80.00 Cash

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Balance on Convenient Terms*

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HUNDREDS HAVE TOLD US THAT PERLEX HAS PERFECT TONE QUALITY.

THOUSANDS OF LONG DISTANCE RECORDS SPELL SENSITIVITY.

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During Radio Week

Nov. 26th to Dec. 1st Our

Store No. 2 — 1853 So. Hope St.

Will Be Open Daily Till 9:30 P. M.

OUR FACTORY is making every effort to keep production up with the demand and immediate deliveries are guaranteed until Dec. 1st. Orders will be taken now for delivery at a later date.

For Demonstration

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Write for our free 10-day trial offer.



Pacific Southwest's Largest Exclusive Radio Manufacturers

1262 W. Second St.

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Announcing a New Paragon Receiver

PARAGON Radio Receivers are famous as the three circuit pioneers which have proved their superiority by eight years of practical operation.

The new PARAGON is the last word in sensitivity and selectivity. The superiority of this type over all other classes of receiving equipment has been thoroughly proved by the long list of distance records which it holds. Included in these records are the reception of the first transcontinental amateur message, the reception of the first trans-Atlantic message, and the unbroken communication which it has maintained with the McMillan Expedition frozen in above the Arctic Circle. (See December Radio News, page 707.)

The operation of the new PARAGON receiver is so materially simplified that even in the hands of a novice it equals in every way the performance of the older type in the hands of an expert.

All cabinet work is of mahogany with a brown mahogany finish. All metal parts showing, inside as well as outside of the cabinet, are nickel-plated. 98% of the wiring is invisible. The whole outfit is compact, neat, solidly built, and finely finished. It is the ideal Radio receiver.

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Radio Doings

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HALL BERRINGER, Technical Editor

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J. B. SHILLINGFORD

308 Van Nuys Building

Phone 876-062

Los Angeles, Cal.

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Two Dollars a Year

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No. 21

National Radio Week

WE have had all kinds of "weeks," Red Cross, Fire Prevention, Tidy Up, Courtesy, and other too numerous to mention. The trouble with most of these "weeks" is that few take any notice of them, and if they do there is no concerted action to make the idea very effective. Now, what can the various people interested in radio do to help National Radio Week? Many are willing to "do their bit" if they know how. Firstly, those of the radio public who have sets should invite someone in to listen-in who has never heard radio before. There are many thousands in this class. Statistics tells us that there is a telephone to every ninth person in the United States; we are safe in saying that a very small percentage of this population have radio sets. Mr. and Mrs. Listener-in, help radio by following the above suggestion.

Mr. Dealer, make a point of making an attractive window display all this week; lighting effects will greatly add to this. We have talked to many dealers and all tell the same story, viz., when an attractive display is made, sales are very materially increased. The Broadcaster; without broadcasting there would be no radio. We owe everything to them. The splendid programs that are "on the air" daily are not put on without endless trouble and expense. The broadcaster is co-operating with National Radio Week by putting on special programs. Starting with Sunday, November 25th, and ending with Saturday, December 1st, each day has been assigned a special subject.

Radio Doings is trying to "do its bit" by putting out this Special Edition and giving its readers articles by some of those well known to them, "Uncle John," Aimee Semple McPherson, D. B. McGowan, William Gibbs, K. G. Ormiston, Walter D. Andrews, and the regular contributors. We also are publishing pictures of some of those you hear on the air.

All the Year for Two Dollars

Do not miss a copy of RADIO DOINGS. Have it mailed every week to your home. Simply sign the blank below. Mail it to us or pay your dealer and let him forward it to us.

RADIO DOINGS, 308 Van Nuys Building, Los Angeles, California.

Inclosed find two dollars for subscription to RADIO DOINGS for one year.

Name _____

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15

The Children's Hour

By JOHN S. DAGGETT
Better Known as "Uncle John"

"The little Wonder Children of KHJ are to radio broadcast what the beautiful, delicate lace is to a lovely gown," wrote a listener-in to "Uncle John" the other day. "Uncle John" was pleased, for he feels that radio broadcast is destined to become as powerful an agency in American citizenship, and the solidarity and happiness of home life, as the wonderful educational system of the schools of our nation. For this reason radio broadcast should be thoughtfully and carefully handled, that its true objective may be seated in the heart of the child who one day will have a voice in the affairs of the world.



"Uncle John" with some of his youthful stars.

The charm of little children broadcasting from the "Times" studio is the fact that they are carefully chosen, and only those children who have the natural vivacity are allowed the privilege. Little children who, unfortunately, at times are self-centered, selfish and too precocious, are not given the opportunity to broadcast. Happy children skip into this studio bearing a veritable flood of sunshine and joy with them. a spirit that makes the little birds begin singing. Strange as it may seem, they are less liable to be microphone shy than finished artists. They never seem to forget that in speaking, singing or playing for the microphone, they are being heard by some loved one at home. It is to be regretted that the laws governing radio broadcast do not allow a dear little girl to say, "I am singing for you, mother, and I hope it is making you happy," as a little girl said at KHJ one night. While they are being heard by the little friends in their neighborhood, they are also carrying a message of love into the hearts of countless thousands, many of whom feel the aching tug of memory for the little playfellow who has gone, or for the child which never came to brighten a lonely home. No words can estimate the beauty of the touch of children in the broadcast offerings.

"Uncle John" has endeavored to feature children because he believes that the playing of a beautiful piano number by a little seven-year-old girl, or the frank, all-boy recitations of the little lad, will inspire juveniles all over the country to study and work along musical lines. Teachers have told him that radio has done more to revivify music among juveniles than any influence of this day, and that influence does not stop with the child, but is bearing fruit among the grown-ups. Radio broadcast has impelled many a singer and entertainer to "endeavor to come back"; not a week passes that some man does not come into the studio and say, "Years ago I was before the public. I gave it up, but because of radio I want to do my bit again to cheer the members of your vast audience." And that man is willing to work to make a success of his appearance.

In the same way that the greatest pride of an American home is to be found in its children, the truest happiness and success of KHJ has been attained in the "Children's Hour," for in that period everything is done for the love of doing it, that happiness may be broadcast into the hearts of humanity.

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Radio, A Power In Evangelism

Saving Souls by Radio—Evangelizing the World by Radio

By AIMEE SEMPLE McPHERSON

An almost unbelievable miracle has happened to the modern preacher!

It has now become possible to stand in the pulpit or remain comfortably seated in the study and speaking in a normal tone of voice, reach hundreds of thousands of ears through the air, without even the use of a wire or any visible carrying channel.

Imagine being seated comfortably in any easy chair by the fireside in your own home and hearing a whole church service—organ, choir, quartette, sermon and altar call being rendered four thousand miles away! Imagine the feeling of being able to participate in the whole service—that is, the whole service except the collection!

The writer remembers a discussion by the neighbors when she was a child in Canada regarding the carrying power of the voices of several ministering brethren.

"I tell you our preacher has the whole world beaten when it comes to making people hear!" exclaimed one of these neighbors. "His voice carries three blocks from the church!"

"Oh, no! Our bishop can do better than that still," interposed a second voice. "Why, at the laying of the cornerstone of our church on the hill, his voice was heard for one-half of a mile. He is the greatest long-distance preacher in the world!"

But now, think of it, the music of the world's smallest playable harmonica, some inch and one-quarter long, broadcast over radio in Los Angeles, has been heard in New Zealand, likewise the voices of singers and speakers. Exploring ships now ice-bound in the Arctic regions, state by wireless that they are receiving the daily radio programs, clear as a bell. Ships lying just outside the Japanese harbor during the recent catastrophe are now in port in Los Angeles harbor and state that they heard Los Angeles broadcasting the news and asking that relief be sent the sufferers. A Spanish singer broadcasting over the Los Angeles "Times" reads the news of the day in Spanish for the benefit of the multitude of "listeners in" in Mexico.

This is the very opportunity that the church has needed for many years!

Such an opportunity for preaching the gospel and evangelizing the word for Jesus Christ has never been known or even dreamed of.

Personally, the writer values this opportunity so highly that she has just signed the \$25,000 contract for the best Western Electric Radio equipment it is possible to obtain. The value of such broadcasting is no longer to her a problematical one. Having broadcast in San Francisco, Oakland, Ohio, Los Angeles, etc., over newspaper broadcasting stations, definite and practical results have been seen. The writer has had people come up and shake her by the hand and say, "Sister McPherson, I heard the sermon such and such a date by radio, as you delivered your sermon over the air." We expect to reap a harvest of thousands of converts when our radio is installed.

We expect to reach the prairie wife and her little family; the farmer, after his day's toil is done; the mountaineer, in his alpine cavern; the desert dweller, among the lonely sand-dunes and the sage brush; the tourist in the auto tent;

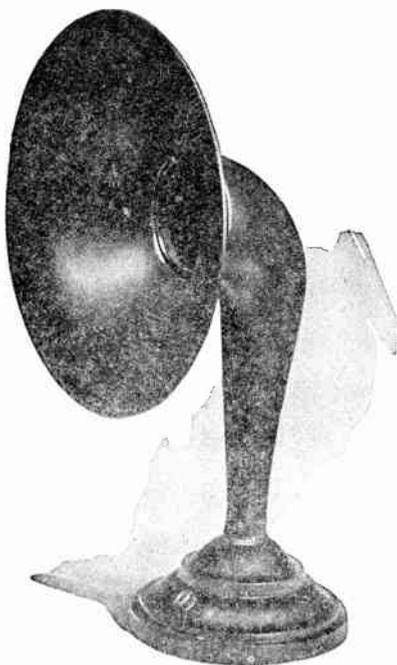


AIMEE SEMPLE McPHERSON

(Continued on page 76)

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- High Volume Efficiency
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- Moderate price
- Adjustable unit.



“Listen to the Difference”

The price of the C. I. C. Loud Speaker complete
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4154 South Vermont Ave.
Los Angeles

The Art of Radio Broadcast

By K. G. ORMISTON
Radio Editor, Los Angeles Times

Radio broadcast has, in the short space of two years, established itself firmly as a permanent institution of inestimable benefit to humanity, combining as it does the school, church, theater, concert hall, opera house and ballroom.

The true meaning of radio and the vital place which it occupies in the life of today can only be fully appreciated by a study of the daily mail of a big broadcast station. There you meet life in all its realities, and from the thousands of letters coming from New York to Hawaii and Sitka to Cuba, from all nationalities, all creeds and all walks and stations of life the realization comes that in radio lies the greatest influence and power for the good of humanity that the world has ever known.

If the voice of the ether spoke only to the lonely and the isolated, the blind, the shut-in and the sick, it would be fulfilling its mission, for there lies the great province of radio. Mary Garden sang at KHJ, not for those who are able to go to the concert hall and hear her, but for the countless thousands who otherwise never in their lives would have heard her lovely voice.

It is a new art, opening up new vocations, requiring the services of specialists who of necessity have developed with radio. Engineers have made rapid strides in the application of radio to the transmission of music and speech, but the broadcasters have also done their part in elevating the standards of broadcast to that point where the greatest artists are glad to appear before the tremendous audience represented by the humble microphone.

The three important departments of the broadcast station are represented by the program manager, the announcer, and the operator. The program manager, necessarily a musician, books and arranges all programs. The artists are tried out in the studio to determine their adaptability to the broadcast requirements, before they are booked. The studio microphone picks up the music or speech; it is amplified in the operating room and reproduced through the monitoring horn or loud-speaker. The program manager listens to the reproduction there and decides whether or not the artist will broadcast satisfactorily.

With four studio programs daily, it is indeed a difficult matter to keep sufficient talent of the desired quality booked in advance. An occasional cancellation results in frantic last minute efforts to arrange a new program, for the advertised broadcast periods must be filled even if it is necessary to make a program out of almost nothing.

The announcer is responsible for the presentation of the program. Personality is an essential factor which enters largely into the success of his work. The artists come and go, but the announcer goes on forever, and if his announcements are monotonous and colorless the station will not be as popular as if a pleasing, friendly personality is radiated. Furthermore, the radio listener is at home and must be made to feel at home, even though he may figuratively be a guest in the studio. Hence a spirit of informality, dignified but friendly and sincere should be manifest.

Through experience the announcer learns the correct position of the microphone for various types of voices and musical instruments. He is able to balance accompaniments and ensembles to render a satisfactory and harmonious result. The operator listens to the entire program through his monitoring horn and communicates with the announcer, either by telephone or a system of signal lamps, advising if more or less volume is required, if accompaniment is too strong

(Continued on page 27)



K. G. ORMISTON

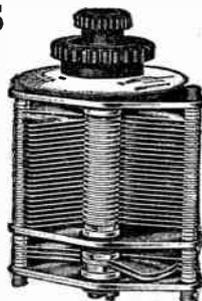
PREMIER RADIO PARTS

FOR ALL HOOK-UPS

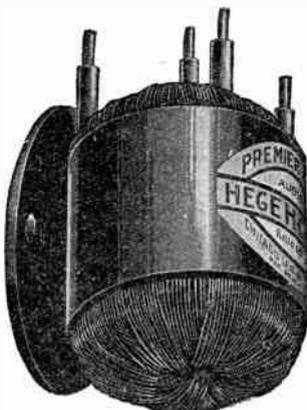
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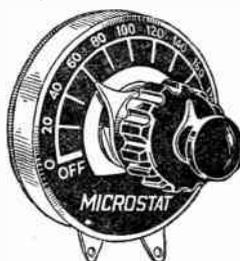
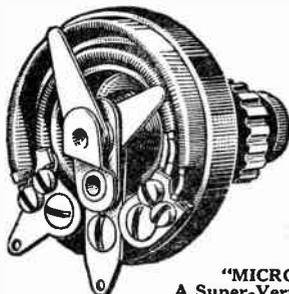
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Broadcasting From the Viewpoint of the Newspaper

By WILLIAM K. GIBBS

Radio Announcer of KFI, Radio Central Station
of Earle C. Anthony, Inc.

Radio broadcast is comparable to a newspaper—a gigantic daily media, which numbers its clientele of “readers”—perhaps I should say, “listeners”—in the millions. A radio station of the KFI type, for example, has entree into more homes than any metropolitan daily can ever hope to have.

Like a newspaper, too, the promotion of a radio program over a period of weeks or months must include something of interest to the masses. Radio is not just a “class newspaper,” but rather one must not lose sight of the fact that the microphone in the studio is the ear of the universe. Like the automobile, that once was thought just a luxury for the rich, radio has enlisted the attention of households of every means—there are “flivver” receivers, and those of more elaborate design for those who can afford the better instruments.

Bearing these facts in mind, the “editing” of this great “radio newspaper” must be done so that it will carry an appeal for everyone, not every day, perhaps, but in the main. There must be something for mother and the girls—for father and the boys—a little dance music for those who enjoy terpsichorean effort—or pleasure—something educational—something that keeps the public on the qui vive, such as little surprises which make them reluctant to miss a single broadcast

(Continued on Page 63)

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Audio and Radio Frequency

Give greatest amount of amplification without howling or distortion
Highest grade material and workmanship.

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Self-contained all-wave Super-Heterodyne Receiver

The Hetrodyne method of radio reception is acknowledged in engineering circles by far the most desirable for wave lengths below 1000 meters.

Since Major Armstrong invented the Super-Heterodyne during the World War, the United States Army and Navy, also the large ocean liners, specify this mode of reception.

Contrary to general belief, the Super-Heterodyne, when properly constructed, is the easiest receiver to tune, and by all odds the most selective and sensitive.

After years of concentration on the refinement of the most vital parts necessary in the construction and simplification of this method of reception, we are now ready to offer to the public the culmination of our achievement. The cost of research work, model making, engineering and drafting this design has cost thousands of dollars. The design we have to offer is not an experiment.

The A. & A. Heterodyne high wave amplifier, combining recent innovations developed by engineers in the Eastern universities and in our Pacific Coast laboratory, make possible dependable daylight reception on the loud speaker up to a thousand miles, while after nightfall the range is from 1500 miles up to and including the Eastern seaboard. All this reception being on a loop, and, of course, while local 500-watt transmitters are broadcasting on a wave length up to within a few meters of the distant station to be received.

For the reception of local stations, including San Francisco, even a regulation loop is necessary to fill a ballroom with music or speech of the finest tone and quality, absolutely free from static and all local interference.

