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No. 25

What Congress Did Not Do

A GAIN Congress has adjourned without passing any legislation for the benefit of radio.

The radio public will not be at all surprised, only disappointed.

They have learned by this time that it matters not how much they want legislation that will be of benefit to the masses; that their representatives are more interested in passing bills for buildings and improvements for their particular districts, or so-called relief bills for veterans or others, for which they provide no revenue.

It is estimated by the Department of Commerce that there are at this time over 5,000,000 owners of radio sets in the country, and we feel that this vast, growing body is entitled to some consideration.

The late President Harding, realizing that needed legislation had not been passed, issued an executive order, which is now in force and which helped the then impossible condition under which broadcasting was conducted. Since that time radio and broadcasting has increased in interest until today it is considered as almost a necessity in the home.

Under these circumstances the radio public are to be congratulated that their interests are being looked after by such a staunch friend as Herbert Hoover. While the legislative branch of our government may have proved derelict in their duty, the executive departments have been strictly "on the job" and are watching the interests of the people.

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Radio at the Bureau of Standards

Just outside of Washington, there is located the Bureau of Standards of the Department of Commerce, which handles, among many other subjects, the standardizing and scientific development of radio, both for the Government and the people. The radio laboratory of this Bureau, headed by Dr. J. H. Dillinger, undertakes research on radio principles, standards and standardization projects and special radio engineering problems for the Government, other than in military and naval development. Its work deals more with fundamentals and with scientific phases of radio than with specific applications embodied in apparatus on the common market. It keeps in touch with advances made elsewhere in radio and electrical communication generally, but does not attempt to police the air, that being done by the Radio Division of the Bureau of Navigation, another branch of the Department of Commerce under Secretary Hoover.

In a special interview, Dr. Dillinger declared that even the term "radio" was not fully understood by many, let alone its many applications and phases. In this connection he said:

"To most of the radio fans, and even the radio experts, who flourish all over the land, radio means receiving apparatus and that alone. The reception of broadcasting is the most extensive phase of radio today, but it is not the whole of radio. The serious effort of radio science and engineering is far less engaged with broadcasting than is commonly supposed. Relatively speaking, and from the technical development viewpoint, the problems of broadcasting and of broadcast reception are solved, and other things are being developed. The real work of broadcasting development was done three to ten years ago. Of course there is great commercial and technical progress being made in this line, but the processes of fundamental development work are being directed to such things as transoceanic radio-telephone service, radio aids to navigation on the seas and in the air, directed radio transmission, radio distant control, conquering of atmospherics, and reduction of interference."

Having no desire to decry broadcasting, Dr. Dillinger points out that in it, radio is certain to reach its highest function. The greatest service radio will eventually render, is its part in the process of education, in a broad sense, he says; and while the widest use of radio broadcasting is entertainment, its greatest serious contribution to human life will be education. The Bureau of Standards has been identified with the developments which have established the present broadcasting service. In 1920, at the request of the Department of Agriculture, the bureau ran a four-month experimental trial of daily broadcasting of market reports. The extensive market report system of today was established on the basis of the results of this trial. Early in 1920, the Bureau broadcasted music experimentally, but on an announced schedule. Later in the same year the broadcasted of music and news on a large scale was inaugurated by the Westinghouse Company at station KDKA.

The extremely practical importance of scientific work on standards is illustrated by radio interference, Dr. Dillinger said, adding that much has been done to solve this great problem. Instead of the common attitude of complaint whenever a code message or other noise disturbs reception, an attitude of wonder and praise over the relative absence of interference would be more appropriate, he

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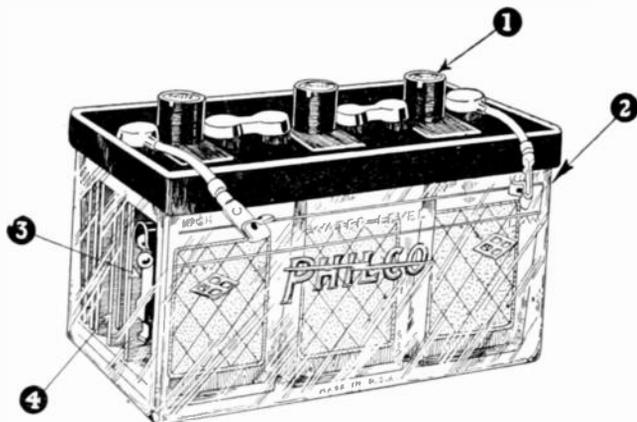
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feels. There are each night several hundred radio messages simultaneously going through the ether from as many stations. Yet each reaches its hearers. There would be much conflict and pandemonium if each of these stations was not kept on, or very near, the assigned wave length. This close adjustment of the station frequencies requires very accurate standards of frequency and constant vigilance to keep the stations and the measuring instruments in harmony with established standards.

The Bureau's scientific work has been of direct value and service to the general public in the radio beacon system. Certain of the Bureau's researches on antennas led to the development of a very simple and efficient radio direction finder. By rotating the direction finder while listening to a radio message, the direction of the transmitting station is indicated. Thus a ship equipped with a direction finder can steer to a ship which is sending out a distress call, or it can locate its own position by means of radio signals from shore stations. The Bureau developed automatic radio transmitting apparatus to send out such signals from lighthouses, and the U. S. Lighthouse Service has installed a number of these radio beacons which serve the same purpose as the lighthouse lights except that they reach over greater distances and penetrate fog. The direction finder and beacon have been found of service also in aerial navigation. Special types of radio beacons have been developed to keep an aircraft on its course. Incidentally, this work is leading toward the solution of the problem of projecting radio waves in a desired direction. When aircraft are developed commercially, they will depend greatly on radio as a means of navigation. Another radio development for aircraft by the Bureau is a distant control device. This device, a direct product of fundamental research on electron tubes, gives a means of control for a pilotless airplane by radio. The same device has been found useful in operating a radio transmitting station from a distance and in other instances of remote control of machinery.

Some of the Bureau's research work is directed toward the large problem of wave transmission variations, fading, and atmospheric disturbances. These are seen as large problems, the ultimate solution of which requires much more extended knowledge of the actual behavior of the waves than now exists. The Bureau is engaged in studying methods and apparatus for such observations, working in co-operation with other laboratories. The results of the Bureau of Standards' radio work are embodied in publications, many of which are available to the public.

The Bureau of Standards is not, and could not possibly be, a radio question-and-answer bureau, it was explained. Many people have the impression that the Bureau can supply the answer to every conceivable question about electrical or mechanical apparatus. It is estimated that there are at least 5,000,000 people in the United States using radio, and radio is so interesting that the average user has in his mind so many questions that it would take a whole course of special training to answer them, the Radio Laboratory Chief stated.

The rapidly growing scope and importance of radio requires the small radio section of the Bureau to handle a wide variety of projects. In order that it may be of maximum service in advancing science and in the development of radio applications for the Government and for the general public, the Bureau avoids duplicating work done by other agencies.

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No Radio Legislation but Conference Planned

With the closing of the doors of Congress Saturday, all hopes for the enactment of radio legislation this session were terminated. In the fall, two things may happen to the revised White Bill, now known as the Howell Bill which sleeps in a pigeon-hole until December. Either it will be revived then or new bills may be introduced in the Senate or House, or both.

In the meantime, Secretary Hoover is planning a general radio conference, to which he will invite representatives of all walks of the radio industry, including manufacturers, commercial and amateur operators, broadcasters and associations interested in radio development.

The purpose of this, the third radio conference, will be two-fold: Efforts will be made to improve present conditions relating to interference, assignment of wave lengths, and time distribution among the commercial, amateurs and broadcasting interests, all of which are now operating on a voluntary agreement, and also to review pending legislation to get expressions of opinion from the many radio users and listeners, before any new regulatory laws are enacted. An agreement between the several interests for stronger voluntary self-regulation is hoped for by Mr. Hoover, whose only authority is contained in a law enacted twelve years ago before radio was used generally throughout the country.

Representatives of the Department of Commerce are now working out in detail the scope of the conference, securing advices from those affected as to a suitable date for the Washington meeting. At first, Secretary Hoover planned to hold the sessions here in June, but difficulties arose. Some time in July appears to be the earliest possible date, but the question now before the department is whether it would not be more agreeable to all parties to avoid the summer months and call the meeting early in September. An early announcement is expected on the date and scope.

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Extra thick plates insure a steady flow of current and prevent needless noise and crackling.

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Jars are of extra heavy glass and have a sediment chamber in the bottom. This means long life without cleaning.

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Wilbur Commends Heroic Radiomen

The four Naval radiomen, who stood by with the late Captain Sparrow of the unfortunate cruiser Tacoma, when she was broken up by heavy seas in January, after grounding near Vera Cruz, Mexico, have all been commended by Secretary Wilbur of the Navy for conspicuous courage, devotion to duty and disregard of personal danger.

Of the four gallant operators who endeavored to maintain communication with shore stations, only one, Chief Radioman Joseph V. Cooper, U. S. N., of Buffalo, N. Y., remains alive, the other three having perished with their Skipper in line of duty. Secretary Wilbur's commendations were sent to the next of kin of Radiomen Solomon Sivin, of New York City; Henry H. Lussier, of Bristol, Conn., and Edward T. Herrick, of Framingham, Mass.

Part of the commendation of Chief Cooper reads like a page of a thrilling movie scenario:

Remaining at his station in the radio house endeavoring to keep up radio communication with Vera Cruz, he accomplished this until the radio shack was demolished by heavy seas and he was washed out on the deck with Captain Sparrow, Lieut. Hungerford and three radiomen. Chief Cooper and the radiomen sought refuge in a hammock storage space, where Cooper worked continually on his three assistants, who were exhausted from cold and exposure. He tried to keep them alive, only to have them die one by one, practically in his arms. Later, although in an exhausted condition himself, he left the hammock space in an effort to rescue Captain Sparrow, who was in distress on the main deck, but the heavy seas separated them. A little later he again attempted to get his skipper, who had died in the meantime, but he did not have strength to do so. Finally, he himself was rescued in a semi-conscious condition and taken below to the sick bay. The next morning he was lowered over the side on a stretcher into a boat for transfer to a tug, but the small boat was capsized and he was forced to swim to Blanquille reef and made his way to the light house some 390 yards distant, where he found safety at last.

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Kodel Circuit and Theory of Operation

By BERTRAM SMITH

The Kodel circuit is not only entirely new in hook-up, but utilizes a different reception principle than any radio receiver heretofore manufactured. While not exactly new in theory, we are the first to work out a successful circuit employing this principle.

So revolutionary is this new theory that when verified, we predict that it will completely upset the present wave theory of radio transmission, as a properly designed three or four-tube set, employing the Kodel circuit, will have a very wide range, using ground only.

The Kodel receiving system and circuit differs from any heretofore employed in the following points:

1. It has no grid circuit, as a grid circuit is commonly understood.

2. The incoming signals are impressed electrostatically on the grid of tube in Kodel circuit, instead of inductively or conductively as heretofore.

Scientists have long recognized the existence of two forces, set up in the ether, when a transmitting station was in operation.

First: Energy in the form of electromagnetic waves, radiated throughout space by the antenna of the transmitting system. This force is the one now utilized exclusively for the transmission and reception of radio signals.

