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Radio Doings

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Los Angeles, Calif

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Five Cents a Copy

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Vol. IV

Los Angeles, April 26, 1924

No. 17

"Freedom of the Air"

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"The American Society has contracts with a number of music publishers, the Berlin company among them, covering the collecting of royalties for public performances for profit.

"On these contracts the American Society licenses hotels, dance halls, picture shows and others collecting royalties for the use of music in almost every place where popular music is played.

"For some time the American Society has attempted to make broadcasting stations pay for the use of the music owned by their members, claiming that broadcasting was a public performance for profit.

"Most broadcasting stations in the country have opposed this unnecessary tax, claiming that the broadcasting was not charged for and that it was not a performance for profit. A few broadcasters, however, paid the fees asked for by the American Society.

"Many music publishers, members of the American Society, claim that the refusal of broadcasting stations to play their numbers, coupled with the increased publicity given the musical compositions of non-members, has injured the business of the music publishers.

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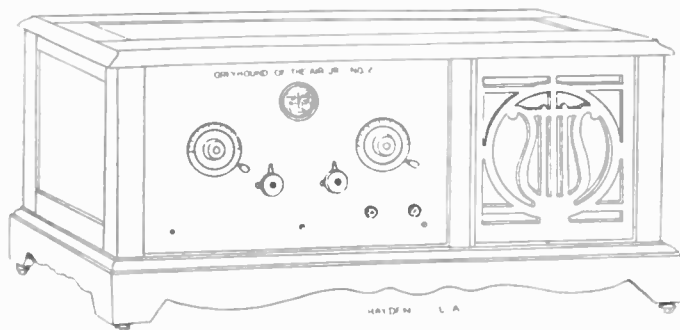
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How the "S. O. S." Originated

The origin of the distress call of ships at sea, familiar to all operators and many fans, has caused considerable curiosity, and in order that a complete report could be made, the Bureau of Navigation of the Department of Commerce asked the International Bureau of The Telegraph Union at Berne for a resumé of the origin and history of "S. O. S."

According to advices just received from M. Etienne, Director, the first suggestion of a distress call for ships was made by the Italian delegates to the preliminary conference on wireless telegraphy, at Berlin in 1903. They urged the adoption of a universal signal "SSSDDD," to be sent by ships in distress, explaining that all stations and ships should be obliged to receive the following messages, suspending their other communications and passing immediately to reception. The other delegates agreed to the need for such a signal but left the final decision to a special conference.

Soon after this suggestion, the Marconi Company recognized the need for a distress call, and on February 1, 1904, the famous call "CQD" was instituted on all their ships by a general order. This signal was a combination of the general call "CQ," coupled with the letter "D," to signify distress. It was used only at the order of the captain of a ship in distress, or a station retransmitting the signal. All stations were to recognize the urgency of the call and make every effort to establish satisfactory communication without delay. The dismissal of operators was to follow the misuse of the call. Several countries, including the United States, adopted "CQD" and used it until the Berlin regulations were ratified.

At the Radio Telegraphic Conference in Berlin in 1906, the German Government submitted the following suggestion relative to a standard distress call: "Ships in distress will make use of the following special danger signal: (SOS)."

Previously German ships desiring to communicate with all vessels in their proximity without knowing their names of calls would send an inquiry signal "SOE." Germany planned to suggest this signal as the international signal, but as the last letter "E," represented by a single dot, was not believed sufficiently characteristic, being easily susceptible to loss, especially during atmospheric disturbances or in heavy traffic, or when carelessly transmitted, the delegates in 1906 suggested the final letter as "S," thereby having the honor to define what became the universal signal "." "SOS."

Interpretations, such as "save our souls," "save our ships," given the call, the Berne Bureau points out should be accepted with reserve. The Italian proverb: If it is not true, it is well invented," they suggest it applicable to the literal translations offered. In a similar manner, Berne reports, the Marconi signal "CQD," has been interpreted to mean "come quick danger."

The distress signal "SOS" was adopted officially and put into effect by the International Radiotelegraphic Convention of Berlin in July 1908. It was a matter of keen regret to the Marconi operators that their old signal "CQD" was not adopted, and many continued to send "CQD," as well "SOS," when accidents occurred. "CQD," however, was gradually forgotten. In 1912 the United States

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Phusiformer Is New Radio Achievement

DEVICE MAY BE USED IN VARIOUS CIRCUITS FROM CRYSTAL TO RADIO AMPLIFIER

By J. M. SCHWARTZ

There appeared in the Eastern radio market, some weeks ago, a new piece of apparatus called the Phusiformer. This is a general name and not the particular trade mark of an individual manufacturer. Three firms already have been licensed to put it on the market. The principle, in each case, is the same. Minor details of design distinguish the different kinds of Phusiformers.

Phusiformers can be used in every kind of a circuit, starting with the simple crystal hook-up. It can serve as a vario-coupler. Its chief use, however, is bound to be in tuned radio frequency sets, reflex circuits, and similar advanced means of picking up radio signals.

One of the most interesting claims for Phusiformer is that they will take the place of radio frequency transformers and their associate condensers in a multi-stage tuned radio frequency amplifier giving a receiver which is immune from excessive regeneration, regardless of the type of tubes employed.

The Phusiformer (pronounced fuse-i-former), is the result of years of experimentation on the part of radio engineers to develop a tuned radio frequency amplifier which would not cause self-oscillation when tuned to resonance with an incoming wave. Construction of multi-tube sets is greatly simplified by the use of several of these devices and the results is a highly efficient receiver whose dials may be calibrated.

The word Phusiform is from the Greek "phusikos," meaning natural, or natural form and it appropriately sets forth the features of this new and remarkable non-oscillating coupler, especially useful in radio frequency amplifiers, which meets the following requisites of an ideal receiver:

1. Non-oscillation.
2. Non-reradiation and non-interference.
3. Sensitive to distant stations.
4. Freedom from hand capacity.
5. Synchronized and calibrated tuning.
6. Simple construction and operation.

Applying these admitted requisites to perfect reception, as we would consider it today, to any of the present standard and popular circuits, we would undoubtedly find that very few meet half of these requirements.

There are, of course, some exceptions which meet most of the demands fairly well, the most notable of which is the neutrodyne. However, the neutrodyne fails in some of the requirements, while in the average receiver which approaches the ideal the construction is very complex and its cost is prohibitive to the majority of radio fans.

More and more the tendency in radio has been toward radio frequency amplification, and exceptional results in this direction have already been accomplished. Progressive evolution from transformer coupled to tuned radio frequency stages has thrown an entirely new light on the possibilities of "DX" reception on which the pleasure and enjoyment to be derived from the radio receiver depends.

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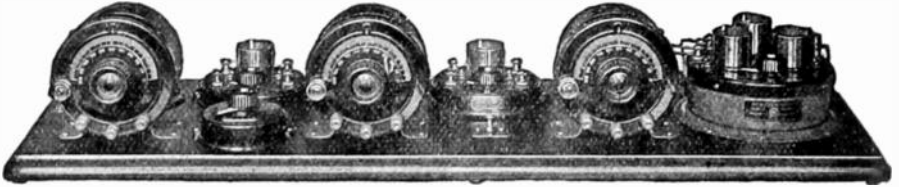
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The Atwater Kent Model 10 Receiving Set. Price \$110.00

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OUTSTANDING among the advantages of this receiving set is its remarkable selectivity, and its wide range of operation:—the desired broadcasting station can be tuned in at will. It gives exceptional tone qualities and volume. You should hear it perform. Atwater Kent Radio Equipment includes complete sets and all parts necessary for the assembling of complete sets.

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The Phusiformer unit used in the Phusiformer circuit, makes possible new combinations in radio frequency amplification hitherto considered impractical and provides an excellent means for a study of the results of non-oscillating tuned radio frequency amplification in terms of our present receiver, since among its other accomplishments it can be added, if it be desired, in one, two or three stages to any existing receiver.

In the center of the phusiformer case is a semi-circular plate variable condenser. Around the condenser the radio frequency transformer is built up. It is formed of self-supporting coils of copper wire, with the various sections connected so as to give a minimum of distributed capacity. The sections are concentric and in a plane with the condenser plates. As is common in radio frequency amplifier construction, the primary is located inside the secondary with comparatively close coupling. This winding terminates in binding posts at the top of the instrument. The secondary is connected in shunt with the variable condenser so that this circuit is variable through a wave length range of 200 to 600 meters. Two binding posts beside the primary terminals are wired to the condenser for external connections to the receiving circuit. Thus we have a radio frequency transformer without means of tuning the primary, and a secondary winding closely coupled to it, shunted by a variable condenser. Not only is it a familiar arrangement, but its connection in an amplifier circuit is according to the well-established method.



Why is it, then, that no oscillation occurs in a radio frequency amplifier made up of Phusiformers, while this action is extremely troublesome when apparently the same electrical arrangement is produced through the use of the older type transformers and condensers? It seems that the answer lies in the fact that the electro-static and electro-magnetic fields are so concentrated that their external density is not sufficient to cause trouble. The accompanying illustrations show a comparison between the fields set up about Phusiformer coils and honeycomb wound inductances. It can be clearly seen that the external electro-magnetic field about the Phusiformer coils is of a character that would give much less trouble in radio circuits than that of the coil with which it is compared. While this explains many reasons for the success of the new device, it does not take into consideration the coupling due to the capacity between the vacuum tube elements, but a complete discussion of theory involved must necessarily be so extended that it is beyond the scope of this article. The problem brought up will provide a great field for exploitation among radio enthusiasts interested in this phase of receiver design.

Besides this being available as a single unit, the phusiformer is already common. Thanking you in advance, I am.

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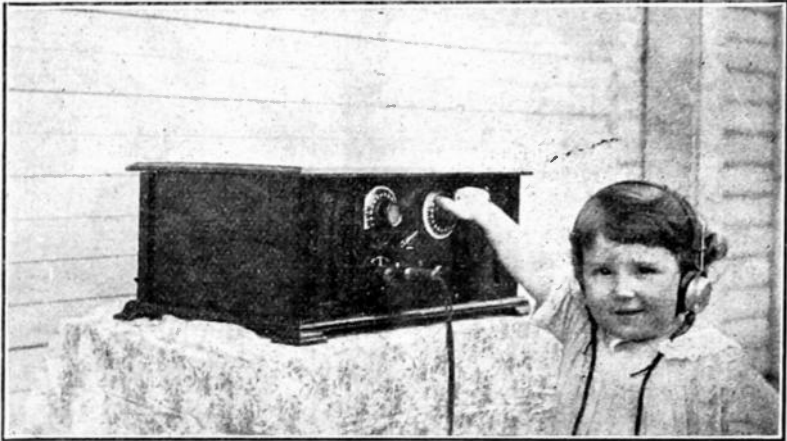
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"The Californian"



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This 2-tube Super-Reflex Receiver is now on production and ready for immediate delivery

Console Model, complete with Tubes, Batteries and Loud Speaker, self-contained in beautiful mahogany cabinet.....

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This set is remarkable for its PURE TONE QUALITY,
EXTREME SELECTIVITY and SIMPLICITY OF OPERATION

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mercially employed in two instruments which are growing in popularity at the present time. One is a so-called "cosmopolitan converter." This is essentially a tuner and a two-stage tuned radio frequency amplifier that can be connected to any detector, or detector and audio frequency amplifier system, to form an ultra-sensitive and stable receiver. A complete Phusiformer set of this type has also made its appearance on the market. The outfit possesses all of the advantages of the best neutralized radio frequency sets with the exclusive virtue of maintaining its stability with various types of vacuum tubes. Thus it is probably the first instrument of this grade that can be turned out commercially with a positive assurance against re-radiation.

The effectiveness of any wave trap depends largely upon its electrical efficiency and the Phusiformer is particularly well adapted for this purpose. In the first place it makes possible either a single or two circuit trap which covers the entire field of filter utility, and secondly the electrical losses of the Phusiformer are at an absolute minimum—its high frequency resistance is extremely low and the condenser losses negligible.

The Phusiformer is equal in its performance as a wave filter to any of the especially designed pieces of apparatus on the market intended for this purpose only, and which consequently sell for a considerably higher price.

There are several methods of connecting wave filters or traps into receiver circuits and each presents some advantage for particular forms of interference. A great deal has been written on this subject and many exaggerated representations have been made. However, excellent results can be secured with an efficient wave filter, but several things must be kept in mind. Any wave-trap will cut down the "tuned-in" station slightly; a wave trap will be more effective against phone or C. W. interference than it will on nearby spark signals. If two interfering stations have so nearly the same wave length that they "heterodyne" each other, it is useless to try to separate them; and for wave lengths near to that to which the trap is set the tuning of the radio set itself will be disturbed. These are vagaries peculiar to the particular receiver, which will have to be mastered by the operator of the set and no fixed rules can be established to cover all existing receiving circuits.

While the greatest field of application of the Phusiformer lies in instruments of the type just referred to, it has so many other possibilities that there are uses for it in every radio receiving equipment, regardless of its character. It makes a wonderful little tuner for use with a crystal detector, as it provides everything needed but the phones and detector itself. In a simple vacuum set it will perform equally well, and due to its extreme compactness it is ideal for portable equipment. When used as a tuner of a regenerative receiver, a variometer is needed in the plate circuit of the detector to control the feed-back. For converting a loop receiver for use with an open type antenna, the type "P" Phusiformer is the handiest of anything that can be used. It can be secured to the cabinet of the receiving set near the loop terminal, so that short leads will connect the two, leaving the primary Phusiformer posts for aerial and ground connections.

The second of this series of three articles will show the wiring diagram of a tuned radio frequency set using Phusiformers.

This is RADIO

R F B

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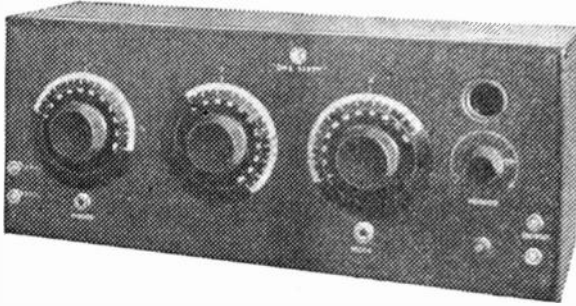
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High-grade parts and good workmanship are used throughout.

The above machine complete and installed with \$17.50 Storage Battery and \$18.00 Loudspeaker—\$85.00

The Non-radiating Receiver



FADA "ONE SIXTY" Neutrodyne Radio Receiver

Distance without a howl or squeal

Turn the dials slowly and in come the stations—local and distant—loud and clear enough for the loud speaker. A Neutrodyne receiver, the FADA "One Sixty" tunes without distortion. Equal in results to sets employing more tubes and double the cost. Price \$120. Tubes, batteries, phones, etc., are extra. Ask for demonstration.

"The Fada 'One Sixty' will do anything that any other set built will do under the same conditions, and do it easier and better."

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Radio Appropriations and Bills

If Secretary Hoover is to patrol the ether for fans and commercial and other interests, he may have to make a plea to the Senate Appropriations Committee.

Appropriations for radio inspection, supervision and experimentation for the fiscal year 1924-25, were cut by over \$25,000 by the House Appropriation Committee, even after the figures submitted by the Department of Commerce had successfully run the "gauntlet" of the Budget.

Secretary Hoover had the approval of the Budget Committee for a total appropriation of \$180,278, for radio administration, but this amount was reduced to \$168,778 by the House. The sum allotted is \$19,578 over the amount authorized for the current year, but this includes \$17,340 as pay for the Naval personnel handling radio accounts, which it is proposed to transfer to Mr. Hoover's Department. The only additional money granted for field work, which has increased greatly during the past year, is \$2,000 instead of \$14,200 asked. Six extra assistant inspectors and three or four clerks were requested. No allotment for much needed apparatus for inspectors is made, although it is known that field workers have to purchase much of their own equipment in order to efficiently police the ether lanes, now congested badly with thousands of transmitters and approximately 20,000,000 fans filing complaints regarding interference. The radio laboratory of the Bureau of Standards suffered also in a cut of \$4,320.

