

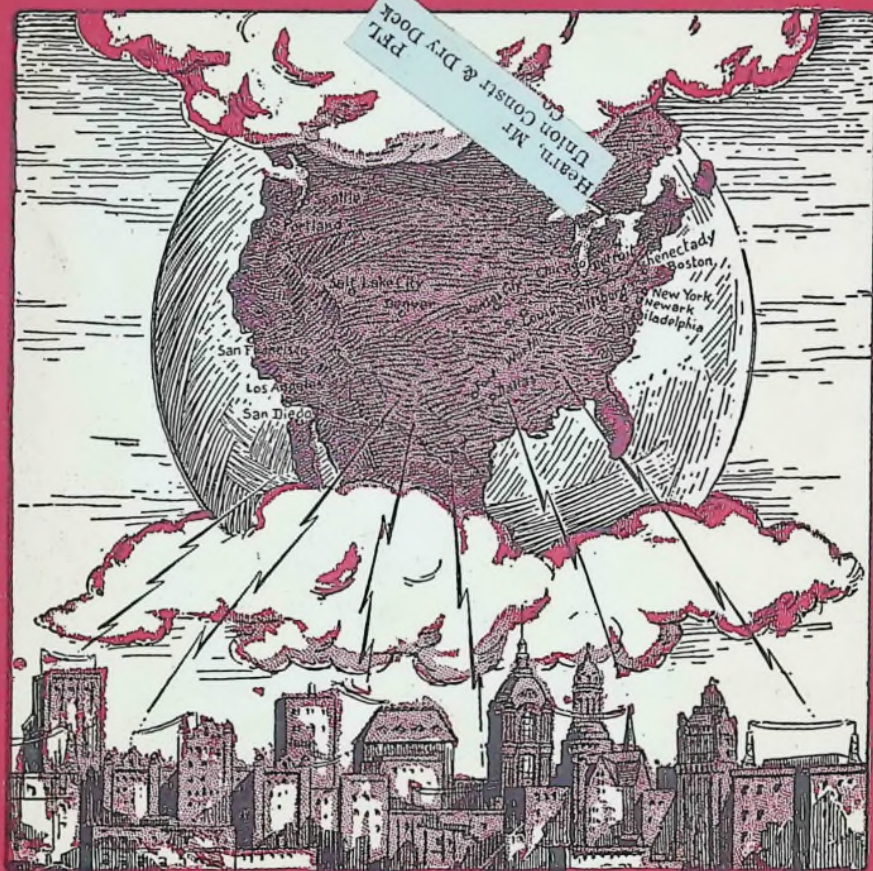
Vol. IV

April 20-26

No. 16

RADIO DOINGS

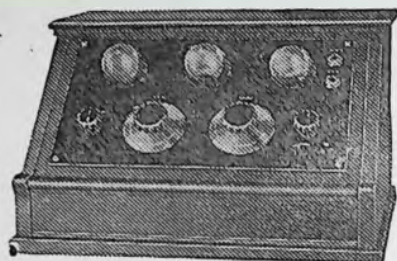
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Los Angeles, Calif

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Two Dollars a Year

Vol. IV

Los Angeles, April 19, 1924

No. 16

Radio and Congress

RADIOLAND is more than ordinarily interested in the present session of Congress. Many matters of interest to the user of radio are now before the lawmakers which may help or hurt their enjoyment.

The White Bill, it is hoped, will help to clear up the present unsatisfactory conditions of the air and regulate broadcasters and other users of the air so that each may be benefitted. Definite wave lengths should be assigned the broadcaster and commercial stations as well as shipping so that neither interferes with the other. Radio is now on a firm footing and legislation is necessary for its regulation.

The Dill Bill is one we are all interested in. Shall the air be free to the listening-in public or shall the broadcasting station be taxed by those owning copyrights? If the latter, then we cannot expect the station to continue to send us daily entertainment without being recompensed in some way. We cannot see why the copyright owner should wish to muzzle the best advertising medium he has by forcing the broadcast station to "cut out" all prohibited music.

Lastly, and possibly of the most interest to both the radio dealer and the listener-in, is the proposed tax on radio equipment. Radio is one of the infant industries of the land and should be encouraged, and not discouraged. Of course you are told that the tax is to be paid by the manufacturer. Yes, certainly! And do you think he will not add it on the price charged to the jobber and dealer? Of course he will, and the public, the ultimate consumer, pays in the end.

If you are interested in any of these matters, write your representatives in Washington today.

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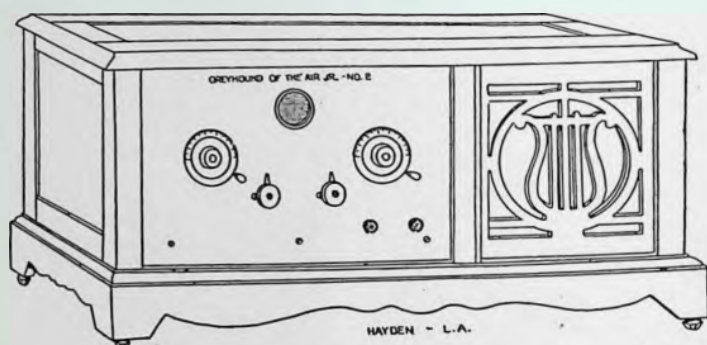
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The Super-Heterodyne

By N. E. BROWN, President So. California Radio Association

EDITOR'S NOTE.—Mr. Brown has tried to make this article as non-technical as possible. Those desiring more technical particulars can procure same by addressing Mr. Brown in our care.

Ever since radio has occupied the attention of the experimenter and research worker the need for a method that would amplify short wave length signals has been paramount. Any one that delights in quality production knows that the limit of satisfactory audio amplification is quickly reached when reproduction is confined to rooms of usual dimensions and furnishings and the only logical escape from the tube noises and all distortion is to amplify at radio frequencies to the required degree. The amplification at short wave lengths has taxed the abilities of the world's best technicians, with the English and French leading in this particular, the art of radio receiving being brought to a higher degree of proficiency there than in the U. S. because they are practically denied the right to experiment with amateur radio transmission by their respective governments while our government has always fostered the movement. Of late the craze of the broadcast listener to hear around the world has led him to feverishly try every new circuit that has been disclosed by an array of radio magazines; competition has driven the radio fan from the simple circuits to those of more complicated structure; in many cases at such a pace that his understanding of the relations of the different parts could not keep up . . . and now it is the Super-heterodyne craze.

Amplification of the radio waves within the broadcast range is highly involved; at these wave lengths the ohmic resistance of the wiring and coils, the dielectric losses in all insulating materials of coils, sockets, condensers, etc., when combined with losses due to absorption of such materials as wood of the cabinet, bakelite of the panels and equipment supports, make efficient amplification impossible even when great pains has been taken to reduce all these losses to the minimum. Even then it is necessary to operate the inductances connecting the tubes of the amplifier at or very near the resonant point when the whole amplifier flashes into sustained oscillation. Oh, yes! we can bias the grids more positive, turn down the filaments and neutralize the tube capacities and use reversed feed back and stop the oscillations after a manner, but what has become of the efficiency? It is nearly gone. We are side-stepping the real issue and defeat maximum amplification. It is comforting to note that these troubles rapidly decrease with increased wave length so that at five to ten thousand meters they have all so greatly reduced as to make amplification at radio wave lengths quite easy except for the remaining tendency for the multi-stage amplifier to oscillate.