Second: Energy in the form of an electrostatic strain in the ether, likewise propagated through the ether by the antenna of the transmitting station. This electrostatic force has been known since the earliest conception of wireless telegraphy, but has heretofore not been utilized. Experiments, which we have made show this force to be the most efficient method of reception, and since the ground side of strain only is used, this system does not require an aerial and is also unaffected by static.

The Kodel circuit is oscillating, but not regenerative, as regeneration is commonly understood. It does not infringe Armstrong Patent No. 1,113,149 or any other regenerative or radio frequency patent that we have been able to locate. While oscillating, it does not re-radiate since the grid and not the plate circuit is connected to the ground.

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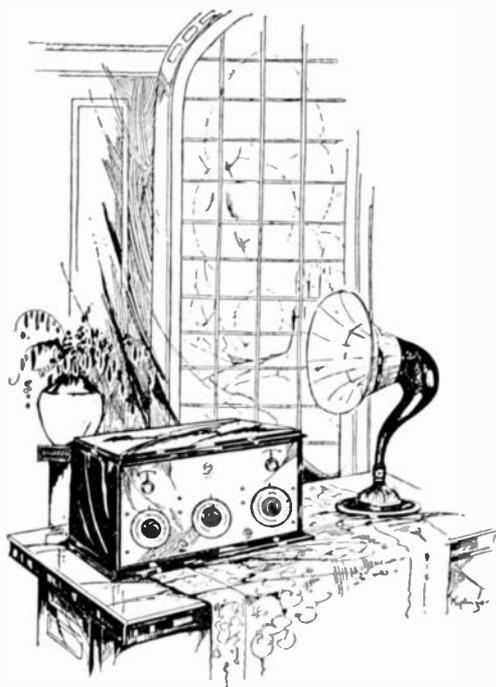
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KFI to Be Radio Super-Station

A most important announcement of interest to the many thousand receiving set owners has just been made by Earle C. Anthony, Inc. This corporation, as most radio enthusiasts know, is owner of KFI, the splendid Los Angeles station, and the recent decision to install a 5000-watt station means a tremendous stride in the history of broadcasting.

The purpose of the Anthony Company in replacing its present 500-watt equipment with what will be the most powerful broadcasting station in the United States, is to increase not only the range of the station, but to increase particularly the quality and reliability of reception. The secret of successful quality reproduction is to put out sufficient power to bring the modulated carrier wave into the receiving set with sufficient strength to operate the detector and the loud-speaking devices from the energy actually transmitted through the air instead of using high-voltage amplification, which distorts and loses quality.

The present governmental law permits but 1000 watts to be put into the antennae, therefore KFI will be operated at 1000 watts power, with a reserve of five times this amount, available for special occasions and in case the law is later modified.

In order to adequately take care of the new equipment, the Anthony personnel of engineers, operators and program managers will be practically tripled. The set contains special transformers and special devices to increase the roundness of tone quality. The voice is amplified and turned into radio frequency by the same 500-watt equipment as is now in use by KFI, but instead of this 500 watts going into the antennae, as at present, it is put into two water-cooled amplifying tubes which are supplied with 10,000 volts direct plate current from three water-cooled rectifying tubes, and the amplified modulated carrier wave is then delivered to the antennae. The set covers about twenty times the area in square feet of the present equipment, and is the latest device used, to be a duplicate of the American Telephone and Telegraph Company's station, WEAJ, in New York City.

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The added power will insure satisfactory reception during the day time, and will mean an absence of fading during the summer months, which is now one of the greatest drawbacks to DX receiving.

The total cost of the extra equipment, now under construction by the Western Electric Company, will approximate \$75,000 more than the present towers, studio and buildings, with an operating expense of approximately \$10,000 per month. An additional studio will be constructed upon the roof of the Packard Building, permitting one group of entertainers to be preparing, while another broadcasts.

Instigation for the new equipment came when Earle C. Anthony made a recent trip to New York and other eastern points, where he thoroughly investigated the broadcasting situation. Mr. Anthony feels that a radio station is a genuine public service, and that in increasing the range and quality of KFI he is adding notably to the great possibilities of radio.

Loading Coils

By HALL BERRINGER

Of all the different parts of a radio transmitting set, there is probably not one of them that is responsible for more avoidable losses than the loading coil. Even in the small amateur set, working on low wave-lengths, the loading coil may eat up as much as all of the energy that would otherwise be supplied to the aerial. In the larger sets, and in using higher wave-lengths, the design of the loading coil becomes increasingly important.

Loading coils have been made in all sorts of shapes and with all sorts of material. They have been wound as helices on square forms and octagonal forms and round forms. They are made of litzendraht (stranded wire with each strand insulated from the others), solid wire, and of tubing and of copper strip. It is obvious that there must be some best form and some best conductor to use.

Litzendraht would undoubtedly be the best kind of wire to use, if it were not for the fact that it does not permit of making easy adjustments.

The amount of inductance in the loading coil must be carefully adjusted, not

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It seems to us that if this is true of a hat, it is equally true of a headset. They are often worn for hours, and you surely want to be comfortable when you are being entertained by Radio. If your headset is uncomfortable, then you are not being entertained, indeed you are being punished.

As we said before, a light straw hat is usually the most expensive, but fortunately this is not the case with headsets. The CANNON-BALL phone is extremely low in price. It is not, however, of inferior quality. The materials and workmanship are the best. It could not be otherwise and be so light. We do not believe that you can buy a better headset at any price.

CANNON & MILLER have been making headsets for years. We make nothing else. Our force is trained to make this class of apparatus ONLY and the result is perfection in manufacture possible only under such conditions.

THE CANNON-BALL will add greatly to your Radio pastime

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RADIOLA X—A selective non-radiating Regenerative Receiver with self-contained loud speaker.

RADIOLA REGENOFLEX—A table type of the Radiola X with external loud speaker.

RADIOLA III-A—A four-tube Regenerative Receiver combining all the latest improvements. A set that will surprise you. Very reasonably priced. Also furnished in separate units.

Demonstrations in the Home by appointment.

Call or write for our Radiola Catalogue.

HOWLAND & DEWEY CO.

EASTMAN KODAK COMPANY

510 So. Broadway

Los Angeles

Phone TRinity 0746.

only when the set is first tuned up, but at frequent intervals afterward, due to changes in the capacity of the aerial, or changes in the wave-lengths of the primary circuit. A coil made of litzendraht cannot have any sliding contacts, and making taps on such a coil is a matter of considerable difficulty.

In making the choice between the solid wire, the tubing and the strip, we have only one thing to consider. High-frequency currents travel in the surface of the wire. This eliminates the solid wire, because it has less surface for a given amount of copper than any other form. The next point is that the inductance, and also the resistance and the losses, of a coil depend on how many turns we can put in a given space. This shows us that the strip will be better than the tubing. As a matter of fact, any tubing which could be used would have less surface than a thin copper strip made with the same amount of copper. So we see that the strip is better for two reasons.

There will be less copper for a given inductance in a round coil than there will be in a square one or an octagonal one. There are two ways to make a round coil, however. It can be wound in a helix (as when it is wound on a tube), or it can be wound in a spiral (like the hairspring in a watch). Since the copper strip has been decided upon, the spiral form of coil will be chosen, because it is very much easier to wind the strip in this form.

There is a very simple formula for the inductance of a flat spiral coil, which anyone can use.

L = the inductance of the coil in centimeters.

n = the total number of turns.

a = the mean radius of the coil (the inside radius plus the outside radius, divided by two) in inches.

b = the width of the copper strip in inches.

c = the radial depth of the coil (the difference between the inside radius and the outside radius) in inches. Then we have

$$L = \frac{32 \times N^2 \times A^2}{0.23a \quad 0.44b \quad 0.39c}$$

This formula is very accurate and can be used to find the number of turns required for a given inductance as well as to find what inductance a given coil will have.

Building coils of this kind is quite simple. Any hard wood will do for the frame, provided it is boiled in paraffin. It is then only necessary to build a wheel having four or six spokes, and to put saw slots in the spokes to set the copper strip into. If four spokes are used, the frame for the coil can be a square of wood. The spokes can run all the way across, being joined together at the center. If six spokes are used, a hub can be made to hold them, and no outside frame will be needed. Such a coil as this can easily be fastened to the wall, and connections made by means of little copper clips made of the same copper strip.

Murdock Radio Head Phones "Standard Since 1914"

BEST'S SUPER HETERODYNE

Built from Remler Parts

We have a model assembled in our store.
Come in and hear it.

We will assemble this set on order.



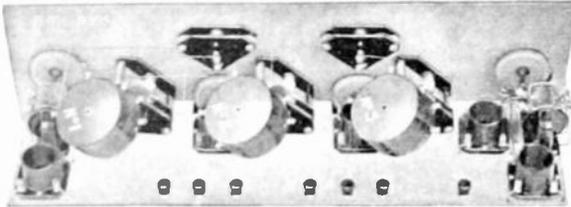
"The Neutrodyne Specialist"

Price of parts for this set, \$75.00

5654 Hollywood Blvd., Hollywood, Cal. OPEN EVENNGS. HOLLY. 1734

BREMER TULLY'S Nameless Prize Circuit

This new method of construction puts oscillations in R. F. Circuit under foot.



Bremer-Tully nameless three-circuit receiver which has demonstrated remarkable selectivity and range. Photograph of one of two sets assembled for test, showing arrangement of instruments and wiring. Part of the wiring is concealed beneath the baseboard. Another view will be printed later showing wiring beneath baseboard.

Briefly, the nameless circuit employs negative feedback through auxiliary coils to stop oscillations in the radio frequency tubes. The negative feedback, through these coils, is controlled by a small variable condenser which gives positive and accurate control. In all tests this was demonstrated readily by tuning a strong signal and turning off one radio frequency tube rheostat.

List of parts used in set tested were as follows:

- 3 Bremer-Tully 3-circuit Transformers.
- 3 Bremer-Tully .0005 Vernier Condensers.
- 2 Bremer-Tully 3-plate plain Condensers.
- 1 7x24x3 16 Panel (7x26 may be used, nicely, if desired).
- 1 200 Detector Tube
- 4 2014 Tubes.
- 1 5 to 1 All-American Transformer for first stage audio, and
- 1 3 to 1 for second stage
- 1 101 Carter Jack.
- 1 104 Carter Jacks
- 2 22 gauge Copper Wire for R. F. Transformer Wiring.
- 16 gauge Copper Wire for 4 Battery Circuits.
- 1 6 ohm Carter Rheostat.
- 3 20 ohm Carter Rheostats
- 1 Meg ohm Grid Leak.

(A two meg ohm leak may be tried, but if tube shows tendency to choke, use smaller size.)

NOTE: The B-T R. F. Circuit tunes very sharp, and B-T Vernier Condensers are essential on account of low losses and sensitivity of the single plate vernier. The 3-plate type of vernier is too coarse.

Prices are as follows:

- 1 Set of 3-circuit Transformers, Nos. 1, 2 and 3.....\$10.50
- 3 .0005 B-T Vernier Condensers... 15.00
- 2 B-T 3-plate Condensers..... 3.00
- 1 Set of diagrams, instructions, etc., is included with each set of Transformers, or sold separately for... .50

We are making reasonably prompt shipments of all of the above items at this time. In wiring up this set be sure to follow diagrams included with Transformers.