Novel Radio Calls Suggested

What would you say if you had to tune your ear musically before you could tune your set to a broadcasting station, and if all announcers sang their calls in musical notes?

As a substitute for the call letters of different broadcasting stations, which are sometimes confusing and unintelligible, the use of musical notes sung by the announcer has been suggested to Secretary of Commerce Hoover.

Dr. Charles M. Swingle, of Cleveland, Ohio, who recommends this practice as an improved method of designating radio stations, says "These notes should be sung by the broadcasters thus: 'do, me, sol, do sol, me, do' might designate WJAX." The call of this station in announcements would then be: "WJAX, do, me, sol, do, sol, me, do," he explains, suggesting that later, only the notes be used.

More than one value would accrue by this method, he believes; more certainty of being understood, training of the broadcasters' voices, and encouragement of vocal music. "It is a psychological fact that one who hears only a few notes, is almost impelled by the musical instinct to sound them over, whereas, this is not true of a complete song," he writes. This old instinct, according to Dr. Swingle, can be encouraged and again made to function for all.

In his reply to Dr. Swingle, the Commissioner of Navigation explained that the Government is forced to follow the rules of the International Bureau at Berne in assigning call letters to radio stations, and numerical designations for amateurs, according to their districts. All of which makes the suggested change practically impossible.

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If you want your Neutrodyne repaired properly, bring it to us. We repair all types of radio sets
Radio sets built to order—by men who know your wants and can give you expert workmanship and prompt service.

HARKNESS

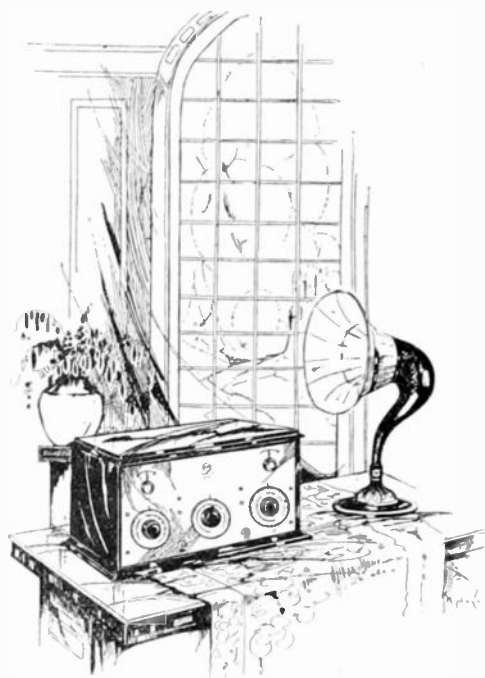
2-Tube Set, complete with horn . . . \$68.50 2-Tube Set, wired . . . \$29.50
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Behind the Scenes in a Broadcast Studio

NUMBER NINE—NOVELTY PROGRAMS

By DR. RALPH L. POWER, "The Sky Crier," Los Angeles Examiner Radio



Some weeks ago I told you about the necessity of variety in a radio musical program. In addition to information about the average program in a broadcast studio, many fans have asked about radio novelties, or, if not novelties, then of unusual program hours.

Some stations have tried clog dancing merely for the novelty it affords the listeners-in. By using strips of hard-wood specially arranged, the invisible audience can hear the dance, although, generally speaking, the result is not particularly interesting. Still, it is something new and novel, and that's what the fans demand.

And again, once in a while a dancer dances to entrancing Hawaiian music and the audience can hear the swish of the reed skirt. Lessons, I believe, have been given on every conceivable subject over the radio. Instruction in languages, in singing, in piano playing—everything, it seems, from the daily dozen to Esperanto. And in everything there is a certain

percentage of the public that is waiting for just that thing.

There are novel ways to sign a station on and off the air. When the program is about to commence, a live rooster crows at one studio; the evening chimes ring out in another; a grandfather's clock loudly ticks at still another, and studio directors are tearing their hair to devise something that will be out of the ordinary.

Slogans are coined to make station calls distinctive. "The voice of the west." "The gateway to the sea." "Out where the west begins," "Where seventeen railroads meet the sea," "The wave of Lake Erie"—these are but samples from at

WITH A Radyne

This is a list of some of the stations heard on a loud speaker with this set in my home in Los Angeles, most of them while local stations were broadcasting:

KYW—Chicago	KGW—Portland
WSAI—Cincinnati	KGG—Portland
KFKX—Hastings	KFBK—Sacramento
CFAC—Calgary, Canada	KLX—Oakland
WDAP—Chicago	KFHJ—Santa Barbara
WBAP—Ft. Worth, Tex.	KZN—Salt Lake
KFAF—Denver	KOB—State College, N. M.
KDYL—Salt Lake	KWG—Stockton
KPO—San Francisco	KUO—San Francisco
KFAE—State College, Washington	KFEV—Douglas, Ariz.
KFAD—Phoenix	CHBC—Calgary, Canada

Let me try to bring in these stations in your home. This set brings in local stations on a loud speaker without aerial or ground.

Main Supply Stores

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The Magazine of the Radio Trade

Over a hundred pages of Live Merchandising Ideas and Authentic Information on the latest developments in Radio—a magazine indispensable to the progressive Radio Merchant.

Sent free on request—put your firm name on our mailing list today to receive the May issue—compliments of

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WESTERN RADIO GUARANTEED PRODUCTS

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Los Angeles

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least eighty distinctive slogans representing as many stations.

And studios, too, must have their announcers who become more or less a part of the fixtures. They must be men who will remain for a length of time. Big Brother, The Hired Hand, Uncle Bob, Uncle John, Dream Daddy are samples of these, as well as The World Crier of Chicago, The Town Crier of Detroit, and The Sky Crier of Los Angeles.

Some stations have yearned for the distinction of a woman announcer, for it would stamp the station as having something different from the other five hundred and more. So far as I know, there are no less than four stations now claiming to have the first woman announcer on their staff.

Just for the sake of novelty, radio people all over the country tried zither playing and yodelers for the evening entertainment. The "experiment" proved so successful that they are now eagerly awaited by hundreds of thousands of fans wherever they play at the many studios in the east or west.

Whistling also was introduced as something extraordinary, but the craze apparently died down. Solos on hand saws won much applause at first, but they, too, did not become a permanent part of program arrangements.

National nights have met with much-deserved success. Special program hours for the Swiss, Scots, French, German, Spanish and other people not only entertain thousands of listeners-in, but they make firm and staunch friends among the people of those nationalities for the station that broadcasts the national or international programs.

Community programs, as I said in one of the earlier articles, do the same for communities. Such programs provide an outlet for home or local talent in those smaller regions where otherwise they would probably be unable to broadcast their talent. On such occasions, relatives all over the country—from Long Beach to Iowa, at least—are listening eagerly for the sound of Mary's voice or of Johnnie's violin playing.

Portable panels to football and other athletic games, to the grand opera or philharmonic orchestras, to Easter sunrise services and other notable events, can hardly be classed in the novelty class of radio entertainment.

It can well be prophesied that the novelty stage will soon pass, if it has not already done so. This is largely because of the difficulty of inventing new ideas, rather than of the public becoming tired of it.

With the stabilization of stations, the standardization of equipment, the training of engineers and the creation of an esprit d'corps among staff and public alike, the solid programs will predominate in radio entertainment of the future.

**Are You Going
To
The Mary Pickford's Studio Dance**

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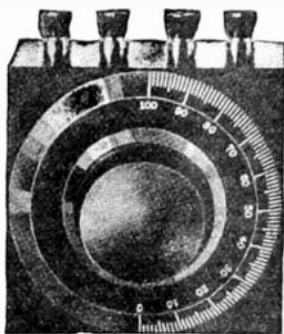
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OPEN EVENINGS

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*"The
Missing Link
in Radio"*



*No Oscillation
No Radiation
No Interference*

\$9.50

The Cosmopolitan Phusiformer is a tuned Radio Frequency Transformers with the following extraordinary features: No Oscillations, No Radiations, Extremely Sensitive and free from Body Capacity.

It is the goal which Radio Engineers have tried to reach for years—namely, not to cause self-oscillation when tuned to resonance with an incoming wave. The secondary is tuned, primary is aperiodic, the coupling is fixed.

No neutralizing condensers are used, thus using any and all tubes.

Cosmopolitan Phusiformers make possible the use of three stages of Tuned Radio Frequency amplification without oscillation heretofore thought impossible.

The use of Phusiformers does away with all coils and variable condensers and permits accurate calibration of the dials. No neutralizing condensers are necessary as neutralization is automatically effected by the patented windings in the Phusiformer.

Ask your dealer to show you how to convert your regenerative set into a five tube set which will be superior to a Neutrodyne.

As a WAVE TRAP the Phusiformer is superior to any now in use. The Wave Length range is 220 meters to 610 meters, which efficiently covers the entire list of Broadcasting stations.

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Community Antenna Practical Soon

The "coupling-tube unit," by means of which several receiving sets may use a single antenna will be made available to the public soon after June 1, according to naval radio experts. This device was invented and perfected by Dr. A. H. Taylor and Mr. L. C. Young of the Naval Radio Laboratory at Bellevue, Md., and has been demonstrated on board the United States Battleship Colorado. By connecting a coupling-tube unit between each receiving set and the single antenna suspended from the masts, several incoming messages on different wave lengths were received simultaneously, while three messages on other wave lengths were transmitted from the vessel.

Patents on this new radio device, which makes the operation of several sets independent of each other, even when receiving on a common aerial, are pending, and consequently the inventors do not care to reveal the exact hook-up nor details of the apparatus. In general, it is said to include a coupling resistance, so high that the strength of the incoming signals are reduced materially, requiring at least a three- or four-tube set. A radio frequency step, in the form of a radio frequency trap, which eliminates any regeneration, is required and, of course, a receiving set with a detector tube. Reception is improved with two tubes of audio frequency amplification.

The military value of the coupling unit to the Navy is very high, since it enables a vessel or station to carry on several times as much business or traffic as has heretofore been possible without interference, and the Navy holds the rights for military use. It has become a part of battleship standard equipment. To the general public, its chief interest will be that it will permit the use of a single aerial on a large apartment house or hotel, wherein each tenant wants to operate his own set independently of others. A lead-in can be run into each apartment or suite, the owner specifying that each tenant must use a coupler unit and not connect his receiving set directly with the plug in his suite. Many unsightly aerials on house tops can thus be eliminated.



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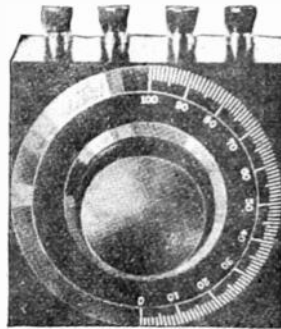
Announcement

We take great pleasure in informing the trade and general public that we have been appointed distributors of

The Cosmopolitan Phusiformer

\$9.50

*The
Missing Link
in Radio*



- 1. No oscillation.
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Los Angeles, Calif.

Amplifier Data

By HALL BERRINGER

(Continued from last week)

Oscillations in an amplifier are the result of regeneration due to feed-back coupling between plate and grid circuits of the amplifier, exactly as in a regenerative receiver, the difference being that in the receiver the regenerative action is intentional and in the amplifier it is accidental and undesired. This regeneration in the amplifier may be due to either inductive or electro-static coupling between grid and plate of the amplifiers. Thus the electro-static coupling between may be provided by the inherent capacity in the tube itself, or by the capacity between grid and plate leads in the wiring of the amplifier. Inductive coupling may also be due to the coupling between grid and plate leads of the wiring; or to coupling between transformed windings in plate and grid circuits due to interlinking of flux paths, and so on. The case of transformer coupled amplifiers may be considered from the point of view of tuned grid and plate circuits. The distributed capacity of the transformer coils in grid and plate acts as the tuning condenser, thus tuning grid and plate circuits and providing the necessary regenerative action. Any of these means provides sufficient coupling between plate and grid to initiate oscillations if there is present a circuit which is able to oscillate, and experience shows that there always is. It is not essential that the plate of one tube be directly coupled to the grid of the same tube. If the plate of any tube is coupled to the grid of any other tube, oscillations are bound to occur. The entire amplifier system oscillates at a frequency which is determined by the most favorable consonants of the system and at a frequency which gives the least losses.

Not only may the amplifier oscillate at audio frequency, but it may also oscillate at radio frequency and still produce noises in the phones. The noises in the phones when the amplifier oscillates at radio frequency are due to blocking action on the grid exactly as in the case of the receiver above described. Due to very

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 tery & Ignition

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 tric Service

Or

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high amplification, the grid of a tube may be given a very high negative potential which immediately stops the oscillations. The charge on the grid usually leaks off until a potential is reached which permits the oscillations to start again. This starting and stopping of oscillations takes place at an audio frequency rate which depends upon the values of leak and condenser.

The problem of preventing howling, then, is the problem of eliminating the feed-back coupling between the grid and the plate of tubes. To put it in other words, if we can prevent the electro-static or electro-magnetic fields of the plate circuit from reaching the grid circuit and causing variations in the grid circuit, we will be able to avoid howling.

The following methods will be found to be of great assistance in accomplishing this purpose:

1. Proper wiring of amplifiers. This is where a great deal of the trouble experienced generally arises. Wiring should be arranged so that all leads are as short as possible, thus giving minimum coupling. Care should be taken that grid and plate leads should be as far apart as possible, thus preventing any transfer of energy between the two circuits. Most important of all, grid and plate wires should not run parallel to one another, as the coupling is thereby considerably increased.

2. Transformers should be mounted so that their cores and coils are at right angles to each other, thus securing minimum coupling between different stages. In order to prevent spreading of the magnetic field, the transformers should be encased in an iron shell, thus concentrating the lines of force around the transformer. In order to prevent electric lines of force from spreading, the metal case and core of the transformers should be grounded, thus putting these shields at earth potential and preventing transfer of energy.

3. If possible, each tube and its associated apparatus should be mounted in a separate chamber which is lined with copper gauze or foil and grounded. Any energy which may be transferred from other circuits to the shielded circuits is absorbed in the shield and run to ground.

4. A common source of coupling between different circuits is due to the use of a common "B" and common "A" battery. It is of course too expensive to use different batteries for each stage, although this is the best way of eliminating this source of coupling. However, by shunting with a high capacity the coupling may be considerably reduced.

5. Finally, there is that disturbing source of coupling due to the operator wearing head phones whenever he moves his hand in the vicinity of the set or makes adjustment. Two remedies for this may be suggested. The first is that the panel of the receiver and amplifier should be lined with a copper shield and grounded. Thus any variations due to the operator's body will be effectively absorbed by the eddy currents in the shield and run to earth. The second is that the leads of the telephones should also be sheathed in copper gauze tubing and grounded to the case of the telephone, if metallic, and then grounded to earth.