It is clear, then, that if the broadcast stations would employ wave lengths around one thousand meters that we would have little difficulty in amplifying them for our use. It is also clear that if we could convert the short wave lengths to longer ones the same results could be enjoyed and that is just what the Super-heterodyne does. If two radio waves of different dimensions are brought together, or combined, in a suitable receiver there will result new derived wave length and if properly done none of the beauty of the original signal will be lost.

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SUPER-HETERODYNE KITS**

This takes advantage of the principle of "sound beats" which result when vibrating energy of different wave lengths combine and produce a third whose frequency is the numerical difference between the two combining.

This requires that all heterodyne receivers be so equipped as to generate high frequency currents for this purpose which is done by suitable circuits and vacuum tubes, and from this fact the name is derived, heterodyne meaning "other energy" in plain English, which refers to the frequency changing part, and the amplification of this derived radio current in the equipment accounts for the prefix "Super."

This method of frequency change and amplification has been in use about four years and the details of design have not materially changed since then.

For the sake of clarity let us denote the radio wave or signal coming to us from some broadcast station which we wish to amplify (that is what it contains, the music, speech, etc.) as the primary frequency, the locally generated frequency, the secondary frequency and the derived new wave length (with the music, etc., contained in the primary frequency), the tertiary frequency. This tertiary low frequency wave is the one we are to amplify and if proper choice of secondary frequency has been made and the amplifier has been carefully designed and constructed the resultant output of the loud speaker should not suffer in quality from these operations.

Let us follow a concrete example through that it may be quite clear:

Suppose we desire to heterodyne a three hundred meter broadcast wave to derive a two thousand meter tertiary wave for amplification; what will be the required secondary or oscillator wave length? First let us reduce to terms of frequency. 300 meters reduce to 1,000,000 cycles (per second always) and 2,000 meters will therefore reduce to 150,000 cycles, or one thousand and one hundred fifty kilocycles respectively. Since the derived tertiary has a frequency represented by the difference between the primary and the secondary frequencies we will subtract the tertiary, in this case, from the primary and obtain the secondary frequency of 850 kilocycles or about 350 meters which is the wave length of the oscillator for this condition. It is also clear that the secondary frequency may be higher than the primary frequency by the value of the tertiary frequency; in other words the secondary frequency may be either higher or lower than the primary by the value of the desired tertiary frequency although for reasons that will not be discussed at this time it is considered best to keep the secondary frequency lower than the primary; if, however, we should choose to place it higher than the primary frequency it would have a value of nearly 260 meters which corresponds to 1150 kilocycles which in this case is the sum of the primary and tertiary frequencies instead of their difference. Since broadcast stations are between 200 and 600 meters, what will be the necessary variation through which the oscillator must admit of being adjusted? By subtracting the frequencies as before we find the oscillator must at least cover a range of from 222 meters to 857 meters in order to meet the conditions. Care should be used that such a combination of frequencies are selected that it will be impossible for the frequency of the oscillator to be adjusted near enough to the frequency for which the amplifier is tuned (the tertiary frequency) that some of its energy may pass as this will result in a "mushyness" of the reproduction. This point depends to some extent upon the sharpness of the amplifier, which must also be given careful con-

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sideration for if too sharp distortion will result from cutting off some of the fringes of the side bands of the broadcast wave, this is especially true if high grade music is being used, but on the other hand if the tuning is too broad much interference will be experienced and the real value of the set greatly reduced. To those who contemplate the construction of such a receiver the following suggestions may not come amiss:

First carefully decide upon the design you are to follow and study each point until you are sure you know just why everything is done just this way or that.

Then select your equipment, remembering that the best condensers (such as Cardwell or General Radio) and coil mountings all through will be none too good. This does not mean that the expensive ones are good, for in many cases you are paying for some fancy finish that catches the eye, but get the equipment that is known to have low losses for, after all is done, you will have losses, and the smaller these are the more sensitive will be the set and that is why you are to build this complicated equipment. Then mount the equipment on a long table, bench or board, not shorter than six feet, and begin with roughly tuning your amplifier transformers by the use of a buzzer driven wave meter or its equal and after getting all carefully tuned while connected to the tubes and sockets you will use, start testing for coupling between each two transformers. If the coupling is negative they will not oscillate readily and the amplification will suffer, and if the coupling is positive it will be impossible to stop oscillation, so take up carefully and get the coupling to the zero point by changing the positions of the transformers until this result is had. Then set the wave meter about six feet away, working on 200 meters with buzzer and adjust the windings of the oscillator until you get this through the tuned amplifier at maximum, then set wave meter on 600 meters and adjust turns in coils for this position and you have set the range of the set. Then try bringing in some local station with a small loop and keep on making improvements in adjustment, then select a weaker station and continue this way until you know the set from end to end. Now it will be time to start laying out the panels and making ready to mount the equipment in a permanent manner, give plenty of room and do not think you can crush the parts onto a 7x21 inch panel and get the best results; make your panel not smaller than 10x40 inches and remember that you will have a lot of new troubles to contend with after you have remounted the parts and this is all in the game. The most important item is tuning and retuning the transformers and I will try to illustrate this point as follows: if you are to put four pieces of board each with a knot hole in it so you can see through the line of holes, they must be IN LINE and if a radio signal is to be amplified in passing through four transformers they must be tuned to the SAME WAVE LENGTH.

Do not choose too low a frequency for the amplifier or you will pick up atmospheric and other noises, and do not choose one too high or the signals will be "mushy," and above all remember that you are not assembling a single circuit crystal set.

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Radio Doesn't Electrocute

Radio, unfortunately and unjustly, frequently gets a "black eye" through improper headlines and sometimes badly written stories in the daily press. The headlines—"Electrocuted by Radio," which recently appeared in a local paper, was not only misleading, but wrong, according to the brief story itself. In the first place, radio itself cannot electrocute anyone, except in case of transmitting stations where high-power supply is used. At the radio receiving end, radio is not dangerous. It is even doubtful if the high-frequency power put into transmitting antenna at big commercial stations could kill, although it is admittedly dangerous to touch bare wire, the motor-generator, bus-bars, or the transmitting circuits, as a shock or burn might result. Only at high-powered, low frequency stations could serious results occur. Receiving sets are not dangerous, according to all well-informed experts, unless, of course, they are charged by outside electric power.

Referring again to the headline and the story of the unfortunate lad, who, it developed, let his antenna come into contact with an electric wire charged with 2300 volts, it is readily seen that he was not electrocuted by radio but by an electric power line. It would have been the same had he been stringing a wire clothes-line, although his death would not have been charged to a clothes-line. An autolst, who stalls his machine on a railway track and is killed by an express train, is not said to have been killed by an automobile.