EXCLUSIVE DISTRIBUTORS

RADIO SUPPLY COMPANY

Open Evenings till 9 p. m. Telephone VAndike 6063

920 South Broadway

Los Angeles, Calif.

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
A. Times	500	Los Angeles	386	KH J	X	X	X	X										
Earl C. Anthony	500	Los Angeles	409	K F I	X	X	X	X										
Bible Institute	750	Los Angeles	380	K J S	X	X	X	X										
Angelus Temple	500	Los Angeles	278	K F S G	X	X	X	X										
la. Electric Co.	50	San Diego	244	KD P T	X	X												
ale Brothers	500	San Francisco	423	K P O		X	X											
ribune	500	Oakland	509	K L X	X	X												
Warner Bros.	250	Oakland	380	K L S				X						X				X
ould	5	Stockton	380	K J Q	X	X												
illon & Co.	100	Santa Barbara	380	K F H J	X	X												
uy Gresson	10	Tacoma	380	K F E J			X	X		X	X				X	X		X
hodes Co.	100	Seattle	455	K D Z E									X					
irst Pres. Church	750	Seattle	380	K T W		X	X				X							
vieler & Frank	50	Portland	360	K F E C														X
regonian	500	Portland	492	K G W				X		X			X		X			X
eynolds Radio	500	Denver	283	K L Z				X		X		X		X		X		X
ews and Journal	500	Dallas	476	W F A A			X	X		X		X		X		X		X
Palmer School	500	Davenport	494	W O C			X	X		X		X		X		X		X
regonian	500	Portland	492	K G W			X	X		X		X		X		X		X
ederal Tel. Co.	500	Buffalo	318	W G R			X	X		X		X		X		X		X
ears-Roebeck	500	Chicago	345	W L S			X	X		X		X		X		X		X

IN STOCK NOW

RADIOLAS

For Every Purpose—Every Purse

Radiola Super Heterodyne

"The Last Word in Radio"

RADIOLA X

4-Tube Regenerative Receiver

RADIOLA III A

4-Tube Regenerative Receiver

RADIOLA III

2-Tube Regenerative Receiver

Immediate Deliveries

GERMAIN'S

SIXTH AND MAIN + LOS ANGELES

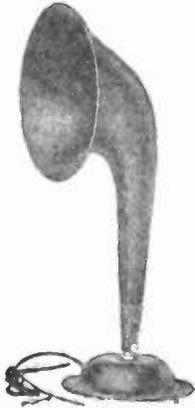
12-2 P. M.
PACIFIC TIME

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
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	K D P T			X				
Warner Bros.	250	San Francisco	360	K L S	X	X					
Hale Bros.	500	San Francisco	423	K P O		X	X				
General Elec.	1000	Oakland	312	K G O		X	X				
Herrold Lab'y	50	San Jose	380	K Q W			X	X			
Guy Greason	10	Tacoma	360	K F E J		X	X				
Rhodes Co.	100	Seattle	270	K D Z E		X	X				
Honolulu Star Bul	100	Honolulu	360	K D Y X	X	X					
Honolulu Adver.	500	Honolulu	360	K G U		X	X				
Reynolds Radio	500	Denver	283	K L Z		X					
Pyles Nichols	10	Denver	360	K D Z O		X					
News and Journal	500	Dallas	476	W F A A	X	X					
Palmer School	500	Davenport	484	W O C		X	X				
Star	500	Kansas City	411	W D A F		X	X				
News	500	Detroit	517	W W J		X	X				
Radio Corp. of Am.	500	New York	455	W J Z		X	X				
Herald	1000	Calgary	420	C F A C		X	X				
Federal Tel. Co.	500	Buffalo	319	W G R	X	X	X				
Woodmen of W	500	Omaha	626	W O A W	X	X					
Sears-Roebuck	500	Chicago	345	W L S	X	X	X				

To Enjoy Radio You Need a Good Loud Speaker



BABY
MADE IN U.S.A.
AUDIOPHONE
Price \$12.50

Used on two or three stages of amplification with excellent results—this Baby Audiophone is ready to connect with your set—requires no auxiliary batteries to operate.

It is substantial in construction and good looking in appearance. The metal base is finished in dull gold bronze with fiber horn of same color to match.

This Loud Speaker has back of it a manufacturer's of 35 years' good reputation.

Write for Bulletin 3013-X.

Made and Sold By

THE BRISTOL CO.
WATERBURY - CONNECTICUT



BRISTOL ONE STAGE POWER AMPLIFIER

No "C" Battery Required

A unit that can be used as a third stage without howling. Install one and give that distant station a chance to come in like locals.

PRICE \$25.00

Pacific Coast Sales Office

Rialto Building
San Francisco

THE PATHE PHUSIFORMER

— *List \$8.50* —

Makes the Best Five-Tube Receiver on the Market

Crosley Trirdyn 3R3

List \$71.60

The Best Three-Tube Receiver That Can Be Purchased
at Any Price

“BETTER — COST LESS”

We can make immediate delivery on the Pathe Phusi-
former, and also on the Crosley TRIRDYN 3-R-3.

First shipment Crosley 51-P, the most practical,
portable set, is expected June 20th. Orders
placed now will be filled in rotation.

COOK-NICHOLS CO.

411 So. San Pedro St.

Los Angeles, Calif.

WHOLESALE ONLY

4-6 P. M.
PACIFIC TIME

RADIO TIME TABLE

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

STATION	WATTS	CITY	METERS	CALL	SUN.		MON.		TUES.		WED.		THUR.		FRI.		SAT.	
					4 00-4 30	4 30-5 00	5 00-5 30	5 30-6 00	4 00-4 30	4 30-5 00	5 00-5 30	5 30-6 00	4 00-4 30	4 30-5 00	5 00-5 30	5 30-6 00	4 00-4 30	4 30-5 00
E. C. Anthony	500	Los Angeles	469	K F I	X	X												
L. A. Herald	500	Los Angeles	469	Herald				X		X				X				
L. A. Examiner	500	Los Angeles	469	Examnr					X		X							X
Angelus Temple	500	Los Angeles	278	K F S G	X	X			X	X	X			X	X	X	X	X
Echophone Radio	100	Long Beach	234	K F O N								X		X				X
General Electric		Oakland	312	K G O			X	X	X	X	X	X	X	X	X	X	X	X
Hale Bros	500	San Francisco	423	K P O			X	X	X	X	X	X	X	X	X	X	X	X
Oakland Tribune	500	Oakland	509	K L X			X		X		X		X					
S. F. Examiner	150	San Francisco	360	K U O				X	X		X	X		X				X
Maxwell Elec.	50	Berkeley	278	K R E									X					
Portable Wireless	100	Stockton	360	K W G			X	X		X	X		X	X				X
Gould	5	Stockton	360	K J O				X	X		X		X	X				X
Radio Den	10	Santa Ana	268	K F A W				X			X		X					X
Nielson Radio Co.	10	Phoenix	238	K F C B					X	X		X	X					
Post Intelligencer	100	Seattle	270	K F J C			X		X		X		X					X
Star Electric	50	Seattle	283	K F H R				X	X		X		X					X
First Pres. Church	750	Seattle	360	K T W	X	X												X
Northwest Radio	50	Seattle	283	K J R			X	X	X		X		X					X
Meler & Frank	50	Portland	248	K F E C			X	X	X		X		X					X
Hallock & Watson	50	Portland	360	K G G				X	X		X		X					X
Pyle & Nichols	10	Denver	360	K D Z Q		X	X	X	X		X		X					X
Star-Telegram	500	Fort Worth	476	W B A P					X			X		X				X
News and Journal	500	Dallas	476	W F A A				X	X		X		X					X
Southern Egr. Exp	500	San Antonio	385	W O A I						X		X		X				X
Palmer School	500	Davenport	484	W O C	X	X	X	X		X	X	X	X	X	X	X	X	X
Post Dispatch	500	St. Louis	548	K S D														
Daily News	500	Chicago	448	W M A Q						X		X		X				X
Drake Hotel	500	Chicago	360	W D A P				X	X		X		X					X
Free Press	500	Detroit	517	W C X	X	X	X	X	X		X		X					X
News	500	Detroit	517	W W J	X	X	X	X	X		X		X					X
Star	500	Kansas City	411	W D A F	X	X	X	X	X		X		X					X
Crosley Mfg. Co.	500	Cincinnati	309	W L W				X	X		X		X					X
Radio Cor. of Am.	500	New York	455	W J Z		X	X	X	X		X		X					X
John Wanamaker	500	Philadelphia	509	W O O				X	X		X		X					X
Federal Tel. Co.	500	Buffalo	319	W G R				X	X		X		X					X
Westinghouse	1000	Pittsburg	326	K D K A	X	X	X	X	X		X		X					X
Westinghouse	1000	Springfield	337	W B Z				X	X		X		X					X
Westinghouse	1000	Chicago	536	K Y W		X	X	X	X		X		X					X
Woodmen of W	508	Omaha	528	W O A W	X	X	X	X	X		X		X					X
Willard Battery	1000	Cleveland	390	W T A M							X		X					X
Canadian Nat. Ry	500	Ottawa	435	C K C H							X		X					X
Sears-Roebuck	500	Chicago	345	W L S			X	X	X		X		X					X

WE KNOW OUR STUFF

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.

STANRAD

2-Tube Reflex Set, complete with horn . . \$68.50 2-Tube Set, wired . . \$29.50
Radio Batteries charged in eight hours, 75c. Stanrad Bakelite Coils, per set, \$2.00

Call Tucker 2433

We fix it or no charge. Sets called for and delivered.

1048 South Olive St.

STANDARD RADIO

Los Angeles

Erla Dealers

*Have You Seen the New
Erla Knock Down Kits*

Everything necessary to assemble Erla Duo Reflex one, two and three tube sets, in neat sealed package, ready for shipping or delivery to your customer.

Also

The Erla Display Board

FOR YOUR COUNTER

Ask Your Jobber, Or

Globe Commercial Co.

Southern California Office:

1113 Wall Street, Los Angeles

Room 205, Radio Bldg.

CALIFORNIA NIGHTINGALE !

The Loud Speaker Supreme

It brings into your home Melody from the Sky, and offers delightful entertainment for your guests.

A trial will convince.

Price equipped with artistic Goose-neck Horn, \$22.50.
Unit only 10.00

Manufactured by

The Stentorfone Company

784 Ceres Ave.,

Los Angeles, Calif.