(To be continued)

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6-8 A. M.
PACIFIC TIME

RADIO TIME TABLE

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

STATION	WATTS	CITY	METERS	CALL	SUN.	MON.	TUES.	WED.	THUR.	FRI.	SAT.
					8:00-6:30	6:30-7:00	7:00-7:30	7:30-8:00	8:00-6:30	6:30-7:00	7:00-7:30
Reynolds Radio	500	Denver	360	K L Z			X				X
Free Press	500	Detroit	517	W C X				X		X	X
Detroit News	500	Detroit	517	W W J		X	X			X	X
Woodmen of W	500	Omaha	626	W O A W	X	X		X		X	X

8-10 A. M. PACIFIC TIME

9-11 Mountain Time

10-12 Central Time

11- 1 Eastern Time

STATION	WATTS	CITY	METERS	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
S. F. Examiner	150	San Francisco	360	K U O		X					X
Reynolds Radio	500	Denver	360	K L Z			X	X		X	X
Star-Telegram	500	Fort Worth	478	W B A P	X	X				X	X
News and Journal	500	Dallas	478	W F A A		X	X		X	X	X
Palmer School	500	Davenport	484	W O C		X	X		X	X	X
John Wanamaker	500	Philadelphia	609	W O O		X	X		X	X	X
Federal Tel.	500	Buffalo	319	W G R			X		X	X	X

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10-12 A. M.
PACIFIC TIME

RADIO TIME TABLE

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

STATION	WATTS	CITY	METERS	CALL	SUN.		MON.		TUES.		WED.		THUR.		FRI.		SAT.	
					10 00-10 30	10 30-11 00	10 00-10 30	10 30-11 00	10 00-10 30	10 30-11 00	10 00-10 30	10 30-11 00	10 00-10 30	10 30-11 00	10 00-10 30	10 30-11 00	10 00-10 30	10 30-11 00
L. A. Times	500	Los Angeles	395	KH J	X	X	X											
Earl C. Anthony	500	Los Angeles	469	K F I	X	X	X											
Bible Institute	750	Los Angeles	380	K J S	X	X	X											
Angelus Temple	500	Los Angeles	278	K F S G	X	X	X											
So. Electric Co	50	San Diego	244	K D P T	X	X												
Hale Brothers	500	San Francisco	423	K P O		X	X											
Tribune	500	Oakland	509	K L X	X	X	X											
Waener Brothers	250	Oakland	360	K L S				X						X				X
Gould	5	Stockton	360	K J Q	X	X							X					
Fallon & Co	100	Santa Barbara	360	K F H J	X	X												
Guy Greason	10	Tacoma	360	K F E J			X	X								X	X	
Rhodes Co	100	Seattle	455	K D Z E			X		X				X			X		
First Pres. Church	750	Seattle	360	K T W		X	X										X	
Meier & Frank	50	Portland	360	K F E C														X
Reynolds Radio	500	Denver	380	K L Z				X										X
News and Journal	500	Dallas	476	W F A A			X		X				X					X
Palmer School	500	Davenport	484	W O C			X	X					X					X
Oregonian	500	Portland	492	K G W			X			X			X					X
Federal Tel. Co	500	Buffalo	319	W G R			X			X			X					X

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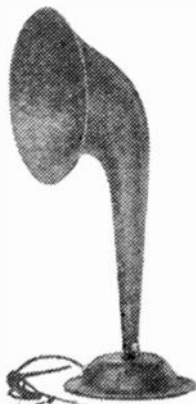
12-2 P. M.
PACIFIC TIME

RADIO TIME TABLE

1- 3 Mountain Time
2- 4 Central Time
3- 5 Eastern Time

STATION	WATTS	CITY	METERS	CALL	SUN.	MON.	TUES.	WED.	THUR.	FRI.	SAT.	
					12:00-12:30	12:30-1:00	1:00-1:30	1:30-2:00	12:00-12:30	12:30-1:00	1:00-1:30	1:30-2:00
L. A. Times	500	Los Angeles	395	KH J	X							
Bible Institute	750	Los Angeles	360	K J S	X							
Angelus Temple	500	Los Angeles	278	K F S G	X							
So. Electric Co.	50	San Diego	244	KDPT	X							
Warner Bros	250	San Francisco	360	KLS	X	X						
Hale Bros	500	San Francisco	423	KPO		X	X					
General Elec	1000	Oakland	312	KGO		X	X					
Herrold Lab'y	50	San Jose	360	KQW			X	X				
Guy Greason	10	Tacoma	360	KFEJ		X	X					
Rhodes Co	100	Seattle	270	KDZE		X	X					
Honolulu Star Bul	100	Honolulu	360	KDYX	X	X						
Honolulu Adver	500	Honolulu	360	KGU			X	X				
Reynolds Radio	500	Denver	360	KLZ			X					
Pyles Nichols	10	Denver	360	KDZQ			X					
News and Journal	500	Dallas	476	WFAA	X	X						
Palmer School	500	Davenport	484	WOC		X						
Star	500	Kansas City	411	WDAF			X	X				
News	500	Detroit	517	W W J			X	X				
Radio Corp. of Am.	500	New York	465	W J Z		X	X	X				
Herald	1000	Calgary	420	C F A C			X	X				
Federal Tel. Co.	500	Buffalo	319	W G R	X	X	X	X				
Woodmen of W	500	Omaha	526	WOAW	X	X						

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THE BRISTOL COMPANY WATERBURY, CONNECTICUT

2-4 P. M.
PACIFIC TIME

RADIO TIME TABLE

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

STATION	WATTS	CITY	METERS	CALL	SUN.		MON.		TUES.		WED.		THUR.		FRI.		SAT.	
					2:00-2:30	3:00-3:00	2:00-2:30	3:00-3:00	2:00-2:30	3:00-3:00	2:00-2:30	3:00-3:00	2:00-2:30	3:00-3:00	2:00-2:30	3:00-3:00	2:00-2:30	3:00-3:00
L. A. Times	500	Los Angeles	386	KH J	X	X			X	X								
Angelus Temple	500	Los Angeles	278	KFSG	X	X												
Electric Light Sup	100	Los Angeles	380	KN X					X	X								
So. Electrical	50	San Diego	244	KDPT			X				X							
Hale Bros	500	San Francisco	423	KPO					X	X								
S. F. Examiner	150	San Francisco	380	KUO				X	X									
Tribune	500	Oakland	509	KLX				X	X									
General Elec. Co	1000	"	312	KGD			X				X							
Portable Wireless	100	Stockton	380	KWG	X	X												
Kimball-Upson	100	Sacramento	283	KFBK				X	X					X	X			X
First Pres. Church	750	Seattle	380	KTW		X	X											
Post-Intelligencer	100	Seattle	270	KFJC				X	X		X							
Rhodes Co	100	Seattle	270	KDZE			X	X	X		X			X	X			
Oregonian	500	Portland	492	KGW				X	X		X			X	X			
Deseret News	500	Salt Lake City	380	KZN				X	X		X							
Reynolds Radio	500	Denver	380	KLZ				X						X	X			
Honolulu Adver	500	Honolulu	380	KGU			X	X									X	X
Star-Telegram	500	Fort Worth	478	WBAP		X	X											
Palmer School	500	Davenport	484	WOC					X									
Daily News	500	Chicago	448	WMAQ			X	X					X	X				
Star	500	Kansas City	411	WDAF					X									
Free Press	500	Detroit	517	WCX	X	X			X	X				X	X			
News	500	Detroit	517	WWJ			X	X		X				X	X			
Drake Hotel	1000	Chicago	350	WDAP				X	X					X	X			
Radio Cor. of Am.	500	New York	455	WJZ		X	X		X		X			X	X			
Herald	1000	Calgary	420	CFAC			X	X		X				X	X			
Federal Tel. Co	500	Buffalo	319	WGR				X		X				X				
Westinghouse	1000	Pittsburg	325	KDKA			X											
Westinghouse	1000	Springfield	337	WBZ			X											

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WHOLESALE ONLY

4-6 P. M.
PACIFIC TIME

RADIO TIME TABLE

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

STATION	WATTS	CITY	METERS	CALL	SUN.		MON.		TUES.		WED.		THUR.		FRI.		SAT.	
					4-6	7-9	4-6	7-9	4-6	7-9	4-6	7-9	4-6	7-9	4-6	7-9	4-6	7-9
E. C. Anthony	500	Los Angeles	489	K F I	X	X												
L. A. Herald	500	Los Angeles	489	Herald				X	X									
L. A. Examiner	500	Los Angeles	489	Examin'r						X								
Angelus Temple	500	Los Angeles	278	K F S Q	X	X			X	X	X							
Echophone Radio	100	Long Beach	234	K F O N						X								
General Electric		Oakland	312	K G O				X	X	X								
Hale Bros	500	San Francisco	423	K P O				X	X	X								
Oakland Tribune	500	Oakland	509	K L X				X										
S. F. Examiner	150	San Francisco	380	K U O					X	X								
Maxwell Elec	50	Berkeley	278	K R E														
Portable Wireless	100	Stockton	360	K W G				X	X									
Gould	5	Stockton	360	K J Q				X	X									
Radio Den	10	Santa Ana	288	K F A W				X										
Nielson Radio Co.	10	Phoenix	238	K F C B					X	X								
Post Intelligencer	100	Seattle	270	K F J C				X		X								
Star Electric	50	Seattle	283	K F H R				X	X									
First Pres Church	750	Seattle	360	K T W	X	X												
Northwest Radio	50	Seattle	283	K J R				X	X	X								
Melior & Frank	50	Portland	248	K F E C				X	X									
Hallok & Watson	50	Portland	360	K Q Q				X	X									
Pyle & Nichols	10	Denver	360	K D Z Q	X	X		X	X									
Star-Telegram	500	Fort Worth	478	W B A P					X									
News and Journal	500	Dallas	478	W F A A				X	X									
Southern Egr. Exp.	500	San Antonio	388	W O A I						X	X							
Palmer School	500	Davenport	484	W O C	X	X	X	X	X									
Post Dispatch	500	St. Louis	548	K S D														
Daily News	500	Chicago	448	W M A Q						X								
Drake Hotel	500	Chicago	360	W M A P				X	X									
Free Press	500	Detroit	817	W C X	Y	X		X	X									
News	500	Detroit	517	W W J	X	X		X	X									
Star	500	Kansas City	411	W D A F	X	X		X	X									
Crosley Mfg. Co.	500	Cincinnati	309	W L W				X	X									
Radio Cor. of Am.	500	New York	465	W J Z		X	X	X	X									
John Wanamaker	500	Philadelphia	809	W O O				X	X									
Federal Tel. Co	500	Buffalo	319	W G R				X	X									
Westinghouse	1000	Pittsburg	328	K D K A	X	X		X	X									
Westinghouse	1000	Springfield	337	W B Z				X	X									
Woodmen of W	500	Omaha	528	W O A W	X	X												
Willard Battery	1000	Cleveland	380	W T A M				X	X									

Murdock Radio Head Phones "Standard Since 1914"

Can You Do This?

RESISTOR →



THE DAVEN COMBINED RESISTOR-CONDENSER MOUNTING DOES BOTH

This may be the trouble with YOUR set—

You can probably change your grid leak for higher
Detecting Efficiency

The highest efficiency can only be obtained by changing both resistor and condenser

If your dealer cannot supply you, write

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SUPER
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Demonstrated in
Your Home



See us for
Kennedy Sets
Radiolas
Neutrodyne
All Latest Models

6-8 P. M.
PACIFIC TIME

RADIO TIME TABLE

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

STATION	WATTS	CITY	METERS	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
Bible Institute	750	Los Angeles	360	K J S	X	X									
L. A. Times	500	Los Angeles	395	KH J			X	X							
E. C. Anthony	500	Los Angeles	469	K F I		X	X								
Angelus Temple	500	Los Angeles	278	K F S G				X	X	X					
Electric Light Sup.	100	Los Angeles	360	K N X				X							
Echophone Radio	100	Long Beach	234	K F O N		X	X								
Hale Brothers	500	San Francisco	423	K P O			X	X							
S. F. Examiner	150	San Francisco	360	K U O		X	X								
Maxwell Electric	50	Berkeley	278	K R E				X	X						
Tribune	500	Oakland	509	K L X		X				X					
General Electric	1000	Oakland	312	K G O			X			X					
Kimball & Upson	100	Sacramento	283	K F B K		X	X								
Fallan & Co	100	Santa Barbara	360	K F H J		X	X								
Radio Den	100	Santa Ana	268	K F A W		X	X								
Southern Elect	50	San Diego	244	K D P T		X	X								
Neilson Radio Sup.	10	Phoenix	238	K F C B		X		X	X						
McArthur Bros	100	Phoenix	350	K F A D		X	X		X	X					
Love Elect. Co	10	Tacoma	360	K M O		X	X		X	X					
Mullens Elect. Co	50	Tacoma	252	K G B			X	X							
N. W. Motor Ser	50	Seattle	283	K J R		X									
Excel. Radio Ser	100	Seattle	380	K H Q			X								
First Pres. Church	750	Seattle	360	K T W		X	X		X						
Star Electric	50	Seattle	283	K F H R		X	X		X	X					
State Col. of Wash.	500	Pullman	320	K F A E		X	X		X	X					
Oregonian	500	Portland	492	K G W	X	X	X		X						
Hallock & Watson	50	Portland	380	K G G	X	X									
Meyer & Frank	50	Portland	248	K F E C		X				X					
Apple Cy. Rad. Cib	10	Hood River	360	K O P		X									
Adler's Music Store	5	Baker, Ore	360	K F D A	X	X			X	X					
Boise High School	150	Boise, Ida	270	K F A U			X	X							
Bunkerhill-Sul.Co	10	Kellogg, Ida	360	K F E Y		X			X						
Telegram	100	Salt Lake	350	K D Y L		X	X		X	X					
Reynold's Radio	500	Denver	360	K L Z		X			X	X					
Western Radio	50	Denver	360	K F A F		X	X		X	X					
Pyle & Nichols	10	Denver	360	K Z D Q	X	X				X					
Fitzsimmons Hospital		Denver	642	A A 3					X	X					
Sparks Hi School	10	Sparks, Nev	225	K F F R											
Westinghouse El	1000	Hastings, Neb.	341	K F K X			X								
Star-Telegram	500	Fort Worth	478	W B A P		X			X						
News and Journal	500	Dallas	476	W F A A		X	X		X	X					
Palmer School	500	Davenport	484	W O C		X	X		X	X					
W. O. W	500	Omaha	528	W O A W		X	X		X	X					
Daily News	500	Chicago	448	W M A Q		X	X		X	X					
Post Dispatch	500	St. Louis	546	K S D	X	X			X	X					
Westinghouse	1000	Chicago	536	K Y W		X	X		X	X					
Sweeney School	500	Kansas City	411	W H B		X	X		X	X					
Star	500	Kansas City	411	W D A F		X	X		X	X					
Drake Hotel	1000	Chicago	390	W D A P	X	X									
Crosley Mfg. Co.	500	Cincinnati	309	W L W		X	X		X	X					
Albertan Pub. Co.	250	Calgary, Can	410	C H B C					X						
Detroit Free Press	500	Detroit	517	W C X			X								
Radio Cor. of Am.	500	New York	455	W J Z	X	X	X		X	X					
John Wanamaker	500	Philadelphia	509	W O O		X	X		X	X					
Federal Tel. Co.	500	Buffalo	319	W G R		X	X		X	X					
El Buen Tono	500	Mexico City	425	C Y B			X		X	X					
El Universal	500	Mexico City	500	C Y L						X					
Willard Battery	1000	Cleveland	280	W T A M				X	X	X					

Murdock Radio Head Phones "Standard Since 1914"

WORKRITE NEUTRODYNE

(Licensed under Hazeltine Patents No. 1450080)



WorkRite Neutrodyne Model 201A—\$175.00, Complete
And we mean Complete

Chicago and Kansas City on Loud Speaker Through Local Broadcast

Albert Feltskog, 1246 Fuller Ave., writes us he receives Chicago KYW, and Kansas City WDAF on loud speaker through local broadcast.

Patterson Electric Company

239 South Los Angeles Street

Telephones: VAndike 8139, MAin 5884 Los Angeles, Calif.

8-10 P. M. PACIFIC TIME

RADIO TIME TABLE

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

Table with columns for STATION, WATTS, CITY, METERS, CALL, and time slots for SUN., MON., TUES., WED., THUR., FRI., SAT. Each time slot has sub-columns for 8:00-8:30, 8:30-9:00, 9:00-9:30, 9:30-10:00.

Murdock Radio Head Phones "Standard Since 1914"

Neutrodyne Outfits

WORKRITE

Neutrodyne Kit—DeLuxe Model

- 3 WorkRite Neuroformers (Special Designs)
- 3 WorkRite E-Z-Tune Dials
- 2 WorkRite Neurodons (New Style)
- Panel Chart, Mounting Angle and Complete Instructions.