Some sort of an aerial is necessary to every receiving set, and it is well known that an outside aerial is better than an inside one or a loop, except in specially constructed high-power tube receivers.

According to Dr. J. H. Dellenger, Chief of the Radio Laboratory of the Bureau of Standards, a fairly long and high antenna is the cheapest way to get loud signals with the simplest receiving sets. "To get the best results, an outdoor antenna, used for great distances or for crystal sets, one should use a single, continuous copper wire, 50 to 150 feet long, direct from the set to the highest point available at the far end, supported by good insulators, such as porcelain or glass, and kept well away from trees and buildings. "Keep the antenna away from possible accidental contact with electric wires," he admonishes.

Replying to the query: "Are antennas dangerous?" Dr. Dellenger said: "The lightning hazard is practically nil. Only for outside antennas need lightning protection be considered at all; it is very simple. A small and cheap device called a lightning arrester should be connected between the antenna and the ground wire on receiving sets. An antenna is no more likely to bring lightning into a house or apartment than are overhead telephones or electric light wires. The principal hazard from antennas is from stringing outdoor antennas over or near electric light wires. A number of persons have met death by electrocution from this cause." A special committee on the National Electrical Safety Code is now drawing up regulations and precautions for the erection and use of aerials, and will report soon.

Concerning antennas in general, Dr. Dellenger pointed out that there is nothing about them to justify the large amount of worry and uncertainty they seem to give many uninitiated fans. An antenna, he explained, is the "harness"

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that converts the radio wave motions into currents which operate the receiving set. Almost any sort will work for a broadcast receiving set, he said, adding that fans do not need to imitate the amateur transmitters and erect elaborate antennas of several wires. A general antenna for reception should be a single wire running from the set, direct, if possible, to a conveniently high point at the far end. It does not have to be horizontal, a slight angle is sometimes advantageous, and it does not matter in what direction the antenna points. Little directional difference is noted in reception, except in special and long antennas. Good insulation is necessary, and he recommends that the wire be swung over a clear space if possible, with at least five feet clearance over all objects crossed. Number 14 solid, bare, copper wire, or larger sizes, are recommended, since it has low resistance and results in loud signals. Stranded wire, though stronger, is not considered quite as good as solid wire. Insulated wire, he explained, is not especially detrimental, but costs more than bare wire. From 50 to 150 feet is the usual length recommended for broadcast reception; longer aerials bring in stronger signals, he says, and are more certain to bring in distant stations. But they also bring in more interference, including static. "Antenna length," he sums up, "is a compromise between loudness of signals and freedom from interference." The public trend is no longer for distance but quality of reception, he believes. If, however, one wants to astonish his friends with a long distance record, he explains, let him erect a "whale of a long antenna," or, use a very sensitive, many-tube receiving set, or both, and pile up a record. Receiving sets using electron tubes work well with indoor antennas or loops, the latter aiding in directional effects, but these antennas are relatively weak and therefore the signals must be amplified, he explained.

Bigger and Better Broadcasting

Plans are afoot for the erection of at least fourteen new Class B broadcasting stations, and seven are already under construction, according to the Department of Commerce. To date, there are 49 of these high-class and high-powered stations, but with the development of the art, more powerful stations have come into vogue and as a result, bigger and better stations are anticipated in New York, Chicago, New Orleans, Denver, Hartford, Houston, Hot Springs, Cincinnati, Fort Bragg, N. C., and Berrin Springs, Mich.

Although seven stations are known to be under construction, the Department has not yet issued licenses and will not announce the names of the prospective owners.

In Chicago, a sort of reorganization in super broadcasting is under way. WJAZ, the well-known station of the Chicago Radio Laboratory, will become station WGN; its call, significant of the Chicago Tribune, which will now use this station on 370 meters instead of 448 meters. The Herald-Examiner, with Sears-Roebuck Company, will share a new B station, which will operate on 345 meters, splitting time on sharing this wave length with WCBD at Zion City. The Daily News station, WMAQ, will operate on 448 meters, dividing time with the Rainbow Gardens. The Calumet Baking Powder Company is planning a new station now under construction, but no call has been announced yet.

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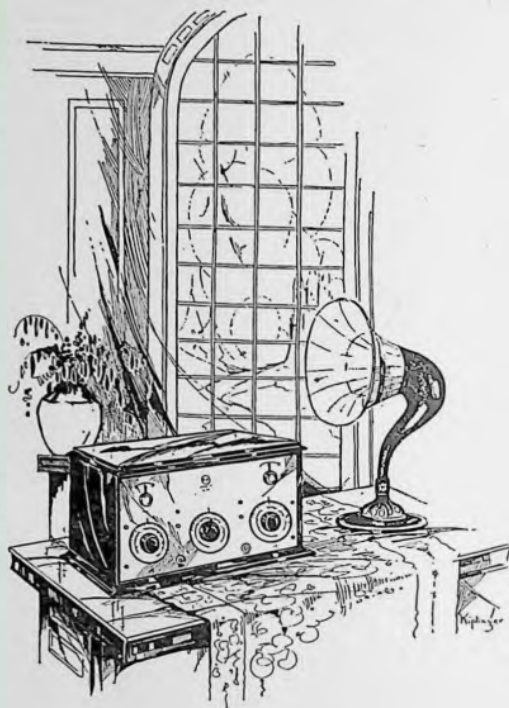
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Behind the Scenes in a Broadcast Studio

NUMBER EIGHT—THE INVISIBLE VOICE

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

The speaker of the broadcast station may be called almost anything, and he usually is. Perhaps his title is the announcer, the broadcaster, the studio director, the program announcer, the manager, or whatever fancy and the powers that be decide. He may be the entire staff, or he may be one of a large corps. He may personally have complete charge, or he may be second or third in command.

It has been conclusively demonstrated that the deep voice is best over the radio—notwithstanding the fact that there are several woman announcers throughout the country.

Mannerisms that are barely discernable when you see a person are much accentuated when you hear them over the microphone. It is easy to get into a rut as well as to acquire mannerisms in announcing.

At first the broadcaster is greatly self-conscious, and the public knows it. Then he gets into the next stage of being too blasé and overbearing, and the public knows that, also. Third stage when he gets unbearable.

Every announcer gets into a rut. He catches himself saying over and over again, "You have been listening to a very splendid program, rendered in such a delightful fashion, by ———," or perhaps he says, until it becomes monotonous, "XYZ signing off until yesterday—hope you enjoy your dinner," or he says, "Don't forget to write and show your appreciation of these artists and your letter will promptly be forwarded," or he says, "Now I'm going to 'ausk' Mr. So-and-so to sing for you again—the telephone has been ringing so insistently for an encore."

Every announcer has other peculiarities. One speaks directly before the microphone about a foot away, another insists on grasping it firmly and shouting. Still others believe it best to stand a little above and warble downward on the slant, and even more believe there is some sort of fetish by standing sideways and bellowing loudly. Perhaps there they are all wrong. The solution may be in placing the microphone in one room and the announcer in another.