Our parts and blue prints, with full instructions, may be obtained, together with our personal assistance.

ANDREWS & ARMSTRONG
5937 SUNSET BLVD. LOS ANGELES
PHONE 432.372

(Laboratories at Montrose, California)

We guarantee all these results and will cheerfully demonstrate the same, day or night—PHONE FOR APPOINTMENT.

Batteries

By FRANK D. ANDREWS
Consulting Radio Engineer

As the homes of the majority of buyers of radio receivers are supplied with alternating electric current, it is necessary to provide some means to adapt it to use in charging the batteries and thus in a measure operate your radio set on the house current. Even with direct current available it is desirable to use batteries in radio transmission or any form of telephone transmission.

The reason why alternating current is used to light the home is that it can be most economically distributed over great distances and it is just as good for lighting as direct current. It is, however, totally unsuited for charging storage batteries. Most alternating current is distributed on either fifty or sixty cycle frequency, and one-half the cycle the current flows in one direction and the other half it flows in another.

A storage battery must receive a current in one direction only if it is to be recharged. If a storage battery should be connected to an alternating current line directly, it would perhaps receive a slight charge during, we will say, the positive half of the current, but it would receive an equal discharge during the reversal of the current. The result would be that the battery would probably slowly discharge instead of charge.

To charge a storage battery successfully from an alternating current line, therefore, something must be interposed between the line and the battery to insure the battery receiving current in one direction only.

This device may take the form of a kind of check valve that permits current to flow in one direction only or it may take the form of a motor generator, the motor being suitable for operation from the alternating current supply and the generator delivering a current suitable for charging the battery. In general, the former method is to be preferred as the apparatus costs less and is usually somewhat more efficient.

There are three standard principles on which these valves or rectifiers, as they are generally called, are built. There are known as the chemical rectifier, the gas rectifier, and the mechanical vibrating rectifier.

The mechanical rectifier and the gas rectifier are best adapted and suited to charging the A battery, although an enterprising firm has recently placed an efficient vibrating rectifier on the market that is adapted to charging the A and B batteries. The chemical rectifier is the best all-round type for charging the B battery as they are simple to make if it is desired or the cost of them does not run over three dollars for the very best obtainable.

The chemical rectifier depends for its action on the fact that a current will flow in one direction only between a piece of metallic aluminum and certain kinds of electrolyte in which it may be immersed. If an aluminum rod is therefore immersed in a solution of ammonium phosphate, and if another electrode of some metal, such as lead, is also immersed in the solution, current will flow from the lead to the aluminum rod, but will be prevented from passing in the opposite direction. The reason for this is that on attempting to pass current from the aluminum rod to the lead, a large number of minute bubbles of gas are immediately generated around the aluminum, effectively insulating it from the solution and thus preventing current flow. In this analysis, the current is assumed to flow from the positive side of a battery toward the negative side. Most recent scientific investigations indicate that the current actually "flows" in the opposite direction, but the actual direction of the current flow is unimportant as long as it is remembered that the chemical rectifier allows current to pass through in one direction only.

To make one of these rectifiers is a very simple matter, and it should be as much a part of the radio equipment as the battery itself. Directions are as follows: Procure a fruit jar, either a quart or pint. Also procure a rod of aluminum about half an inch or five-eighths thick and about five inches long. It should be round if possible, but any shape will do. Procure a piece of lead the same

(Continued on Page 61)

AN ENGINEERING ACHIEVEMENT

New Condenser Is 100%

The day of the unstable variable condenser has passed. The Kilbourne and Clark Mfg. Co. hastened it and now have passed it. The new type K-C variable condenser is the answer. This condenser is the outcome of months of study of the faults of all variable condensers. It is the embodiment of all that is desirable. Objectionable, faulty features have been eliminated down to the most minute point.

The K-C variable condenser of the new type is mounted on two moulded end plates. The shaft of the rotor plates revolves in bronze bushings that are moulded in. These bushings give a wear-proof permanent bearing that obviates enlarged shaft holes and resulting short circuits and explosive noises in the head phones. There are no sliding contacts. The rotor plates are connected with a lug by means of flexible Belden braid, affording a direct and positive contact.

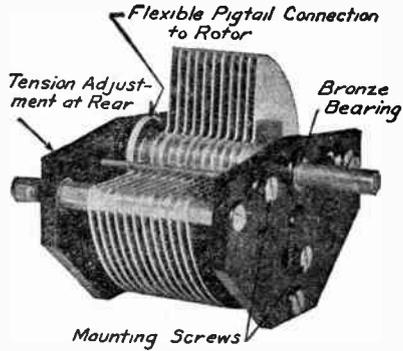
The K-C vernier condenser comes with dial, correctly marked from 0 to 100, and a separate control knob for the vernier adjustment. The vernier is a two-plate extension on the condenser that has been designed to give the greatest breadth of movement in tuning in the faintest of signals.

The prices of the new type K-C condenser follow:

CONDENSER PRICES

Cat. No.	Capacity	No. Plates	List	Cat. No.	Capacity	No. Plates	List
3	.00003 mfd.	3	\$2.50	23	.0005 mfd.	23	\$3.50
7	.0001 mfd.	7	2.75	31	.0007 mfd.	31	4.75
13	.0002 mfd.	13	3.25	43	.001 mfd.	43	5.00
17	.0003 mfd.	17	3.35	63	.0015 mfd.	63	7.75

For condenser with vernier adjustment add \$2.00 to above prices.



SPECIFICATIONS

MAGNETS: Chrome Steel, heat treated and aged.
 WINDOWS: Double Pole, Form Wound
 CASES: Powdered Aluminum Moulded Caps.
 DIAPHRAGM: Norway rex, epoxide.
 HEADBAND: Adjustable, Light Weight, Nickel Finish, Knuck Braid.
 CORD: Standard Length, Reinforced, Plug Type.
 All Head Sets individually adjusted and receivers matched - Wound for 200 ohms per pair.
FULL FACTORY GUARANTEE

CLEAR AS A BELL

THE KILBOURNE & CLARK STANDARD HEAD-SET is manufactured to the specifications shown, with the accuracy of a watch. Each set is skillfully tested and receivers matched so that perfect equality of sound in both ears is attained. The use of a consequent pole permanent magnet system gives a light weight receiver and extraordinary efficiency, so that a K & C head-set can be worn for hours without becoming tiresome. The head-band is of tempered spring-steel wire, khaki braid covered, affording a pleasing resiliency and comfort. The receivers can be raised or lowered by a single movement to suit the user.

Every K & C head-set is backed by our well known guarantee and affords you a high grade receiver without the payment of a fancy price. Be sure you see the trade mark.

K & C Type P-2 Head-set, 2000 ohms	\$5.00
K & C Type P-2 Head-set, 3000 ohms	6.00

KILBOURNE & CLARK MANUFACTURING CO.

Head Office and Works, Seattle, Washington

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 Phone 581-002

New York City, 80 Washington Street

The Most Versatile Device Known to Science

By D. B. McGOWAN
Deputy Radio Inspector

The radio listener of the present day, who sits down and, after a few adjustments, brings in a speech, concert or other entertainment from a nearby or far-distant station, does not, generally, realize the importance of one very vital part of his equipment. If his vacuum tube, or tubes happen to burn out suddenly, he realizes suddenly that something quite important is the matter with his set (and pocketbook) and has a faint glimmer of the real wonder of the device he so blissfully removes, and replaces with a new one.

The three-element vacuum tube, known as the "audion," "triode," "valves," and a host of other names, is one of the most versatile of all the wonderful devices developed by modern science. The most apparent use of vacuum tubes, and the use which most people think as their chief use is in radio receiving sets. Innumerable uses besides this exist, only a few of which can be enumerated here. The transmission of the speech, or music from a broadcasting station is accomplished solely through the use of three element vacuum tubes; the magnification, or amplification of speech which controls the big tubes used in these same broadcasting stations is done through the entire aid of vacuum tubes. Remove the vacuum tube from the radio field of today, and that field would cease to exist as we now know it.

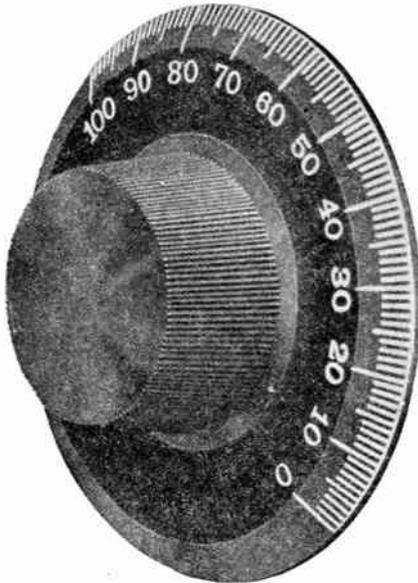
Not alone does radio owe a great debt to the three element vacuum tube, but all long-distance transcontinental wire telephony is dependent on the vacuum tube for its very existence. The operation of long distance telegraph or "Morse" telegraph systems is likewise rendered enormously more satisfactory and reliable, due to the aid of the vacuum tube. The work of the technician in the laboratory is simplified with the help of the vacuum tube, and the age of the vacuum tube has as yet hardly started.

In the three element tube we have the filament, a grid, which is the control element, and the plate. A current is permitted to flow between the filament and plate electrodes, and the charge impressed on the grid is varied by the received sound or signal, and this varies the current flowing across the space between the electrodes. Here, inside this small glass vessel, we have an electric current flowing, without any connecting wire, at all. Instead of a connecting wire, we have a stream of electrons, which are emitted by the incandescent filament, which carries the current across the space inside of the tube, which space is, as nearly as it is possible to get it, an absolute vacuum, which contains absolutely nothing, in the ordinary sense. The variations of the plate current (which is supplied from an external source), are of great interest; if the grid charge varies at all, it causes the plate current to vary, and this variation is **DIRECTLY PROPORTIONAL** to the magnitude of the grid charge. Thus the plate current's variations are exactly the same as those of the grid, but they are of much greater magnitude, or quantity, as far larger current is flowing in the plate-filament circuit, than can be impressed on the grid. This is the effect of an amplifier tube, and really of a detector tube as well. In some cases, the grid and plate circuits are so arranged that apart of the current from the plate is fed **BACK** to the grid, either by a condenser, or by a system of inductance coils, coupled together; in this case, the current variations on the grid are built up to a much larger value than if there was no feedback (commonly called "regeneration"), which gives much louder signals, or, they may even be allowed to build up so far that the grid will receive enough energy from the plate circuit to cause the effect to repeat itself, and we then have a condition of **OSCILLATION**. In this latter case, the tube is actually becoming a generator of alternating electric current, and this is the condition it is used in, as a transmitter of electric waves.

These actions are capable of some of the most widely divergent uses that

(Continued on Page 57)

C-N BAKELITE MAHOGANY DIALS



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High Power Radio

By HALL BERRINGER

(Continued)

One of the fundamentals in radio technique is that the strength of signals at a distance receiving station is dependent upon the effective height at which the overhead wires of the antenna system are suspended above the earth, and the value of the current delivered to the antenna without causing brushing or corona formation at the transmitting station.

Obviously, therefore, regardless of all other considerations, it is always desirable to suspend the transmitting antenna the greatest distance that it is possible above the earth, to insulate effectively the antenna from its supports, and to deliver the greatest possible current value from the transmitter into the antenna for communicating over long distances, such as distances of 2000 to 6000 miles.

Three types of antenna supports were available from which a selection could be made, namely, guyed wooden lattice masts, guyed steel pipe or steel lattice masts, and self-supporting steel towers.

A variety of factors must be considered in the selection of the type of antenna supports to be used, particularly at high power stations, where the initial cost and subsequent upkeep must be given careful consideration, such as the area of the ground available for the station site and the cost required to purchase, if not already available, the availability, locally or otherwise, of suitable timber, in the case of wood masts, transportation facilities and labor costs, intensity of prevailing winds, nature of soil in connection with foundations, etc.

The Navy decided on self-supporting steel towers as antenna supports in preference to steel or guyed wood lattice masts in the interests of permanency, dependability, and comparative low cost of upkeep, notwithstanding the fact that the effective antenna height would be reduced thereby in the order of 15 per cent, as compared with guyed wood masts.

A tower height was fixed at 600 feet, and to be of sufficient strength to withstand a horizontal antenna pull at the top of 20,000 pounds. Three towers were decided upon for each station, the towers to be erected at the apices of a triangle 1000 feet on each side.

Broadly speaking, there were only two classes of radio transmitters available for selection, one the damped wave system, and the other the undamped or continuous wave system.

The damped wave system as originally used by Marconi, based on earlier experiments of Hertz, had been in general use in the radio services of Great Britain, the English Marconi Company and its various affiliated companies, including the Marconi Telegraph Company of America for low and medium power stations, but it had not been successfully demonstrated for use in high power stations to work reliably over long distances.

In the damped or spark system of radio telegraphy the antenna is given a series of electrical impulses of considerable intensity but of very short duration at comparatively infrequent intervals, and the average power is thus a very small fraction of the maximum. If communications are to be exchanged over extremely long distances, the energy to be handled during one of these impulses becomes so large as to be impracticable. Moreover, as a result of the increment and decrement of the oscillations, the effect of the method is to produce the simultaneous radiation of a wide range of wave lengths, or very "broad" waves, which seriously interfere with receiving stations which may be attempting to copy the signals of other stations. These facts were not generally recognized as early as the year of 1912, but they are undisputed today.

(To be continued)

ANNOUNCING

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Feb. 5th to 10th, Inc., 1924

Under the Auspices of

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Room 707, Bank of Italy Bldg., Los Angeles

San Diego Radio Club

TEMPORARY HEADQUARTERS, 640 BROADWAY, SAN DIEGO, CAL.

The following resolution was adopted at a regular meeting of the San Diego Radio Club, held November 9th, 1923:

WHEREAS, At the present time radio communication is subject to serious interference of a preventable nature, and

WHEREAS, It is imperative that the full privileges of radio communication be accorded all parties equally, and

WHEREAS, The Department of Commerce is unable, under the existing law of 1912, to so administer and control radio communication as to eliminate certain types of interference; therefore, be it

RESOLVED, By San Diego Radio Club of the City of San Diego, County of San Diego, State of California, That it is the sense of this club that immediate action should be taken by the Congress and Senate to the end that adequate legislation be enacted to supersede the law of 1912; be it furthermore

RESOLVED, That the White-Kellogg Bill, which passed the Sixty-seventh Congress, is the most suitable form in which legislation could be written; be it furthermore

RESOLVED, That our Congressmen and Senators be urged to give this matter their immediate attention and that a copy of this resolution be forwarded to said Congressmen and Senators, to the Secretary of Commerce, the Supervisors of Radio, for the various United States Districts, Executive Headquarters of American Radio Relay League, the Signal Officer U. S. Army, the Chief of the Bureau of Radio Communication of U. S. Navy and the Press.

EUGENE DANAY, President.

Attest:

H. E. CALLAWAY, Secretary.

San Diego's approximate radio strength, 7000.

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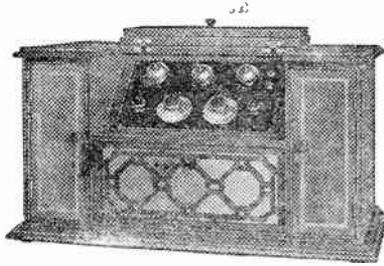
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and Simplicity*

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Prest & Dean Radio
Electric Co.

742 E. 4th St.

Long Beach, Calif.

The Art of Radio Broadcasting

(Continued from page 15)

or if the balance is imperfect in any respect. The position of the microphone is then altered to correct the fault.

The efforts of the program and studio departments culminate when the artist performs before the microphone, and the operator then functions to properly modulate and broadcast that which comes to him from the studio.

The broadcast operator labors under considerable responsibility. The transmitting apparatus must function efficiently and without delays or breaks for the number of hours required each day. When trouble arises it must be removed immediately, for a symphony orchestra may be waiting at one end and half a million people at the other.

Remote control is being used more and more, constituting a large portion of the broadcast from some stations. This consists of picking up a program at some distance from the radio station by simply extending the microphone circuit. Instead of using the studio microphone, which is but a few feet from the radio transmitter, leased telephone lines to the desired location are connected into the circuit and the microphone attached to the other end with an amplification unit to compensate for the line losses.