The Kit is packed in a very neat box.

Price \$25.00

WorkRite Neutrodyne Outfit

Containing all parts listed below

- | | |
|------------------------------------|----------------------------|
| 3 WorkRite Neuroformers | 1 Double Circuit Jack |
| 2 WorkRite Neurodons | 1 Closed Circuit Jack |
| 5 WorkRite Non-Microphonic Sockets | 2 A. F. Transformers |
| 1 WorkRite Rheostat | 25 ft. Buss Wire |
| 4 WorkRite Resistance Cart. | 1 Base Board |
| 3 WorkRite 1/4" E-Z-Tune Dials | 1—.25 mfd. Condenser |
| 9 WorkRite Marked Binding Posts | 1—.001 mfd. Condenser |
| 1 Panel 24x7x3/16 in. (Drilled) | 1—.00025 mfd. Condenser |
| 1 Brass Panel Shield | 1—5-ohm Grid Leak |
| | Screws, solder, lugs, etc. |

Build Your Own Five Tube Neutrodyne Set

This outfit contains the special parts from the DeLuxe Kit and is just what you have been looking for. No shopping around for the right parts. No doubt about the parts to get. No delay. No mistakes in assembling. In addition to the parts listed above, the Outfit contains a mounting angle and complete instructions. The WorkRite Neutrodyne Outfit is packed in an attractive box that will come in handy as a radio tool box. Can you imagine any more fun than building your own set with this outfit? Order one today.

Price \$70.00

TUBES

Apex Amplifying

Type 201A—1/4 amp. Each.....\$4.00

These tubes are absolutely guaranteed.

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Open Evenings Till 9 P. M.

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920 South Broadway

Los Angeles, California

Our New and Complete Price List Now Ready

10-12 P. M.
PACIFIC TIME

RADIO TIME TABLE

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

STATION	WATTS	CITY	METERS	CALL	SUN.		MON.		TUES.		WED.		THUR.		FRI.		SAT.	
					10 00-10 30	11 30-12 00	10 00-10 30	11 30-12 00	10 00-10 30	11 30-12 00	10 00-10 30	11 30-12 00	10 00-10 30	11 30-12 00	10 00-10 30	11 30-12 00	10 00-10 30	11 30-12 00
L. A. Times	500	Los Angeles	395	KH J					X	X	X	X	X	X	X	X	X	X
Earle C. Anthony	500	Los Angeles	468	K F I	X	X			X	X	X	X	X	X	X	X	X	X
Angelus Temple	500	Los Angeles	278	K F S G			X	X										
Northwest Radio	100	Portland	366	K G N				X										
Oregonian	500	Portland	492	K G W					X	X								
Post-Intelligencer	100	Seattle	270	K F J C			X						X	X				
W. W. Grant	500	Calgary	440	C F C N							X	X						
Hale Bros	500	San Francisco	423	K P O			X	X	X	X			X	X			X	X
Herald	1000	Calgary	422	K F A C			X	X					X	X				
Pyle & Nichols	10	Denver	360	K D Z O	X	X												
Westinghouse	1000	Chicago	536	K Y W							X	X	X		X	X	X	
Sweeney School	500	Kansas City	411	W H B	X	X												
Drake Hotel	1000	Chicago	360	W D A P					X	X	X	X	X	X	X	X	X	X
Edgewater Beach	1000	Chicago	370	W G V					X	X	X	X	X	X	X	X	X	X
Fallon & Co	100	Santa Barbara	3 0	K F H J													X	X
General Elec. Co.	1000	Oakland	312	K G O					X	X	X	X					X	X

Keeler White Co., 211 South San Pedro Street, Los Angeles
Pacific Coast Agent of Wm. J. Murdock Co.

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For Those Who W

Unsurpassed for volume, natural reproduction
and tone quality on local broadcast.

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Without Acce

Approximate 3rd Dial Settings for NR-5 Sets with Str

Call	Location	Wave Length	3rd Dial
KRE	Oakland, Cal.	276 Meters	16
KFBK	Sacramento, Cal.	283 "	17
KFHR	Seattle, Wash.	270 "	15
WLW	Cincinnati, Ohio	309 "	19
KGO	Oakland, Cal.	312 "	20
KDKA	Pittsburgh, Pa.	326 "	22.5
KFAE	Pullman, Wash.	330 "	23
WCBF	Zion City, Ill.	345 "	27
KDYL	Salt Lake City, Utah	360 "	30.5
KFAF	Denver, Colo.	360 "	31.5
KLZ	Denver, Colo.	360 "	30
KGG	Portland, Ore.	360 "	29.5
KFCF	Seattle, Wash.	360 "	29.5
WCAL	Northfield, Minn.	360 "	27
WEAY	Houston, Texas	360 "	30.5
WOAI	San Antonio, Texas	385 "	35.5

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tings to go with each set sold.

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The supreme receiver for long distance—stations from coast to coast are being heard by NR-5 owners when local stations are broadcasting.

at \$150.00

Plate Condensers—Full List Submitted by Request

Call	Location	Wave Length	3rd Dial
WHAZ	Troy, N. Y.	380 Meters	33
WDAP	Chicago, Ill.	390 "	35
WTAM	Cleveland, Ohio	390 "	35
PWX	Havana, Cuba	400 "	38
WOR	Newark, N. J.	405 "	39.5
WJY	New York, N. Y.	405 "	39
WDAF	Kansas City, Mo.	411 "	39.5
CKCD	Vancouver, Can.	410 "	40
WOS	Jefferson City, Mo.	441 "	47
WFAA	Dallas, Texas	476 "	58
WOC	Davenport, Iowa	484 "	58.5
WMC	Memphis, Tenn.	500 "	63.75
CYL	Mexico City	500 "	64
WOAW	Omaha, Neb.	526 "	73
KYW	Chicago, Ill.	536 "	76
KSD	St. Louis, Mo.	546 "	80

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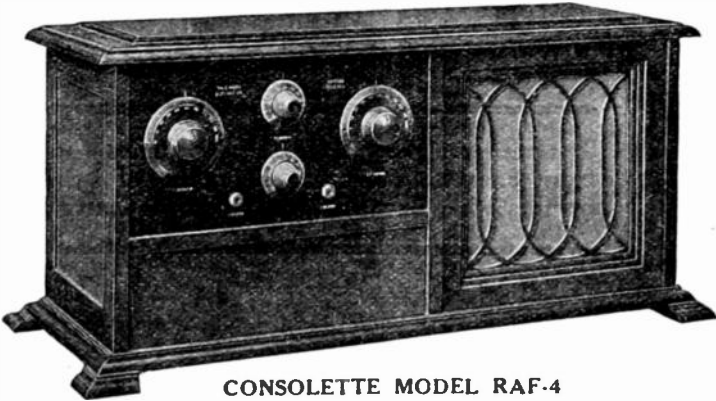
031

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Oakland

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CONSOLE MODEL RAF-4
(Complete with Built-in Timmons Talker, Tubes and Batteries)
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SUPER - HETERODYNE

No. R-99 Kit \$36.50

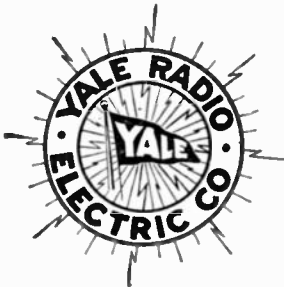
Contains: 1 Special Antenna Coupler,
1 Oscillator Coupler, 3 Intermediate R. F.
Transformers, 1 Special Transformer
Coupler, 2 Working Blue Prints, and 1
Instruction Booklet.

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Dealers! Attractive Discounts and Prompt Service.

K H J—Los Angeles Times—395 Meters

Times Building, First and Broadway, Los Angeles. Owned and Operated by Los Angeles Times
John S. Daggett, Announcer and Manager

WEEK COMMENCING SUNDAY, APRIL 27

Daily, except Sunday and Monday, from 10 to 11 p. m., we will broadcast Art Hickman's Orchestra from the Biltmore Hotel. Sunday from 6:30 to 7:30 p. m. and daily except Monday, from 6 to 6:30, we will broadcast Art Hickman's Concert Orchestra from the Biltmore Hotel.

SUNDAY, APRIL 27—

10:00 a. m.

Sermon from KHJ studio by Dr. E. T. MacMahon of Cleveland, Ohio, a guest in Los Angeles.

10:30 to 12:30 p. m.

Organ recital and entire religious service from the First Methodist Episcopal Church; Arthur Blakeley, organist, and Rev. Elmer E. Helms, pastor.

7:00 to 7:30 p. m.

Organ recital from the First Methodist Episcopal Church; Arthur Blakeley, organist.
De Luxe program.

8:00 to 10:00 p. m.

MONDAY, APRIL 28—

12:30 to 1:15 p. m.

Program presenting Monte Weeks, tenor. Silent the remainder of the day.

TUESDAY, APRIL 29—

12:30 to 1:15 p. m.

Program presenting Stella S. Ogden, soprano; Alice Lee-Wiley, pianist-composer. White's Californians, through the courtesy of La Raza Palm Grove.

2:30 to 3:30 p. m.

6:30 to 7:30 p. m.

Program presented through the courtesy of Barker Brothers. Children's program, presenting Prof. Walter Sylvester Hertzog telling stories of American history. The weekly visit of the Sandman and Queen Titania. Morris Erenberg, violinist, 13 years old; Carl Fischer, pianist, 11 years old. Bedtime Story by Uncle John. Program presented through the courtesy of Harry James Beardsley.

8:00 to 10:00 p. m.
WEDNESDAY, APRIL 30—

12:30 to 1:15 p. m.

2:30 to 3:30 p. m.

6:30 to 7:30 p. m.

Program presenting Blanche Nichols, mezzo-soprano. Program presented through the courtesy of Barker Brothers. Children's program presenting Evelyn Sheehy, pianist, 15 years old, pupil of Anna Lisenbard; Dick Winslow, juvenile reporter; George W. Hood, reader.

8:00 to 9:00 p. m.

9:00 to 10:00 p. m.

Program through the courtesy of Mrs. J. F. Faber, presenting Judge Bledsoe, speaker; Carl Buratt, cornetist; Robert Odell, president of the Board of Education; Burkman Brothers' Hawaiian Quartet. Dr. Russ Baumgardt, lecturer. Appreciation program through the courtesy of Mrs. Cecil Frankel, vice-president of the National Federation of Music.

THURSDAY, MAY 1—

12:30 to 1:15 p. m.

2:30 to 3:30 p. m.

6:30 to 7:30 p. m.

News items, weather report and music. Program presented through the courtesy of Barker Brothers. Music Memory Contest conducted by Fitzgerald Music Co. Prof. Walter Sylvester Hertzog telling stories of American history. The Hollywood School for Girls Glee Club. Weekly visit of Dickie Brandon, screen juvenile. Bedtime story by Uncle John. Program presented through the courtesy of Fitzgerald Music Co. Albert Bryant, tenor. Susan Frances White, reader.

FRIDAY, MAY 2—

12:30 to 1:15 p. m.

2:30 to 3:30 p. m.

6:30 to 7:30 p. m.

Program presented through the courtesy of Barker Brothers. Capt. W. F. Cannon will give a "Traffic Talk." Program presented through the courtesy of Barker Brothers. Music Memory Contest conducted by the Fitzgerald Music Co. Prof. Walter Sylvester Hertzog. Program through the courtesy of Barker Brothers. Weekly visit of Richard Headrick, screen juvenile. Bedtime Story by Uncle John. Program presented through the courtesy of Barker Brothers.

8:00 to 10:00 p. m.
SATURDAY, MAY 3—

12:30 to 1:15 p. m.

2:30 to 3:30 p. m.

6:30 to 7:30 p. m.

Special program for Music Week, arranged through the courtesy of R. E. Wales, presenting Cladys Blackwell Pickering, soprano, and Raymond Harmon, tenor.

Matinee musicale. Children's program. Music Memory Contest conducted by Fitzgerald Music Co. Prof. Walter Sylvester Hertzog, telling stories of American history. Kathryn Sawyer, 4 years old, reader. Caryl Boardmann, pianist, 12 years old, pupil of Clara Gordon Seefeld. John T. Brown, harmonica. Bedtime Story by Uncle John. Program arranged through the courtesy of the Paul G. Hoffman Co.

RADIOLAS

GREBES

"Note Our New Address"

COAST RADIO

306 W. Main St., El Monte

Phone El Monte 110

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PARTS

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We will give you a home demonstration
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Prices from \$35.00 to \$500.00
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Packard Building, 1000 South Hope St., Los Angeles, California
 Class "A" 500 Watt Western Electric Station, Operating on 469 Meters
 PAUL REESE, Program Announcer

Remote Control Stations:

Los Angeles Evening Herald:	4:45 to 5:15 p. m. Daily except Sunday
	8:00 to 9:00 p. m. Monday, Wednesday, Friday
Los Angeles Examiner	5:15 to 5:45 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

SUNDAY, APRIL 27—

10:00 to 10:45 a. m.	L. A. Church Federation Service.
4:00 to 5:00 p. m.	Federated Church Musicians Vesper Service.
6:45 to 7:30 p. m.	By Foothill Four Quartette.
8:00 to 9:00 p. m.	Ambassador Hotel Concert.
9:00 to 10:00 p. m.	Examiner Concert.
10:00 to 11:00 p. m.	Packard Six Orchestra.

MONDAY, APRIL 28—

5:15 to 5:45 p. m.	Examiner News Bulletins.
9:00 to 10:00 p. m.	Examiner Concert.
10:00 to 11:00 p. m.	Ambassador-Max Fischer Cocoanut Grove Orchestra.

TUESDAY, APRIL 29—

5:15 to 5:45 p. m.	Examiner News Bulletins.
6:45 to 7:30 p. m.	Hawaiian Program.
8:00 to 9:00 p. m.	Ambassador-Max Fischer Cocoanut Grove Orchestra.
9:00 to 10:00 p. m.	Examiner Concert.
10:00 to 11:00 p. m.	C. Howard Paxton arranging vocal concert.

WEDNESDAY, APRIL 30—

5:15 to 5:45 p. m.	Examiner News Bulletins.
6:45 to 7:30 p. m.	Nick Harris Detective Stories and Concert.
9:00 to 10:00 p. m.	Examiner Concert.
10:00 to 11:00 p. m.	Hollywoodland Community Orchestra.
11:00 to 12:00 p. m.	Ambassador-Max Fischer Cocoanut Grove Orchestra.

THURSDAY, MAY 1—

5:15 to 5:45 p. m.	Examiner News Bulletins.
6:45 to 7:30 p. m.	Y. M. C. A. Concert, Sales Lecture.
8:00 to 9:00 p. m.	Ambassador Hotel Concert.
9:00 to 10:00 p. m.	Examiner Concert.
10:00 to 11:00 p. m.	Concert arranged by Birkel Music Co.

FRIDAY, MAY 2—

5:15 to 5:45 p. m.	Examiner News Bulletins.
6:45 to 7:30 p. m.	Concert.
9:00 to 10:00 p. m.	Examiner Concert.
10:00 to 11:00 p. m.	Vocal and Instrumental Concert.
11:00 to 12:00 p. m.	Ambassador-Max Fischer Cocoanut Grove Orchestra.

SATURDAY, MAY 3—

5:15 to 5:45 p. m.	Examiner News Bulletins.
6:45 to 7:30 p. m.	Vocal Concert.
8:00 to 9:00 p. m.	Gardiner Hart, Baritone, arranging program.
9:00 to 10:00 p. m.	Examiner Concert.
10:00 to 11:00 p. m.	Popular Concert.
11:00 to 12:00 p. m.	Ambassador-Max Fischer Cocoanut Grove Orchestra.