At first the announcer is much impressed with public attention. He insists on personally attending to his phone calls and counts the day lost when he has not personally answered at least several hundred communications and mash notes.

Then he becomes rather fed up on this sort of thing and becomes a recluse—haunting back alleys for fear of being recognized.

There is, of course, a happy medium, whereby he may not be tied down too tightly by routine, 'phone and mail matter. He ought to take particular care in representing his department, for he is before the public personally and through his voice more than all the other members of the radio staff put together.



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If his station is a prominent one, he must occasionally appear at public places, such as expositions, shows and other affairs. His picture will become well known through his writings or column in the newspaper. After a year or so, his voice will be known to hundreds of thousands and his name will be a household word in the immediate community as well as to thousands of radio bugs who fish for long distance.

The announcer is human. He has a work to do, which is relatively important. Of course, he likes to be flattered occasionally, as everyone does, but he cannot be expected to accede personally to any great number of telephone calls, request for photographs, signing letters, and what not.

The voice of the announcer signing on and off the air and between numbers is the connecting link between the studio, station and public. It ought to be concise, sympathetic, kind, intelligent and understandable. The announcer ought to be able to read all kinds of musical terms with ease as well as hundreds of family names, of which he never even dreamed. To a limited extent he ought to have an opportunity of getting his personality "over the air," although this should never be done at the expense of boring everyone on radioland and sea with lengthy orations and improptu speeches, which generally mean nothing.

To Broadcast Records in the Making

WABU, the new Victor Talking Machine broadcasting station at Camden, N. J., will soon give the public an opportunity to hear phonograph records in the making. That is, radio fans will be permitted to hear original records before they are released. When famous vocalists or musicians are about to perform for the reproduction on master phonograph records in the studio, a microphone will be placed alongside the recording apparatus and as the artist renders his piece for record the radio fans will hear it over the air.

The Columbia Graphophone Company, through co-operation of the A. T. & T. Co., and station WEAF, will also start broadcasting new records soon.

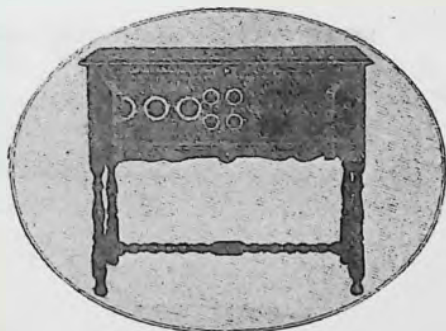
The New Cutting & Washington TELEDYNE

5 New Features

1. **SUPER-SENSITIVE**—catching and developing the weakest signals.
2. **EXTREMELY SELECTIVE**—it will tune your local stations out.
3. **GREATER VOLUME**—a real Loud-speaker set.
4. **NO RADIATION**—no regeneration howls on the air.
5. —and it's easy to pick up new stations with TELEDYNE.

Two models, both complete, self-contained, ready to operate. \$190—\$350
See it!—Hear it!—Come in today!

Console—\$350 Complete
Cabinet—\$190 Complete



We carry a complete line of Standard Parts and Sets—Neutrodyne Experts—Are you having trouble with your set?—Bring it to us, our Radio Engineers are at your service at all times.

Free demonstration in your home by appointment

NORTON & NORTON

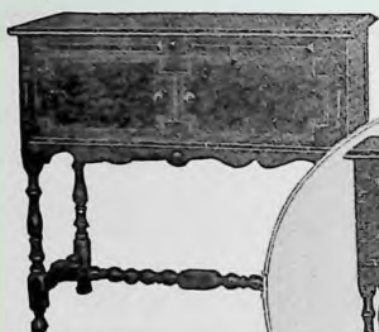
Capitol 0484

2211 North Broadway, Los Angeles

The New CUTTING and WASHINGTON

Teledyne

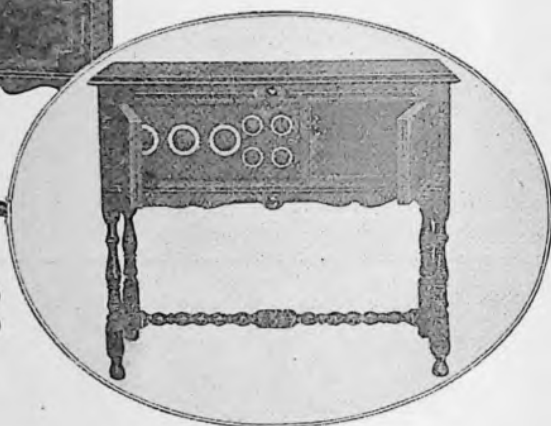
TELE means Distance — DYNE means Power



Console Model \$350.00

Cabinet Model 190.00

Complete with
Batteries and Tubes



5 POINTS OF SUPERIORITY

- 1 Super-Sensitive
- 2 Extremely Selective
- 3 Greater Volume
- 4 No Radiation
- 5 Easy Tuning

FRANKLIN RICHARDSON

WEST HOLLY RADIO SHOP

"Rich for Radio"

7412 Sunset Blvd.

Phone GRanite 3011

Radio Waves Go Underground; Test Made 200 Feet Down

A story of radio reception under difficulties is told here by a party of ten men, including radio engineers and newspaper men, who went 200 feet underground in a new tunnel near Lakeport, Ohio, to test the penetrating powers of electro-magnetic waves.

The shaft connects the river valley with Lake Erie. To reach the tunnel the apparatus had to be carried down a flight of steps into a gully, at the bottom of which is the entrance to the shaft.

The following account of the feat is given by B. L. Strang, one of the party:

"The narrow flight of steps leading to the mouth of the shaft was just about five degrees out of perpendicular, and they were devoid of any hand rail or safeguard from falling. The trip down was filled with thrills, as it was pitch dark and we had only pocket flashlights to light the way.

"Each man had something to carry. My pack consisted of a camera, flashlight powder, a tripod and four very breakable plates.

"Outside the tunnel the mercury was hovering around 20 degrees below zero, and inside it was but one-half of one degree warmer. A strong, freezing breeze was blowing through the shaft from the lake.

"Bending nearly double under the low ceiling, we plowed our way through the debris and in places waded up to our knees in ice water. At the approximate center of the tunnel we set up our apparatus. Standing there in crouched positions, ankle deep in water, we twirled dials and strained our ears.

"The loud speaker cleared its throat, choked and then whispered feebly the voice of WTAM—the Willard Storage Battery Company, outside of Cleveland, twenty miles away.



C. D. TANNER
"Your Radio Friend"

Neutroflex

**The Most Beautiful Radio Set in America Is
Now Ready for Delivery**

When you buy or build your next set, you must consider Volume, Tone, and Distance. All these are combined in the Neutroflex. Never before has a receiver given such volume and at the same time retained such quality of tone.