No fixed methods of procedure have been established, due to the newness of the art, and therefore each department of the broadcast station studies its individual problems, working to the general perfection of radio. The listening public constantly becomes more critical, and by means of their letters of appreciation and constructive criticism materially assist the broadcaster in visualizing the goal of this efforts.

“Half the head phones *in use* are Murdock”

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Phone Vermont 7836

4154 S. Vermont Ave.

Los Angeles, Calif.

6-8 A. M.
PACIFIC TIME

RADIO TIME TABLE

7- 9 Mountain Time
8-10 Central Time
9-11 Eastern Time

STATION	METERS	CITY	CALL	SUN.		MON.		TUES.		WED.		THUR.		FRI.		SAT.	
				6:00-6:30	6:30-7:00	6:00-6:30	6:30-7:00	6:00-6:30	6:30-7:00	6:00-6:30	6:30-7:00	6:00-6:30	6:30-7:00	6:00-6:30	6:30-7:00	6:00-6:30	6:30-7:00
Reynolds Radio Co.	517	Denver	K L Z														
Free Press	517	Detroit	W C X			X											
Detroit News	517	Detroit	W W J				X										

8-10 A. M. PACIFIC TIME 9-11 Mountain Time 10-12 Central Time 11- 1 Eastern Time

STATION	METERS	CITY	CALL	SUN.		MON.		TUES.		WED.		THUR.		FRI.		SAT.	
				8:00-8:30	8:30-9:00	8:00-8:30	8:30-9:00	8:00-8:30	8:30-9:00	8:00-8:30	8:30-9:00	8:00-8:30	8:30-9:00	8:00-8:30	8:30-9:00	8:00-8:30	8:30-9:00
S. F. Examiner	360	San Francisco	K U O														
Reynolds Radio Co.	478	Denver	K L Z														
Star-Telegram	478	Fort Worth	W B A		X												
News and Journal	476	Dallas	W F A			X	X										
Palmer School	484	Davenport	W O C				X										
John Wanamaker	509	Philadelphia	W O O					X									

“Half the head phones in use are Murdock”

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WILL LAST ALMOST INDEFINITELY

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Type	Capacity	Price New	Special Price Used
A-6	225 A. H.	147.50	25.00
A-8	300 A. H.	190.00	40.00

Prices given above are for batteries of five cells each and are F. O. B. our service station. New batteries are F. O. B. Orange, New Jersey

The available supply of these cells is limited

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LOS ANGELES, CALIF.
Ask for Mr. Douglas

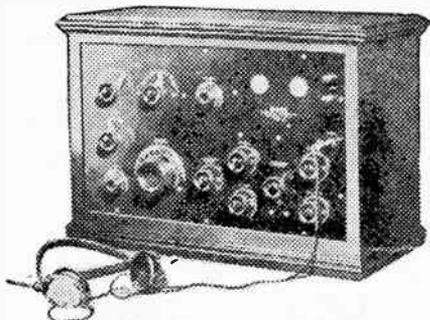
10-12 A. M.
PACIFIC TIME

RADIO TIME TABLE

11- 1 Mountain Time
12- 2 Central Time
1- 3 Eastern Time

STATION	METERS	CITY	CALL	SUN.	MON.	TUES.	WED.	THUR.	FRI.	SAT.										
				10:00-10:30	10:30-11:00	11:00-11:30	11:30-12:00	10:00-10:30	10:30-11:00	11:00-11:30	11:30-12:00	10:00-10:30	10:30-11:00	11:00-11:30	11:30-12:00					
L. A. Union Stk. Yds.	360	Los Angeles	K F C L		X															
L. A. Times	385	"	K H J	X	X															
Earl C. Anthony	469	"	K F I	X	X															
Hale Brothers	425	San Francisco	K P O		X	X														
Tribune		Oakland	K L X	X	X															
Warner Brothers		"	K L S			X														X
Gould		Stockton	K J Q	X	X															
Fallon & Co.	380	Santa Barbara	K F H J	X	X															
Guy Cresson		Tacoma	K F E J			X	X													
Rhodes Co.	455	Seattle	K D Z E		X	X		X	X				X							X
First Presby. Church		"	K T W		X	X														
Meier & Frank		Portland	K F E C																	X
Reynolds Radio Co.		Denver	K L Z			X	X		X											X
Winner Radio	360	Dallas	W F A A			X	X		X				X	X						X
News and Journal	476	Davenport	W O C L			X	X		X				X	X						X
Palmer School	484	Denver	K F E L			X	X													X
Winner Radio	360	Portland	M G W				X		X											X
Oregonian	492																			

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2-4 P. M.
PACIFIC TIME

RADIO TIME TABLE

3- 5 Mountain Time
4- 6 Central Time
5- 7 Eastern Time

NAME OF STATION	CITY	Met.	CALL	SUN.		MON.		TUES.		WED.		THUR.		FRI.		SAT.		
				2:00-2:30	2:30-3:00	2:00-2:30	2:30-3:00	2:00-2:30	2:30-3:00	2:00-2:30	2:30-3:00	2:00-2:30	2:30-3:00	2:00-2:30	2:30-3:00	2:00-2:30	2:30-3:00	2:00-2:30
L. A. Times..... Elec. Lighting & Sup. Co.	Los Angeles.....	395 360	K H J K N X	X	X					X	X			X	X			
Hale Bros..... S. F. Examiner..... Tribune.....	San Francisco..... San Francisco..... Oakland.....	433 360	K P O K U O K L X			X	X	X	X	X	X			X	X	X	X	
Portable Wireless..... Kimball-Upton..... Calif. Radio Lab'y.....	Stockton..... Sacramento..... Hanford.....		KWG KFBK KFBD	X	X			X	X	X	X			X	X			
First Presby. Church..... Guy Gresson..... Post-Intelligencer..... Oregonian.....	Seattle..... Tacoma..... Seattle..... Portland..... 270 492	K TW K FE J K F J C K GW		X	X		X	X	X	X		X	X	X	X	X	X
Deseret News..... Reynolds Radio..... Winner Radio..... Honolulu Advertiser.....	Salt Lake City..... Denver..... Denver..... Honolulu..... 360 360	K Z N K L Z K F E L K G U			X	X	X	X	X	X		X	X	X	X	X	X
Star-Telegram..... Palmer School..... Daily News-Fair..... Star..... Free Press..... News..... Drake Hotel..... Radio Corp. of America..... Herald.....	Fort Worth..... Davenport..... Chicago..... Kansas City..... Detroit..... "..... Chicago..... New York..... Calgary.....	478 484 448 411 617 617 360 455 430	W B A P W O C W M A Q W D A F W C X W W J W D A P W J Z C F A C	X	X		X	X	X	X	X		X	X	X	X	X	X

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4-6 P. M.
PACIFIC TIME

RADIO TIME TABLE

5- 7 Mountain Time
6- 8 Central Time
7- 9 Eastern Time

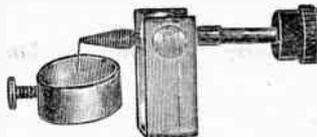
NAME OF STATION	CITY	Met.	CALL	SUN.		MON.		TUES.		WED.		THUR.		FRI.		SAT.	
				4.00-4.30	4.30-5.00	5.00-5.30	5.30-6.00	4.00-4.30	5.00-5.30	5.30-6.00	4.00-4.30	5.00-5.30	5.30-6.00	4.00-4.30	5.00-5.30	5.30-6.00	4.00-4.30
E. C. Anthony	Los Angeles	469	K F I	X	X										X		
L. A. Herald	"	468	Herald						X		X				X		
L. A. Examiner	"	468	Examiner					X		X					X		X
Hale Bros.	San Francisco	423	K P O			X	X	X	X	X	X	X	X	X	X	X	X
Oakland Tribune	Oakland		K L X			X	X	X	X	X	X	X	X	X	X	X	X
S. F. Examiner	San Francisco	360	K U O				X	X	X	X	X	X	X	X	X	X	X
Maxwell Elec.	Berkeley		K R E														
Portable Wireless	Stockton		K W G			X	X	X	X	X	X	X	X	X	X	X	X
Gould	"		K J Q			X	X	X	X	X	X	X	X	X	X	X	X
Radio Den.	Santa Ana	268	K F A W				X	X	X	X	X	X	X	X	X	X	X
Nielson Radio Co.	Phoenix	238	K F B C				X	X		X	X				X		
Post-Intelligencer	Seattle	270	K F J C				X		X		X		X		X		
Rhodes Co.	"	455	K D Z E												X	X	
First Presby. Church	"		K J R	X	X				X	X		X	X		X	X	X
Northwest Radio	"	283	K J R				X	X		X	X		X	X		X	X
Mullens Elec.	Tacoma	252	K G B		X	X									X	X	X
Guy Greason	"		K F E J				X		X		X		X		X		X
Meter & Frank	Portland	380	K F E C		X	X	X	X	X	X	X	X	X	X	X	X	X
Hellock & Watson	"		K G G				X	X	X	X	X	X	X	X	X	X	X
Pyle & Nichols	Denver	860	K D Z Q	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Star-Telegram	For* Worth	476	W B A P				X	X	X	X	X	X	X	X	X	X	X
News and Journal	Dallas	476	W F A A				X	X	X	X	X	X	X	X	X	X	X
Southern Egr. Exp.	San Antonio		W O A I							X	X	X	X	X	X	X	X
Palmer School	Davenport	484	W O C	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Daily News-Fair	Chicago	438	W M A Q					X	X	X	X	X	X	X	X	X	X
Free Press	"	517	W C X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
News	"	580	W W J	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Star	Detroit	415	W D A F	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Tribune	Kansas City		K D Y S	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Drake Hotel	Great Falls	390	W D A P				X	X	X	X	X	X	X	X	X	X	X
Crosley Mfg Co	Chicago	309	W L W				X	X	X	X	X	X	X	X	X	X	X
Radio Corp. of America	Cincinnati	455	W J Z		X	X	X	X	X	X	X	X	X	X	X	X	X
John Wanamaker	New York	609	W O O		X	X	X	X	X	X	X	X	X	X	X	X	X
	Philadelphia						X	X	X	X	X	X	X	X	X	X	X

Ajax Products Are Standard

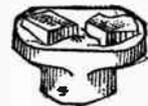
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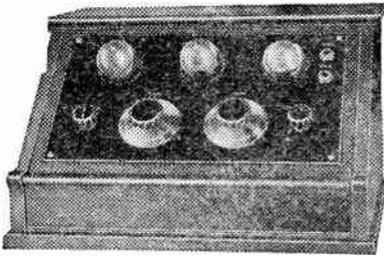
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Radio Sets vs. Radio Service

Kennedy Model V



This set is a wonderful value. It is complete with 3 tubes, phones, batteries and a plug. Sensitive, long range.

PRICE \$125

Any type loudspeaker may be used with it.

The set at the right is entirely self-contained. Beautiful, inlaid mahogany cabinet, adjustable reproducer. Has to be seen and heard to be appreciated.

PRICE \$285

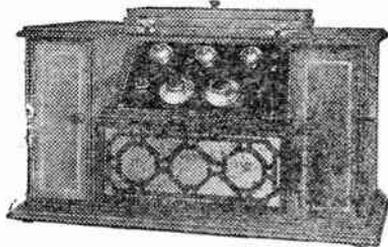
Complete in Every Respect

Almost any set will *work*; it is important though to know what kind of *service* goes with the set you buy.

When you need radio service with any set, ask Newbery. Our 21-year-old organization is squarely behind every bit of merchandise we sell—this service is prompt, personal, friendly and unbiased.

**Complete sets from
\$5 to \$825**

Kennedy Model X



You are cordially invited to see our display, and to listen to any of our sets. We have a comfortable Radio Studio for your convenience.

NEWBERY
ELECTRIC CORPORATION
724-726 - S. OLIVE ST. LOS ANGELES CALIF.

New

872-914

Phone

6-8 P. M.
PACIFIC TIME

RADIO TIME TABLE

7-9 Mountain Time
8-10 Central Time
9-11 Eastern Time

NAME OF STATION	CITY	MeL	CALL	SUN.		MON.		TUES.		WED.		THUR.		FRI.		SAT.	
				6.00-6.30	6.30-7.00	7.00-7.30	7.30-8.00	6.00-6.30	6.30-7.00	7.00-7.30	7.30-8.00	6.00-6.30	6.30-7.00	7.00-7.30	7.30-8.00	6.00-6.30	6.30-7.00
Bible Institute	Los Angeles	360	K J S	X	X												
L. A. Times	"	385	K H J		X												
E. C. Anthony	"	469	K F I														
S. F. Examiner	San Francisco	360	K U O			X	X		X	X		X	X		X	X	
Maxwell Electric	Berkeley		K R E														
Tribune	Oakland	509	K L X							X							X
Western Radio	Oakland		K Z L														
Kimball & Upson	Sacramento	268	K F B K			X	X		X	X		X	X		X	X	
Modesto Herald	Modesto		K X D				X		X	X		X	X		X	X	
Cal. Radio Lab'y	Hanford		K F B D		X	X			X	X		X	X		X	X	
Fallon & Co.	Santa Barbara	360	K F H J						X	X		X	X		X	X	
Radio Den.	Santa Ana	268	K F A W			X	X		X	X		X	X		X	X	
Dr. R. O. Shelton	San Diego	242	K F F A	X	X		X		X	X		X	X		X	X	
Southern Elect.	"	244	K D P T						X	X		X	X		X	X	
Dr. W. K. Azbill	"	278	K F B C		X												
Smith-Hughes Co.	Phoenix		K D Y W	X		X		X	X	X		X	X		X	X	
McArthur Bros.	"		K F A D				X	X	X	X		X	X		X	X	
Univ. of Ariz.	Tucson		K F D H					X	X	X		X	X		X	X	
Love Elect. Co.	Tacoma		K M O			X	X		X	X		X	X		X	X	
Mullens Elect. Co.	"	282	K G B				X		X	X		X	X		X	X	
Northwest Radio Service	Seattle	283	K J R				X		X	X		X	X		X	X	
Excelsior Motor Cycle	"	280	K H Q						X	X		X	X		X	X	
First Presby. Church	"		K T W			X											
State Coll. of Wash.	Pullman	330	K F A E					X				X			X		
Oregonian	"	492	K G W	X	X	X	X										
Hallock & Watson	"		K G G		X	X											
Meier & Frank	"	360	K F E C		X		X		X	X		X	X		X	X	
Apple City Radio Club	Hood River	360	K O P				X					X			X		X
Adler's Music Store	Baker, Ore.		K F D A	X	X		X		X	X		X	X		X	X	
Boise High School	Boise, Ida.	270	K F A U						X	X		X	X		X	X	
Bunkerhill & Sullivan Co.	Wallace, Ida.		K F E Y			X			X	X		X	X		X	X	
Telegram	Salt Lake	360	K D Y L			X	X		X	X		X	X		X	X	
Oceanic News	"		K Z N				X		X	X		X	X		X	X	
Reynold's Radio	Denver		K L Z		X	X		X	X	X		X	X		X	X	
Western Radio	"		K F A F					X	X	X		X	X		X	X	
Sparks High School	Sparks, Nev.	226	K F F R						X	X		X	X		X	X	
Star-Telegram	Fort Worth	476	W B A P			X		X	X	X		X	X		X	X	
News and Journal	Dallas	476	W F A A			X	X	X	X	X		X	X		X	X	
Palmer School	Davenport	484	W O C		X	X	X		X	X		X	X		X	X	
Daily News-Pair	Chicago	448	W M A Q					X	X	X		X	X		X	X	
Pest Dispatch	St. Louis	548	K S D	X	X		X	X	X	X		X	X		X	X	
Westinghouse	Chicago	448	K Y W			X	X	X	X	X		X	X		X	X	
Sweeney School	Kansas City	411	W H B			X	X	X	X	X		X	X		X	X	
Star	"	411	W D A F			X	X	X	X	X		X	X		X	X	
Tribune	Great Falls		K D Y S			X	X		X	X		X	X		X	X	
Drake Hotel	Chicago	390	W D A P		X	X											
Cresley Mfg. Co.	Cincinnati	309	W L W									X	X				
Albertan Pub. Co.	Calgary, Can.	410	C H B C									X	X				
Radiot Free Press	Detroit	517	W G X					X	X	X		X	X		X	X	
Detroit Corp. of America	New York	455	W J Z	X	X	X	X	X	X	X	X	X	X	X	X	X	X
John Wanamaker	Philadelphia	509	W O O			X	X	X	X	X	X	X	X	X	X	X	X

The numeral next to name of station indicates the wave length. Where no number appears, the wave length is 360. The letter indicates that the station is on the air.