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Complete with Batteries and Tubes

\$97.50

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Evening Herald, Los Angeles

Phone METropolitan 5100

Evening Herald Programs Via Radio Central Station KF1

4:45 to 5:15—Daily except Sunday. Evening Herald News Items.

MONDAY, APRIL 28—

8:00 to 9:00 p. m. Owen Fallons' Californians. Emanuel A. Meeks, Tenor. Mrs. Hart Allen, dramatic reader.

WEDNESDAY, APRIL 30—

8:00 to 9:00 p. m. Frank Carr and his orchestra. Professor Marquis Ellis. A. E. Schifferman, Radio Talk.

FRIDAY, MAY 2—

8:00 to 9:00 p. m. Concert program courtesy of Dictograph Products Corp.

K J S—Bible Institute Radiophone—360 Meters

Owned and Operated by Bible Institute of Los Angeles, Inc.

M. E. CARRIER, Mgr.

PROF. J. B. TROWBRIDGE, Director of Programs.

SUNDAY, APRIL 27—

10:45 to 12:30 noon.—Regular services of the Church of the Open Door, including sermon by Dr. R. A. Torrey. Mr. C. M. Brooks, baritone; Mr. Paul S. McConnell, organist.

6:00 to 6:45 p. m. Radio Vesper Service with sermon by Rev. Wm. H. Pike. Mrs. Marian McGlashan Muller, soprano; Miss Paulene Plummer, organist.

8:00 p. m. Sermon by Dr. R. A. Torrey. Mrs. Irvin S. Fallis, soprano; Mr. Paul S. McConnell, organist.

TUESDAY, APRIL 29—

8:00 to 9:00 p. m. Miss Mildred Colville, contralto; Miss Sara Henry, recitations; instrumental selections.

THURSDAY, MAY 1—

8:00 to 9:00 p. m. Miss Lucille Corbet' reading, "The Little Shepherd Who Didn't Go"; vocal and instrumental selections.

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SUNDAY, APRIL 27—

- 10:30 to 12:00 noon. Great organ, chimes and choir. The Pilgrim of the Burning Heart, sermon by Aimee Semple McPherson.
 2:30 to 4:30 p. m. Choir; Temple Band; Edison Rice, tenor; Charles Sutton, baritone; Merrell LaFontaine, accompanist. The Baptism of the Holy Ghost and Fire, evangelist's address.
 7:00 to 7:30 p. m. Grace Springsted, contralto, singing "Come Unto Me" (Coenans); Ada Lantz, Swedish soprano; A. Capella Choir.
 8:00 to 9:00 p. m. The Cathedral of the Air, sermon by Aimee Semple McPherson.

TUESDAY (APRIL 29—

- 3:30 to 4:00 p. m. Organ recital, "Old Melodies and Songs," Esther Fricke Green.
 4:00 to 5:30 p. m. John Walker, tenor; Ruth Russell, soprano; Miss Dorothy Sauter, 'Cellist; Abrasha Orlikoff, concert violinist; Mrs. Eva Jennison, evangelistic singer.
 6:30 to 7:30 p. m. "Kozy Hour," Mr. and Mrs. H. T. Heard, cornet and trombone duet; Inez Lasley, soprano; Frances Henking, reading; "Children's Story"; Miss Doris Jones will present her juvenile pupils, ages 6 to 11 years.
 8:00 to 10:00 p. m. Address by B. F. Pearson, superintendent of California Edison Co. The Suanee Jubilee Singers, "Plantation Melodies." Margaret Knox McGraw, contralto. "Good Night Psalm," Aimee Semple McPherson.

WEDNESDAY, APRIL 30—

- 2:30 to 4:30 p. m. Auditorium service, organ and choir. "Message of Faith," Aimee Semple McPherson.
 6:30 to 7:30 p. m. "Kozy Hour." Annie Lacey, child soprano; Frances Henking, reading; Mr. A. J. W. Galbraith, basso; Francis Floto, whistler; Ruth Thomas, accompanist and soloist.

THURSDAY, MAY 1—

- 3:30 to 4:30 p. m. Organ recital and program by B. Earnest Ballard.
 4:30 to 5:30 p. m. Sarah Karcher, violinist; Mrs. R. W. Klages, soprano; Ada Lantz, soprano; Mrs. W. C. Corning, Angelus Temple soprano; Frances Henking, reading; Roy Reid Brignall, accompanist.
 6:30 to 7:30 p. m. "Kozy Hour." Ruth Clayton, the children's friend, in story and song; Blanche Clay, soprano; Mr. S. T. Lashbrook, tenor.
 8:00 to 9:00 p. m. "Splashing Water," address by Aimee Semple McPherson.
 9:00 to 10:00 p. m. Gray Studio program given by courtesy of Edison Rice, tenor; Charles Sutton, baritone, and Merrell LaFontaine, pianist. Angelus Temple Quartet; Choir. "Family Altar."

FRIDAY, MAY 2—

- 3:30 to 4:00 p. m. Organ recital. "From Luther to Dudley Buck," historical recital by Roy Reid Brignall.
 4:00 to 5:30 p. m. Ruth Russell, soprano; Madeline Gilliland, the Happy Song Girl; Frances Henking, reading; Mildred Wetwakaka, violinist; Bessie Lincoln in piano solos; Roy Reid Brignall, accompanist.
 6:30 to 7:30 p. m. "Kozy Hour." Children's program provided by courtesy of Harry James Beardsley (Cousin Jim) and associates; Eugene Lamb, pianist; Edward Jacobson, violinist. "Mother's Fireside Story."
 8:00 to 9:00 p. m. Crusaders in Song, Music and Reading. Series of addresses by Judge Carlos S. Hardy, Justice, Superior Court. Madeline Gilliland.
 9:00 to 10:00 p. m. Gray Studio program, courtesy of Maude Reeves Bernard and pupils. The Angelus Temple Band, "The King's Praises."

SATURDAY, MAY 3—

- 3:30 to 5:00 p. m. "Cheery Words for Shut-ins," Ruth Clayton; Gertrude Wilding, child soprano; Clara Enid, soprano, accompanied by B. Churchill Hays; Mrs. Grace Waldron, soprano; Maude Gile, child pianist, age 13.
 5:00 to 5:30 p. m. Organ recital, Roy Reid Brignall. "Back Program."
 6:30 to 7:30 p. m. "Kozy Hour." Program furnished by Angelus Temple Children's Church, assisted by Frances Henking, reading; James R. Hood.

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TUESDAY, April 29—2:50 p.m.

WEDNESDAY, APRIL 30—7:00 p. m.

THURSDAY, MAY 1—2:50 p. m.

FRIDAY, MAY 2—9:15 p. m.

California Theatre Concert Orchestra of fifty musicians; Carli D. Elinor, director. Concert program given in conjunction with the photoplay "Fools Highway," the current attraction at the California Theatre.



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SANTA BARBARA, CALIF.

WEEK OF APRIL 27

SUNDAY, APRIL 27—

10:00 to 10:45 a.m.

Radio church service, by Rev. John S. Niles, pastor of the Federated Church of Goleta.

WEDNESDAY, APRIL 30—

6:00 to 6:45 p.m.

"The Citizens' Military Training Camps," a talk by Major James W. Peyton, commandant Santa Barbara R. O. T. C. D. R. Stone, tenor.

FRIDAY, MAY 2—

6: to 6:45 p.m.

Francisco Lopez, guitarist, will play some of the old songs of early California. A five-minute talk on the Foot and Mouth Disease. Program arranged by Imogen Avis Palmer, teacher of voice.

9:00 to 10:00 p.m.

SATURDAY, MAY 3—

10:00 to 11:00 p.m.

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BROADCASTING PROGRAM FOR KLX FOR WEEK BEGINNING SUNDAY, APRIL 27

3:00 to 5:00 Daily (except Sunday and Monday) Baseball scores, all leagues.

SUNDAY, APRIL 27—

9:30 to 10:00 p. m. Talk by Rev. John Snape, pastor of the First Baptist Church of Oakland; sacred songs.

MONDAY, APRIL 28—

8:00 to 10:00 p. m. Program by the University of California Radio Club, broadcast over private leased wires from Stephen's Union Hall, University campus, through KLX. Arranged by Blanche Adella Hawkins. (Note— This will be the last program to be broadcast by the Radio Club of the University of California for this semester of college, now ending. Announcement of summer programs will be made next week.)
 (1) Campus and college sport news from the A. S. U. S. Publicity Bureau. (2) "Characteristics of Birds About the Bay," talk by Charles Keeler. (3) Whistling solo by Blanche Adella Hawkins, known as "the American Robin," assisted at the piano by Mildred Jensen—Waltz Song. (4) Half hour of jazz by Claire Debois' Orchestra. (5) Baritone solos by E. M. Holbrook (a) Mother of Mine; (b) Kasbmiri Song. (6) Two dramatic readings from "Riley" and "Daly," by Rose Brown.

TUESDAY, APRIL 29—

3:00 to 5:00 p. m. Baseball scores, all leagues.

WEDNESDAY, APRIL 30—

3:00 to 5:00 p. m. Baseball scores, all leagues.

8:00 to 10:00 p. m. Studio Program. 1. Baritone solos by Dean Gross, Mrs. Dean Gross, accompanist—(a) On the Road to Mandalay (Oley Speaks); (b) Macushla (Dermot Macmurrough). 2. Recitation by Fred F. Bebergall, "Spartacus to the Gladiators." 3. Pianos solos by Lloyd Kremer—(a) Aralia (Adams); (b) Mazurka (Godard). 4. "Psychology in Salesmanship," talk by Mrs. Henri Napier Carmer. 5. Vocal solos by Mrs. G. W. McMillan, Mr. McMillan, accompanist—(a) Night and Day (Lloyd); (b) Just A-Wearyin' for You (Bond); (c) Cherry Ripe (Horn). 6. Piano solos by Lloyd Kremer—(a) Prelude in C Sharp Minor (Rachmininoff); (b) Prelude (Chopin).

FRIDAY, MAY 2—

8:00 to 10:00 p. m. Special Studio Program. On this program KLX will endeavor to respond to every request that is received up to and including Wednesday, April 30. It will be an "Old Favorites" night and the program will be arranged according to requests received. Anyone who has heard and liked any artist, orchestra, Hawaiian troupe, speaker, dramatist, may write to KLX immediately, requesting the reappearance on this night of the artist or musical organization they liked best during some program of the past, and every effort will be made to fulfill the request. On this occasion no effort will be spared to bring together the greatest array of talent ever heard from any broadcasting station. The natural result of such an arrangement will be to bring together all of the artists who have met with the greatest public favor. It will be impossible, of course, to comply with requests that are not augmented by other and similar requests. Requests for the appearance of an artist must, of course, be of sufficient number to warrant the securing of that artist for this program. Here is an opportunity to show the various artists how much their efforts of the past have been appreciated. Write to KLX at once.

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GENERAL ELECTRIC COMPANY (312 Meters), OAKLAND, CALIFORNIA
(Pacific Time)

WEEK OF APRIL 27, 1924

SUNDAY, APRIL 27— 3:30 p. m.	Concert by KGO Little Symphony Orchestra and soloists.
MONDAY, APRIL 28— 1:30 p. m. 3:00 p. m. 4:00 to 5:30 p. m.	New York Stock Exchange and U. S. Weather Bureau reports. Musical program. Address, "Boys' Recreation," by A. Hjelte. Music by the St. Francis Hotel Dance Orchestra, San Francisco, Henry Halstead, leader.
TUESDAY, APRIL 29— 6:45 p. m. 1:30 p. m. 4:00 to 5:30 p. m.	Final reading, stock exchange and weather reports, and news items.
6:45 p. m. 8:00 p. m.	New York Stock Exchange and U. S. Weather Bureau reports. Concert Orchestra of the St. Francis Hotel, San Francisco, Fermin Cardona conducting.
10:00 to 1:00 a. m.	Final reading, stock exchange and weather reports, and news items. Program contributed by Lions' Club of Berkeley, featuring Bohemian Male Quartet.
WEDNESDAY, APRIL 30— 1:30 p. m. 3:00 p. m.	Music by the St. Francis Hotel Dance Orchestra, San Francisco, Henry Halstead, leader.
4:00 to 5:30 p. m.	New York Stock Exchange and U. S. Weather Bureau reports. Musical program. Address, "Education and the Community," by Mrs. Edna Aiken.
6:45 p. m.	Concert Orchestra of the St. Francis Hotel, San Francisco, Fermin Cardona conducting.
THURSDAY, MAY 1— 1:30 p. m. 4:00 to 5:30 p. m.	Final reading, stock exchange and weather reports, and news items.
6:45 p. m. 8:00 p. m.	New York Stock Exchange and U. S. Weather Bureau reports. Concert Orchestra of the St. Francis Hotel, San Francisco, Fermin Cardona conducting.
FRIDAY, MAY 2— 1:30 p. m. 3:00 p. m.	Final reading, stock exchange and weather reports, and news items. "Daddy Long Legs," a four-act comedy, by KGO Players. Music by Claremont Orchestra.
4:00 to 5:30 p. m.	New York Stock Exchange and U. S. Weather Bureau reports. Musical program. Reading by Wilda Wilson Church from the drama, "Lightnin'," written by Frank Bacon.
6:45 p. m.	Concert Orchestra of the St. Francis Hotel, San Francisco, Fermin Cardona conducting.
SATURDAY, MAY 3— 12:30 noon 4:00 to 5:30 p. m.	Final reading, stock exchange and weather reports, and news items.
8:00 p. m.	New York Stock Exchange and U. S. Weather Bureau reports. Concert Orchestra of the St. Francis Hotel, San Francisco, Fermin Cardona conducting.
10:00 to 1:00 a. m.	Program furnished by the Plymouth Congregational Church, Oakland, featuring a song cycle by the mixed chorus of the Plymouth Congregational Church.

TUESDAY, APRIL 29—8:00 P. M.

Program given by the Lions' Club of Berkeley, California

Instrumental Selection—Somebody Stole My Gal.....	Lions' Club Orchestra
Claude Kruse, Arthur Brown, and Howard Thurston, Saxophones; Arthur Garcia, Violin; Herman Reid, Drums; Joseph Taylor, Banjo; Richard Eisenmayer, Piano.	
Vocal Selection—Kentucky Babe (Gelbel).....	Bohemian Male Quartet
George R. Hunter, First Tenor; Philip Ashcroft, Second Tenor; George C. Pettis, First Bass; Scott Beebe, Second Bass	
Violin Solo—Romance (Tschaiakowsky).....	Arthur Garcia; Eva Garcia, Accompanist
Readings—(a) How Three Were Made One; (b) A Letter from the South Sea Islands	Irving Whitney
Vocal Selection—Winter Song.....	Bohemian Male Quartet
Contralto Solo—Sing to Me, Sing (Homer).....	Ruth Hall Crandall; Eva Garcia, Accompanist
Instrumental Selection—Linger Sometime (Carey) (Boosey).....	Lions' Club Orchestra
Address—"Is Happiness for All?".....	Rev. O. W. S. McCall
Piano Solo—Waltz in A Flat (Chopin).....	Eva Garcia

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Vocal Selection—Absence (Buck) Bohemian Male Quartet
Soprano Solos—(a) Berceuse, from Jocelyn (Godard); (b) Sylvain (Sinding)
Instrumental Selection—Sunkist Rose (Staany) Lions' Club Orchestra
Baritone Solo George C. Pettis
Violin Solo—Ava Maria (Schubert) Arthur Garcia
Readings—(a) This Wife of Mine; (b) If I Were Only Thin Irving Whitney
Contralto Solo—Friend o' Mine (Sanderson) Ruth Hall Crandall
Vocal Selection—West, West, West in California Bohemian Male Quartet
Instrumental Selection—Sunshine of Mine (Browne) Lions' Club Orchestra

THURSDAY, MAY 1—8:00 P. M.