Come in and listen to the Neutroflex before you buy

WE HAVE PLENTY OF 301-A CUNNINGHAM TUBES

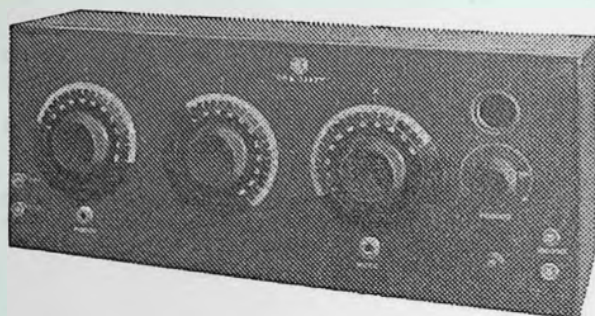
Phone
ATLantic 4548

C. D. TANNER CO.

428 W. Washington St.

Los Angeles,
Calif.

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."

Distributed by

Union Hardware & Metal Co.
Los Angeles

Electric Corporation
Los Angeles, Portland and Seattle

H. Earle Wright Co.
Los Angeles and San Francisco

Stations Operating Total 569

On April 1st there were 569 broadcasters in operation, two new class A stations having been licensed during the last week in March, while eleven stations ceased operation during the month.

TWO CLASS A BROADCASTING STATIONS LICENSED

Call	Station	Frequency Kcys.	Wave Length Meters	Power Watts
KFPM	The New Furniture Co., Greenville, Texas.....	1240	242	10
WCBO	The Radio Shop, Inc., Memphis, Tenn.....	1200	250	20

TRANSFERRED CLASS C TO CLASS A

KQV	Doubleday-Hill Electric Co., Pittsburgh, Pa.....	1110	270	500
-----	--	------	-----	-----

ELEVEN BROADCASTING STATIONS DELETED DURING MARCH

Call	Station	Class
KFDL	Knight-Campbell Music Co., Denver, Colo.....	"C"
KXD	Herald Publishing Co., Modesto, Calif.....	"A"
WABK	First Baptist Church, Worcester, Mass.....	"A"
WEAS	Hecht Co., Washington, D. C.....	"C"
WIAR	Paducah Evening Sun, Paducah, Ky.....	"C"
WJH	Wm. P. Boyer Co., Washington, D. C.....	"A"
WPAH	Wisconsin Dept. of Markets, Waupaca, Wis.....	"C"
WQAV	Huntington and Guerry, Inc., Greenville, S. C.....	"A"
WRAD	Taylor Radio Shop, Marion, Kans.....	"A"
WSAH	Leonard, A. G., Jr., Chicago, Ill.....	"A"
WSAL	Franklin Electrical Co., Indianapolis, Ind.....	"A"

A MESSAGE FROM M. A. R. S.

A complete line of Sets and Assemblies. Why not build your own. We furnish the parts and show you how. Ask Us.

COMPLETE ASSEMBLIES FOR

One-Tube Reflex.....	\$18.00 to \$30.00
Two-Tube Reflex.....	28.00 to 50.00
Three-Tube Reflex.....	62.00
Five-Tube Fada Neutrodyne.....	65.50
Six-Tube Super-Hetrodyne.....	70.00

Other assemblies in proportion

All assemblies less Tubes, Batteries, Cabinet, Phones or Loud Speaker

SETS COMPLETE

Radiola IV, complete, installed.....	\$200.00
Radiola III, complete with loud speaker, batteries and tubes.....	50.00
Echophone, New Three-Tube, complete, installed.....	150.00
Freed-Eisemann Neutrodyne, less tubes, batteries or loud speaker.....	150.00
Complete installed.....	250.00

INVESTIGATE OUR EASY PAYMENT PLAN

Why wait for that new Set? A small down payment will give you the immediate use of your new set, with plenty of time to pay the balance.

MANUAL ARTS RADIO & ELECTRIC SHOP

SAM SCOTT, Manager

4154 S. Vermont Ave., Los Angeles, Calif.

Phone Vermont 7836

Better Results from Radio

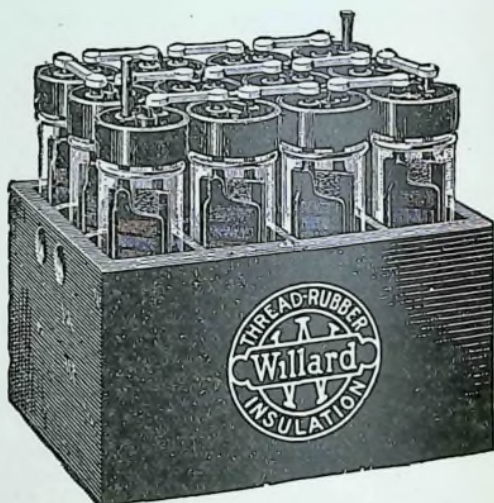
Get our **FREE BOOK** on Better Results from Radio—it is full of valuable facts you ought to know.

It tells how to get more volume—How to get rid of noises—How to lower your cost.

Write or telephone to any **WILLARD DEALER LISTED BELOW** and you will be sent, postpaid, one of these books.



RADIO "A" BATTERY
Heavy plates—Threaded rubber—
Unusual capacity.



RADIO "B" BATTERY
Note the construction—Individual glass cells
that eliminate external and internal leakage.

WILLARD RADIO BATTERIES

For Sale By

BURBANK—John Null

ONTARIO and UPLAND—
R. J. Tobey

LONG BEACH—A. C.
Walker

SANTA ANA, ORANGE,
FULLERTON—Orange
County Ignition Works.

MONROVIA—Emil Lind-
strand

SAN BERNARDINO—C. H.
Stickel

WHITTIER—Whittier Auto
Electric Company

PASADENA—F. W. Birnie

RIVERSIDE—Mission Auto
Electric Company

LOS ANGELES—Western
Auto Electric Co. or any

Willard Service Station
ANAHEIM—A. Bevilard

TORRANCE—Torrance
Auto Electric Co.

GLENDALE—E. W. Cizek
Company

SANTA MONICA—Guy
Hammond

GARDENA—Gardena Bat-
tery & Ignition

SAN PEDRO—Auto Elec-
tric Service

Or

At Your Nearest Radio Dealer

Amplifier Data

HALL BERRINGER

The amateur or novice frequently stumbles across a phenomenon which interferes with his set. This is especially the case when he is operating a regenerative set and amplifier, as regenerative effects make their appearance in amplifiers and give rise to such annoying disturbances as howling. A discussion of some of these things may not be amiss, therefore, and may be of help to those struggling with the strange manifestations of a sensitive receiver.

About the greatest nuisance that the novice has to contend with are the strange noises which he hears in the phones when adjusting his receiver. Assuming that he is not using an amplifier (the amplifier will be discussed later), these noises will generally be found to be caused by starting and stopping of oscillations, which is due to incorrect values of grid condenser and leak. While the receiver is in the oscillating state the grid has an average negative potential, which must be given a path for leaking off or else it will block the passage of the plate current. This leakage path is provided by the grid leak and the rate at which the negative charge on this leaks off depends upon the value of the grid condenser and leak. If the leak has too high a resistance, the charge leaks off too slowly, with the results that oscillations stop. During the period that oscillations have ceased, the leakage still continues until the grid potential has again assumed a value permitting oscillations. Oscillations then commence until the above performance is repeated. This starting and stopping of oscillations may take place at an audible rate and results in the peculiar noise generally heard in the phones. The rate at which this takes place is what determines the pitch of the noise heard. The rate of starting and stopping of oscillations is determined by the time constant of the grid condenser and leak combinations. The greater the values of resistance and capacity, the lower will be the pitch, and visa versa. By varying the values of leak and condenser, the note can be varied from individual clicks widely separated to a continuous high shrill note and even beyond to the audible stage. From this it will appear that it is best to use a variable grid condenser and leak and adjust these values until proper operation is secured. This is much more preferable than using a fixed condenser and leak, since each tube requires certain values for maximum efficiency, and these can best be secured by trial.