MURDOCK "SOLID" NO. 56 HEAD PHONES
Best at Any Price

A RADIO SET FOR EVERY PURSE

"A Necessity for the Home"

We carry a very large and complete line of **Standard Radio Sets**—viz.:

Radiola Grand	\$350.00
Radiola VII	290.00
Radiola IV	275.00
Radiola V	175.00
Radiola II	97.00
Radiola Senior	70.00

Peerless International

5-tube set tuned Radio
Frequency
\$275.00

Radyne

5-tube set tuned Radio
Frequency
\$205.00

All prices of sets are complete with Phones, Batteries and Loud Speaker

A SPECIAL FOR THE KIDDIES

A beautiful Crystal Set with Phone and Aerial, \$15

"Don't be a MOSSBACK. Get your Radio Set now, and join the happy family of Radio Land"

"Come in and see us, or phone us, and we will gladly give you a demonstration at your home."

"The House of Standards"

"Quality"

ORIGINAL RADIO

"Service"



1030 So. Figueroa St., Los Angeles

Phone 820-253

8-10 P. M.
PACIFIC TIME

RADIO TIME TABLE

9-11 Mountain Time
10-12 Central Time
11- 1 Eastern Time

NAME OF STATION	CITY	Met.	CALL	SUN.		MON.		TUES.		WED.		THUR.		FRI.		SAT.	
				8:00-8:30	8:30-9:00	9:00-9:30	9:30-10:00	8:00-8:30	8:30-9:00	9:00-9:30	9:30-10:00	8:00-8:30	8:30-9:00	9:00-9:30	9:30-10:00	8:00-8:30	8:30-9:00
L. A. Herald	Los Angeles	489	Herald				X	X									
Bible Institute	"	360	K J S	X	X												
L. A. Times	"	395	K H J	X	X	X											
L. A. Examiner	"	489	Examiner	X	X	X											
E. C. Anthony	"	489	K F I	X	X	X											
Hale Bros.	San Francisco	423	K P O	X	X	X	X	X	X	X	X	X	X	X	X	X	X
S. F. Examiner	"	360	K U O														
Warner Bros.	"		K L S						X	X							
Oakland Tribune	Oakland		K L X					X	X				X	X			
Maxwell Electric	Oakland	278	K R E				X	X	X			X	X				
Cal. Radio Lab'y	Hanford		K F B D							X							
Modesto Herald	Modesto	252	K X D				X	X									
Portable Wireless	Stockton		K W G				X	X									
San Joaquin L. & P.	Fresno	273	K M J	X	X				X	X						X	X
Herold Lab'y	San Jose		K A W								X	X					
Kimball-Upton	Sacramento	283	K F B K														
Abbott-Kinney Co.	Venice	258	K F A V				X	X		X	X			X	X		
Gould	Stockton		K J Q				X	X									
Fallon & Co.	Santa Barbara	360	K F H J							X	X					X	X
Dr. W. K. Azbill	San Diego	278	K F B C	X	X	X						X	X	X			
Savoy Theatre	"	252	K D Y M				X	X	X					X	X	X	
Southern Art Co	"	244	K D P T				X	X	X					X	X	X	
Univ. of Ariz	Tucson		K F D H					X					X				
Nelson Radio Sup Co	Phoenix	238	K F B C											X	X		
Post-Intelligencer	Seattle	270	K F C				X	X	X		X	X	X	X	X	X	X
Northwest Radio Service	"	283	K J R				X	X	X				X	X	X	X	X
Excelsior Motor Co	"	280	K H O										X	X	X	X	X
Rhodes Co	"	455	K D Z E				X	X	X		X	X	X	X	X	X	X
First Presby Church	"		K T W	X	X	X											
Oregonian	Portland	492	K G W				X	X					X	X			
Hallock & Watson	"		K G G							X	X						
Stubbs Elect	"		K G N										X	X			
Meier & Frank	"	360	K F E C										X	X			
Apple City Radio Club	Hood River	360	K Q P										X	X			
Pacific Radio Co	Eugene, Ore	275	K F A T				X	X									X
Boise High School	Boise, Ida	270	K F A U				X	X									X
Virgin Radio Service	Medford, Ore	283	K F A Y				X	X					X	X			X
Bunkerhill & Sullivan Co.	Wallace, Ida.		K F E Y				X	X					X	X			X
Deseret News	Salt Lake City		K Z N					X		X			X				X
Reynolds Radio Co.	Denver		K L Z	X	X												
Pyle & Nichols	Denver	360	K D Z Q					X	X				X	X			X
Winner Radio	Denver	360	K F E L				X	X						X	X		X
Star Telegram	Fort Worth	476					X	X					X	X			X
Dallas News	Dallas, Tex.	476	W F A A	X	X				X	X				X	X		
Palmer School	Davenport	484							X	X							X
Post Dispatch	St. Louis	548	K S D								X	X					X
Star	Kansas City	411	W D A F				X	X			X	X					X
Weedmen of World	Omaha	528	W O A W				X						X				X
Webbhouse	Chicago	245	K Y W								X						X
Winner Radio	Denver	360	K F E L	X	X												
Crescent Mfg Co	Chicommatt	309	W L W										X	X			
Radio Corp. of America	New York	455	W J Z				X										X
Herald	Calgary	430	C F A C	X	X												

The numeral next to name of station indicates the wave length. Where no number appears, the wave length is 360. The letter indicates that the station is on the air.

MURDOCK "SOLID" NO. 56 HEAD PHONES
Best at Any Price

RADIO SUPPLIES

Most Complete Line on the Coast

Monodyne Tube Set, complete.....	\$27.50
Aeriola Sr. Tube Set.....	39.50
Sterling Voltmeter.....	2.75
Filko-stat	\$ 2.00
Workrite Variometer and Varicoupler, each.....	3.50
Erla Reflex Transformers.....	5.00
WD-11, WD-12 Tubes, large stock.....	6.50
UV-199 and C-299, 201-A, 301-A Tubes.....	6.50
Diodide Detector Tube with Socket.....	2.50
All American Transformers.....	4.25
Bristol Loud Speaker.....	22.50
Dictagrand Loud Speaker.....	24.50
Adapters and Sockets for UV-199 Tubes.....	60c up
Atlas Loud Speaker.....	25.00

Sleeper Monotrol

The Long Distance Set

Complete with Tubes, Batteries, Loud Speaker and Loop Aerial, \$197.50

No. 65 Federal Transformer.....	7.00
No. UV 1716 Transformer.....	8.50
Parts for Fada 5-tube Set.....	65.60
Sleeper Variometer and Varicoupler, each.....	6.00

SPECIAL SALE OF RADIO BOOKS

	Reg.	Sale
Wireless Telegraphy, by Bucher.....	\$2.25	\$1.15
Experimenters' Manual, by Bucher.....	2.25	1.15
Wireless Stations, by Edelman.....	3.00	1.50
Sleepers—Radio Hook-Ups.....	.75	.50
Radio Phone Receiving.....	1.50	1.00
Radio Instruments and Measurements.....	2.25	1.00
Radio for Everybody.....	1.50	.90

We have for Immediate Delivery

Erla Parts, Fada No. 160 Receiver, \$120.00; Neutrodyne Parts

Radiola II, Radiola IV, Radiola Grands

Gilfillan, Sleeper and Remler Parts

Acme Transformers

Amatran Transformers

Bradleystad and Bradley Leak, \$1.85

Full line Transmitting Parts

Citizens Call Books, 50c

Cabinets, built to order, \$3.50 up

Full line Hazelhurst Condensers

Roffy Transformers, \$8.50

MOTOR CAR SUPPLY CO.

RADIO DEPARTMENT

Open Evenings Till 9 P. M.

Telephone 826-063

920 South Broadway

Los Angeles, California

Write for

OUR NEW AND COMPLETE PRICE LIST



Cutting and Washington

The Standard of Excellence in Radio Since 1914

What Cutting and Washington

Stands for in Radio

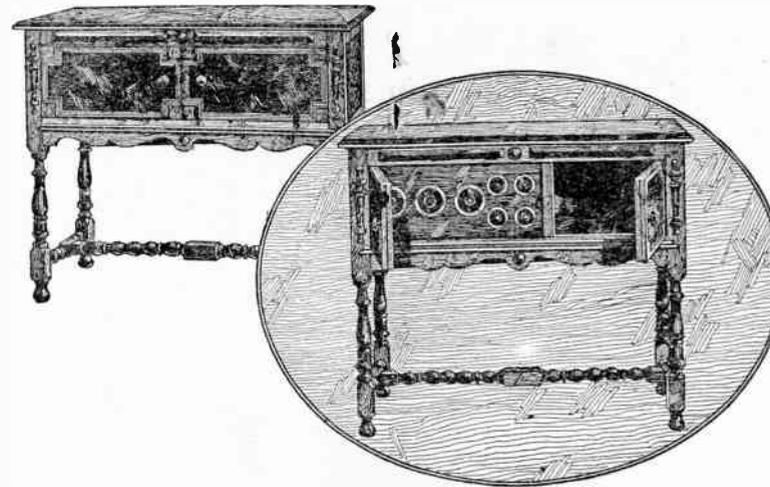
America's Pioneers in the business of radio.

Designers of U. S. Naval Equipment, Used on U. S. Ships, Aeroplanes and Shore Stations.

A complete line of instruments, each the best in its class made by experienced workmen—under the famous Armstrong Patents—in the plant of the world's largest manufacturer of automatic electric equipment.

The belief that long range, sharp selectivity and clear reception are absolutely essential for the complete enjoyment of broadcasting programs.

A responsible organization with practically unlimited financial resources, that insures the servicing of your C & W Set.



Cutting and Washington Model 11C

A 3-tube, double circuit regenerative receiver of remarkable long-range and sharp selection, in a dark walnut, early English Period Console Cabinet. Completely self contained, with loud speaker—a receiver you will be proud to own, both as a means of entertainment and as an attractive furnishing for your home.

\$295.00

WESTERN RADIO, Inc.

Pacific Southwest Distributors

637 South Hope St.
Los Angeles

Metropolitan
8297

Proof

of the Superiority of Cutting & Washington Receivers

Tested with other broadcast receivers—on the same antennae—listening to the same stations—the micro-ammeter proves that Cutting and Washington Sets give:

*Greater Volume from the Station You Want to Hear.
Less Interference from all Other Stations.*

Insist on the demonstration of Cutting and Washington Receivers (made under the famous Armstrong patents). Let us prove they are without an equal.

Exclusive Dealer Territorial Rights on C & W Receivers still available in certain sections of Southern California and Arizona. Wire today for complete data.

Live territory open to live sales organizations on a line of Broadcast Receivers destined, by their excellence, to be the most popular on the market.

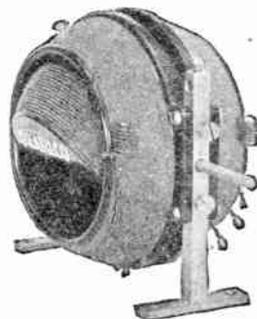
National Radio Week



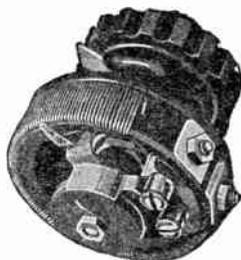
Over Thirty Standard
Lines of Nationally
Known Radio Apparatus
Carried in Stock.



"Earla" Audio
Transformer



The "Pearlco" Coupler



King Vernier
Rheostat



Manhattan
Speaker

MAIL ORDER SERVICE ANYWHERE

Yale Radio Electric Company

"PEARLCO" Distributors for California

Phone Vermont 8973

4816-4818 So. Vermont Ave. Los Angeles, Calif.

Satisfactory Discounts to Dealers

10-12 P. M.
PACIFIC TIME

RADIO TIME TABLE

11-1 Mountain Time
12-2 Central Time
1-3 Eastern Time

STATION	METERS	CITY	CALL	SUN.		MON.		TUES.		WED.		THUR.		FRI.		SAT.	
				10:00-10:30	10:30-11:00	11:00-11:30	11:30-12:00	10:00-10:30	10:30-11:00	11:00-11:30	11:30-12:00	10:00-10:30	10:30-11:00	11:00-11:30	11:30-12:00	10:00-10:30	10:30-11:00
L. A. Times	395	Los Angeles	K H J					X	X	X	X	X	X	X	X	X	X
Post-intelligencer	270	Seattle	K L J C					X	X	X	X	X	X	X	X	X	X
Earle C. Anthony	469	Los Angel	K F I	X	X		X	X	X	X	X	X	X	X	X	X	X
Northwest Radio		Portland	K G N				X	X									
Oregonian	492	Portland	K G W				X	X									
W. W. Grant	440	Calgary	C F C N						X	X	X	X	X	X	X	X	X
*Hale Bros.	423	San Francisco	K P O						X	X	X	X	X	X	X	X	X
Herald		Calgary															

*Note—Hale Bros., San Francisco, KPO, on Monday, Tuesday, Wednesday and Friday broadcast to 1 a. m.

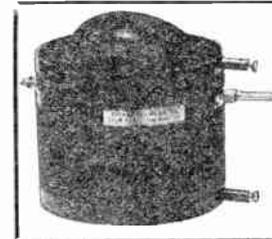
The Ambassador Hotel

SUNDAY— 8:00 to 9:00 p. m. LYMAN'S ORCHESTRA.
Broadcast by Remote Control Over KFI
LOS ANGELES, CALIFORNIA
MONDAY— 10:00 to 11:00 p. m. LYMAN'S ORCHESTRA.
TUESDAY— 8:00 to 9:00 p. m. LYMAN'S ORCHESTRA.
WEDNESDAY— 11:00 to 12:00. LYMAN'S ORCHESTRA.
THURSDAY— 8:00 to 9:00 p. m. ROSENFELD'S ORCHESTRA.
FRIDAY— 11:00 to 12:00. LYMAN'S ORCHESTRA.
SATURDAY— 11:00 to 12:00 p. m. ROSENFELD'S ORCHESTRA.

STOP AND READ THIS

If you're a keen radio fan, you want Long Distance
GET LONG DISTANCE WITH A COAST COUPLER

The whole trouble with radio set owners is, they cannot tune in distant stations. Of course they can't. They don't own a Coast Coupler. A Coast Coupler is cheap and gives you the thrill of hearing distant stations.



You've got to have a Coast Coupler to get long distance. With one tube and this Coupler you can hear Detroit, Chicago, Calgary, Canada, most any station you want. Isn't that satisfactory?

Special hook-up given free with each Coast Coupler
Don't be foolish and spend your money recklessly. Buy our Coast Coupler and hear distant programs on your set.

Don't Delay—Small Stock Left—Mail \$5.00 with This Coupon

COAST COUPLER COMPANY

Manufacturers and Dealers

245 EAST SEVENTH ST. LONG BEACH, CALIF.

COAST COUPLER CO.,
245 East Seventh St., Long Beach, Calif.

Enclosed find five dollars, for which send me one Coast Coupler.

Name
Address 11-3

K H J—Los Angeles Times—395 Meters

Times Building, First and Broadway, Los Angeles. Owned and Operated by Los Angeles Times.
Phone Metropolitan 0700

WEEK COMMENCING NOVEMBER 25TH
(Subject to Change)

SUNDAY, NOVEMBER 25—

- 10:00 a. m. Sermon by Mrs. Annie Rix Miltz, pastor of the Home of Truth and editor of the "Master Mind."
10:30 to 12:30 m. Organ recital, and entire religious service from First Methodist Episcopal Church, Rev. Elmer E. Helms, pastor. Arthur Blakeley, organist.
7:00 to 7:30 p. m. Organ recital from First Methodist Episcopal Church, Arthur Blakeley, organist.
8:00 to 10:00 p. m. Program presented by Suburban Estates Company; Luboviski Quartet: Calmon Luboviski, first violin; Morris Stoloff, second violin; Josef Rosenfeld, viola, and Ossip Giskin, 'cello; assisted by Stewart Wille, pianist. One-act play by Pasadena Community Broadcasters.