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	7:30-8:00	6:00-6:30	6:30-7:00
Bible Institute	750	Los Angeles	360	K J S	X	X												
L. A. Times	500	Los Angeles	395	K H J	X	X												
E. C. Anthony	500	Los Angeles	489	K F I	X	X												
Angelus Temple	500	Los Angeles	278	K F S G														
Electric Light Sup.	100	Los Angeles	360	K N X														
Echaphone Radio	100	Long Beach	234	K F O N														
Hale Brothers	500	San Francisco	423	K P O														
S. F. Examiner	150	San Francisco	360	K U O														
Maxwell Electric	50	Berkeley	278	K R E														
Tribune	500	Oakland	509	K L X														
General Electric	1000	Oakland	312	K G O														
Kimball & Upson	100	Sacramento	283	K F B K														
Falian & Co	100	Santa Barbara	360	K F H J														
Radio Den	10	Santa Ana	268	K F A W														
Southern Elect	50	San Diego	244	K D P T														
Neilson Radio Sup.	10	Phoenix	238	K F C B		X												X
McArthur Bros	100	Phoenix	368	K F A D														X
Love Elect. Co	10	Tacoma	360	K M O														
Mullens Elect. Co	50	Tacoma	252	K G B														
N. W. Radio Ser.	50	Seattle	283	K J R														
Excel. Motor Cy.	100	Seattle	380	K H Q														
First Pres. Church	750	Seattle	360	K T W														
Star Electric	50	Seattle	293	K F H R														
Oregonian	500	Portland	492	K G W	X	X	X											
Hallock & Watson	50	Portland	360	K G G														
Meier & Frank	50	Portland	248	K F E C														
Apple Cy. Rad. Clb	10	Hood River	360	K Q P														
Adler's Music Store	5	Baker, Ore	360	K F D A	X	X												
Boise High School	150	Boise, Ida	270	K F A U														
Bunkerhill-Sul.Co.	10	Kellogg, Ida	360	K F E Y														
Telegram	100	Salt Lake	360	K D Y L														
Reynold's Radio	500	Denver	283	K L Z														
Western Radio	50	Denver	360	K F A F														
Pyle & Nichols	10	Denver	360	K Z D Q														
Fitzsimmons Hospital		Denver	542	A A 3														
Sparks Hi School	10	Sparks, Nev	226	K F F R														
Westinghouse El	1000	Hastings, Neb.	341	K F K X														
Star-Telegram	500	Fort Worth	476	W B A P														
News and Journal	500	Dallas	476	W F A A														
Palmer School	500	Davenport	484	W O C	X	X	X	X										
W. O. W	500	Omaha	528	W O A W														
Daily News	500	Chicago	448	W M A Q														
Post Dispatch	500	St. Louis	546	K S D														
Westinghouse	1000	Chicago	536	K Y W														
Sweeney School	500	Kansas City	411	W H B														
Star	500	Kansas City	411	W D A F														
Drake Hotel	1000	Chicago	380	W D A P	X	X												
Crosley Mfg. Co.	500	Cincinnati	309	W L W														
Albertan Pub. Co.	250	Calgary, Can.	410	C H B C														
Detroit Free Press	500	Detroit	517	W C X														
Radio Cor. of Am.	500	New York	455	W J Z	X	X	X	X	X	X	X	X	X	X	X	X	X	X
John Wanamaker	500	Philadelphia	509	W O O	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Federal Tel. Co	500	Buffalo	319	W G R														
El Buen Tono	500	Mexico City	425	C Y B														
El Universal	500	Mexico City	500	C Y L														
Willard Battery	1000	Cleveland	280	W T A M														
Westinghouse	1000	Pittsburg	328	K D K														
Canadian Nat. Ry		Ottawa	435	C K C H														
Chamber of Com	50	El Paso	268	W D A H														

Owing to "daylight saving" time now in force in the East, all stations in East should show one hour earlier.

Notice to the Trade

On July 1st we will open a branch factory at 239 South Los Angeles St. under the direction of EMMETT R. PATTERSON, formerly of the Patterson Electric Company, who have been retailing WORKRITE Neutrodyne sets.

Mr. Patterson is closing out his entire retail business and will devote his entire organization to the manufacture and sale of WorkRite sets and parts to the trade.

WATCH FOR FURTHER ANNOUNCEMENT

Dealers — write for attractive proposition on the
Work-Rite Neutrodyne sets and parts.
Licensed under Hazeltine's Patents No. 1450080

Workrite Manufacturing Co.

CLEVELAND, OHIO

Western Branch

239 So. Los Angeles St. Telephone VAndike 8139

Radio Supplies

Most Complete Line on the Coast

Monodyne Tube Set, complete.....	\$27.50
Sterling Voltmeter.....	2.75
Filko-stat.....	2.00
Accuratune Dials.....	3.75
Erla Reflex Transformers.....	5.00
WD-11, WD-12 Tubes, large stock.....	5.00
UV-199 and C-299, 201-A, 301-A Tubes.....	5.00
Diodide Detector Tube with Socket.....	2.50
Apex Tubes.....	4.00
All American Transformers.....	\$4.50 and 4.75
Bristol Loud Speaker.....	12.50
Dictagrand Loud Speaker.....	24.50
Adapters and Sockets for UV-199 Tubes.....	60c up
Connecticut Sodion Tube.....	5.00
Homecharger Gold Seal.....	18.50
No. 4500 Cotocoil Transformer.....	2.50
Harkness Coil, Silk Wound.....	pair 3.00
Sodium Tubes, $\frac{1}{4}$ amps, Detector Tubes, 1 $\frac{1}{2}$, 3, 4, 6.....	4.50
Sodium Tubes, $\frac{1}{4}$ amps, Amplifier Tube.....	4.50
Cardwell Condensors, 11 plate, \$4.25; 17 plate.....	4.75
Cardwell Condensors, 21 plate, \$5.00; 41 plate.....	6.00
Ballantine Transformer.....	9.60
Ballantine R. F. Amplifier.....	15.00
T. N. T. Superheterodyne Transformer.....	Each 4.00
Tungar Charges, 50 cyc., 2 amp.....	22.50

Sleeper Monotrol

The Long Distance Set

Complete with Tubes, Batteries, Loud Speaker and Loop Ariel, \$145.00

No. 65 Federal Transformer.....	7.00
Mercury Table Talker.....	8.50
Parts for Workrite 5-Tube Set.....	70.00

SPECIAL SALE OF RADIO BOOKS

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

We have for Immediate Delivery

Erla Parts—Gilfillan, Sleeper and Remler Parts
Acme Transformers Amstran Transformers

Bradleystad and Bradley Leak, \$1.85

Full Line Transmitting Parts

Citizens Call Books, 50c

Radio News Handbooks, \$1.00

Cabinets, built to order, \$3.50 up

RADIO 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

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	10 30-11 00	11 00-11 30	11 30-12 00	10 00-10 30	10 30-11 00	11 00-11 30	11 30-12 00	10 00-10 30	10 30-11 00	11 00-11 30	11 30-12 00	10 00-10 30	10 30-11 00	11 00-11 30
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															
Echophone Radio	100	Long Beach	234	K F O N							X	X							
Northwest Radio	100	Portland	360	K G N															
Oregonian	500	Portland	492	K G W				X	X					X	X				
Post-Intelligencer	100	Seattle	270	K F J C			X			X				X	X				
W. W. Grant	500	Calgary	440	C F C N					X	X	X	X						X	
Hale Bros	500	San Francisco	423	K P O				X	X		X	X					X	X	
Herald	1000	Calgary	420	C F A C			X	X					X	X			X	X	
Pyle & Nichols	10	Denver	360	K O Z Q	X	X													
Westinghouse	1000	Chicago	538	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 O A P					X	X	X	X			X	X	X		
Edgewater Beach	1000	Chicago	370	W G V					X	X	X	X			X	X	X		
Fallon & Co	100	Santa Barbara	360	K F H J					X	X	X	X			X	X	X		
General Elec. Co.	1000	Oakland	312	K G O					X	X	X	X			X	X	X		

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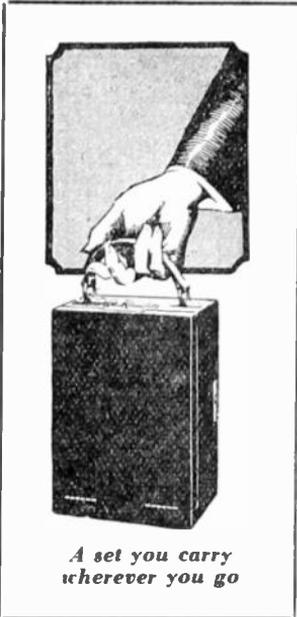
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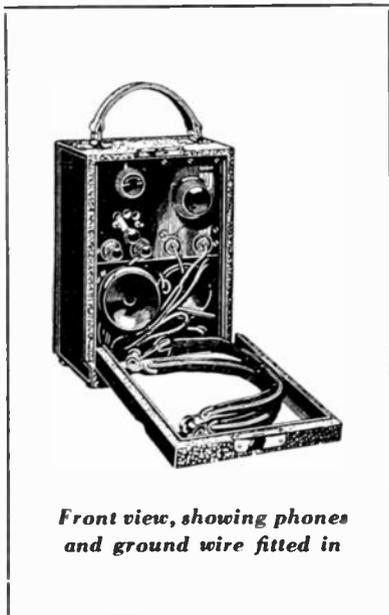
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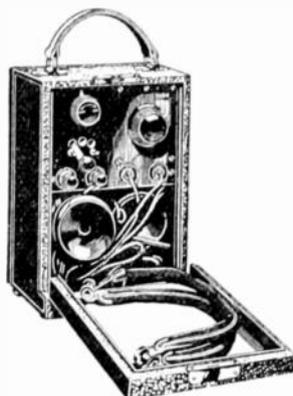
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from 6 to 6:30, we will broadcast Art Hickman's Concert Orchestra from the Biltmore Hotel.
2:30 to 3:30 p. m. Daily except Sunday and Monday. Matinee musicale.