DADDY LONG-LEGS

A Comedy in Four Acts by Jean Webster

Presented by the KGO Players

Under the direction of Wilda Wilson Church

CAST

Jervis Pendleton	Roger Noble	Noble Burnham	Sallie McBride	Lenore Everett
James McBride	Richard Ehlers	Richard Ehlers	Mrs. Semple	Mary Harper
Cyrus Wykoff	J. Spencer Riley	J. Spencer Riley	Mrs. Lippett	Mrs. Palmer
Abner Parsons	David Barnwell	David Barnwell	Orphan Children at the John Grier Home—	
Griggs	Conrad Kahn	Conrad Kahn	Sadie Kate	Roberta Hoyt
Walters	Gerald Malsby	Gerald Malsby	Gladiola	Helen Bacon
Judy	Rose Brown	Rose Brown	Loretta	Jane Barker
Miss Prichard	Vera Morse	Vera Morse	Mamie	Ruth Mason
Mrs. Pendleton	Evelyn Avery	Evelyn Avery	Freddie Perkins	Barnston Smeaton
Julia Pendleton	Mary Miller	Mary Miller		
Instrumental Selection				Claremont Orchestra

Act I

The dining room of the John Grier home on Trustees' Day

Instrumental Selection Claremont Orchestra

Act II

Judy's college study; an afternoon in May, one year later

Instrumental Selection Claremont Orchestra

Act III

The sitting room at Lock Willow farm; Summer, three years later.

Instrumental Selection Claremont Orchestra

Act IV

Mr. Pendleton's library; two months later.

Instrumental Selection Claremont Orchestra

SATURDAY, MAY 3—8:00 P. M.

Program furnished by the Plymouth Congregational Church, Oakland, Calif.

Reverend Harry S. McCready, Minister Lowell Redfield, Director of Music

Quartet

Dorothy Buechner, Soprano

Catherine Peterson, Alto

Accompanist, Arthur McHoul; Assisting Pianist, Rosamond Gilmour

Merville Yetter, Tenor

Lowell Redfield, Baritone

PART I

Baritone Solo—Invictus (Huhn-Schmidt) Lowell Redfield

Soprano Solo—Jewel Song from Faust (Gounod) Dorothy Buechner

Duet for Tenor and Baritone—Tuscan Folk Song (Caracciolo) Merville Yetter & Lowell Redfield

Piano Solo Rosamond Gilmour

Tenor Solo—Mattinata (Tosti) (Ditson) Merville Yetter

Alto Solo—My Love Is a Muleteer (di Nogero) (Schmidt) Catherine Peterson

Original Reading—"A Connecticut Yankee in California" Harry S. McCready

Duet for Soprano and Alto—By the Waters of the Minnetonka (Lieurance) (Presser) Dorothy Buechner and Catherine Peterson

Piano Solo—Country Gardens (Grainger) Arthur McHoul

PART II

Song Cycle for Mixed Quartet—Love Songs (Liebeslieder) (Johannes Brahms) Sung by the Plymouth Congregational Church Quartet

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EVENING PROGRAMS**SUNDAY—**

11:00 to 12:00 a. m. Radio Church Services.
 8:30 to 10:00 p. m. Rudy Seiger's Orchestra, from Fairmont Hotel.

MONDAY—

8:00 to 8:30 p. m. Organ Concert.
 10:00 to 11:00 p. m. Palace Hotel Dance Orchestra.

TUESDAY—

8:00 to 10:00 p. m. Studio Program.
 10:00 to 11:00 p. m. Palace Hotel Orchestra.

WEDNESDAY—

8:00 to 11:00 p. m. Palace Hotel Orchestra.

THURSDAY—

8:00 to 9:00 p. m. Organ Recital.
 9:00 to 10:00 p. m. Studio Program.
 10:00 to 11:00 p. m. Palace Hotel Dance Orchestra.

FRIDAY—

Spent for evening.
 10:00 to 11:00 p. m. Palace Hotel Orchestra.

SATURDAY—

8:00 to 12:00 p. m. Art Weidmer's Fairmount Hotel Dance Orchestra.

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MONDAY, APRIL 28—

8:30 p. m. The Bach Society of Seattle, presenting a special program of choral music. The works presented will be the celebrated "Missa Brevis," by Palestrina, which will be sung unaccompanied, and selections from the cantata by J. S. Bach with organ accompaniment. The choir numbers some thirty mixed voices and was formed mainly to foster and cultivate a taste for the works of the great masters, especially those of Johann Sebastian Bach. It is the first choir attempting to broadcast the works of J. S. Bach. The first of a series of talks on "Filtered Sunshine" will be given by Erwin L. Weber.

WEDNESDAY, APRIL 30—

8:30 p. m. A program of vocal music presenting Mrs. Peabody of the Cornish School of Seattle. Misses Myrtle Stewart and Florence Doty will sing a group of popular duet numbers. The second installment of the address on "Filtered Sunshine" will be given by Erwin L. Weber.

FRIDAY, MAY 2—

8:30 p. m. Classical recital given by James Hamilton Howe, dean of the American College of Music, assisted by the following faculty and students: Maude Pederson, Claire Turner, Mrs. Florida Munson-Wroten, Corinne Munson, Jean Black, Frank Burns, George McElroy, Mrs. Clifton Reid, L. F. Jones, Roy Deaver, Hazel Cameron, Ray Marston. The program will be concluded with "Our Washington" (State song), sung by the entire chorus. The third installment of the address on "Filtered Sunshine" will be presented by Erwin L. Weber.

SATURDAY, MAY 3—

12:00 p. m. A special midnight matinee of late song hits of the Leo Feist Publishing Co. Mr. Leo Feist will listen in for this Pacific Coast program at his home in Mount Vernon, N. Y. A special receiving equipment will also be installed in the Boston office of the Leo Feist Publishing Co.

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MONDAY, APRIL 28—

7:30 to 8:30 p. m.

"The World Court—What it Will Accomplish," Prof. C. H. Woody; "Spring Work on the Farm," Leonard Hegnauer; Agricultural Talk; Readings, Department of Dramatic Art; Songs, Miss Marie Scroggin, Spokane; Instrumental Solos.

WEDNESDAY, APRIL 30—

7:30 to 8:30 p. m.

"The Outlawry of War," Prof. C. H. Woody; "Finding New Facts for Agriculture," Dean E. C. Johnson; "Two Bouquets of Clover," Lincoln R. Lounsbury; Instrumental Music; Vocal Solos; Piano.

FRIDAY, MAY 2—

8:30 to 9:30 p. m.

Vagabonds' Orchestra, Leighton Bailey, Spokane, leader. "Farm Crops," C. L. Vincent. "Is the Pacifist Right?," Rev. Clay Palmer. Cornet Solos, William P. Hanson, Michigan, N. D. "Transferring Bees," B. A. Slocum. Instrumental selections. "Highways of the North-west and Their Condition," H. E. Phelps. Book Chat, Miss Alice Webb.

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K G W—The Morning Oregonian—492 Meters

PORTLAND, OREGON

(PACIFIC TIME)

PROGRAM FOR WEEK APRIL 27 TO MAY 3, 1924

- 11:30 a. m. Daily except Sunday—Government weather forecast.
 7:30 p. m. Daily except Sunday—Government weather forecast and market reports.
- SUNDAY, APRIL 27—**
 8:00 p. m. Church services by Forbes Presbyterian Church, Rev. L. R. Carrick, pastor.
 7:00 p. m. George Olsen's Concert Orchestra in dinner program and baseball scores.
- MONDAY, APRIL 28—**
 3:30 p. m. Literary program by Portland Library Association.
 7:00 p. m. Talk by representative of Parent-Teachers Association.
 8:00 p. m. Recital by Jane Burns Albert, soprano.
 9:30 p. m. Program by Musical Department, Chemawa Indian School.
- TUESDAY, APRIL 29—**
 11:15 a. m. Market Basket.
 12:30 p. m. Concert by Civ'c Mus'c Club of Portland.
 3:30 p. m. Talk by Jeanette P. Cramer, home economics editor of The Oregonian.
 7:45 p. m. Talk for farmers, Oregon Agricultural College extension service.
- WEDNESDAY, APRIL 30—**
 11:15 a. m. Window Shopping.
 12:30 p. m. Concert by Darby's Orchestra of Cotillion Hall.
 3:30 p. m. Children's program.
 8:00 p. m. Concert by Columbia Theater All-Artist Orchestra.
 9:00 p. m. Alexander Hamilton Institute Business Talk by James Albert.
 10:00 p. m. Dance music by George Olsen's Metropolitan Orchestra of the Hotel Portland.
- THURSDAY, MAY 1—**
 11:15 a. m. Window Shopping.
 12:30 p. m. Concert provided by Seiberling Lucas Music House.
 3:30 p. m. Woman's story program. Installment of "The Midlander," by Booth Tarkington.
 8:00 p. m. Accordion solos by Johnny Sylvester.
 8:15 p. m. Studio program of Dance Music by George Olsen's Metropolitan Orchestra of Hotel Portland, Herman Kenin, director.
 10:00 p. m. Dance music by George Olsen's Metropolitan Orchestra of the Hotel Portland. Intermission solos by Naomi Miller, soprano.
- FRIDAY, MAY 2—**
 11:15 a. m. Market Basket.
 12:30 p. m. Program by Peck Holton's Orchestra of the Wintergarden.
 3:30 p. m. Lecture by Esther B. Cooley, clothing expert of extension service, Oregon Agricultural College; subject, "Who Notched the Coat Lapel?"
 8:00 p. m. Lecture provided by Portland School of Social Work.
 8:30 p. m. Silent until 10:30 p. m.
 10:30 p. m. Hoot Owls.
- SATURDAY, MAY 3—**
 3:00 p. m. Special musical program.
 3:30 p. m. Children's program. Story by Aunt Nell.
 10:00 p. m. Baseball scores, weather forecast and dance music by George Olsen's Metropolitan orchestra of Hotel Portland. (2 hours.)

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DAILY—FEATURES—

SUNDAY, APRIL 27—

- 9:00 to 10:15 a. m. Complete services of the First Presbyterian Church; Rev. J. K. Thompson, pastor.
- 2:00 to 3:00 p. m. Organ Concert by Miss Margaret Agnew White of the Rialto Theater.
- 3:00 to 4:00 p. m. Concert by Wylbert Brown and his orchestra.
- 8:00 to 10:00 p. m. Popular concert by Fred Cahoon's WBAP Southern Serenaders Orchestra.

MONDAY, APRIL 28—

- 5:30 to 6:30 p. m. Pupil concert offered by Mrs. Willie Usrey.
- 7:30 to 8:45 p. m. Concert by the North Texas State Teachers' College Orchestra of Denton, Texas.

TUESDAY, APRIL 29—

- 5:30 to 6:20 p. m. Concert by Dot Echols McCutchan and assisting artists.
- 7:30 to 8:45 p. m. Concert by E. Clyde Whitlock's violin ensemble.

WEDNESDAY, APRIL 30—

- 5:30 to 6:30 p. m. Concert by Tom Dawson's Mandolin Orchestra of Weatherford, Texas.
- 7:30 to 8:45 p. m. Concert by Dick Gaines Dance Orchestra.

THURSDAY, MAY 1—

- 5:30 to 6:30 p. m. Concert by Owen Crockett's Yeoman Orchestra.
- 7:30 to 8:45 p. m. Concert by the Old Time Fiddlers of Lewisville, Texas.

FRIDAY, MAY 2—

- 5:30 to 6:30 p. m. Concert by the Texas Christian University, under arrangement of Prof. H. D. Guelick, head of the school of music.
- 7:30 to 8:45 p. m. Concert by Fred Wagner and his Hawaiian steel guitar players.

SATURDAY, MAY 3—

- 5:00 to 5:30 p. m. Review of the interdenominational Sunday School Lesson and radio Bible Class by Mrs. W. F. Barnum.

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W F A A—Dallas News-Journal—476 Meters

(PACIFIC TIME) DALLAS, TEXAS

- MONDAY, APRIL 28—**
 10:30 to 11:00 a. m. Address, Jack Lockett, blind assistant manager Painters and Pa-perhangers' Union.
 6:30 to 7:30 p. m. Mrs. Otis Holt, singer; William H. McRaven, pianist, in recital.
- TUESDAY, APRIL 29—**
 10:30 to 11:00 a. m. Address, DeWitt McMurray, editor The Semi-Weekly Farm News, in a medley of humor, pathos and wisdom.
 6:30 to 7:30 p. m. Miss Davis, Miss Talty, Mrs. Max Spangler and the Universal Quartet of Male Voices, in musical recital.
 Circle Theater Orchestra in musical recital.
- WEDNESDAY, APRIL 30—**
 9:00 to 10:00 p. m. Musical program by the Red-Head Girl of The Dallas Journal.
 10:30 to 11:00 a. m. Station WFAA will be silent for the remainder of the day.
- THURSDAY, MAY 1—**
 10:30 to 11:00 a. m. Address, by Dr. A. D. Laugenour, President Dallas Astronomical Society.
 4:45 to 5:00 p. m. Boy Scout program, H. W. Wester, Scout Executive.
 6:30 to 7:30 p. m. Male quartet of singers with varied entertainment from Greenville, Texas.
 9:00 to 10:00 p. m. Gibson Mandolin and Guitar Club in recital for the housewarming of the Nash-McLarty Motor Company.
- FRIDAY, MAY 2—**
 10:30 to 11:00 a. m. Address, Dr. Robert Stewart Hyer, President Emeritus of Southern Methodist University, on the Sunday School Lesson.
 4:45 to 5:00 p. m. Frank Reedy on "Alaskan Railway Development."
 6:30 to 7:30 p. m. Musical recital by J. Wesley Hubbell, baritone, and the members of the Hubbell Club.
- SATURDAY, MAY 3—**
 10:30 to 11:00 a. m. Address by Hugo Swann, manager Better Business Bureau.
 1:30 to 2:00 p. m. Special musical program.
 6:30 to 7:30 p. m. Ball-Richey-Smith faculty recital from North Texas State Teachers' College, Denton, Texas.
 9:00 to 10:00 p. m. Adolphus Hotel Orchestra playing dance music in the junior ball-room of the hotel.
- SUNDAY, MAY 4—**
 4:00 to 5:00 p. m. Radio Bible Class, Dr. William M. Anderson, Pastor First Presby-terian Church, teacher; Bible study and Gospel song.
 7:00 to 7:30 p. m. Address, Dr. Harry Lee Virden, archdeacon diocese of Dallas, the Protestant Episcopal Church.
 7:30 to 9:00 p. m. Jack A. Davis and His Orchestra in popular music recital.

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- 8:55 a. m. Daily except Sunday—Arlington Time Signals.
 9:00 a. m. Daily except Sunday—Weather Forecast.
 9:15 a. m. Daily except Sunday—Concert.
 6:55 p. m. Daily except Sunday—Arlington Time Signals.

MONDAY, APRIL 28—

5:30 p. m. Concert by the KDKA Little Symphony Orchestra, Victor Saudel, conductor, assisted by Mrs. Genevieve Elliott Marshall, soprano; Eari B. Collins, pianist and accompanist. Program: Selections by the orchestra—Overture, "Stradella" (Flotow); "Rosary" (Nevin); "Narcissus" (Nevin); Concert Waltz, "Woodland Dreams" (Waldteufel); excerpts, "Alone at Last" (Lehar); popular numbers; solo for cornet, "The Lost Chord" (Sullivan); Irish Dances (Ansell). Soprano solos—"Rose, Softly Blooming" (Spohr); "Lushinghe piu care" (Handel); "Out Where the West Begins" (Philleo); "A Page's Road Song" (Novello); "Life and Death" (S. Coleridge-Taylor); "Ave Marie" (Bach-Gounod), with orchestra. Piano solos—"Rhapsodie d'Auvergene" (Saint-Saens); "Nocturne in F" (Chopin).