Frequently it will be found that the above tube noises can be traced to too light a tickler coupling, and since feedback coupling varies with the wave length used it often happens that when changing from one to another wave length no change is made in the tickler coupling. As a result, if the tickler coupling should be lower for the new wave length and is not, change noises are likely to be heard. It is, therefore, best always to alter the feedback coupling when any other change is made in the tuning of the set.

Howling noises in amplifiers are also a source of considerable trouble, and is a case of audio frequency oscillations in the amplifier system caused by regeneration. Naturally, the greater the amplifying possibilities of an amplifier the more liable will it be to howling. Many amateurs realizing this, resort to the poor remedy of working their amplifiers at low amplification, as for example,

DO YOU WANT

A Perfect Receiving Set?
Genuine Neutrodyne Parts?
Complete Radio Satisfaction?

Then Go To—

HENSEL ELECTRIC STORE

567-073

214 So. Western Ave.

ANNOUNCING THE
"Angelus Reflex"
LINE OF
Radio Receivers

BUILT IN LOS ANGELES

It is a well known fact that many makes of radio receivers built in eastern cities do not operate entirely satisfactorily in Southern California. We have made exhaustive tests and have perfected a circuit adapted to the climatic conditions of this section.

7—Models—7

EASE OF OPERATION (any child can operate it)
CLARITY OF TONE (we welcome comparison)
VOLUME (Loud Speaker operation)

Priced from \$75 Up

Cabinets Finished in Walnut or Mahogany
Very Liberal Dealers' Discounts

*See us or write at once for exclusive territory.
It means money for you*

Angelus Radio Manufacturing Co.

922 Santee St.

VAndike 2577

reducing the filament currents, in order to eliminate howling. Obviously this is no remedy at all, since an amplifier is designed to amplify and should be worked for all the amplification that it is capable of. In fact an amplifier which shows no tendency to howl may be a very poor one. Elimination of howling should not be obtained by a sacrifice of amplification. By understanding the causes of howling we may be able to arrive at other more desirable remedies.

(To be continued)

Western Samoa Opera Season Via Radio

The last "Radio Bulletin," a tiny magazine printed in Apia, Western Samoa, has just reached Earle C. Anthony, owner of KFI.

Foremost among the articles in this small paper, is one entitled "KFI Brings Grand Opera to Samoa." The writer then goes on to say that grand opera has been introduced for the first time to Western Samoa on February fourth and eleventh, and, that there be no doubt of the correct reception of the KFI broadcasting, further records names of the operas heard, cast of the San Carlos Opera Company, and the Philharmonic Auditorium from where the opera was broadcast. As Western Samoa is about five thousand miles from Los Angeles, this makes another record for the Earle C. Anthony Station, the recent successful London program being an especial test and broadcast over some seven thousand miles.

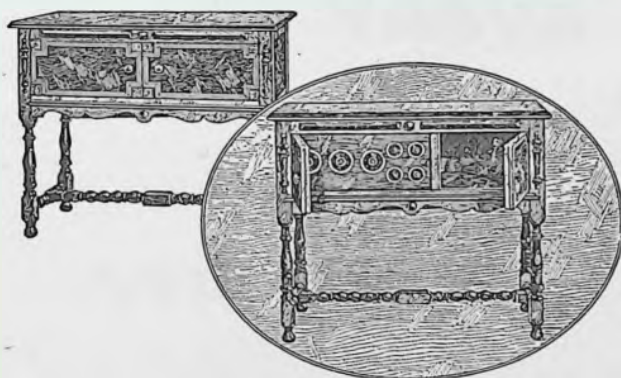
"The overtures," says the article, "orchestra, chorus and solos came through remarkably well. On the first night VMG cutting in destroyed part of the announcements but the following Monday receiving conditions were better. The applause of the auditors broadcasted as it swept over the audience was a touch of realism that annihilated the distance between Apia and Southern California."

Although the KFI station has received countless letters from persons isolated from towns large enough to support an opera company, since that broadcasting in February, this further demonstration of the marvelous possibilities of radio to bring music to distant places is a further incentive to all broadcasting stations to send out the best possible programs if only for the pleasure of the listeners-in far away from civilization of the town and city.

THE NEW
Cutting & Washington

TELEDYNE

TELE means distance—DYNE means power



DESCRIPTION

1. SUPER - SENSITIVE—catching and developing the weakest signals.
2. EXTREMELY SELECTIVE—it will tune your local stations out.
3. GREATER VOLUME—a real Loudspeaker set.
4. NO RADIATION—no regeneration howls on the air.
5. —and it's easy to pick up new stations with TELEDYNE.

Two models, both complete, self-contained, ready to operate \$190-\$350

See it! Hear it!
Come in today!

STONE ELECTRIC SUPPLY CO.

710 West Pico, Masonic Temple Building
(Pico and Figueroa) Los Angeles

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

ATlantic 7043

— Telephone —
Open Saturday Evenings

ATlantic 1155

The Radio Building

Eleven Eleven (1111) Wall St.
Los Angeles, California

* * *

"RADIO CENTER" OF THE PACIFIC
COAST

* * *

—**EVERY**—

Dealer—

Manufacturer—

Jobber—

Should Know Where the Radio Building Is Located

For space or information call Mr. E. Van Metre—VAndike 4353

Government Inspectors Night Owls

The lives of Government's radio supervisors and inspectors in the nine districts of the country are strenuous, exhausting and expensive. Most of these officials, who strive to make ships, land stations, amateurs and broadcasters live up to regulations, have of necessity become "night owls." They are a cross between detectives and mind readers. The varied problems coming up for solution every day, and the medley of technical questions they are asked by amateurs and fans, require the combined wisdom of Sherlock Holmes and Guglielmo Marconi.

Not alone do they inspect all transmitting stations, and examine commercial and amateur operators; they see to it that stations remain on assigned wave lengths, power and time schedules; they try to locate interference from every source to keep the ether clear for commerce and the listeners in. This requires late hours, since most interference is reported to occur at night, and they are usually on watch until midnight in most districts. First-hand information is of the greatest value to them, enabling them to act immediately and not spend time running down rumors and incorrect or inadequate interference reports, which they receive by the hundreds.