MONDAY, NOVEMBER 26—

- 12:30 to 1:15 p. m. Program presented by Carlyle Stevenson's Bon-Ton Orchestra of Ocean Park, composed of Carlyle Stevenson, saxophone and leader; Jack Deeble, saxophone and clarinet; Victor Massie, saxophone and clarinet; Cushman Branch, violinist; Bob Sawyer, pianist; Andrew Partridge, bass saxophone; Laylor Guffin, trumpet; George Johnson, trombone; Gay Martis, banjo, and Buddy Johnson, drums and xylophone.
2:30 to 3:30 p. m. Silent.
6:45 to 7:30 p. m. Silent.
8:00 to 10:00 p. m. Silent.

TUESDAY, NOVEMBER 27—

- 12:30 to 1:15 p. m. Program presenting Ruth Linrud, harpist.
2:30 to 3:30 p. m. Matinee musicale, presenting Ruth Linrud, harpist.
6:45 to 7:30 p. m. The weekly visit of "The Sandman."
8:00 to 10:00 p. m. Program presented by the Long Beach Band, appearing through the courtesy of the Long Beach Chamber of Commerce.
10:00 to 12:00 p. m. Broadcasting Art Hickman's Orchestra, by line telephony from the Los Angeles Biltmore Hotel.

WEDNESDAY, NOVEMBER 28—

- 12:30 to 1:15 p. m. Program presenting Monte L. Weeks, tenor.
2:30 to 3:30 p. m. Matinee program presenting Cecilian Trio, composed of Eva May Decker, pianist; Helen Rundle, 'cellist, and Viola Alfonte, violinist; Monte L. Weeks, tenor.
6:45 to 7:30 p. m. Children's program, presenting Priscilla Moran, screen juvenile; Dorothy Risk, reader, 11 years of age, pupil of Marshall Stedman, Barbara Jane Mitchell, singer, 5 years of age; Frank Johnson Hoppe, 5 years of age; Mrs. Cora R. Dundas, reader.
8:00 to 10:00 p. m. Program presenting Barker Brothers Community Chorus, J. McDonald Stephen, baritone.
10:00 to 12:00 p. m. Broadcasting Art Hickman's Orchestra, by line telephony from the Los Angeles Biltmore Hotel.

THURSDAY, NOVEMBER 29 (THANKSGIVING DAY)—

- 10:00 a. m. Union Services broadcast from the First Methodist Episcopal Church. Rev. Elmer E. Helms will give the sermon.
2:30 to 3:30 p. m. Broadcasting football game, Pomona vs. University of Hawaii.
6:45 to 7:30 p. m. Program presenting Dickie Brandon, 4 years of age, and the Emerson School of Self-Expression of Glendale.
8:00 to 10:00 p. m. Continuity program, "Thanksgiving Night at the Old Farmhouse." Gladys Blackwell Pickering, soprano.
10:00 to 12:00 p. m. Broadcasting Art Hickman's Orchestra, by line telephony from the Los Angeles Biltmore Hotel.

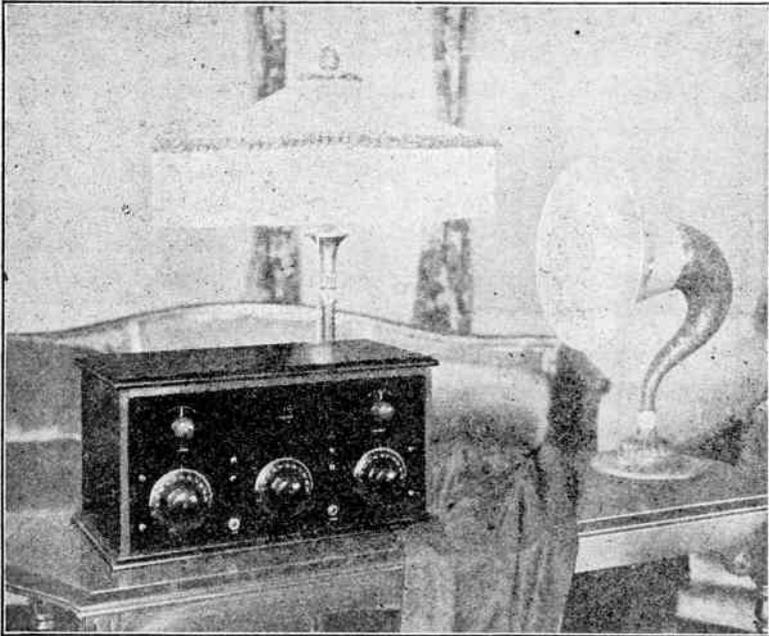
FRIDAY, NOVEMBER 30—

- 12:30 to 1:15 p. m. News items. Music.
2:30 to 3:30 p. m. Matinee musicale.
6:45 to 7:00 p. m. Children's program with Richard Headrick, screen juvenile.
7:00 to 7:30 p. m. Organ recital from First Methodist Episcopal Church. Arthur Blakeley, organist.
8:00 to 10:00 p. m. Program presenting Southern branch of the University of California Men's Glee Club. Mabel Pierson, appearing through the courtesy of the Braun Corporation, will take on "Biology and Evolution."
10:00 to 12:00 p. m. Broadcasting Art Hickman's Orchestra, by line telephony from the Los Angeles Biltmore Hotel.

SATURDAY, DECEMBER 1—

- 12:30 to 1:15 p. m. News items. Music.
2:30 to 3:30 p. m. Matinee musicale.
6:45 to 7:30 p. m. Children's program.
8:00 to 10:00 p. m. Children's De Luxe program.
10:00 to 12:00 p. m. Broadcasting Art Hickman's Orchestra, by line telephony from the Los Angeles Biltmore Hotel.

"Radyme" the Perfect Set



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Los Angeles Evening Herald	5:00 to 5:30 p. m. daily except Sunday. 8:00 to 9:00 Monday, Wednesday, Friday.
Los Angeles Examiner	5:30 to 6:00 p. m. daily except Sunday. 9:00 to 10:00 p. m. daily.
Hotel Ambassador	8:00 to 9:00 p. m. Sunday, Tuesday, Thursday. 10:00 to 11:00 p. m. Monday. 11:00 to 12:00 p. m. Wednesday, Friday, Saturday.

Program Detail, Anthony Studio (Pacific Time), November 18th to 24th, Inclusive
(Does not include detail of remote control stations)
(Subject to change)

SUNDAY, NOVEMBER 25—

10:00 to 10:45 a. m.	Services by L. A. Church Federation.
4:00 to 5:00 p. m.	Services by Federated Church Musicians.
6:45 to 7:30 p. m.	Instrumental concert.
10:00 to 11:00 p. m.	Courtesy of Theron Bennett.

TUESDAY, NOVEMBER 27—

6:45 to 7:30 p. m.	Courtesy Emma M. Bartlett, Chairman, Public School Music, State Federation.
10:00 to 11:00 p. m.	Henry Robinson, Trio-chamber music.

WEDNESDAY, NOVEMBER 28—

6:45 to 7:30 p. m.	Nick Harris—Detective stories.
10:00 to 11:00 p. m.	Dr. Marian Tracie Whiting Concert Company.

THURSDAY, NOVEMBER 29—

6:45 to 7:30 p. m.	Courtesy Y. M. C. A.
10:00 to 11:00 p. m.	Courtesy Geo. J. Birkel Co.

FRIDAY, NOVEMBER 30—

6:45 to 7:30 p. m.	Baisden's Venice Orchestra.
10:00 to 11:00 p. m.	Popular Concert, instrumental and vocal.

SATURDAY, DECEMBER 1—

6:45 to 7:30 p. m.	Carl Edward Hatch, violinist.
8:00 to 9:00 p. m.	Filipino String Orchestra.
10:00 to 11:00 p. m.	Special vocal concert.

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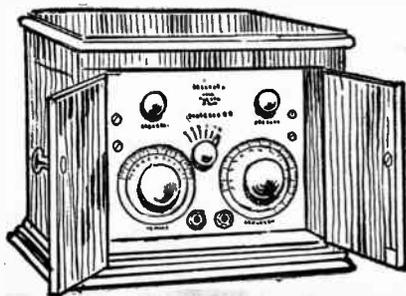
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SUNDAY—

9:00 to 10:00 p. m. Sioma Bergarten, the famous Anglo-Polish pianist. Solomon's Dance Orchestra. Yvonne Farr, lyric soprano.

MONDAY—

9:00 to 10:00 p. m. The Peach Edition Club; Harry McCoy, Norman McNeil, Charlie Melson, Harry Coe, Madelyn Hardy.

TUESDAY—

9:00 to 10:00 p. m. Program through the courtesy of Sid Grauman.

WEDNESDAY—

9:00 to 10:00 p. m. The Examiner Radio Club.

THURSDAY—

9:00 to 10:00 p. m. Program through the courtesy of J. C. Lester of Lester's Radio Shoppe.

FRIDAY—

9:00 to 1000 p. m. Examiner Girls' Club. Palais Majestic Ballroom Orchestra

SATURDAY—

9:00 to 10:00 p. m. Palos Verdes Concert, arranged and presented by Jean De Chauvenet of the Chauvenet School of Music.

SUNDAY—

9:00 to 10:00 p. m. Special Concert.

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MONDAY, 26th—

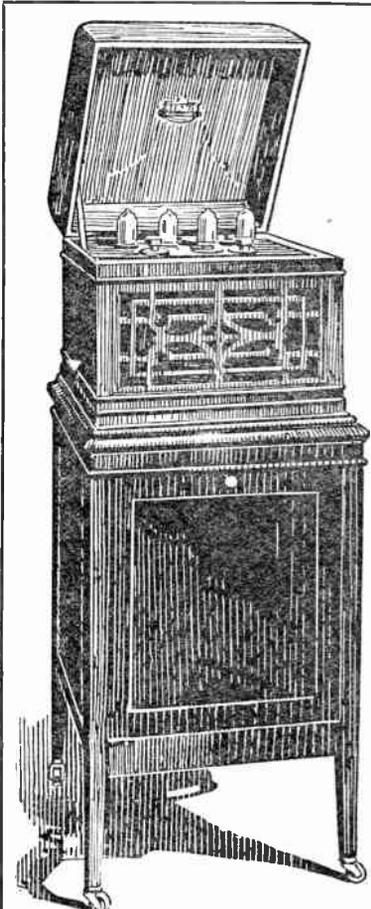
8:00 to 9:00 Dance Orchestra and vocal soloists.

WEDNESDAY, 29th—

8:00 to 9:00 Concert by courtesy of Florence Van Dyke of Long Beach.

FRIDAY, 30th—

9:00 to 9:00 Orchestra Concert.



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SUNDAY, NOV. 25—

11:30 a. m. Dr. R. A. Torrey, Sermon. The Harmony Male Quartet.
6:00 to 6:45 p. m. Radio Vespers. Rev. John A. Hubbard, Scripture and Sermon.
Evelyn B. Palmer, Organist; James Foreshaw, Tenor.
8:00 p. m. Dr. F. A. Torrey, Sermon. Mr. C. M. Books, Gospel Solo.

TUESDAY, NOV. 27—

8:00 to 9:00 p. m. Organ Recital. Vocal selections.

THURSDAY, NOV. 29—

Special Thanksgiving Musical Service. Vocal and instrumental selections by Mr. and Mrs. Robert Harkness, The Bible Institute Glee Club, and others.

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FRIDAY—

3:30 p. m. California Theatre Orchestra, Carli D. Elinor, Director.

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PULLMAN, WASHINGTON

MONDAY, NOVEMBER 26—

7:30-8:30. "Milk and Health," Prof. E. V. Ellington.
Musical features.
"Mining Opportunities in Washington," Prof. Hugh M. Henton.

WEDNESDAY, NOVEMBER 28—

7:30-8:30. "How to Study Occupations," Dr. D. W. Hamilton.
"Housecleaning Made Easier," Dean Florence Harrison.
Music.
"Aspects of the Future of Agriculture," Dean E. C. Johnson.

FRIDAY, NOVEMBER 30—

7:30-8:30. "Control of Water Borne Diseases," Prof. M. K. Snyder.
Talk on New Books, Miss Alice L. Webb.
Music.
"Gas Engine Cooking," Prof. C. C. Johnson.

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EVENING PROGRAMS

SUNDAY—

8:30 to 10:00 p. m. Rudy Seiger's Fairmont Hotel Concert Orchestra.

MONDAY—

8:00 to 10:00 p. m. Studio Program.
11 p. m. to 1 a. m. Palace Hotel Dance.
Organ between 9 and 10 p. m.

TUESDAY—

8:00 to 10:00 p. m. Studio Program.
11 p. m. to 1 a. m. Palace Hotel Dance.

WEDNESDAY—

8 p. m. to 1 a. m. Max Bradfield's Palace Hotel Dance Orchestra.

THURSDAY—

8:00 to 9:00 p. m. Studio Program. Pipe Organ Recital.
9:00 to 11:00 p. m. Palace Hotel Dance.

SATURDAY—

8:00 p. m. to midnight. Special Request Program. Art Weidner's Fairmont Hotel Dance Orchestra.

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THURSDAY—

6:00 to 6:45 p. m. News Bulletin's Bed Time Story. Vocal and Instrumental Concert.

FRIDAY—

6:00 to 6:45 p. m. News Bulletin's Bed Time Story. Vocal and Instrumental Concert.
9:00 to 10:00 p. m. Special Concert.

SATURDAY—

6:00 to 6:45 p. m. News Bulletin's Bed Time Story. Vocal and Instrumental Concert.

SUNDAY—

10:00 a. m. Radio Church Service.

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PORTLAND, OREGON

PROGRAM FOR WEEK—NOVEMBER 25 TO DECEMBER 1, 1923

SUNDAY, NOVEMBER 25—

- 6:00 p. m. Church services provided by Temple Beth Isreal.
 7:00 p. m. George Olsen's Metropolitan Orchestra in dinner program of concert music from Portland Hotel; piano solos by Madeline Baker.

MONDAY, NOVEMBER 26—

- 11:30 a. m. Weather Forecast.
 3:30 p. m. Literary program by Portland Library Association.
 7:30 p. m. Weather Forecast and Market Reports.
 8:00 p. m. Program provided by Mildred Nichols, violinist.
 9:30 p. m. Community program by McMinnville Rotary Club.

TUESDAY, NOVEMBER 27—

- 11:30 a. m. Weather Forecast.
 3:30 p. m. Talk by Jeannette P. Cramer, Home Economics Editor of The Oregonian.
 7:30 p. m. Weather Forecast and Market Reports.
 8:00 p. m. Talk for farmers, provided under direction of Paul V. Maris, extension director Oregon Agricultural College.
 10:00 p. m. Dance Music by George Olsen's Metropolitan Orchestra of the Portland Hotel.

WEDNESDAY, NOVEMBER 28—

- 11:30 a. m. Weather Forecast.
 3:30 p. m. Children's program; music by children and story by Aunt Nell.
 7:30 p. m. Weather Forecast and Market Reports.
 8:00 p. m. Concert by Columbia Theater All-Artists Orchestra, directed by Harry Linden.
 9:00 p. m. Business talk by James Albert, local representative of Alexander Hamilton Institute.
 10:00 p. m. Dance music by George Olsen's Metropolitan Orchestra of the Portland Hotel; violin solos by Inez Chambers.

THURSDAY, NOVEMBER 29—

- 11:30 a. m. Weather Forecast.
 7:30 p. m. Weather Forecast and Market Reports.
 8:00 p. m. Dramatic program under direction of Doris Smith.
 10:00 p. m. Dance music by George Olsen's Metropolitan Orchestra, under direction of Herman Kenin; solos by Jeanette Boyer Xanten, coloratura soprano.

FRIDAY, NOVEMBER 30—

- 11:30 a. m. Weather Forecast.
 3:30 p. m. Jessie D. McComb, Home Economics Department, Oregon Agricultural College; subject: "Do Your Dollars Spend Well?"
 7:30 p. m. Weather Forecast and Market Reports.
 8:15 p. m. George Olsen's Metropolitan Orchestra of the Portland Hotel in studio program.
 9:00 p. m. Lecture on "Oregon Resources" by Alfred L. Lomax, Professor of Foreign Trade of University of Oregon.
 10:30 p. m. Hoot Owls with Pantages Frolic.