WEEK COMMENCING SUNDAY, JUNE 22, 1924

- SUNDAY, JUNE 22—**
 10:00 a. m. Sermon from KHJ studio by Rev. A. L. Webb, pastor of the Uni-
 versity Christian Church.
 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.
 8:00 to 10:00 p. m. A wood-winds recital through the courtesy of the Baxter Northrup
 Company.
- MONDAY, JUNE 23—**
 12:30 to 1:15 p. m. Program presenting Carl Allen and his Rendezvous Ballroom Or-
 chestra from the Crystal Pier. E. M. Bonnell, "Uncle Remus."
- TUESDAY, JUNE 24—**
 12:30 to 1:15 p. m. Program presenting White's Californians, Steve White, leader,
 through the courtesy of the La Raza Palm Grove.
 2:30 to 3:30 p. m. Program presented through the courtesy of Barker Bros., arranged
 by Claire Forbes Crane.
 6:45 to 7:30 p. m. Children's program presenting Prof. Walter Sylvester Hertzog.
 The weekly visit of the Sandman and Queen Titania. Breffni Biggs,
 reader, 10 years old. Bedtime story by Uncle John.
 8:00 to 10:00 p. m. Program presented through the courtesy of the Hellman Commer-
 cial Trust and Savings Bank.
- WEDNESDAY, JUNE 25—**
 12:30 to 1:15 p. m. Program of music and news items.
 2:30 to 3:30 p. m. Program presented through the courtesy of Barker Bros., arranged
 by Claire Forbes Crane.
 6:45 to 7:30 p. m. Children's program presenting Prof. Walter Sylvester Hertzog.
 Dick Winslow, juvenile reporter. Leonard Tanner, child orator.
 Jack Pepper, 12 years old, violinist. Betsy Byrnes, mezzo-soprano,
 accompanied by Mrs. James Fitzhugh. Bedtime story by Uncle John.
 8:00 to 10:00 p. m. Program presented through the courtesy of Ray F. Chesley, Ford
 dealer at Bell, Cal. Dr. Mars Baumgardt.
- THURSDAY, JUNE 26—**
 12:30 to 1:15 p. m. Program presenting the Oak Tavern Orchestra; Frank Reiter, mgr.
 Program presented through the courtesy of Barker Bros., arranged
 by Claire Forbes Crane.
 6:45 to 7:30 p. m. Children's program presenting Prof. Walter Sylvester Hertzog.
 The weekly visit of Dickie Brandon, screen juvenile. Marguerita
 Hurd, pianist, 14 years old, pupil of L. F. Shepard. Katherine
 Sawyer, reader, 4 years old. Max Laird, reader, 10 years old. Bed-
 time story by Uncle John.
 8:00 to 10:00 p. m. Program presented through the courtesy of the Pacific Palisades,
 arranged by William H. Carter.
- FRIDAY, JUNE 27—**
 12:30 to 1:15 p. m. Program presenting the Junior Novelty Three.
 2:30 to 3:30 p. m. Program presented through the courtesy of Barker Bros., arranged
 by Claire Forbes Crane.
 6:45 to 7:30 p. m. Children's program presenting Prof. Walter Sylvester Hertzog.
 The weekly visit of Richard Headrick, screen juvenile.
 8:00 to 10:00 p. m. Program presented through the courtesy of C. S. DeLano, instructor
 of stringed instruments.
- SATURDAY, JUNE 28—**
 12:30 to 1:15 p. m. Program of music and news items.
 2:30 to 3:30 p. m. Program presented through the courtesy of Barker Bros., arranged
 by Claire Forbes Crane.
 6:45 to 7:30 p. m. Children's program presenting Prof. Walter Sylvester Hertzog. Bed-
 time story by Uncle John.
 8:00 to 10:00 p. m. Program presented through the courtesy of Barker Bros., arranged
 by Claire Forbes Crane.

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GREBES

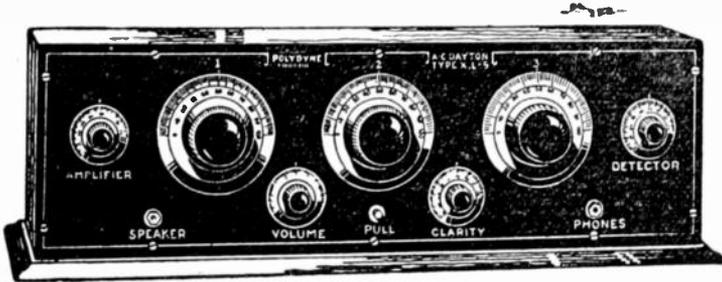
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Los Angeles Evening Herald:	5:00 to 5:30 p. m.	Daily except Sunday
	8:00 to 9:00 p. m.	Monday, Wednesday, Friday
Los Angeles Examiner:	5:30 to 6:00 p. m.	Daily except Sunday
	9:00 to 10:00 p. m.	Daily
Hotel Ambassador:	8:00 to 9:00 p. m.	Monday, Tuesday,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

SUNDAY, JUNE 22—

10:00 to 10:45 a. m.	L. A. Church Federation Service.
4:00 to 5:00 p. m.	Choral Society program.
6:45 to 7:30 p. m.	Musical program.
8:00 to 9:00 p. m.	Ambassador Hotel Concert Orchestra.
9:00 to 10:00 p. m.	Examiner concert.
10:00 to 11:00 p. m.	Packard Six Orchestra.

MONDAY, JUNE 23—

5:30 to 6:00 p. m.	Examiner News Bulletins.
9:00 to 10:00 p. m.	Examiner concert.
10:00 to 11:00 p. m.	Ambassador Coconut Grove Orchestra.

TUESDAY, JUNE 24—

5:30 to 6:00 p. m.	Examiner News Bulletins.
6:45 to 7:30 p. m.	Vocal concert.
8:00 to 9:00 p. m.	Ambassador Coconut Grove Orchestra.
9:00 to 10:00 p. m.	Examiner concert.
10:00 to 11:00 p. m.	Maud Reeves Barnard arranging concert.

WEDNESDAY, JUNE 25—

5:30 to 6:00 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 Orchestra.
11:00 to 12:00 p. m.	Ambassador Coconut Grove Orchestra.

THURSDAY, JUNE 26—

5:30 to 6:00 p. m.	Examiner News Bulletins.
6:45 to 7:30 p. m.	Y. M. C. A. concert and lecture.
8:00 to 9:00 p. m.	Ambassador Hotel Concert Orchestra.
9:00 to 10:00 p. m.	Examiner concert.
10:00 to 11:00 p. m.	Harry Porter, baritone, and others.

FRIDAY, JUNE 27—

5:30 to 6:00 p. m.	Examiner News Bulletins.
6:45 to 7:30 p. m.	Varied musical program.
9:00 to 10:00 p. m.	Examiner concert.
10:00 to 11:00 p. m.	Myra Belle Vickers artist students.
11:00 to 12:00 p. m.	Ambassador Coconut Grove Orchestra.

SATURDAY, JUNE 28—

5:30 to 6:00 p. m.	Examiner News Bulletins.
6:45 to 7:30 p. m.	Vocal concert.
8:00 to 9:00 p. m.	Harry James, monologist arranging Glendale concert.
9:00 to 10:00 p. m.	Examiner concert.
10:00 to 11:00 p. m.	Popular song concert.
11:00 to 12:00 p. m.	Ambassador Coconut Grove Orchestra.

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WEDNESDAY, June 25—7:00 p. m.

THURSDAY, June 27—2:50 to 3:30 p. m.

SATURDAY, June 28—7 p. m.

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



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OPEN SATURDAY EVENINGS

KLX—Oakland Tribune Radiophone—509 Meters

FOR WEEK BEGINNING SUNDAY, JUNE 22

- SUNDAY, JUNE 22—**
 9:30 to 10:00 p. m. Talk on popular subject by Rev. John Snape, pastor of the First Baptist Church of Oakland; sacred songs by members of the choir, First Baptist Church.
- DAILY—**
 3:00 to 5:00 p. m. Baseball, all leagues (except Sunday and Monday).
 7:00 to 7:30 p. m. News items, United States Weather Bureau Bulletin, market and financial news (except Sunday).
- MONDAY, JUNE 23—**
 8:00 to 10:00 p. m. Educational and musical program broadcast from the University of California over private leased wires through KLX.
- WEDNESDAY, JUNE 25—**
 8:00 to 10:20 p. m. Studio program, with music from the American Theater broadcast over private leased wires through KLX. Studio program arranged by the Wiley B. Allen Company of Oakland: 1. Vocal duets—(a) Venetian Boat Song (Blumenthal); (b) Absent (Metcalf), Mrs. Chester Miller and Frances Barrett Jones. 2. Piano solos—(a) Nocturne (Chopin); (b) Butterfly Etude G Flat (Chopin), Galdys Ivanelle Wilson. 3. Soprano solos—(a) Gavotte from "Mignon" (Thomas); (b) Habanera from "Carmen" (Bizet), Hele Strause; Theodore Adydelotte, accompanist. 4. Cello solos—(a) Arioso (Bach); (b) Chanson D'Amour (Holman), Margaret A. Vogel; Doris King, accompanist. 5. Vocal duets—(a) The Fishers (Gabussi); (b) Come Sing to Me (Thompson), Frances Barrett Jones and G. A. Jones. 6. Bass solos—(a) In an Old-Fashioned Town (Squire); (b) Eleanore (Coleridge-Taylor); (c) Kashmiri Song (Woodford-Finden), Robert Romani; Luquar E. Elwell, accompanist. 7. Violin solos—(a) Andante Cantabile (Tschaiakowsky); (b) Valse Bluette (Drigo), Eleanor Parke Webber; Helen Y. Crawford, accompanist. 8. Tenor solos—(a) Where My Caravan Has Rested (Lohr); (b) By the Side of the Road (Clarke), G. A. Jones. 9. Cello solos—(a) Bouree (Squire); (b) Nocturne (Scharwenka), Margaret A. Vogel; Doris King, accompanist. 10. Overture by American Theater Orchestra, Owen Sweeten, director, boardcast direct from the theater through KLX over private leased wires.
- FRIDAY, JUNE 27—**
 8:00 to 10:20 p. m. Studio program and music broadcast from the American Theater over private leased wires. Studio program arranged by Johnson's Californians, composed of Al Hopkins, saxophone; Mike Davis, saxophone; Walter Tibbey, piano; Allen Jones, drums; Billy Moran, banjo, and Ned Johnson, violin. Assisted by Bob Valleau, Letty Collins, Anita Putzman, Caroline Gilman, Henry C. Lassen, Anita Weichart, and O. W. Collingwood. Accompanists: Mrs. Beulah Thorpe, Miss Marie Maytorena, and Miss Linda Wilson. 1. Instrumental numbers: (a) After a While (featured by National Broadcasters Association); (b) Rose; (c) Rock-a-Bye Baby Blues, Johnson's Californians. 2. Bass solos—(a) Mifanny (Forster); (b) Sittin' Thinkin' (Fisher); (c) Recessional (De Koven), H. C. Lassen. 3. Recitations and variations, Bob Valleau. 4. Contralto solos—(a) Dawn (Curran); (b) Waters of Minetoka (Lieurance); (c) I Passed by Your Window (Brahe), Anita Putzman Kayei. 5. Request program of old melodies, Johnson's Californians: (a) Bits of Memory: Beautiful Lady, Merry Widow Waltz, My Hero. (b) Jazz numbers of yesterday: East Side, West Side; Sweet Rose O'Grady, In the Good Old Summertime. (c) Remembrances of the South: Swanee River; Massa's in the Cold, Cold Ground; Dixie; Old Black Joe; Old Kentucky Home. (d) Songs of 1918: Tipperary; Goodby Broadway, Hello, France; Long Way to Berlin; Over There; Long, Long Trail. (e) Saxophone special: Roses of Picardy.