Present Government appropriations, strange as it may seem, do not provide receiving sets for the Governmental radio policing force; consequently all of the men have to purchase or build their own sets. Good sets are, of course, necessary, and one supervisor is known to have spent seven hundred dollars in equipment for his main office out of his own pocket, but believed necessary for efficient and effective service in his district. Many other supervisors and inspectors have spent between four and five hundred dollars each in radio equipment. The Government can only provide its field force with testing and measuring instruments, such as decremeters, wattmeters, ammeters, voltmeters and hydrometers. They cannot listen in with these instruments. In Baltimore, the Supervisor maintains his own automobile, found essential in running down or locating unidentified stations and radiating receiving sets in the outskirts of his district. Some of the inspectors find radio compasses, or direction-finding coils, necessary in locating offending transmitting sets, or amateurs operating without giving their calls or using "fake" calls. It is a "hard life," they all admit, and yet they find it fascinating and developing.

With the advent of the new appropriation bill, it is hoped that increased funds will be forthcoming, so that the field force of the radio section of the Bureau of Navigation can be provided with sufficient radio apparatus of the latest type to cope with the increase of radio traffic in both code and voice. Incidentally, the Bureau needs additional inspectors and more funds for transportation of its operatives, some of whom travel thousands of miles a month, covering their territory.

RADIO A BATTERIES

100 Amp. Hours.....\$10.00
120 Amp. Hours..... 12.00

Guaranteed

THORNTON & EVEREST, Inc.

225 W. 12th St.

MEtro 1714

Los Angeles, Cal.

6-8 A. M.
PACIFIC TIME

RADIO TIME TABLE

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

STATION	CITY	METERS	CALL	SUN.	MON.	TUES.	WED.	THUR.	FRI.	SAT.
				6:00-8:30	6:30-7:00	7:00-7:30	7:30-8:00	8:00-8:30	8:30-9:00	9:00-9:30
Reynolds Radio Co.	Denver	360	K L Z	.	.	.	.	.	.	.
Free Press	Detroit	517	W C X	.	.	.	.	.	.	.
Detroit News	Detroit	517	WW J	.	.	.	.	.	.	.
Woodmen of World	Omaha	526	WOAW	.	.	.	.	.	.	.

8-10 A. M. PACIFIC TIME

9-11 Mountain Time

10-12 Central Time

11- 1 Eastern Time

STATION	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	10:00-10:30	10:30-11:00	11:00-11:30
S. F. Examiner	San Francisco	360	K U O	.	.	.	.	.	.	.
Reynolds Radio Co.	Denver	360	K L Z	.	.	.	.	.	.	.
Star-Telegram	Fort Worth	476	W B A P	.	.	.	.	.	.	.
News and Journal	Dallas	476	W F A A	.	.	.	.	.	.	.
Palmer School	Davenport	484	W O C	.	.	.	.	.	.	.
John Wanamaker	Philadelphia	509	W O O	.	.	.	.	.	.	.
Federal Tel.	Buffalo	319	W G R	.	.	.	.	.	.	.

FACTORY PRICES TO YOU DISTANCE SELECTIVITY VOLUME

Phipps Super Coils \$1.00

For Reflex or Harkness Circuits

SPECIALS

Rheostats, 30 ohm	\$.45	Phone	\$2.98
Detectors	.65	Horn	8.50
Sockets	.25	23-Plate Condensers	1.25
A. F. Transformers	2.25	Tapped Coils	.25
R. F. Transformers	2.00	2-Tube Portable Set	9.95

WORK BENCH AND ADVICE FREE

D. C. PHIPPS

Distributor

WING RADIO PRODUCTS

TRinity 6434

726 S. Spring St.

10-12 A. M.
PACIFIC TIME

RADIO TIME TABLE

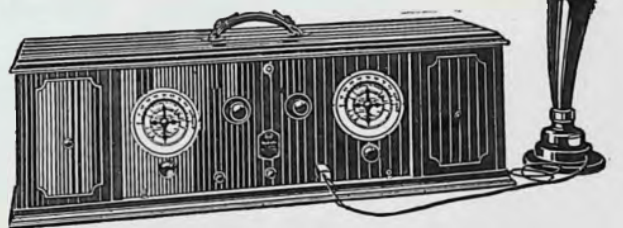
11- 1 Mountain Time
12- 2 Central Time
1- 3 Eastern Time

STATION	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	Los Angeles	395	KH J	X	X	X	X										
Earl C. Anthony	Los Angeles	459	KF I	X	X	X	X										
Bible Institute	Los Angeles	360	KJ S	X	X	X	X										
Angelus Temple	Los Angeles	278	KFS G	X	X	X	X										
So. Electric Co.	San Diego	244	KD P T	X	X												
Hale Brothers	San Francisco	423	KPO	X	X	X	X										
Tribune	Oakland	509	KL X	X	X												
Warner Brothers	Oakland	350	KLS					X				X					X
Gould	Stockton	360	KJ Q	X	X												
Fallon & Co.	Santa Barbara	360	KFH J	X	X												
Guy Creason	Tacoma	360	KFE J			X	X		X	X							
Rhodes Co.	Seattle	455	KD ZE			X	X							X	X		
First Pres. Church	Seattle	360	KT W		X	X				X		X					
Meier & Frank	Portland	360	KFE Q														X
Reynolds Radio Co.	Denver	360	KL Z				X		X		X				X		
News and Journal	Dallas	476	WFA A					X	X			X				X	
Palmer School	Davenport	484	WOC			X				X		X					
Oregonian	Portland	492	KGW					X				X		X		X	
Federal Tel. Co.	Buffalo	319	WOR				X		X			X		X			X

Murdock Radio Head Phones "Standard Since 1914"

Radiola Super-Heterodyne

On display now, this superior machine that is the greatest advance in radio receiving sets yet devised. Have this machine demonstrated to you by people who know how.



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	CITY	METERS	CALL							
				SUN.	MON.	TUES.	WED.	THUR.	FRI.	SAT.
L. A. Times	Los Angeles	395	KHJ	X	X	X	X	X	X	X
Bible Institute	Los Angeles	360	KJS	X	X	X	X	X	X	X
Angelus Temple	Los Angeles	278	KFS G	X	X	X	X	X	X	X
So. Electric Co.	San Diego	244	KDPT	X	X	X	X	X	X	X
Warner Bros.	San Francisco	360	KLS	X	X	X	X	X	X	X
Hale Bros.	San Francisco	423	KPO	X	X	X	X	X	X	X
General Elec.	Oakland	312	KGO	X	X	X	X	X	X	X
Harrold Lab'y	San Jose	360	KQW	X	X	X	X	X	X	X
Guy Greason	Tacoma	360	KFE J	X	X	X	X	X	X	X
Rhodes Co.	Seattle	270	KDZE	X	X	X	X	X	X	X
Honolulu Star Bulletin	Honolulu	360	KDY X	X	X	X	X	X	X	X
Honolulu Advertiser	Honolulu	360	KGU	X	X	X	X	X	X	X
Reynolds Radio	Denver	360	KLZ	X	X	X	X	X	X	X
Pyles Nichols	Denver	360	KDZO	X	X	X	X	X	X	X
News and Journal	Dallas	476	WFAA	X	X	X	X	X	X	X
Palmer School	Davenport	484	WOC	X	X	X	X	X	X	X
Star	Kansas City	471	WD AF	X	X	X	X	X	X	X
News	Detroit	517	W J Z	X	X	X	X	X	X	X
Radio Car. of Am.	New York	455	W J Z	X	X	X	X	X	X	X
Herald	Calgary	423	CFAC	X	X	X	X	X	X	X
Federal Tel. Co.	Birfield	318	WGR	X	X	X	X	X	X	X
Woodmen of World	Omaha	526	WOAW	X	X	X	X	X	X	X

When the Receiving Set is Finished



You will want your family and your friends to listen in with you. A good Loud Speaker is the only way possible.