SATURDAY, DECEMBER 1—

- 11:30 a. m. Weather Forecast.
 3:30 p. m. Children's program; music by piano pupils of Lucille Cummings; story by Aunt Nell.
 7:30 p. m. Weather Forecast and Market Reports.
 10:00 p. m. Dance Music by George Olsen's Metropolitan Orchestra of the Portland Hotel.

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MONDAY, NOVEMBER 26—

6:30 to 7:30 a. m. Music of the Orchestra, Don Albert, conducting; broadcast from the Palace Theater.

TUESDAY, NOVEMBER 27—6:30 to 7:30 p. m. Mrs. Albert L. Scales, singer, with assisting musicians.
9:00 to 10:00 p. m. Mrs. Lena Holland Fielder in song, and assisting instrumental artists; a reader.**WEDNESDAY, NOVEMBER 28—**10:30 to 11:00 a. m. Address, W. A. Philpott, secretary Texas Bankers' Association, "The Story of American Coins."
Station WFAA will be silent for remainder of the day.**THURSDAY, NOVEMBER 29 (THANKSGIVING DAY)—**10:30 to 11:00 a. m. Address, Dr. Thomas H. Harper, pastor Central Congregational Church, on "Our Thankfulness."
6:30 to 7:30 p. m. Gussie Montgomery's Harmony Six, an orchestra.**FRIDAY, NOVEMBER 30—**10:30 to 11:00 a. m. Address, Dr. Robert Stewart Hyer, physics, Southern Methodist University, on the Sunday school lesson, "Power of the Early Church."
6:30 to 7:30 p. m. Musical recital presenting faculty representatives of North Texas State Teachers' College, Denton, Texas.**SATURDAY, DECEMBER 1—**10:30 to 11:00 p. m. Address, J. P. Comer, literature, Southern Methodist University, "The Art of Reading."
6:30 to 7:30 p. m. Piano recital, presenting Leland Johnston, retail sales manager the Baldwin Piano Company, composer and performer.
9:00 to 10:00 p. m. Mrs. LaRue Nelson and Miss Grace Hudgins, voice, and Miss Inez Hudgins, piano.**SUNDAY, DECEMBER 2—**12:30 to 2:00 p. m. Elks' Memorial Service, broadcast from the First Baptist Church.
4:00 to 5:00 p. m. Radio Chapel Bible Class; Dr. William M. Anderson, Jr., pastor
5:30 to 7:00 p. m. Evening service at First Baptist Church; Dr. George W. Truett, pastor.
8:00 to 9:00 p. m. Jack Gardner's Orchestra in dance music recital.

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SUNDAY, NOVEMBER 25—

9 a. m. to 10:15 a. m. Complete services of the First Methodist Church, Rev. J. W. Bergin, D. D., pastor; Will Foster, organist.

2:00 to 3:00 p. m. Organ concert from the Rialto Theater, Margaret Agnew White, feature artist. (E. L. O. announcing.)

3:00 to 4:00 p. m. Vesper concert. (E. L. O. announcing.)

MONDAY, NOVEMBER 26—

5:30 to 6:30 p. m. Concert of instrumental and vocal selections, featuring popular music, presented under the direction of Mrs. John L. Rogers. (E. L. O. announcing.)

7:30 to 8:45 p. m. Concert of Hawaiian music presented by the orchestra of the Butcher School of Music. (G. C. A. announcing.)

TUESDAY, NOVEMBER 27—

5:30 to 6:30 p. m. Concert arranged by Whybert Brokn, violinist, and assisting artists. (E. L. O. announcing.)

7:30 to 8:45 p. m. Concert arranged by Dot Echols McCuthan. (G. C. A. announcing.)

WEDNESDAY, NOVEMBER 28—

5:30 to 6:30 p. m. Concert by the Broadway Presbyterian Men's Bible Class. (E. L. O. announcing.)

7:30 to 8:45 p. m. Concert by George Freeman's Sooner Serenaders, Texas Hotel Orchestra. (The Hired Hand announcing.)

THURSDAY, NOVEMBER 29—

1:00 to 3:30 p. m. Special play-by-play broadcast of the Texas University-Texas A. & M. College football game at College Station, Texas, by direct wire from the football field at College Station to WBAP.

5:30 to 6:30 p. m. Concert from the Rialto Theater, Fort Worth. (E. L. O. announcing.)

7:30 to 8:45 p. m. Concert by the Hilo Five Hawaiian Serenaders Orchestra, Fred Wagner, director. (The Hired Hand announcing.)

FRIDAY, NOVEMBER 30—

5:00 to 6:30 p. m. Special banquet program from the Crystal Ballroom of the Texas Hotel, featuring the annual dinner of the North Texas State Teachers' College of Denton, Texas. All musical organizations of the college will take part in the program. (G. C. A. announcing.)

7:30 to 8:45 p. m. Concert by the orchestra and artists of the Sam Houston State Teachers' College of Huntsville, Texas, under direction of R. L. Bunting. (G. C. A. announcing.)

SATURDAY, DECEMBER 1—

5:00 to 5:30 p. m. Review of the interdenominational Sunday School lesson and Radio Bible Class, conducted by Mrs. W. F. Barnum.

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Davenport, Iowa—Pacific Time

SUNDAY, NOVEMBER 25—

- 11:30 a. m. Orchestra concert (1 hour). Patriotic and sacred numbers by the P. S. C. Orchestra.
- 5:00 p. m. Organ recital (¼ hour), Erwin Swindell, organist.
- 6:00 p. m. Church service—Rev. Bertram Langford Davies, pastor Woodhull Presbyterian Church, Woodhull, Illinois.
- 7:00 p. m. Musical program (2 hours), Erwin Swindell, musical director. P. S. C. Orchestra, Gerald M. Barrow, director. Assisted by Lillian O'Meara, reader, and Mrs. Edward Applequist, soprano.

MONDAY, NOVEMBER 26—

- 6:00 p. m. Musical program (1 hour), Erwin Swindell, musical director. Program by Carlisle Evans, and his orchestra, of Rock Island, Illinois.

TUESDAY, NOVEMBER 27

- 3:45 p. m. Chimes concert.
- 4:50 p. m. Sport news and weather forecast.
(No broadcasting after 6 p. m. Tuesday—Silent night for WOC.)

WEDNESDAY, NOVEMBER 28

- 6:00 p. m. Organ recital. Mrs. Frank W. Elliott at the Console; Mrs. F. C. Huntoon, soprano; Virginia Smith, pianist.
- 7:00 p. m. Two-hour concert. Special Thanksgiving program by the Schmidt Music Company Concert Orchestra, assisted by the following soloists: Amalia Schmidt Gobble, soprano; Maud Marshall Bond, reader; Mrs. E. H. Hipple, saxophone and piano; Earl Hipple, xylophone and trombone; Henry Sonntag, violin; Carl C. Schmidt, violin; Herman Schmidt, Jr., mellophone and piano, and the Edwards Congregational Male Quartette.

THURSDAY, NOVEMBER 29—

- 5:00 p. m. Thanksgiving service, conducted by Rev. J. L. Vance, pastor Oak Grove Second Presbyterian Church, Rock Island, Illinois. (Musical numbers to be announced.)
- 6:00 p. m. Musical program (1 hour), P. S. C. Orchestra. Gerald M. Barrow, director. (In keeping with the Thanksgiving spirit, old-time numbers and classics will be substituted for the usual popular program.) V. B. Rochte, baritone soloist.

FRIDAY, NOVEMBER 30—

- 6:00 p. m. Musical program (1 hour), Erwin Swindell, musical director. Program by the Kable Brothers Company of Mount Morris, Illinois. L. M. DeArvil, cornet soloist, accompanied by May Hough.

SATURDAY, DECEMBER 1—

- 7:00 p. m. Orchestra program (1 hour), P. S. C. Orchestra. Gerald M. Barrow, director. (Popular selections through the National Association of Broadcasters, of which WOC is a member.) V. B. Rochte, baritone soloist.

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K D S WEEKLY PROGRAM—WEEK OF NOVEMBER 12TH
Pacific Time

WEEK OF NOVEMBER 26TH

MONDAY, NOVEMBER 26—

- 6:00 p. m. Vocal and instrumental specialties. Orchestra and organ music broadcast direct from the Grand Central Theater.
9:30 p. m. Program to be announced.

TUESDAY, NOVEMBER 27—

- 6:00 p. m. Mrs. Frank Howard, mezzo-soprano; Miss Sylvia Waldon, violinist; Mrs. Louis Maginnis, pianist. Address by Dr. T. R. Ball.
9:00 p. m. Dance music played by Silverman's Orchestra, broadcast direct from Hotel Jefferson.

WEDNESDAY, NOVEMBER 28—

- 5:00 p. m. Program by Abergh's Concert Ensemble, Arne Arneson, violinist; broadcast direct from Hotel Statler.
9:00 p. m. Broadcasting direct from Hotel Statler; dance music played by Rodemich's Orchestra.

THURSDAY, NOVEMBER 29—

- 6:00 p. m. Broadcasting direct from the Odeon concert, given by St. Louis Symphony Orchestra; Francis MacMillen, violinist, soloist.

FRIDAY, NOVEMBER 30—

- 6:00 p. m. Mrs. Katherine Cowan, soprano; Mrs. Charles H. Anstin, contralto; Waldo Finke, tenor; Frank Ingalls, basso; Mrs. Frank A. Neal, accompanist.

SATURDAY, DECEMBER 1—

- 6:00 p. m. Orchestra concert, organ recital, vocal and instrumental specialties; broadcast direct from the Missouri Theater.

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Pacific Time—Wave Length 447.5

MONDAY—

2:30 The Southwest Division Salvation Army Band. Monday night is silent night in Chicago.

TUESDAY—

2:30 Program by pupils of Glenn Dillard Gunn School of Music.
5:00 Weekly Babson Statistical Report. Talk provided by American Chemical Society.

5:30 Program by Chicago Consulate of Hungary.
7:00 Hotel LaSalle Trio.
7:15 Program provided by Lyon & Healy.

WEDNESDAY—

11:00 a. m. Speeches broadcast from Chicago Association of Commerce luncheon.
2:30 Pupils of Cosmopolitan School of Music and Dramatic Art.
5:00 Miss Georgene Faulkner, the Story Lady, stories for children.
5:30 Weekly lecture from Northwestern University.
7:00 Hotel LaSalle Trio.
7:15 To be announced.

THURSDAY—

Thanksgiving Day. No program.

FRIDAY—

2:30 Pupils of Bush Conservatory.
5:30 Weekly program arranged by Mrs. Frances M. Ford for "Wide Awake Club."
5:30 Weekly musical lecture by Mrs. Marx E. Oberndorfer.
7:15 To be announced.

SATURDAY—

6:00 Pennsylvania Railroad Orchestra.
7:00 Weekly musical revue broadcast direct from the Chicago Theatre.

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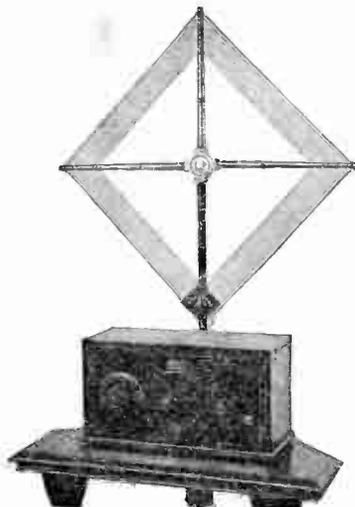
"SLEEPER MONOTROL"

The Most Perfect Set in America

Licensed—under the Grimes Inverse Duplex Circuit Patents—the only system for using the same tubes in inverse direction for both radio and audio frequency amplification.

No Outside Wires—the only connection is with an indoor loop. No outdoor aerial need be erected and there is no ground connection whatsoever.

The Monotrol Loop—a beautiful Windsor Period loop is furnished complete with every set and reduces static disturbances and other interference to practically zero.



Absolute Clearness—use of radio frequency without regeneration makes distortion impossible. Absolute purity, clarity and naturalness of tone are assured.

Intensity Control—the special patented taps on the Monotrol Loop make it possible to control intensity of volume without disturbing the tuning.

Distance and Volume—3 tubes do the work of 5, giving two stages of radio frequency amplification and two of audio with tube detector. No crystal to search for a sensitive spot over its entire surface.

Any radio set that works will give you a thrill the first time you listen in on the air, but the ambition to hear more and to hear further and better grows so quickly that you might as well buy the best in the beginning as in the end. The SLEEPER MONOTROL (at no higher—even at a lower price) will assure you the most perfect reception for every broadcast program that can possibly be heard through any three-tube set and many which could not be heard except through five-tube sets in any other type of circuit.

Complete with Loud Speaker, Batteries and Tube

\$197.50

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RADIO DEPARTMENT

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920 South Broadway

Telephone 826-063
Los Angeles, California

The Most Versatile Device Known of Science

(Continued from Page 21)-

can be possibly imagined. The radio uses of vacuum tubes are too common to require further description, and these are daily becoming more and more versified. In electrical laboratories vacuum tubes are used to generate electric currents of ANY frequency desired, from one to two cycles per second, up to many millions, and all this without the aid of ANY mechanical motion at all. This is a feat accomplished by no other generator of electrical currents of ANY kind. The usual commercial power line frequencies are 25, 50 and 60 cycles, where the current reverses itself 25, 50 or 60 complete times, respectively. When the vacuum tube can so change the direct current supplied to its plate so that the resulting current reverses itself anywhere from one to two times per second, (or as much slower as is wanted), up to frequencies of many million times per second, the versatility of the tube is evident, without question.

There is, as yet an entirely untouched field for the vacuum tube, which is receiving the careful attention, and thought of some of the most prominent electrical engineers of today, one of whom suggested this to the writer: This is the field of power transmission at any frequency, or voltage, or under any other conditions through the use of vacuum tubes of as yet, undeveloped types of large size. The present systems of power transmission over long distances use alternating current exclusively, owing to the ease with which it may be changed from a low to a high potential, or vice-versa. Alternating currents in extremely long lines set up all kinds of trouble, such as so-called surges, etc., which are voltages which rise far above the working voltage of the line, due, in effect to the electrical inertia of the line. Lightning plays havoc with such alternating current lines, and many other technical problems arise. With direct current these do not exist, but it has been impossible to develop any means of transforming direct current, either up or down in voltage, except by the use of motor-generator or dynamotor systems, which are clumsy and inefficient, at best.

It will be perfectly possible, in all probability, within a reasonable time to generate any alternating current at any convenient voltage or frequency, step it up to the proper voltage, and rectify this alternating current by means of vacuum tubes, and filter this, getting direct current of line potential, which will feed the line, along with many other such stations, which can be situated wherever they are conveniently located. The current will then flow over the line as DIRECT CURRENT, and at the point, or points where it is needed it will be used at the high potential to operate a large three electrode vacuum tube, which will generate alternating current of any frequency desired, which can be then changed by suitable transformers, to the desired voltage or pressure, and used for power purposes.

In the large public address systems of today, the vacuum tube is used as a speech amplifier. This system of speech amplification, which was repeated over vacuum tube repeaters on the long-distance lines, was used at the burial of the unknown soldier in Arlington, by the late President Harding, and every word the President uttered was heard by large audiences at Washington, Chicago, San Francisco, and several other points. Such a vacuum tube public address system has just been installed at Exposition Park, Los Angeles, and many other progressive cities are installing these systems in their large public meeting places. Again the vacuum tube is of incalculable value in this work.

A device which is gradually becoming popular with deaf people consists of a small but very sensitive carbon transmitter, made on the same principle of the transmitter on the common telephone, which picks up sounds, and then a small portable two-stage amplifier increases the volume of the sound to such a point that the deaf person, unless entirely deaf, can hear a good deal, if not all of what is being said, without trouble. Again, the vacuum tube, which serves in the amplifier, is the key to the whole situation.

An almost endless list of practical applications of the vacuum tube, and its attendant devices could be made, but it bids fair to entirely revolutionize the entire science of electrical engineering, in the same manner that it has already revolutionized the science of communication, which again proving the wonderful versatility of the vacuum tube, or "audion."