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

KGO Program in Brief
WEEK OF JUNE 22, 1924

SUNDAY, JUNE 22— 3:30 p. m.	Concert by KGO Little Symphony Orchestra and soloists, Carl Rhodehamel conducting.
MONDAY, JUNE 23— 1:30 p. m. 3:00 p. m.	New York Stock Exchange and U. S. Weather Bureau reports. Short musical program. Speaker furnished through the courtesy of the Parent-Teacher Associations of the San Francisco Bay District.
4:00 to 5:30 p. m. 6:45 p. m. 8:00 p. m.	Hotel St. Francis Dance Orchestra, San Francisco. Final reading, stock exchange and weather reports, and news items. Educational program, with musical numbers by Arion Trio. Courses in Agriculture, Spanish, Music, Economics, and literature.
TUESDAY, JUNE 24— 1:30 p. m. 4:00 to 5:30 p. m. 6:45 p. m. 8:00 p. m.	New York Stock Exchange and U. S. Weather Bureau reports. Concert Orchestra of the Hotel St. Francis, San Francisco. Final reading, stock exchange and weather reports, and news items. "In a Persian Garden," a song cycle, with words from the Rubaiyat of Omar Khayyam; California Mixed Quartette; Josephine Holub, violinist; Clan MacDonald Double Male Quartette; Beatrice L. Sherwood, piano soloist.
10:00 to 1:00 a. m.	Hotel St. Francis Dance Orchestra, San Francisco.
WEDNESDAY, JUNE 25— 1:30 p. m. 3:00 p. m.	New York Stock Exchange and U. S. Weather Bureau reports. Short musical program. Address, "Creative Expressions," by Wilda Wilson Church.
4:00 to 5:30 p. m. 6:45 p. m.	Concert Orchestra of the Hotel St. Francis, San Francisco. Final reading, stock exchange and weather reports, and news items.
THURSDAY, JUNE 26— 1:30 p. m. 4:00 to 5:30 p. m. 6:45 p. m. 8:00 p. m.	New York Stock Exchange and U. S. Weather Bureau reports. Concert Orchestra of the Hotel St. Francis, San Francisco. Final reading, stock exchange and weather reports, and news items. "Three Live Ghosts," a comedy in three radio scenes, by Frederick Isham and Max Martin, directed by Wilda Wilson Church. Music between scenes by Neapolitaine Four.
FRIDAY, JUNE 27— 1:30 p. m. 3:00 p. m. 4:00 to 5:30 p. m. 6:45 p. m.	New York Stock Exchange and U. S. Weather Bureau reports. Short musical program. Concert Orchestra of the Hotel St. Francis, San Francisco. Final reading, stock exchange and weather reports, and news items.
SATURDAY, JUNE 28— 12:30 noon 4:00 to 5:30 p. m. 8:00 p. m. Program	New York Stock Exchange and U. S. Weather Bureau reports. Concert Orchestra of the Hotel St. Francis, San Francisco. furnished by the City of Paris Dry Goods Company, San Francisco, featuring George Lipschultz, violin soloist, and the Lipschultz String Quartette; Jacqueline Morrin, soprano; Byron Keys, tenor.
10:00 to 1:00 a. m.	Hotel St. Francis Dance Orchestra, San Francisco.

TUESDAY, JUNE 24—8:00 p. m.

PART ONE

Vocal Selection—Festival Te Deum in D Flat (Dudley Buck)	California Mixed Quartet
Carl Anderson, tenor and director; Laura Broderick, soprano; Ruth Waterman, contralto; Henry L. Perry, bass; Beatrice L. Sherwood, accompanist	
Violin solos	Josephine Holub
Baritone Solos—(a) El Canto del Presidiario (Alvarez); (b) Ultima Rosa (Sibella)	Edilberto G. Anderson; Leslie Taylor, accompanist
Vocal Selections—(a) Hail to the Chief; (b) Scotland Yet	Clan MacDonald Double Male Quartet
Duets for Contralto and Tenor—(a) The Voyagers (Sanderson); (b) Over the Heather (Muir)	Ruth Waterman and Carl Anderson
Piano Solos—(a) Gopak (Moussorgsky); (b) Shadow Dance (MacDowell)	Beatrice L. Sherwood
Soprano Solos—(a) Parla (Arditi); (b) Kathleen Mavourneen (Irish Balad)	Laura Broderick
Vocal Selections—(a) The Hundred Pipers; (b) Who'll be King, But Charlie	Clan MacDonald Double Male Quartet

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Violin Solos..... Josephine Holub
 Baritone Solos—(a) A Granada (Alvarez); (b) Engano (Leslie Taylor); (c) Obstination
 (de Fontenailles)..... Edlberto G. Anderson
 Vocal Selection—Blue Danube Waltz (Strauss)..... California Mixed Quartet
 Piano Solos—(a) Clair du Lune (Debussy); (b) Prelude in C Sharp Minor (Rachmaninoff)
 Beatrice L. Sherwood

PART TWO

This part of the program will be given over to a rendition of the song cycle "In a Persian Garden" (words from the Rubaiyat of Omar Khayyam). Music by Liza Lehman. Sung by the California Mixed Quartet, Laura Broderick, soprano; Ruth Waterman, contralto; Carl Anderson, tenor; Henry L. Perry, bass; Beatrice L. Sherwood, accompanist.
 Address—"Omar Khayyam"..... Otto Riehl

THURSDAY, JUNE 26—8:00 p. m.

THREE LIVE GHOSTS

A Comedy in Three Radio Scenes, by Frederick Isham and Max Martin
 Presented by the KGO Players under the direction of Wilda Wilson Church

CAST

Jimmie Gubbins, a live ghost..... Barry Norton
 John Foster, alias Bill Jones..... Fred Thomas
 Spoofy, doesn't know who he is himself..... Guy Kibbee
 Bolton, private detective..... Burt Horton
 Benson, Scotland Yards..... Conrad Kahn
 Briggs, Scotland Yards..... John Bacon
 Mrs. Gubbins, old sweetheart..... Mary Harper
 Miss Woofers, Jimmie's girl..... Helen Maher
 Rose, in love with Foster..... Rose Brown
 Lady Leichester..... Florence Palmer

Place—Mrs. Gubbins' Apartment, London.

Time—Summertime, 1917.

Instrumental Selection—A Ghost Story (Burleigh)..... Neapolitaine Four
 Scene I
 Instrumental Selection—Ghost Dance (Burleigh)..... Neapolitaine Four
 Scene II
 Instrumental Selection—Orientale (Cesarcuti)..... Neapolitaine Four
 Scene III
 Instrumental Selection—Tarantella Brillante (Scarmolin)..... Neapolitaine Four

SATURDAY, JUNE 28—8:00 p. m.

Program furnished through the courtesy of City of Paris Dry Goods Company of San Francisco, California

Instrumental Selections—(a) To a Wild Rose (MacDowell); (b) Album Leaf (Greig)
 Lipschultz's String Quartet
 Vocal Selections—(a) Marcheta's Sister (Baron Keyes); (b) The World Loves a Lover
 (Baron Keyes)..... Played and sung by the Composer
 Address—Edward S. Rainey, Secretary to Mayor James Rolph of San Francisco, California
 Violin Solos—(a) Ave Maria (Schubert); (b) Spanish Dance (Rehfield)..... George Lipschultz
 Vocal Selections—(a) Somebody's Smile (Baron Keyes); (b) The Song You Were Singing
 (Baron Keyes)..... Played and sung by the Composer
 Instrumental Selections—(a) Scheherazade (Rimsky-Korsakow); (b) Serenade (Lipschultz)
 Lipschultz's String Quartet
 Address—"My Impressions of America"..... Mohammed Barada, the Moroccan Prince
 Piano Solos..... Baron Keyes
 Vocal Selections (in French)..... Jacqueline Morrin, the French Comedienne
 (Courtesy of California Theatre)
 Vocal Selections..... City of Paris Male Quartet
 Instrumental Selections..... Lipschultz's String Quartet
 Vocal Selections..... Jacqueline Morrin
 Violin Solos..... George Lipschultz
 Vocal Selections..... Baron Keyes
 Vocal Selections..... City of Paris Male Quartet

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1:00 to 2:00 and

4:30 to 5:30 p. m. Daily except Saturday and Sunday, Fairmont Hotel.

2:30 to 3:30 p. m. Studio program daily, except Sunday.

FRIDAY—

12:45 to 1:30 p. m. Speakers of Commonwealth Club from the Palace Hotel.

SATURDAY—

1:00 to 2:00 p. m.

3:30 to 5:30 p. m. Fairmont and Palace Hotel Tea Dansants.

SUNDAY—

11:00 a. m. to 12:15 p. m. Church services by Church Federation of San Francisco.

EVENING PROGRAMS

SUNDAY—

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

MONDAY—

8:00 to 9:00 p. m. Organ.

9:00 to 10:00 p. m. Studio program.

10:00 to 11:00 p. m. Max Bradfield's Versatile Band of Rose Room Bowl, Palace Hotel.

TUESDAY—

8:00 to 10:00 p. m. Studio program.

10:00 to 11:00 p. m. Palace Hotel Dance Orchestra.

WEDNESDAY—

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

THURSDAY—

8:00 to 9:00 p. m. Organ.

9:00 to 10:00 p. m. Studio program.

10:00 to 11:00 p. m. Palace Hotel Dance Orchestra.

FRIDAY—

Silent.

SATURDAY—

8:00 to 12:00 p. m. Art Weidner's Fairmont Hotel Dance Orchestra.

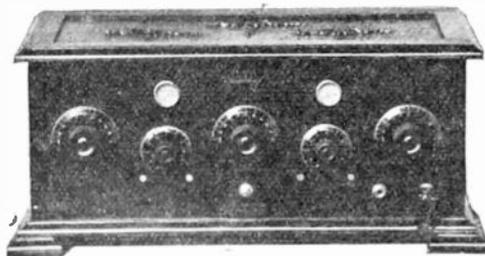
MONDAY, TUESDAY, WEDNESDAY AND THURSDAY—

7:00 to 7:30 p. m. Dinner concerts by Rudy Seiger's Fairmont Hotel Concert Orchestra.

5:30 p. m. Children's Hour; stories for children.

10:00 p. m. Time Signals daily except Friday, P. S. T.

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(PACIFIC TIME)

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MONDAY, JUNE 23—

8:30 p. m. Violin recital given by Miss Evelyn Heidenstrom and Russell Pohl, artist pupils of Arnold Krauss. Mr. Krauss is Concert Meister of the Seattle Civic Symphony Orchestra and one of the best known instructors of the Northwest. Miss Evangeline Hall, accompanist.

WEDNESDAY, JUNE 25—

8:30 p. m. A program of dance music given by the Premier 5 Piece Orchestra, under the direction of Mr. L. Nist.

FRIDAY, JUNE 27—

8:30 p. m. Y. M. C. A. program consisting of several groups of male quartette numbers, solo and instrumental music. A constructive talk concerning the work of the Y. M. C. A. will be given by one of the leaders of the work in Seattle. Mr. Vivian, community song leader of the Y. M. C. A., is director of the program.

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PORTLAND, OREGON
(PACIFIC TIME)

PROGRAM FOR WEEK JUNE 22 TO JUNE 28, 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, JUNE 22—**
6:00 p. m. Church services. Rose City Park Presbyterian Church; Rev. Donald Mac-Cleure, pastor.
7:00 p. m. George Olsen's concert orchestra in dinner program; baseball scores.
- MONDAY, JUNE 23—**
3:30 p. m. Literary program by Portland Library Association.
7:15 p. m. Police reports.
8:10 p. m. Program of old songs by Beaux Arts Society.
- TUESDAY, JUNE 24—**
3:30 p. m. Children's program.
7:15 p. m. Police reports.
8:00 p. m. Concert by Sieberling-Lucas Music Company.
- WEDNESDAY, JUNE 25—**
3:30 p. m. Talk by Jeanette P. Cramer, home economics editor of The Oregonian.
7:15 p. m. Police reports.
8:00 p. m. Concert by Elizabeth Reger, contralto, and Lucille Cummins, pianist.
10:00 p. m. Dance music by George Olsen's Metropolitan Orchestra of the Hotel Portland. Intermission solos by Consuelo Allee, mezzo-soprano.
- THURSDAY, JUNE 26—**
3:30 p. m. Children's program.
7:15 p. m. Police reports.
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 Eulah Mitchell Carroll, pianist.
- FRIDAY, JUNE 27—**
3:30 p. m. Lecture provided by Home Economics Extension Service, Oregon Agricultural College.
7:15 p. m. Police reports.
10:30 p. m. Hoot Owls.
- SATURDAY, JUNE 28—**
3:00 p. m. Children's program. Music and story by Aunt Nell.
10:00 p. m. Police reports, baseball scores, weather forecast and dance music by George Olsen's Metropolitan Orchestra of Hotel Portland. (2 hours.)