TUESDAY, APRIL 29—

6:00 p. m. Baseball scores; concert continued.
 8:00 p. m. Special concert by the Queen City Orchestra and talent from the Pittsburgh Theaters.

WEDNESDAY, APRIL 30—

5:00 p. m. Concert arranged by the K. of C.

THURSDAY, MAY 1—

8:00 p. m. Special concert.

FRIDAY, MAY 2—

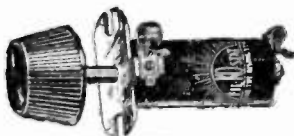
5:00 p. m. Special feature.

SATURDAY, MAY 3—

5:00 p. m. Concert by the Westinghouse Band, T. J. Vastine, conductor, and assisting soloists; Ernest C. Shultz, baritone. Program: Selections by the band—Overture, "Morning, Noon and Night" (Suppe); Waltz, "Tesoro Mio" (Becucci); Pilgrim Chorus from "Tannhauser" (Wagner); clarinet solo, "Third Air Varie" (Thornton); excerpts from "Carmen" (Bizet); "An Oriental Scene," "The Dance of Bagdad" (Langley); Serenade, "An Autumn Romance" (King); cornet solo, "Like a Flower so Fair" (Watson); entre act, "Idle Moments," Rollinson).

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FOR WEEK OF APRIL 27 TO MAY 4, 1924

PACIFIC STANDARD TIME

DAILY EXCEPT SUNDAY AND MONDAY—

5:00 to 5:30 p. m.

Dinner concert from the Congress Hotel, Chicago; Joska De-Babary's Orchestra; Paul Whiteman's celebrated Collegians under the personal direction of A. Vincent Gauthier.

SUNDAY, APRIL 27—

9:00 a. m.

Central Church service broadcast from Orchestra Hall, Chicago; Dr. F. F. Shannon, pastor. Musical program under the direction of Daniel Protheroe.

12:30 p. m.

Studio Chapel service given under the direction of Chicago Church Federation. The speaker of the evening will be announced by radiophone.

5:00 p. m.

Preliminary service of the Chicago Sunday Evening Club.

6:00 p. m.

Regular meeting of the Chicago Sunday Evening Club. The speaker of the evening will be Henry Van Dyke.

MONDAY, APRIL 28—

4:02 to 4:18 p. m.

News, financial and final markets furnished by the Union Trust Co., Chicago Journal of Commerce and U. S. Dept. of Agriculture.

4:33 to 4:43 p. m.

Talk—Speaker will be announced by radiophone.

4:45 p. m.

Children's Bedtime Story.

TUESDAY, APRIL 29—

6:00 to 7:30 p. m.

Musical program, courtesy of the Chicago Musical College, under the direction of D. Paul Bretweiser. American Farm Bureau Federation program. The speaker of the evening will be J. D. Harper, National Live Stock Producers' Association, whose subject will be announced by radiophone. E. R. Cogswell, Illinois Bell Telephone Co., whose subject will be "The Relationship of Telephone Service to the Farmer."

WEDNESDAY, APRIL 30—

6:00 to 7:15 p. m.

Musical program—Gwennie William Evans, soprano; Grace M. DeCosta, soprano; William Davies, tenor; J. Sounenchien, baritone. Passage Bird's Farewell (Hiltdoch), Gwennie Williams Evans and J. Sounenchien. (a) Twilight (Glenn); (b) Lenz (Hiltdoch); (c) Thank God for a Garden (Del Riego), Grace M. DeCosta. (a) O No Byddai'n Haf O Hyd (Davies); (b) Voviana (Adams), William Davies. Maying (Smith). Gwennie Williams Evans and Grace DeCosta. (a) Gwlad Z Delyn (Henry); (b) Morning (Speaks), Gwennie Williams Evans. (a) O'er the Desert (Kellie); (b) Slave Song (Del Riego); (c) Invictus (Huhn), J. Sounenchien. (a) It Was a Lover and His Lass (Walthew); (b) Prison Scene from Il Trovatore (Verdi), Gwennie Williams Evans and William Davies. "Good Roads" Report furnished by the Chicago Motor Club. Program furnished under the auspices of the Union Trust Co. Book Reviews by Llewellyn Jones, literary editor of Chicago Evening Post.

8:00 to 12:30 p. m.

Midnight Revue. This is a Chicago Evening American-Westinghouse feature broadcast from the Hearst Building. Program will be announced by radiophone.

THURSDAY, MAY 1—

5:50 to 7:20 p. m.

Talk on "Sports" by Leo Fisher of Chicago Evening American staff. Talk on "Finance and Markets" furnished by Mr. Thomas Hoyne, who writes for the Chicago Evening American under the name of Argus. "Twenty Minutes of Good Reading," by Rev. C. J. Pernin, S. J., head of Department of English, Loyola University, Chicago. Edison Symphony Orchestra concert at Orchestra Hall, Morgan L. Eastman, conductor. Swedish Coronation March (Svendsen); Humoreske (Dvorak); vocal soloist to be announced; "Robispiere" Overture. Sandy Meeks, tenor; Harry Carl Geske, pianist. (a) Fantasia No. 1 (Mozart); (b) Hungarian No. 12 (MacDowell)—

FRIDAY, MAY 2—

6:20 to 6:45 p. m.

Program furnished by the American Farm Bureau Federation.

8:00 to 12:30 p. m.

Midnight Revue. This is a Chicago Evening American—Westinghouse feature, broadcast from the Hearst Building studio. Artists and program will be announced by radiophone.

SATURDAY, MAY—3

6:00 to 6:58 p. m.

Musical Program—Anna Meck, soprano; J. S. Meck, accompanist; Isadore T. Mishkin, baritone; Sallie Menkes, accompanist; Arling Shaeffer, banjo; Kathryn Gordon, pianist. Soprano solos (selected), Anna Meck. (a) Southern Pastime (Shaeffer); (b) On to Victory, Arling Shaeffer. (a) It Is Enough, from Elijah (Mendelssohn); (b) Serenade (Schubert), Isadore T. Mishkin. Valse Brillante (Chopin), Kathryn Gordon. Soprano solos (selected) Anna Meck. (a) Old Black Joe with variations (Shaeffer); (b) Guitar Solo (selected), Arling Shaeffer. (a) Di Provenza Il Mar, from La Traviata (Verdi); (b) Toreador Song from Carmen (Bizet), Isadore T. Mishkin. (a) Shepherds Hey (Grainger); (b) Liebstraum (Liszt), Kathryn Gordon.

7:05 p. m.

Program will be announced by radiophone.

WTAM—Willard Storage Battery Co.—390 Meters

CLEVELAND, OHIO

WEDNESDAY, APRIL 30, 1924—5 p. m. Pacific Standard Time

WTAM Symphony Orchestra, assisted by the West End Garage Co. Saxophone Serendare, New Philadelphia, Ohio, Oscar Puigner, director, and the Glenville Baptist

Church Choir, John H. Williams, director

Comedy Tom (Holmes), "None So Rare," from Martha (Lake), Saxophone Serenaders A Pilgrm Song (Tschakowsky), Trees (Limer-Rasbach), Charles Murray, baritone; George H.H. accompanist. Somnambula (Thornton), Venzano Waltz (Venzano), Oscar Puigner, clarinet; Alice Murray, accompanist. I Never Knew (Ball), Who Knows (Ball), J. Fennimore Helmick, bass; Alice Murray, accompanist. Intermezzo, "Forget Me Not" (Brooks), Lonesome and Blue (Alford), saxophone quartet, Edwin Kinsey, Howard Ulrich, Frank McCarty, Everett Dienst; Why I Love You (Felton), Virginia Huffman, soprano; Alice Murray, accompanist. Medley (Holmes), Waltz (Holmes), Saxophone Serendare. If I were a King (Adam), WTAM Symphony Orchestra. The Radiant Morn Hath Passed Away (Woodward), Glenville Baptist Church Choir; Mrs. Ira N. Clover, accompanist. Be Thou My Light (Bill n), Helen Milmine, soprano; Mrs. Ira N. Clover, accompanist. I Love a Little Cottage (O'Hara), Dorothy McLean, soprano; Mrs. Ira N. Clover, accompanist. Until (Sanderson), C. F. K. bby, tenor; Mrs. Ira N. Clover, accompanist. Trumpet solo (selected), Alois Hruby. Lo! How a Rose E'er Bloom'ng (Praetorius), Glenville Baptist Church Choir; Mrs. Ira N. Clover, accompanist. Jesus, the Very Thought of Thee (Woolar), Gladys Koekert, soprano; Mrs. Ira N. Clover, accompanist. On the Road to Mandalay (Scott), H. T. Roper; Mrs. Ira N. Clover, accompanist. The Lord Is My Light (Buck), Mrs. Ralph Trinkner, soprano; John H. William, director. To a Wild Rose (MacDowell), Mrs. Ira N. Clover, pianist. My Anchor Holds (Townner), male chorus. Who Could It Be (Harkness), Glenville Baptist Church Choir; Mrs. Ira N. Clover, accompanist. The Song Divine (Temple), John Hutton. Norwegian Dance (Grieg), Selection from Tannhauser (Wagner), WTAM Symphony Orchestra. Absent (Metcalf), Chas. F. Gardner; Mrs. Ira N. Clover, accompanist; Red, Red Rose (Hastings), Emmaetta Friedel, soprano; Mrs. Ira N. Clover, accompanist. Inflammatus (Rossini), Glenville Baptist Church Choir; Mrs. Ira N. Clover, accompanist. La Bella Argentina (Roberts), Selections from Up She Goes (Tierney), March of the Walking Dolls (Cobb), WTAM Symphany Orchestra.

SATURDAY, MAY 3, 1924—8 p. m. Pacific Standard Time

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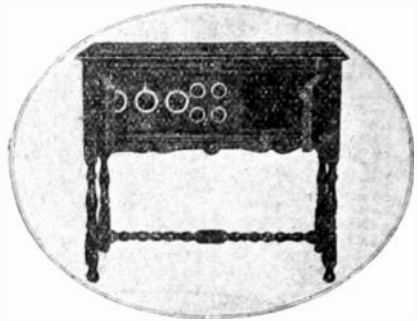
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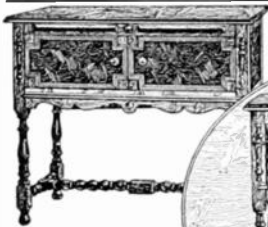
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K S D—St. Louis Post-Dispatch—546 Meters

Weekly Program, Week of April 28th
Pacific Standard Time

MONDAY, April 28th—

6:30 p. m. Music program broadcast direct from the Grand Central Theater.

TUESDAY, April 29th—

6:00 p. m. Operatic concert given by the pupils of Ursuline Academy.

WEDNESDAY, April 30th—

6:30 p. m. Program of Abergh's Concert Ensemble, broadcast direct from Hotel Statler.

7:00 p. m. Studio recital by Mrs. H. W. Geller, soprano; Miss Virginia Slack, reader.

9:00 p. m. Broadcasting direct from Hotel Statler dance music played by Rodemich's Orchestra.

THURSDAY May 1st—

Silent.

FRIDAY, May 2d—

6:00 p. m.—Program to be announced.

SATURDAY, May 3d—

6:00 p. m. Missouri Theater orchestra concert and specialties broadcast direct from the theater.

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Letters to the Editor

Hamlin, Kansas, April 14.

Editor, Radio Doings:

April 13th RD just received. Will answer some questions in this issue.

J. F. J. Fay:—WDAF broadcasts on Mondays, 8 to 9:15, C. S. time. On March 31, program in Star was given as 12 selections by Stinson's orchestra. Was at National Guard drill, so didn't hear it. WDAF has no regular woman announcer. You may have heard WLAG on 417.

J. Sourwine:—What is wave of WOG?

J. Voy:—Should give wave of station heard. That selection heard "all over," lately.

A. V. Narath:—Maybe WSB; if so, an extra program. Doubt it, as it would be 2 to 3 a. m., their (Central) time. Probably a Canadian station.

Myself:—It was KFSG.

G. T. Berry:—WOS. Certain. Write me.

W. B. Pond:—Fine DX., OM.

A. M. Norton:—Probably a short in power line causing "spark QRM." Have it here. Consult someone connected with light company.

Earle W. Varney:—WAAZ, Emporia, used to come in here (about 185 miles), though not loud. Not at all since last summer, and I believe it no longer broadcasts. Was told so by a fellow from Emporia, who was rather a "fan" while there. If you're sure, though, will try to tune them again. Heard CYL April 11 on a 5-tube Neut. My own is a single C-299, own-circuit affair. Have heard CYL and also CYX on it, 1420 miles. My best DX is CKCD, Vancouver, 1480 miles. Am so near the center of the United States that's about as far as I can go, on 1-tube, I guess. Your description of HFHJ fits a lot of 'em, O. M. Ought to be censured.

J. A. BROCKHOFF.

Dear Sir:

I would greatly appreciate if any of the subscribers would please inform me as to what station signed off the air at 11:25 p. m., April 13th, broadcasting about 500 meters. This was Pacific time. Thanking you for any favor returned.

A. P. BOYD, Oakland, Calif.

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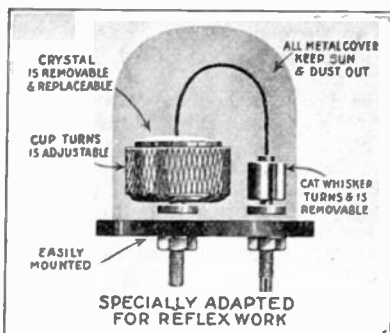
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Mention This Advertisement. Address Dept. O-11

Letters to the Editor

Editor "Radio Doings."

Roy Higginson asks about a station in Minnesota that has a lady announcer. This was probably WLAG, Minneapolis, broadcasting on 417 meters. I have heard this station several times.

Curtis Hanson asks what station was broadcasting on about 450 meters, April 11. This was station KFOA at Seattle, Washington. This was a program given by a string sextet.

OLIVER YOUNG, R. D. 1, Fillmore, Calif.

1800 South Bronson Ave., Los Angeles, Calif., April 17, 1924.

Dear Sir:

Last night (Thursday), between 7:30 and 8:00, the station was on about 360 meters. They were broadcasting orchestra music. I could hear the music, but when the announcer talked I could not understand him. I would appreciate it very much if some one would tell me where it was. I am a radio fan and could not get along without the "Radio Doings." Thanking you in advance.

DELL A. SCHWEITZER.

Dear Sir:

While listening-in last Wednesday (April 16, 1924), I received the program broadcasted from the special amateur station, QXN, in Chicago to WNZ, the station of the MacMillan expedition in Arctic Circle at the North Pole, until 1:45 a. m., when they closed down. I would like to know if you or any of your readers could inform me as to their power or wave length?

KENNETH R. ROGERS.

Dear Sir:

Could you or some of your readers please tell me the call letters of a station that was on at seven-forty-five, between 360 and 400 meters? The announcer said something about Mexico or New Mexico, and said the last selection was by a famous violinist. We sure appreciate the Radio Doings. Mostly the part in which the complete programs are given.

WM. SHOEMAKER, 238 E. Twenty-fourth Street, Los Angeles, Calif.

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A well established, profitable Radio Retail Business in the heart
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For particulars call or write the Editor, Radio Doings.



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Most Complete Line on the Coast

Monodyne Tube Set, complete.....	\$27.50
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Cardwell Condensors, 21 plate, \$5.00; 41 plate.....	6.00
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Ballantine R. F. Amplifier.....	15.00
T. N. T. Superhetrodyne Transformer.....	Each 3.50
Tungar Charges, 50 cyc., 2 amp.....	22.50

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The Long Distance Set

Complete with Tubes, Batteries, Loud Speaker and Loop Ariel, \$195.00

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Successor to MOTOR CAR SUPPLY CO.

Open Evenings Till 9 P. M.
920 South Broadway

Telephone VAndike 6063
Los Angeles, California

Our New and Complete Price List Now Ready

?? ??