Charges Radio and Auto Batteries at Home Over Night for a Nickel

For a friend who owns a radio set or auto, what would be more appropriate than a gift which would eliminate the inconvenience and expense of taking his battery to a service station every time it requires recharging? The

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is such a gift, appropriately dressed up in a beautiful package. It charges any Auto, Radio or "B" storage battery in the quickest, simplest and most efficient manner possible. Connects to any lamp socket—operates silently—requires no watching. Fully automatic in operation—absolutely safe. Beautifully finished in mahogany and gold. Unqualifiedly guaranteed. Over 125,000 already in use.

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AN EVIL THAT SHOULD BE CORRECTED

By R. H. McCASKILL

On my table in Hollywood is a modern high grade radio set, obtained from a highly trustworthy dealer, who told me perfectly truthfully just what the set would do. The set is all that he claimed for it, yet I cannot get long distance with any degree of satisfaction because of some local power line that has a leaky transformer.

Personally, I did not know what the noise was, but got my information from a very well known radio engineer, a man whose reputation is such that he is a regular contributor to the technical radio papers. This friend tuned in San Francisco, but we heard the program through a noise that was a cross between Niagara Falls and a buzz saw. Both the local stations were on the air, but were tuned out!

A point that I would bring out is that my friend tells me radio "listeners in" suffer from this interference all over the city, and unless the light company can be prevailed upon to put the leaky transformer right, the trouble will continue indefinitely. But, the unfortunate "listener-in" must first locate the transgressing transformer—a thing impossible to the average man.

Radio has now become an important trade in Los Angeles, there is not only the retail dealer to be considered, but also the wholesaler and the manufacturer—I understand that there are now a number of concerns here building equipment.

In view of two outstanding facts:—first, that the purchaser is interested in long distance; second, that the trade makes more money out of an expensive set than they do from a cheap one; it would seem that the time has now come when the trade should present a united front to the city and others who use power lines. They should bring pressure to bear so that all lines be regularly inspected and whatever causes the trouble be at once taken care of.

If it would help matters, I have no doubt that the thousands of "listeners-in" would be glad to join with the trade in presenting a petition to the power companies. It is obvious that the individual can have no weight with any powerful corporation, but the combined efforts of the members of this growing trade should have a salutary effect.

Another Step Forward

The Introduction of

M. P. M.

REFLEX RADIO FREQUENCY Transformer

represents another signal advance in reflex reception. Absolute precision in the assembling of these transformers assures surprising range and volume, with positive elimination of distortion. Try one on your reflex set and realize the full possibilities of efficient reception.

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To insure the maximum of results from this Transformer, equip your set with

M. P. M.

Million Point Mineral

The World's Greatest Radio Crystal

Supersensitive—reproducing from every point on its surface—greatly increasing both audibility and radius—M. P. M. is unsurpassed for reception, both with and without amplification.

Price 25c, Unmounted; 35c, Mounted

SPECIAL FREE OFFER

Detailed working diagram of a successful reflex circuit will be sent free with all orders for either transformers or crystals

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Selling a high-class, uniform, powerful product

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GILMORE OIL COMPANY

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Batteries

(Continued from Page 19)

size. Make a cover for the top of the jar out of hard rubber or bakelite or fiber. As a last resort, use wood. Make this cover in the form of a disk, just the size of the top of the jar, so the original zinc cover of the jar can be screwed down over it. Take the porcelain out of the zinc cover and cut a large hole in the top of the cover, so that all there is left of it is a ring with the threads on it and a flange to clamp the disk down on the top of the jar. The aluminum and lead rods are called electrodes. Cut holes in the disk so these two rods may be inserted in it about one and three-quarters of an inch apart on centers. Secure them to the disk with about four inches projecting out of one end and on the other end secure a binding post to each. Fill the jar to within a half-inch of the top with a solution of one part borax to four parts water; dissolve the borax thoroughly, and place disk, with the electrodes hanging down in the solution, on the top of jar and use the cut out zinc cover to secure it in position, making sure that the zinc does not touch the electrodes. Connect the rectifier with the aluminum electrode to the battery positive post and connect the lead electrode to the electric light line with a 40 watt electric lamp in series, then connect the other side of the electric light line directly to the negative post of the battery.

With this arrangement a fifty volt B battery may be given a full charge in twenty-four hours.

During this course of articles little has been said about the A battery, which is always a storage battery except in cases where dry batteries are preferred. The A battery should always be a storage battery except in the case of the WD11 or WD12 tubes. If uniform results are desired the A battery should be a good storage battery even in the case of the '99 tubes. While in the case of the '99 tubes the storage battery seems extremely cumbersome yet the current consumed by these tubes is rather high when taken from a dry cell which cannot be recharged. The current consumption of a '99 tube is 60 milliamperes and for the "A" tubes .25 of an ampere.

The current consumed by two of the large tubes, for instance, is about one-half of an ampere. These tubes require a voltage of at least five. Each cell of the lead type storage battery delivers approximately 2 volts. Suppose, for instance, that your radio set uses two vacuum tubes and that the set will be in operation on an average of two hours a day, the discharge current required will then be one-half ampere, and this discharge over a period of two hours will be one ampere hours a day out of the battery. A 40 ampere hour battery would carry this discharge for about forty days before recharging.

But due to the necessity of having a fresh well charged battery, it will be necessary to take up the matter of recharging in less than half this time or fifteen days. The battery should be well tested at intervals of once a week, with a reliable hydrometer.

In batteries used for radio service the specific gravity of the solution ranges from about 1.275 at full charge to 1.175 at complete discharge. The scale of the hydrometer float is graduated from about 1.300 to 1.100.

The procedure to follow in taking a specific gravity reading is as follows: Place the hydrometer syringe in the battery so that the end of the rubber tube is completely submerged in the solution and squeeze the bulb just enough to fill the glass to three-quarters full of the solution when the bulb is left free. Be sure you are not pressing the bulb and that it is free when you are reading the gravity.

For the best results a radio battery should never be allowed to discharge below 1.250. For those operating five tube sets, the charger should be put on every other day for two hours.

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Has Announced from K.H.J. that the

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Desires to give Radioland the very best entertainments possible. That is true. We have presented four programs of a high type. Our fifth, which will be given over K.H.J. Sunday evening, November 25th, will undoubtedly be one of the finest programs ever broadcasted.

Be our guests Sunday. Spend the day at

PACOIMA

Then come to our main offices in the evening and listen to the LUBOVISKI QUARTET. We have installed a receiving set and a loud speaker for the occasion.

Here's How to Get to Pacoima

The Transportation Department of the Suburban Estates Company has made arrangements to supply you with round-trip tickets on the busses of the Original Stage Line. Go to the Union Stage Depot at Fifth and Los Angeles Streets. One of our agents, wearing a yellow badge, will be there to give you your ticket. Or get your free ticket at our main office or from one of our branch offices.

FROM LOS ANGELES—Drive out Sunset and over Hollywood Boulevard to Cahuenga Avenue. Turn right on Cahuenga and go through Pass to Lankershim Boulevard and drive through Universal City and Lankershim until boulevard meets San Fernando Road. Turn left on San Fernando Road to North Sherman Way (formerly Pershing Avenue), one mile south of San Fernando. Tract office on corner.

If you haven't a car of your own call 653-25 or 871-498 and make arrangements to have one of our representatives call for you in a private car and take you out to Pacoima.

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Suburban Office, Cor. N. Sherman Way and San Fernando Road to Pacoima Station



Perflex Receivers

What are they? How do they differ from other receivers? Where did the name come from? All these and many other questions have arisen in the minds of radio fans since the circuit was published about a year ago. Its action is radically different from the action of most types of radio receivers.

According to the man who developed the circuit, it all came about like this. A year ago last January, when returning from a New Year's Eve celebration in San Diego via the observation car (fresh air) route, he wondered why he couldn't have had a small radio receiver along, one which would work without the big aerial, and yet be small enough to carry in his suitcase. The receivers at that time were all large, cumbersome affairs which required a freight car to move around. The thought struck him that none of our sets were securing the most out of our present-day vacuum tubes. While in a laboratory in France he had worked considerably with the now famous Latour circuit, and although the results at that time were not extremely successful, he believed that the circuit had possibilities. A theoretical circuit was then put on paper, and later, after about a year of experimental work, published. Thousands of receivers built by experimenters all over the country according to the Perflex circuit now attest to its wonderful tone quality and sensibility. The name, "Perflex," was given to the circuit due to its extreme flexibility and ease of control, either on an inside loop or outside aerial.

The action of the circuit, briefly, is as follows. Energy from the aerial or loop is tuned by means of some kind of tuning element. It enters the first tube, is amplified at radio frequency; then enters the second tube and is amplified again at radio frequency. The output of this tube is coupled to the crystal by means of the second radio frequency transformer. The crystal acts as a rectifier, thus reducing the energy to audio frequency current. This current passes into the primary of the reflex audio frequency transformer. The secondary of this transformer feeds back into the second tube, where the energy is again amplified. The last tube receives the output of the second tube at this point and gives us a power amplification of from eight to ten times.

With the proper selection of radio and audio frequency transformers the output and sensitivity of three vacuum tubes in the Perflex circuit is amazing to one who has been using tubes in the conventional "single duty" method.

Broadcasting From the Viewpoint of the Newspapers

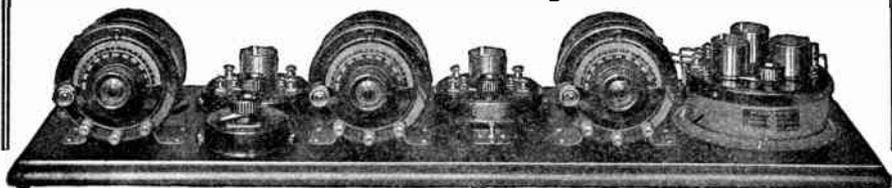
(Continued from page 17)

period for fear one of those surprises will pass when they are not listening. Of course, the spoken word, unlike the printed, cannot be recalled—there are no back issues which one may "listen to" at will.

The newspaper knows the value of circulation, and it works to gain a greater number of readers daily. How do they do it? By keeping the columns of their paper so teeming with interest that their readers are permanent. The same principle applies to radio broadcast. Oftentimes it is a critical public that listens to radio—this has always been true of the readers of a newspaper. One cannot hope to please every listener every minute the station is on the air, but the old phrase, "Variety is the spice of life," holds true with a radio program. Progress is measured by innovations, and hence the radio broadcast program which is continually bringing to the thousands and thousands of homes a daily change of program, replete with variety, will please the greatest number and make for more and more listeners.

ATWATER KENT

Model 10 Receiving Set



THE Atwater Kent Model 10 Receiving Set is an excellent example of modern Radio engineering. It includes 2 stages of tuned radio frequency amplification, Detector, and 2 stages of audio frequency amplification.

The instruments included are 3 Variable Condensers, 3 Radiodyne Transformers, 2 Tube Units, Potentiometer, and Detector, 2 stage Amplifier.

Exceptional selectivity, volume on D. X. signals, efficiency, and great ease of operation are accomplished through the circuit arrangement used. Its range of operation includes all wave lengths in the broadcast band.

With this set it is very easy to return to the dial settings for any given station once they are recorded. It is designed for tubes using $\frac{1}{4}$ ampere, with the exception that a 1-ampere detector tube may be used, if desired.

No. 4340 Model, 10 Receiving Set, as above,
wired.....\$88.00

Electric Equipment Co.

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Additional Radio Routes

Concerning additional radio routes now being established, the report says:

"High-power radio stations are in process of construction in the Netherlands, Sweden, Poland, and Italy, and on their completion direct radio service will be established from New York to the commercial centers of those countries.

"Austria, Spain, Denmark, Portugal, and Russia are each engaged in surveys for the establishment of high-power radio stations for inter-continental work, and all of these additional circuits should be in operation by the summer of 1925.

"In the Far East an American company is proceeding with the erection of a radio station in China designed to communicate with the stations of the Radio Corporation of America in Hawaii and California. Another American company plans a radio circuit between the countries of the Orient and Alaska and Seattle. A high-power station of the Dutch Government is now in operation at Malabar, Java, communicating with the United States naval radio station at Cavite, but this East Indian station will probably establish a circuit direct to the United States or via Hawaii."

Commenting on the standard frequency situation, the Bureau of Standards says: "If every radio transmitting station maintained exactly the wave frequency assigned to it, there would be available a standard frequency wave every time any station was in operation. However, at present this is the case only with certain stations, and because it is a matter of difficulty to maintain exactly the assigned frequency, and also because this is of great importance, the Bureau has been collecting some interesting data on the subject. As a result of these measurements, it is possible to give out information from time to time on stations which maintain a sufficiency accuracy to be useful as frequency standards. Several stations which use special means for maintaining constant frequency, have very nearly attained the goal of remaining within 2 kilocycles of the assigned frequency, as recommended by the Second National Radio Conference.

Transmissions from seven stations may be used in standardizing apparatus, by the methods given in Bureau of Standards Letter Circular 92, "Radio Signals of Standard Frequency, and their Utilization."

Radio Parts Nationally Known

BALDWIN PHONES	FROST PRODUCTS
BRANDES PHONES	HERALD LOUD SPEAKERS
CUNNINGHAM TUBES	REMLER PARTS
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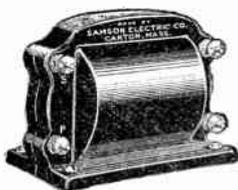
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International Communications Review Out

A pamphlet on international communications, of considerable value to business men whose interests extend beyond the United States, has just been prepared by P. E. D. Nagle, Communication Expert of the Department of Commerce. The booklet reviews the present situation in world-wide cable and wireless communication, and publishes for the first time in this country the provisions of the International Telegraph Convention of St. Petersburg and Lisbon.

In view of this government's plans to participate in the next international conference on electrical communication, a resume of the situation is a valuable contribution to present literature on wire and wireless communication, especially as regards international relations and regulations.

Under the title: "International Communications and the International Telegraph Convention," No. 121 of the Miscellaneous Series of Department of Commerce publications, Mr. Nagle's publication is available from the Superintendent of Documents, Government Printing Office, Washington, D. C., at ten cents a copy.

Prepared with a view of serving the American business public, which is constantly appealing to the Department for assistance in connection with international telegraphic and radio correspondence, the book covers the present means of direct communication, additional facilities planned, registered addresses and certified codes, methods and regulations. The part devoted to the telegraph convention relates to present foreign practice and regulations. The United States has never subscribed to these proceedings, but many of them are incorporated in the later radiotelegraphic convention, now being studied by government experts in view of modification and extension in the next international conference.

Complete radio transmitting and receiving sets have been installed at fire headquarters at Boston, and aboard the three fire boats which patrol the harbor, water-front and rivers. Formerly there was no way of communicating with these craft except by messenger. Now it is the work of an instant to get in touch with any or all of the fire fighters.

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True Reproduction of Voice and Music

Absolutely No Vibrations

Sweet, clear tones, no distortions or mushy sounds—good full volume without those rasping effects. Made of soundproof "Parembo," you get the entire strength from its special shaped throat and large bell-shaped mouth. Absolutely no metal parts. Extra large size, finished in grain leather effect. A big speaker at a little price. You'll want one when you see it.



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NED LAWRENCE
Los Angeles Evening Herald



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KFI

*Some
of
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"UNCLE JOHN"
HJK

*Friends
on the
Air*



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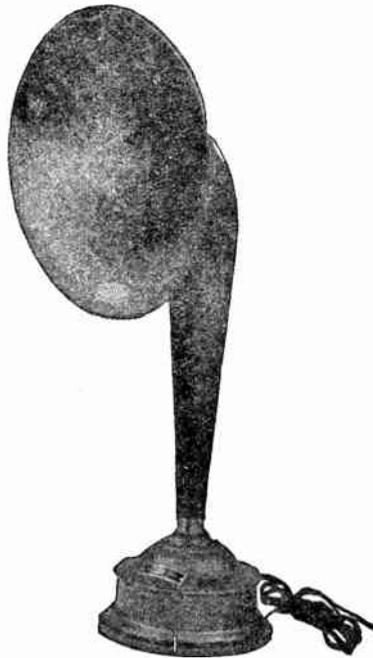
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performance
at a price
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reach of all.

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Los Angeles, Calif.