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SUNDAY, JUNE 22—

- 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 from the Rialto Theater, Miss Marguerite Agnew White, organist.
- 5:00 p. m. Sport review.
- 9:00 to 10:00 p. m. Popular program by Fred Cahoon's Orchestra.

MONDAY, JUNE 23—

- 7:30 to 8:45 p. m. Concert by the Octet of Old Time fiddlers of Mineral Wells, Texas; Cap Johnson, directing.

TUESDAY, JUNE 24—

- 7:30 to 8:45 p. m. '92 program by J. C. Rutledge, reproducing the program given at the close of the Volunteer fire hall in Fort Worth.

WEDNESDAY, JUNE 25—

- 7:30 to 8:45 p. m. Concert of dance music.

THURSDAY, JUNE 26—

- 7:30 to 8:45 p. m. Concert by a group of Fort Worth artists.

FRIDAY, JUNE 27—

- 7:30 to 8:45 p. m. Old time fiddle concert presented by J. W. Rains.

SATURDAY, JUNE 28—

- 5:00 to 5:40 p. m. Review of the Interdenominational Sunday School Lesson, W. F. Barnum, leader of the Barnum Bible Class of the First Methodist Church.

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(PACIFIC TIME) DALLAS, TEXAS
SPECIAL DAILY FEATURES

- MONDAY, JUNE 23—**
10:30 to 11:00 a. m. Address, W. C. Everett, business man, on "Taking Yourself Seriously."
6:30 to 7:30 p. m. Sherley Lee Alley and his orchestra, in favorites in rhythm.
- TUESDAY, JUNE 24—**
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. Varied program by talent from Princeton, Texas.
9:00 to 10:00 p. m. Melrose Orchestra, in popular music recital.
- WEDNESDAY, JUNE 25—**
10:30 to 11:00 a. m. Recital by the Syncopating Jackrabbits Orchestra.
Station WFAA will be silent for remainder of the day.
- THURSDAY, JUNE 26—**
10:30 to 11:00 a. m. Address, William A. Philpott, secretary Texas Bankers' Association, on "American Coinage."
6:30 to 7:30 p. m. Musical recital by the Wednesday morning Choral Club, Mrs. Mamie Folsom Wynne directing.
9:00 to 10:00 p. m. Miss Jessie McKee and her orchestra in favorites for dance.
- FRIDAY, JUNE 27—**
10:30 to 11:00 a. m. Address, Dr. Robert Stewart Hyer, president emeritus Southern Methodist University, head of the department of physics, on the Sunday School lesson.
6:30 to 7:30 p. m. Musical program presenting H. M. Morton, cornetist; Hugh Bryan, pianist; Miss Marie Hudson, contralto.
- SATURDAY, JUNE 28—**
10:30 to 11:00 a. m. Address, A. C. Bigger, president the American Life Reinsurance Company, on "Life Insurance as an Investment."
1:30 to 2:00 p. m. Charles H. McKinney and his old-time musicians.
6:30 to 7:30 p. m. W. A. Green Company's Choral Club, Earle D. Behrends directing.
9:00 to 10:00 p. m. Adolphus Hotel Orchestra, Lawrence Morrell directing, playing in the Bambooland Roof Garden dance pavilion.
- SUNDAY, JUNE 29—**
4:00 to 5:00 p. m. Radio Bible Class, Dr. William M. Anderson, pastor First Presbyterian Church, teacher; Bible study and Gospel song.
7:00 to 8:00 p. m. Sacred recital by choir of Gaston Avenue Baptist Church, Dallas, Texas.
8:00 to 9:00 p. m. Garland (Texas) Orchestra, ten-piece, with L. R. Vidler, directing.

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DAYLIGHT SAVING TIME

FOR WEEK OF JUNE 15 TO JUNE 22, 1924

KYW, "The World Crier," will broadcast the latest news of the world every half hour—on the hour and half hour—during the twenty four. This service is broadcast under the auspices of the Chicago Evening American, International News Service, Cosmopolitan News Service, from 5 a. m. to 5 p. m. KYW bulletins are provided from 5 p. m. to 5 a. m. by the Universal News Service in co-operation with the Chicago Herald and Examiner.

TUESDAY, JUNE 24—

5:00 to 8:30 p. m.

Musical program courtesy of the Chicago Musical College, direction of D. Paul Breitwiser. Talks by the American Farm Bureau Federation: "Business in Live Stock Production," by Howard Leonard, chairman of the National Live Stock and Meat Board. "How to Make More Money from Bees," by E. W. Atkins, G. B. Lewis Company, Watertown, Wisconsin. Continuation of the musical program by the Chicago Musical College. Program will be announced by radiophone.

WEDNESDAY, JUNE 25—

5:00 to 9:30 p. m.

Musical program: Mildred Pike, soprano; Phillip Milleville, baritone; Mary Potter Smith, pianist; Jean Andrews, dramatic reader. Detailed program will be announced by radiophone. "Good Roads" report furnished by the Chicago Motor Club. Midnight revue. This is a Chicago Evening American-Westinghouse feature. It is broadcast from KYW's studio in Hearst Square.

THURSDAY, JUNE 26—

5:00 to 9:30 p. m.

"Twenty Minutes of Good Reading," furnished by Rev. C. J. Permin, S. J., head of Department of English, Loyola University, Chicago. Musical program will be radiocast from KYW's studio in the Commonwealth Edison Building. Details will be announced by radiophone. "Safety First" talk by Mr. Z. C. Elkin of Chicago Motor Club. Late studio program will be radiocast from KYW's studio in Hearst Square, Chicago.

FRIDAY, JUNE 27—

5:20 to 5:45 p. m.

American Farm Bureau Federation program: "Boys, Girls and the Grain Exchange," by George S. Bridge, chairman Grain and Hay Show Committee, Chicago Board of Trade. "Among Our Neighbors," a regular weekly feature furnished by the Orange Judd Illinois Farmer, Paul A. Potter, assistant editor, on "Illinois Granges and What They Are Doing."

7:00 to 9:30 p. m.

Midnight revue. This is a Chicago Evening American-Westinghouse feature. It will be radiocast from KYW's studio, in Hearst Square.

SATURDAY, JUNE 28—

5:00 to 10:30 p. m.

Musical program: Ann Swenson, contralto; Paul E. Wood, baritone; Erica Ender, pianist; Ned Santry, tenor. Detailed program will be announced by radiophone. This program will be radiocast from KYW's studio in the Commonwealth Edison Building. Youth's Companion, including short stories, articles, and humorous sketches. Late show. This is broadcast from KYW's studio in the Congress Hotel. Artists and program will be announced by radiophone.

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SUNDAY, JUNE 22—

7:00 p. m. Music program broadcast direct from Grand Central Theater.

MONDAY, JUNE 23—

4:45 p. m. Concert by Abergh's Concert Ensemble; Arne Arnesen, violinist; broadcast direct from Hotel Statler Roof Garden.

7:00 p. m. Program by choir of St. Paul's Episcopal Church, East St. Louis, Ill. Dr. Herman Glenn, director; Sara Curry, soprano soloist.

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

TUESDAY, JUNE 24—

Station KSD will broadcast the proceedings of the Democratic National Convention at New York, direct from the Madison Square Garden in New York. This will be a 24-hour service. Market quotations, etc., will be broadcast at the regular hours during the day as far as possible.

6:00 p. m. Silent, unless there is a night session of the Democratic National Convention. NOTE—This program subject to postponement to 7:30 if there is a night session of the Democratic National Convention.

WEDNESDAY, JUNE 25—

Station KSD will broadcast the proceedings of the Democratic National Convention of New York, direct from the Madison Square Garden in New York. This will be a 24-hour service. Market quotations, etc., will be broadcast at the regular hours during the day as far as possible.

6:00 p. m. Music and specialties at Delmonte Theater broadcast direct from that theater.

THURSDAY, JUNE 26—

Station KSD will broadcast the proceedings of the Democratic National Convention of New York, direct from the Madison Square Garden in New York.

7:30 p. m. Special anniversary program celebrating the second anniversary of the opening of KSD station. Address by Mayor Henry W. Kiel. Artist program by leading St. Louis musical artists.

FRIDAY, JUNE 27—

Station KSD will broadcast the proceedings of the Democratic National Convention of New York, direct from the Madison Square Garden in New York.

6:00 p. m. Silverman's Orchestra concert broadcast direct from Lyric Skydome.

SATURDAY, JUNE 28—

Station KSD will broadcast the proceedings of the Democratic National Convention of New York, direct from the Madison Square Garden in New York.

6:00 p. m. Missouri Theater Orchestra and specialties broadcast direct from Missouri Theater.

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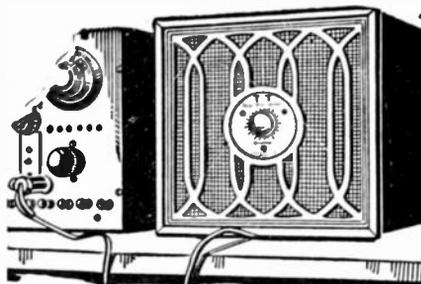
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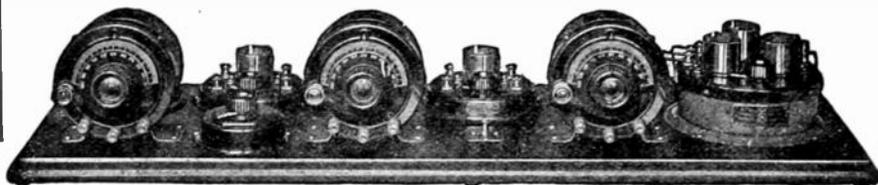
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Letters to the Editor

Hamlin, Kans., June 8.

Radio Doings.

In reply to some letters in issues of June 1 and 8, Billy Marrow, send me your address. Have a real strong, though cheap and easily tuned, circuit for your single C299. That's what I get three "foreign" countries on, U. C. Will Ray D. O. Nutt please send me his 5KW self-cocking circuit? Don't pay any attention to C. J. Applegate, O. M. Loren Ayers: Your question is far too indefinite. May have been anyone of fifty. J. McDevitt: Probably WCBD on 345, though you didn't say how well you heard them.

I wish all questions of that sort would tell what the call sounded like; at least was it a W or a K station.

My letter of May 27, in answer to Mr. Vaughn, contains a typographical error and should read, "Three 201's draw 3 amps, three 201 A's, $\frac{3}{4}$ amps. Noticed an error in June 8 issue having L. J. Harding refer to "Amusing type" of battery.