Los Angeles, Calif.

Dear Editor: I have a four-tube set and have been using a 100-volt B battery, until recently, when the set ceased to function on a voltage of over 50 volts. Some of the clips are a little corroded. Could this be the trouble? Or have the plates in the tubes turned soft? Yet I got Calgary, Canada, in this condition.

Yours truly,

A READER,

Anaheim, Calif.

Ans.—Your tubes have either gone soft or your B batteries are defective.

Dear Sir:

Will you please answer the following question in "Radio Doings": Have a CR-5 one-step receiver, using a 200-foot aerial. I find when I use a 100-foot aerial the volume decreases to almost nothing. Could I insert a load coil and be able to use a 75-foot aerial so as to increase selectivity? I live eight miles from KHJ.

A dealer tried to sell me a UV-199 tube with a standard base, not a 1-inch base. Was it a fake?

J. H. BRUTSCHE,

4114½ Homer Street, Los Angeles.

Ans.—We believe you have not sufficient wire on your coupler—200 feet of antenna is entirely too much for this type of circuit. UV-199 tubes have not been released with standard base as yet.

Have a Crosley Model V detector with two-step amplifier. At wave lengths below KFI I get a popping noise which cuts out the signals. Acts like it cuts out the B batteries, as the signals come strong and then die out entirely and then come on again. Set is installed with Radiotron UV-201 Detector and Cunningham 301-A Amplifiers. Have tried new tubes but it doesn't remedy the popping. B batteries are O. K. Storage battery O. K. This is not the late model Crosley. Would you advise to install the new type tuning coil and condenser? Would appreciate reply, personal or through "Radio Doings."

O. S. P., Box 41, Glendora.

Ans.—Your trouble sounds like loose connection. We advise close inspection of variable condenser for loose connections.



"It tunes 'em out"

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To one station at a time with an
X-L RADIO CRYSTAL SET

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Genuine Loud Speaker Volume Guaranteed!

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A degree of protection never before heard of is represented in these phones and loudspeakers.

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Bi-polar construction. Wonderful volume and elasticity of tone.

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Adjustable diaphragm. Finest reproducing radio instrument ever built.

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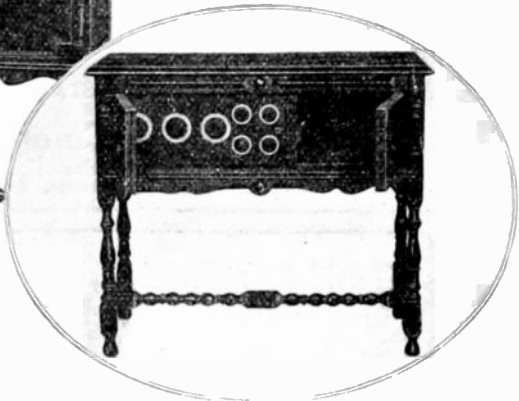
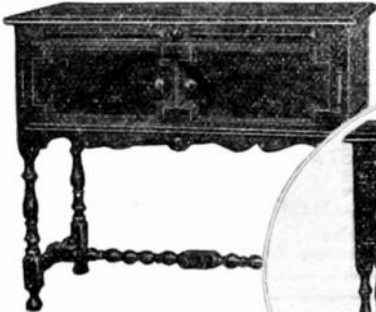
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?? ??

Dear Sir:

I am only 14 years old and I would like to get some advice from you on how to receive long distance on my radio set that I made myself, which is a CR-5 two-tube set. I have a 45-volt B battery and three dry cells as an A battery, and using C-299 tubes. My aerial is 75 feet long and two strands about one foot apart. My aerial points north and south. My lead-in is at the north end. My ground is on a water pipe. I seem to get amateurs as loud as I do local. Now can you please tell me why I can't get long distance?

PAUL BERGMAN, 2736 Winter Street, Los Angeles.

Ans.—If your circuit is correct, we see no reason why you should not get distance. Mail us your circuit, that we may check.

Gentlemen:

I believe the most interesting part of your publication is questions and answers, so wonder if you would answer one for me. In using an Atwater-Kent, Model 10, KFI, KHJ, KFSG, KGO and KFKX come in on the speaker so loud it is really uncomfortable, but those are the only ones I have any luck with. All batteries are good. Aerial from 30 feet to 140 feet above the ground. Tried from 75 to 200 feet long, and could see no difference. Everything clear under the aerial. Grounded to a cold water supply line 20 feet from receiver, also buried a plate three feet square and kept it well soaked up. No difference. Tubes all good; connections all tight; rheostats and potentiometer good. Would a variometer, a vario-coupler or a variable condenser between the aerial and receiver help?

Thanking you in advance, and with best wishes for the continued success of "Radio Doings," I remain, very truly yours,

F. E. GILPIN, P. O. Box 2076, Bisbee, Arizona.

P. S.—Lead-in is well supported and insulated; no chance for leak.—F. E. G.

Ans.—Mail us your circuit. Then we can give you correct data.

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1646 West Adams

Where your dollars have more cents

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Courtesy - Quality Merchandise
Guaranteed Sets Made to Order
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REDUCED PRICES
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Prompt Mail Order Service

?? ??

Dear Sir:

Could the diagram of the set enclosed be made into a transmitter by plugging in a microphone in the phone jack? If not, what changes would have to be made?

2. How much better service will an A tube give the average user than a 1½-V tube will?

3. Does a wave trap cut down the volume?

4. Can a loop aerial be used on a Harkness reflex? If so, what gauge, and how much wire is used?

A Radio Irishman,

W. H. McCLAY,

360 Elizabeth Street, Pasadena, Calif.

Ans.—(1) No circuit was enclosed. (2) No better service; a little more volume. (3) No. (4) Yes, but it is not advisable.

Dear Sirs:

Would you please tell me if the Myers Vacuum Tube for receiving is as sensitive as the C-299 tubes for detecting, and if they are as good an amplifier? Also would you please give the current consumption? Please send a hook-up for a phantom receiver (one tube). Is station 6XG the same as KGO at Oakland?

Yours truly,

EDWARD OSWALD,

Idaho Falls, Idaho.

Ans.—6XG is KGO. C-299 and UV-199 tubes are the standard.

How does a five-tube Neutrodyne compare with a five-tube set consisting of two stages of radio frequency, detector, and two stages of audio frequency amplification, in respect to ease of construction, ease of operation, upkeep, volume distance and ability to hold up? By this I mean its continuing to operate the same at all times, allowing for batteries, etc. I had a reflex set, but there was always something wrong with it. If it wasn't the tubes it was the crystal, etc. Is the Neutrodyne subject to this trouble?

OGLE McCLELLAN,

1927 E. Second St., Los Angeles.

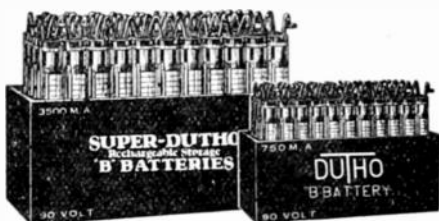
Ans.—We cannot take any stand either for or against the receivers you mention.

I have an Erla three-tube duo-reflex, which had anything beat for howling that was ever invented. I took it to a local expert, who promptly took out the fixed detector and replaced it with an adjustable one. It works very nicely now, but I find some crystals work better than others. I am using B metal now. Would some other reader of your columns tell me what kind of crystal he likes best? It would be rather expensive to buy them all just to find the best kind.

COLLIS JOHNSON,

R. F. 35, Fresno, Calif.

Ans.—Give Argentite a trial.



DUTHO RECHARGEABLE STORAGE "B" BATTERIES

Here's what they cost you delivered

Super-Dutho
3500 ma hours

24 v \$9

45 v \$17

90 v \$32

S Type Dutho
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Provide Clear Reception

Have 3500 M. A. Hours capacity.

Designed especially for larger sets

demanding steady plate current.

for loud, clear, undistorted reception.

Note low prices delivered.

750 M. A. hours Dutho "B" Batteries

are for portable and other sets.

New technical features make them fool-proof

and insure long life. Shipped dry, with liquid in

separate container. Thousands in use.

Shipped anywhere prepaid. Certified

Check or money order must accompany order.

Write for booklet on Storage "B" Batteries

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DEALERS:—Write for Special Dealer Proposition

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You are courteously
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Sign of the Lion's
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Have 210 Distributors

(Service Stations)



An increase of thirty-five since the first of the year.
This indicates an increasing approval of our product.

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2333 East 28th Street

Los Angeles, Cal.

? ? ? ?

"Radio Doings," 308 Van Nuys Bldg., Los Angeles.

I would like answers to following, through "Doings":

1. Will a wave trap cut out interference from the damnable one-tube, single-circuit nuisance, or would a pick handle be the appropriate remedy?
2. What is meant by the terms "loose coupling" and "tight coupling," used by "experts" in giving information about hook-ups?

I wonder if those owners of receiving sets who are asking for silent aid know or care for the pleasure or comfort of the over 90 per cent of people who listen in on sets that don't reach to Chicago, and wouldn't waste time and energy, if they could, listening to scraps of broadcasting that can't be understood when heard? See the many requests for "what station was it that was on the air on such a date," etc., appearing in "Radio Doings."

Yours for the best that's going, and due consideration for the other fellow,

F. P. WILLARD,

Box 599, Route 1, San Diego, Calif.

Ans.—Yes, a wave trap would help. These terms relate to coupling between antenna circuit and secondary circuit—in a coupled circuit. This type of circuit is more selective than the single-circuit type.

Dear Editor:

Can you tell me why my two-tube Harkness set will not pick up Hastings, Phoenix, Portland, etc.? It works wonderfully well on local or KGO and KPO, but anywhere else seems impossible. The carrier wave seems to simply drown the voice and is accompanied by crackling noises when tubes are turned high enough to bring in distance. The volume on Oakland is so strong that the neighbors can hear it half a block away when fully open. Portland is audible all over the room at times, but am unable to get anyone else loud enough to distinguish them. It is impossible to use ear phones at all because of the hum. Could it be my crystal? Am not within six blocks of power sub-station or motors. Have a large aerial like diagram. Lead-in drops from triangle to roof edge, where it is joined by single wire aerial from 40-foot pole, then down and into the house. Everything is thoroughly insulated. Less aerial cuts down my volume.

C. R. HULL, Covina, Calif.

Ans.—Your Harkness set is working good. We believe you have not given your set a fair trial. The fact that KGO and KPO are O. K. proves to us that distance is possible.

Prest and Dean Radio Electric Co.

Complete Line of Radio Sets and Supplies

Colin B. Kennedy Sets—"The Royalty of Radio"

742 East Fourth Street, Long Beach

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If Your Set is "Logy"

LET US HELP YOU

WINCH RADIO SHOP

4301 South Western Avenue

OPEN EVENINGS

SETS

REPAIRS

PARTS

"Out of the Air"

By LISTENER-IN

If you refer to our "Radio Time Tables" you will note that we are now giving the power in watts of each station listed so that those who wish to try for them can judge what chances they have of picking them up. Naturally, the stations with the greater power are easier to pick up than those with smaller. We hope and believe this information will help you all.

Salt Lake City is to have another broadcasting station. Nathaniel Baldwin, Inc., is presenting this station to the city. Equipment cost will be about \$25,000 and will be furnished by the Western Electric Co. The station will be located on the Hotel Utah and will be in operation by October 1st.

By special arrangement, the Sale Lake Chamber of Commerce will have full charge of the operation of the station for the first two years and programs will be arranged by a committee representing this organization. The power will be 500 watts.

The examination will be held throughout the country on May 21 for Radio Inspector. It is to fill a vacancy in the Signal Service at large, at an entrance salary of \$2400 a year, and vacancies in positions requiring similar qualifications.

Applicants must have been graduated from an accredited high school, and, in addition, have had at least two years of experience in special radio work, such as the manufacture, installation, adjustment, inspection or operation of commercial radio apparatus. Each completed year of a scientific course in a college of recognized standing, majoring in radio, electrical engineering or physics, will be accepted as equivalent to six months of the required experience, and for each year lacking of the completion of the high school course applicants may substitute an additional six months of the required experience.

Full information and application blanks may be obtained from the United States Civil Service Commission, Washington, D. C., or the Secretary of the Board of U. S. Civil Service Examiners at the postoffice or custom house in any city.

Five More Broadcasters Licensed

List of limited commercial, or Class A, stations licensed during past week:

Call	Station	Kcys.	Meters	Watts
KFPH	—Harold Chas. Mailander, Salt Lake City, Utah....	1240	242	50
KFPL	—C. C. Baxter, Dublin, Texas.....	1240	242	20
KFPN	—Missouri National Guard, Jefferson City, Mo....	1240	242	10
KFPP	—G. & G. Radio & Electric Shop, Olympia, Wash..	1270	236	20
WCBR	—Charles H. Meester (Portable Station), Providence, R. I.....	1220	246	5
TRANSFERRED FROM CLASS A TO CLASS A				
KFEZ	—Asso. Engr. Societies of St. Louis, St. Louis, Mo..	1210	248	250
WTAU	—Ruegg Battery & Electric Co., Tecumseh, Neb..	1240	242	10

The stage and motion picture screen are constantly announcing new acquisitions from abroad. Radio is also catching the mania.

KFI, the Earle C. Anthony station, last Friday night presented for the first time over radio the recently imported "Neapolitan Quartet." This group of artists came into the Anthony station, passports still in their hands, having just arrived on the Anthony Special from Kzebezych, capital of Pylask. Signor Paolo Reeso, noted Italian pianist, accompanied the Neapolitan Quartet as they sang their charming native serenades, notably "O Sole Mio." Signor Harree Portero, protege of Harry Porter, the American baritone, was a member of this talented group, and Signorita Marotta and Signora Gemma Casaretto completed the quartet.

Many requests have come in for a return engagement of this unexpected but devastating vocal and instrumental quartet, and it is rumored that they may make their home in Southern California, instead of sailing by return boat to their native land.



Magnavox Reproducer M1 is designed for use with dry battery receiving sets and gives splendid results. It is as simple to connect as a headset.

Price \$35.00



Magnavox Reproducer M1

A notable addition to the famous Magnavox line of Radio Reproducers and Power Amplifiers is M1 illustrated above.

This instrument requires no battery for its operation, and is supreme in its class. Magnavox Products are for sale by good dealers everywhere.

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WIRELESS SHOP

SUPER - HETERODYNE

PARTS ARE SUCCESSFULLY WORKING

Letters and addresses in our files, to which we will refer you, prove it. Don't take our word for it, come and look at a perfect factory-built set. You can do the same with our balanced parts—the home-made job is what counts.

ONE CUSTOMER

who has a very popular type of Neutrodyne working on a good aerial, and giving real long distance reception, says:

"IT BRINGS THEM IN ON A LOOP JUST ABOUT TWICE AS GOOD AS THE NEUTRODYNE DOES ON AN AERIAL."

WIRELESS SHOP INTERSTAGE TRANSFORMERS

are wound with a special low capacity winding, developed in our laboratory for this purpose. They are resonant at

3400 METERS

Every turn of every transformer is in the same relative position as the same wire in other transformers, thus assuring that they are all alike.

Price per Set of Four \$26.00
Oscillator Coils 4.50

Order yours now, as our production is limited by the capacity of our winding machine.

ULTRADYNE

TRANSFORMERS—OSCILLATORS—TUNERS

Made exactly to specifications—in stock.

PRICES—Transformers, set of 4 . . . \$25.00
Oscillator 3.00
Tuner 3.50

HARKNESS SETS

The most practical small receiver available. Our parts are all of the usual high WIRELESS SHOP QUALITY. Dealers are making real money buying these Standard Sets of Knock Down Parts from us, and assembling them. Panels are drilled and engraved.

LIST PRICES

Two Tube Kit—Knock Down Parts . . \$40.90
One Tube Kit—Knock Down Parts . . 28.95

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