Phone 823-269

Smoke Consumers Cause Radio Interference

Radio fans have complained about practically every kind of interference, but lately a new form of electrical emissions, making local radio reception difficult, has been called to the attention of the radio officials of the Department of Commerce. Complaints against plants using the Cottrell electrical, smoke precipitation system have come from fans in Pennsylvania, Arizona and Montana.

Several letters received state that the factories using this high-frequency method of consuming and purifying smoke cause electrical disturbances similar to radio waves, which interfere with regular radio messages and broadcasting within a radius of about 20 miles. A very noticeable hum is sent out into the atmosphere by the precipitation. There is no law against interference from this sort of inadvertent transmission, and the Department of Commerce has merely called the attention of the offending plants to the disturbance they were creating.

Steps taken by a company to prevent the hum in their Arizona plant have been satisfactory, it is said, and other plant owners have expressed a willingness to clear the air for the radio fans. A method of grounding or shielding the electric equipment is understood to be under investigation.

Literally the plants using this form of smoke consumer are benefiting all their territory since they are clearing the air of injurious and poisonous gases, soot, and other objectionable matter, even if they do create a slight electric discharge similar to the hum of a motor generator.

Radio Enters Building Specifications

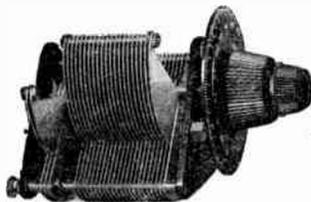
Radio is fast becoming indispensable as a household service, not unlike permanent features such as light, power and heat. Radio receiving sets are now considered by architects as fixtures, and the details of wiring, battery space and antenna installation are being written into specifications.

One of the first radio homes—that is, with facilities for radio built into the house—is that of Mr. L. E. Whittemore, Secretary of the Governmental Inter-Department Radio Advisory Committee. Before construction was begun, Mr. Whittemore explained his radio requirements to the architect, who included in his plans all radio facilities required by this engineer and enthusiast.

A non-metallic conduit pierces the study wall for a lead-in wire; another goes below to a special space in the cellar reserved for the batteries, while a third is for the ground lead. Another piece of conduit pipe will carry leads from the set to a floor or wall socket in the living room, where a loud speaker may be installed if desired.

Besides fixtures for erecting an aerial on the house-top, the owner plans to install two single, vertical loops in the north and west wall spaces of his study, the wires terminating in special sockets for an antenna plug connected with his set. This feature will give him certain directional selectivity, as he can use, at will, the loop facing east or west or one at ninety degrees to it.

Kellogg Condensers



DECREMETER type, 11, 23, and 43 plate with and without vernier. Standard capacities. With this variable condenser the dial scale can be correctly calibrated. The amount of increase or decrease of the plate surface variation is always constant.

		List, each
No. 601	11 plate with 5 plate Vernier. Knob—4" Dial.....	\$6.75
No. 602	11 plate without Vernier. Less Knob and Dial.....	4.50
No. 603	23 plate with 5 plate Vernier. Knob—4" Dial.....	7.75
No. 604	23 plate without Vernier. Less Knob and Dial.....	5.50
No. 605	43 plate with 5 plate Vernier. Knob—4" Dial.....	8.75
No. 606	43 plate without Vernier. Less Knob and Dial.....	6.50

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(Pico and Figueroa) Los Angeles

"Always a Place to Park Your Car Nearby—No Parking Limits"

287043

Telephone

281155



In order that questions be answered promptly and accurately, write plainly, number your questions and make them as brief as possible.

TECHNICAL EDITOR.

HALL BERRINGER

In order that questions be answered promptly and accurately, write plainly. Number your questions and make as brief as possible. T.E.

Question—Will you kindly send me a hookup using Tungar bulbs for rectifying 110-V A. C., using either a transformer or otherwise. I would like to use this for the plate supply on a transmitting tube.

MORRIS WILLIS, 501 Waverly Place, Spokane, Wash.

Answer—It is not practical to use Tungar bulbs to rectify current for plate supply in transmitting equipment. We suggest synchronous rectifier, electrolytic rectifier, or rectifier tubes manufactured for high voltage rectification.

Question—Would you please tell me how to hook up a loading coil and a vario-coupler so I can get meters from 300 up?

R. S., 1886 Lime Ave., Long Beach, Cal.

Answer—Connect loading coil in antenna lead between antenna and primary or vario-coupler. Bear in mind when the antenna or open circuit is increased, the secondary circuit must be increased. This can be accomplished by shunting the secondary of the vario-coupler with a variable condenser.

If your receiver is of the regenerative type the plate circuit must also be made to correspond with the secondary and antenna circuits. This can be accomplished by either adding more wire to the tickler coil or shunting coil with a fixed or variable condenser.

Question 1.—What can be done to stop the noises and interference in my set?

2.—What can I do to give more selectivity?

3.—What causes distant reception to come in coarse, and how can it be made to come in clear?

4.—Can more than one set be hooked up to one aerial, that is, so that two different parties could join, in using the same antenna?

F. E. SCHAAD, 964 Fifth Ave., Los Angeles, Cal.

Answer 1.—See that all connections are soldered. Check B-battery voltage, check tube bases, making sure they make positive contact.

2.—Put in new set of B-batteries. We suggest you get in touch with the dealer you purchased this receiver from.

3.—We think B-battery trouble exists in your set. If this is remedied, it should clear up signals.

4.—It is not practical to put more than one set on one aerial.

(Continued on page 75)

“Half the head phones in use are Murdock”



**Did You Hear Our New Echophones
and Dictogrand Loud Speakers?**

Ask for Demonstration

Open Evenings Until 9 o'Clock

THE CEN-RAD RADIO CO.

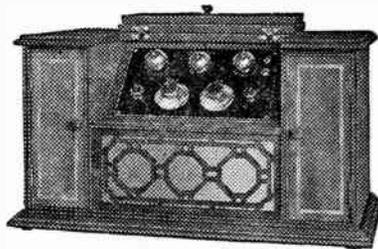
800½ So. Figueroa St.

Los Angeles

K E N N E D Y

The Royalty  *of Radio*

*National
Radio
Week*



*November 25
to
December 1*

YOU are cordially invited to visit our new Radio demonstration booths (on the first floor), and listen to the splendid broadcast reproductions from the new Kennedy models.

You will be impressed also with the striking beauty of these new models, which are fine pieces of furniture as well as superior receiving sets. All are self-contained units, requiring only dry batteries. Simplicity of operation has been attained, and we guarantee their correct and efficient performance.

A demonstration can be arranged in your own home and without obligation on your part.

716-738 *Barker Bros.* Los Angeles
South Broadway California

Radio Department
Exclusive music dealer distributor of the famous Kennedy sets

Concerts Daily—12:30 and 2:30 P. M.



(Continued from page 73)

Question 1.—I wish to know if I could build a set of two stages of radio frequency and add to it; second, will this be practical.

2.—Will it increase my receiving range to any extent? The only stations I am able to receive with any degree of certainty are KHJ, KFI, KPO and KGW.
W. W. GOLDSWORTHY, Auberry, Cal.

Answer 1.—Yes, it would be practical.

2.—Yes, it will increase your range to a certain extent.

For the past few nights especially the night of November 9, my receiving set has been cutting out or rather going absolutely dead and remaining so for three to twenty seconds every minute or less, while the Los Angeles stations are on the air or off it makes no difference with distance or local stations.

My aerial and lead-in, also ground connections are in good condition, batteries test O. K. The signals cut out and return in sharply. I have a 5-tube Neurodyne set connected with a loud speaker.

Could the Government Wireless Station, located about five miles from me, have anything to do with this trouble? If so, they must be trying something new, as it has only been doing this recently.

Is there anything that can be done to remedy this trouble or is everybody else having the same trouble?

C. K. STOAKS, La Mesa, Cal.

Answer.—There are many things that could cause the trouble you experience, in fact, too many to mention here. Your location suggests to us this trouble could come from the high power station near you. We suggest you get in touch with the dealer you purchased your set from. This dealer, no doubt, will send a service man to help locate the trouble.

MURDOCK "SOLID" NO. 56 HEAD PHONES
Best at Any Price

TUBES REPAIRED

Detectors \$2.75—Amps. \$3.25. All Work Guaranteed Good as New.
No Charge for Broken Glass. Discount to Dealers. 15-Day Service Now.

LESTER RADIO SHOPPE

140 So. Spring St.

Metropolitan 4832

Open Evenings

RADIO ARGENTITE

Trade **JUNIOR** Mark

THE MOST FOR YOUR MONEY

Radio-Argentite Detectors are scientifically adjusted to give full value to the delicate tone shading that it is so necessary to hear if you are to get the most enjoyment from the broadcast programs. Thorkensinite, the ore from which all Radio-Argentite detectors are prepared, is the only known mineral that can be tempered in this manner. Be sure you get the genuine Radio-Argentite.

CURRY & COUTELLIER LABORATORIES

2843 West Ninth Street

Los Angeles, Cal.

Radio a Power In Evangelism

By AIMEE SEMPLE McPHERSON

(Continued from page 13)

the large congregations who will be assembled in community halls to listen to the radio sermons at various points of the country; the invalid in his wheel chair; the afflicted on hospital beds; the business man at his dinner table; the children at the story hour.

Such an unprecedented opportunity is one the very angels of heaven might feign desire. It is filled with unlimited possibilities, and should facilitate the fulfillment of the great commission, "Go ye into all the world and preach the gospel to every creature."

We have formed what is known as the ANGELUS TEMPLE RADIO MISSIONARY SOCIETY, the first of its kind that has ever been formed, and are confidently expecting the largest possible results through the broadcasting of the Word of God for international evangelization.

MURDOCK "SOLID" NO. 56 HEAD PHONES

Best at Any Price

STAR ENGRAVING COMPANY
 223 EAST FOURTH ST. LOS ANGELES
 872-969 TELEPHONE 872-969
 "Your Story in Picture Leaves Nothing Untold"

Heath's Electric Shop

NOTICE!

During the month of **December** our **Radio Department**
 will be open till 9 P. M.

1052 N. Western Ave., Hollywood

Phone Holly. 1937

Standard Merchandise Excellent Service Demonstrations That Satisfy

We specialize in



Products



There is a RADIOLA for every purse.

They are all on display.

See—Hear—and be Convinced.

KODAKS

Howland & Jewey Co.

FRAMES

EASTMAN KODAK COMPANY

510 SOUTH BROADWAY

LOS ANGELES

"Out of the Air"

By LISTENER-IN

Good news for Los Angeles. The National Radio Show will be staged at the Biltmore Hotel, February 6th to 10th inclusive. Last year this show was held in the Auditorium, San Francisco. Mr. J. C. Johnson, General Manager, American Radio Exposition Company of New York, is a recent visitor to our office and informs us that after looking over the field he is convinced that Los Angeles is the logical place for holding the western show. Only two radio shows are put on each year, one in New York and the other in the city in the west that will be representative. We feel that the selection of Los Angeles as the place for holding this national show is a great victory and we are indebted to the splendid efforts of the Radio Trades Association of Southern California and The Los Angeles Chamber of Commerce who have made this possible. Mr. Johnson will remain in Los Angeles until after the show. He has opened offices in the Bank of Italy Building.

It is always a good practice in bringing a lead-in into the house not to let it touch anything. If the lead-in touches any metal, some of the signal strength will be absorbed. In some cases where the lead-in touches wood there is not much difference in the signals; however, when it rains, the wood has the same effect as a metal object.

KFCL, Los Angeles Union Stock Yards, are off the air until further notice.

Mr. William Gibbs, who used to be known as "Cousin Bill" over KHJ some time ago, is now announcing from KFI.

A reader in Chicago writes that he heard Mary Garden very clearly the night she sang over KHJ. He was using a five-tube Neutro-Grand.

At a recent meeting in New York of the directors of the Independent Radio Manufacturers the matter of dealers and manufacturers who are putting out sets built from neutrodyne parts without procuring a license to use the Hazeltine patent was taken up.

Radio is being used successfully in India to send messages over a mountain 15,000 feet in height. Previously, considerable difficulty was found in wire communication due to heavy snow drifts and storms which severed the lines. This achievement has been effected between the cities of Srinigar and Jammu, in Kashmir. Other installations have been made or are planned in Bhopal, Gwalior, Hyderabad and Rejkot, by Marconi engineers.

It has been suggested that there should be an association of Listeners-in so that their voice could be heard in matters that pertain to their interests, such as legislation, programs, etc. We shall be glad to hear from our readers with their ideas on this subject.

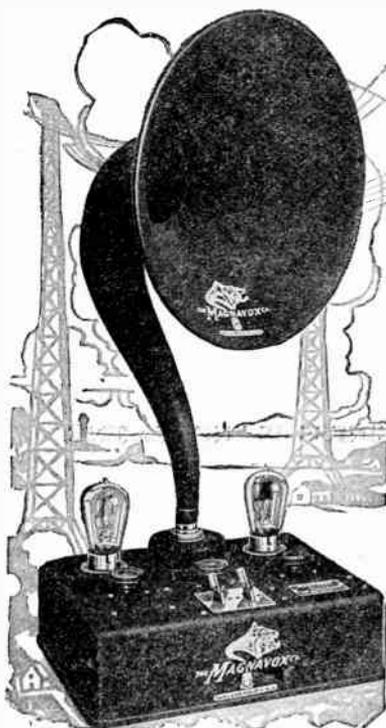
Whether or not you are interested in radio you should visit the new demonstration rooms at Barker Bros., Los Angeles. For artistic effect they are hard to beat.

Owing to a change in plans, the "get-together" banquet given by the Radio Trades Association of Southern California will be at the Oakes Tavern, 361 South Hill St., Los Angeles (entrance on Fourth St.), in place of the Elite Cafe, as previously announced. Monday, November 26th, is the day, and 6:30 P. M. is the time. All radio dealers, jobbers and manufacturers please take notice and be sure and attend. Very important matters will be discussed.

Is the radio business good in the west? After looking over the advertisements in this issue we feel that there is no need to answer this question.

A Magnavox Reproducer and Power Amplifier in One Unit

AFTER exhaustive study and tests by our engineers, this has been successfully accomplished, and the new instruments of the unit type here illustrated in one and two stages of amplification may now be had through Magnavox dealers everywhere.



The new Magnavox Combination Sets A2-R [2-stage] and A1-R [1-stage] insure the utmost in convenient, home radio reproduction.

Reproducers

- R2 with 18 inch horn \$60.00
- R3 with 14 inch horn \$35.00
- M1 with 14 inch horn; for dry battery sets . \$35.00

Combination Sets

- A1-R consists of Magnavox Reproducer with 14 inch horn and 1-stage Amplifier \$59.00
- A2-R same with 2-stage Amplifier . . . \$85.00

Power Amplifiers

- A1-One-stage . . \$27.50
- AC-2-C-Two-stage 55.00
- AC-3-C-Three-stage 75.00

Magnavox Products can be had of good dealers everywhere. Ask for a demonstration

THE MAGNAVOX CO.
Oakland, Cal.

New York Office: 370 Seventh Avenue
Canadian Distributors:
Perkins Electric Co., Ltd., Montreal

Perflex Salesman

ARE MAKING REAL MONEY

because — — —

Every set sold has sold at least one additional set.

because — — —

We are giving them every possible kind of sales help in addition to a complete course of instruction in the tuning and operation of the set.

because — — —

Perflex is made in models to meet every class of people.

because — — —

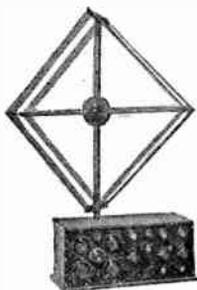
It is manufactured by a firm with ten years of successful radio manufacturing behind it.

because — — —

It has made its own reputation, which is growing better every day.

because — — —

The field to work in is unlimited.



BUSINESS IS INCREASING

To such an extent that we can use to mutual advantage ten more energetic workers. Men who have been selling electrical appliances, automobiles, real estate or securities are preferred—but anyone who can meet our qualifications as to selling ability will be considered. Extended Radio experience not required. We give you necessary training.

IF YOU MEAN BUSINESS

Don't Pass This Opportunity

Write or apply in person at once

THE XMAS SEASON IS HERE

THE WIRELESS SHOP
A. J. EDGCOMB

Phone 52268

1262 W. Second St.

Los Angeles

Pacific Southwest's Largest Exclusive Radio Manufacturers