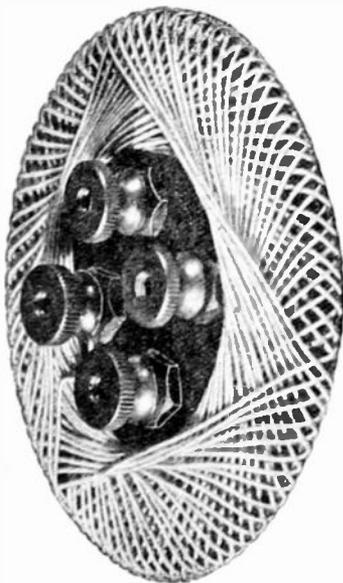
Glad to hear from more Radio Doings readers. Have heard from several. Paul Smith, here's a Nighthawk.

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Letters to the Editor

Dear Sir: Noting that in your answer to the letter of Harry Wozumi (Radio Doings, June 7, 1924), you state that a "Reinartz" circuit is not desirable for concert reception, permit me to take exception. The Reinartz circuit, of which Mr. Wozumi writes, has been found by the undersigned to give better results than several other hook-ups costing considerably more to construct and operate.

I am now using my third Reinartz set. The first, built for a friend, was exactly as outlined in the diagram furnished with the coil; was used to practice receiving of code telegraph signals, as well as for concert receptions, and gave perfect satisfaction, getting stations whose wave lengths covered ranges from 240 to 1713 meters. The second set was built following the diagram on page 28, Radio Age, for May, 1924 (except that an 1850 Ohm Potentiometer could not be obtained, and a 300 Ohm Potentiometer was substituted). You will note that this drawing calls for two stage of Audio Frequency amplification; during the past two weeks this set has regularly operated, receiving in San Diego stations KHJ, KFI, KJS, KFSG, KGO and KPO, in such volume that two pairs of phones were extremely uncomfortable until the second stage of amplifications was eliminated. This at a time when several of my friends owning far more elaborate and expensive sets, complain of static interference to the extent that they cannot operate.

The third set I built intending to take with me to Honolulu, in a few weeks, for my own use. In this, I have returned to the original Reinartz circuit, with one stage of Audio Frequency added. I regularly get the same stations listed above, and find in addition that my tuning range is sufficient to permit commercial code reception as well as concert broadcasting. Static interferes to a less degree than in any radio apparatus I have before operated, and signals are received with unusual clarity. Sufficient volume is obtained to operate a Baldwin C loud speaker unit, but personally I prefer the head set telephones to any loud speaker for concert work.

You will note that I do not claim exceptionally long range reception. I am experimenting rather along the lines that one can obtain varied classes of entertainment by taking advantage of the assortments of broadcasting stations within reasonable distances, and that reaching out for distance is a whim to be satisfied only at the expense of elaborate equipment.

So far as the suitability of any piece of apparatus is concerned, the expectations of the operator, and class of service intended, makes all the difference in the world. The Reinartz suits me for tuning range and quality of service; and if our friend cannot find his favorite class of music in the excellent programs being broadcasted from Portland, Ore., to San Diego, I am afraid the distance he will need will require some of the twin six super reach-o-dynes we hear about.

Yours sincerely,

LEON H. DAVID, Master Electrician, U. S. Army.
1267 Johnson St., San Diego, Calif., June 10, 1924.

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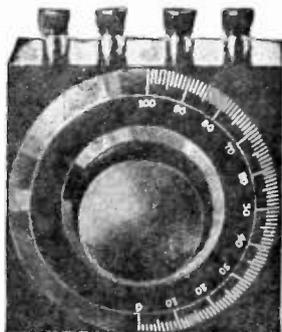
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Editor "Radio Doings":

I have some questions that I wish you would answer, as I am a novice in this field. I hope that you can clear up these points.

A—I am now using two-variometer standard set, so I am informed, with one step of amplification. I continually hear hissing noises in my bulbs. Have they gone soft?

B—I have been using a C battery in this set. Is it possible to use a potentiometer instead of changing taps continually? I was advised by a friend to try it.

C—I have a burnt-out bulb. Do you think I could fix the filament wires myself? If so, please give data and instruments used.

I have attained great knowledge from your wonderful little magazine. Thanking you in advance, I remain,

Yours truly,

CHARLES CLIFTON RICHARDSON,

1725 Second Street, San Diego, California.

Answer: A—Your detector tube may have gone soft. Try reducing B battery current.

B—We do not recommend a potentiometer.

C—No.

"Radio Doings":

I have a two-tube Harkness reflex set. Local comes in fine, but I cannot get distance. I got KGO twice, but could not tune out KHJ and KFI. This is the farthest I ever got, and it came in very faintly. My antenna is about 70 feet long, with two strands. It lies east and west.

Can you suggest anything to make my set step out and be more selective? Please answer in "Radio Doings." I read this little magazine every week.

I remain, a radiophan,

F. W. KELLY,

1228 North Sycamore Avenue, Los Angeles, California.

Answer: We believe your crystal is not a good one. Another reason is that summer coming on reduces distance reception.

June 2, 1924.

I wish to thank you for your last set of answers, and I would be much obliged if you would answer a few more for me.

A—Is there any formula for determining the natural wave length in meters of an aerial with the lead-in coming from center?

B—The lowest I have ever been able to tune down to is 423 meters (KPO), not counting KGO, which comes in all over the dial almost. My aerial is 273 feet long, and in shape of right angle, with the vertex of angle at center. The lead-in comes off vertex of the angle. Is my aerial too large to permit the tuning in of lower wave lengths? I have a 17-plate variable condenser in the ground lead, but still can't get down below 423 meters.

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You are courteously
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There is nothing wrong with my set, because I get KFI, KLX, GGO, KPO, etc., all the time. I have even gotten KGW.

My set is a crystal set, consisting of a vario-coupler, v. condenser (17-plate), crystal detector, fixed condenser and phones.

If this letter takes up too much of your valuable space, you need only print the answers to the questions.

Yours very respectfully,

BERNARD JOHNSTON,
Box 61, Taft, California.

P. S.—If my aerial is too large, how many feet would you suggest that I cut it down to?

Answer: A—Yes, but it is not accurate.

B—Your aerial is entirely too long. One wire 150 feet long in your location would serve very well.

June 1, 1924.

Gentlemen:

I have been a reader of "Radio Doings" since Jan. 1, 1922. I would like a little information. I have a five-tube Neutrodyne, built with Fada parts, except transformers, which are Acme; it is wired according to Fada diagram. What can I do to take the squeals out of it? Can neutralize first neutrodon, but it makes no difference where I move the last one. Any information will be appreciated.

Thanking you in advance,

T. W. BURNETTE,
271 South Grand Street, Orange, California.

Answer: We suggest using a very small condenser of the Vernier type for this work. There is one type of condenser on the market today that is excellent.

June 1, 1924.

Dear Sirs:

I am asking you as a favor to answer a question for me. We have a two-tube Duo-Reflex in the advanced hook-up. We cannot get any distance. The farthest we have got was KFI and KGW. We have 5½ volts of A and 90 volts of B; an antenna which is three wires, 65 feet long and 35 feet high on one side and 39 feet high on the other, running east and west. Our ground is a pipe in the ground.

Can you tell us the trouble?

Thanking you ahead of time, I remain,

Yours very truly,

ALVIRO FIEDLER,
2450 Peralta Avenue, Oakland.

Answer: The fact that you get Portland, Oregon, shows us that your set is in perfect repair. We believe the weather conditions and that summer is coming on are your trouble.

SUPER-HETERODYNE SPECIALISTS
Come In and Listen to the 3-Tube "Caraflex"



Open Evenings and Sunday A. M.

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Los Angeles, Cal.

Trade Notes

The Japanese Department of Communications has authorized the use of broadcast wireless telegrams in communicating with vessels at sea, the State Department has been advised. These messages, however, may only be sent to vessels which do not carry branch Japanese telegraph offices, and vessels which do not send or receive retransmitted messages.

Nothing is so easy as to cut prices, and nothing is so hard to get back when once they have been pulled down. Any child can throw a glass of water on the floor, but all the wise men in the world can't pick that water up.

No manufacturer can permanently keep up the standard of his goods if the price is persistently cut. Soon he is compelled to use cheaper materials and to cut down the wages of his workers.

A general meeting of the Los Angeles retail members of the Radio Division of the Music Trades Association of Southern California took place at noon at Ye Friendly Inn last Monday. B. H. Dennis presided and several important matters were discussed, including the desirability of advertising radio sets more extensively throughout the summer months, thereby disabusing the public of the idea that summer reception is not as satisfactory as in the winter months.

The Radio Jobbers Association met on Wednesday for their regular meeting. J. A. Hartley presided and there was a full attendance of members.

The Credit Bureau of the Radio Jobbers Association has issued a circular letter regarding credit terms to all radio dealers, namely, 2 per cent cash discount 10 days from date of invoice, all accounts overdue on 10th proximo.

The first national convention of the radio associations of the United States will likely be held in New York City late in September, if plans now on foot carry through, according to announcement from the office of the secretary of the National Radio Trade Association at New York.

Colin B. Kennedy, of the well-known firm bearing his name, is a visitor at the Biltmore Hotel, Los Angeles.

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Out of the Air

E. O. Davis, whom many of our readers will remember as the author of a series of articles entitled "The Part Radio Played in the Peace Conference," and who was one of the radio operators on the U. S. S. George Washington which carried the late President Woodrow Wilson to Europe and back during the stirring days after the armistice, is now in charge of the radio department of Howland & Dewey Company, 510 S. Broadway, Los Angeles.

Walter D. Kellogg, manager of KGO, Oakland, was a visitor at our office recently. We tried to get the latest news from Mr. Kellogg regarding the new General Electric station in Denver, but he was unable to give us much new "dope" except that the station expected to be on the air some time this fall. We have had many inquiries about this station, and we will try and keep our readers informed at all times about new stations.

George H. Frenger, popularly known in New York and eastern radioland as A. F. N., has returned to Los Angeles for his first vacation in five years. Mr. Frenger is a former Los Angelean, who was associated with the dramatic and entertainment activities of the stock companies, little theaters and high schools of the Southwest before the war. The past year Mr. Frenger was with the announcing and program department of Broadcast Stations WJZ and WJY of New York City. Prior to that he appeared with such stars as Leo Ditrichstein and with the Theater Guild in several productions, distinguishing himself particularly in "Liliom," one of the outstanding successes of the past few years. A. F. N., during a very interesting talk with Listener-in, expressed himself as being much pleased with broadcasting on the Pacific Coast, and said that the class of programs were as good as any in the East. It is likely that we may have the pleasure of hearing him on the air from a local station in the near future.



GEO. H. FRENGER
Announcer, WJZ

The advertisement of Smithy's Radio Store in our last issue should have read: "May we demonstrate under no obligation?"

Watch each number of "Radio Doings" for the list of new stations licensed weekly. We also publish lists of stations that are deleted from time to time. In this way you can keep your list up to the minute.

We must apologize to many of our readers who have written letters to the Editor, and others who have asked questions of our Technical Editor, for not publishing these letters and answers to their queries, as space forbids at this time. We hope to print these at an early date.

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Every Dictogrand Loud Speaker bearing the factory serial number is guaranteed to be free from all electrical and mechanical defects and further we guarantee clarity of tone.

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Sales Agent

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