The same engineers which built the other Audiophone models, including Senior and Junior, developed this Baby

AUDIOPHONE

TRADE MARK
REG. U. S. PAT. OFFICE

Model. It is different from the others, and costs less, but gives good results. The price, \$12.50, is not much more than many of the better grade headphones. This Baby Audiophone is ready to connect to your set—requires no auxiliary batteries to operate.

It is substantial in construction and good looking in appearance. The base is finished in dull gold bronze with the fibre horn of same color to match. Write for Bulletin No. 3013-X.

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	CITY	METERS	CALL	SUN.				MON.				TUES.				WED.				THUR.				FRI.				SAT.			
				2 00-2 30	2 30-3 00	3 00-3 30	3 30-4 00	2 00-2 30	2 30-3 00	3 00-3 30	3 30-4 00	2 00-2 30	2 30-3 00	3 00-3 30	3 30-4 00	2 00-2 30	2 30-3 00	3 00-3 30	3 30-4 00	2 00-2 30	2 30-3 00	3 00-3 30	3 30-4 00	2 00-2 30	2 30-3 00	3 00-3 30	3 30-4 00	2 00-2 30	2 30-3 00	3 00-3 30	3 30-4 00
L. A. Times	Los Angeles	395	KH J	X	X						X	X			X	X			X	X			X	X			X	X			
Angelus Temple	Los Angeles	278	K F S G	X	X	X						X	X		X	X			X	X			X	X			X	X			
Electric Light Supply	Los Angeles	360	K N X									X	X			X			X	X			X	X					X	X	
So. Electrical	San Diego	244	K D P T					X			X				X				X			X				X					
Hale Bros	San Francisco	423	K P O																												
S. F. Examiner	San Francisco	350	K U O						X	X			X	X		X	X		X	X			X	X			X	X			
Tribune	Oakland	509	K L X						X		X			X			X		X			X			X			X	X		
General Electric Co.	"	312	K G O					X					X			X			X			X			X			X	X		
Portable Wireless	Stockton	360	K W G	X	X																										
Kimball-Upton	Sacramento	283	K F B K							X	X		X	X		X	X		X	X			X	X			X	X			
First Pres. Church	Seattle	360	K T W			X	X																								
Post-Intelligencer	Seattle	270	K F J C							X	X	X		X	X		X		X	X			X	X			X	X			
Rhodes Co.	Seattle	270	H D Z E						X	X	X		X	X	X		X		X	X			X	X			X	X			
Oregonian	Portland	492	K G W							X	X		X	X		X			X			X			X			X	X		
Deseret News	Salt Lake City	360	K Z N						X	X			X	X		X			X			X			X			X	X		
Reynolds Radio	Denver	360	K L Z									X	X		X			X	X			X			X			X	X		
Honolulu Advertiser	Honolulu	360	K G U					X	X									X	X					X	X			X	X		
Star-Telegram	Fort Worth	478	W B A P			X	X																								
Palmer School	Davenport	484	W O C																												
Daily News-Fair	Chicago	448	W M A Q					X			X																				
Star	Kansas City	411	W D A F					X	X																	X	X				
Free Press	Detroit	517	W C X	X	X			X	X																	X	X				
News	Detroit	517	W W J					X	X	X		X	X		X	X		X	X			X	X		X	X		X	X		
Drake Hotel	Chicago	360	W D A P					X	X			X	X		X	X		X	X			X	X		X	X		X	X		
Radio Cor. of Am.	New York	455	W J Z					X	X			X	X		X	X		X	X			X	X		X	X		X	X		
Herald	Calgary	420	C F A C						X	X			X	X		X			X			X			X	X		X	X		
Federal Tel. Co.	Rhine	319	W G R					X	X			X	X		X			X	X			X			X	X		X	X		
Westinghouse	Pittsburg	326	K D K A					X																							
Westinghouse	Springfield	337	W B Z				X																								

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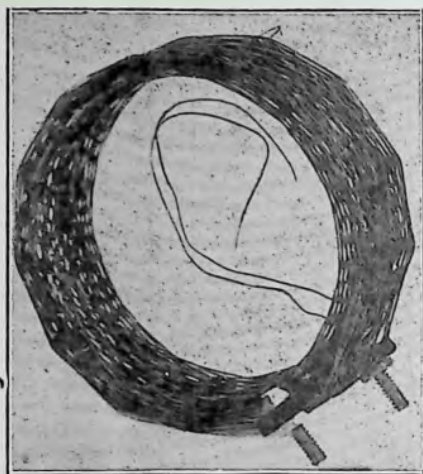
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WHOLESALE ONLY

4-6 P. M.
PACIFIC TIME

RADIO TIME TABLE

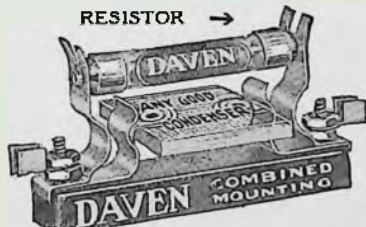
5-7 Mountain Time
6-8 Central Time
7-9 Eastern Time

STATION	CITY	METERS	CALL	SUN.		MON.		TUES.		WED.		THUR.		FRI.		SAT	
				4 00-4 30	4 30-5 00	4 00-4 30	4 30-5 00	4 00-4 30	4 30-5 00	4 00-4 30	4 30-5 00	4 00-4 30	4 30-5 00	4 00-4 30	4 30-5 00	4 00-4 30	4 30-5 00
E. C. Anthony.....	Los Angeles...	469	KFI	X	X												
L. A. Herald.....	Los Angeles...	469	Herald			X	X										
L. A. Examiner.....	Los Angeles...	469	Examin'r					X	X								
Angelus Temple.....	Los Angeles...	278	KFSG	X	X			X	X	X	X	X	X	X	X	X	X
Echophone Radio.....	Long Beach...	234	KFON					X		X		X		X		X	
Hale Bros.....	San Francisco...	423	KPO			X	X									X	X
Oakland Tribune.....	Oakland.....	509	KLX			X		X	X							X	X
S. F. Examiner.....	San Francisco...	360	KUO				X	X		X	X			X	X		X
Maxwell Elec.....	Berkeley.....	276	KRE														
Portable Wireless.....	Stockton.....	360	KWG			X	X	X	X	X	X	X	X	X	X	X	X
Gould.....	Stockton.....	360	KJO				X	X	X	X	X	X	X	X	X	X	X
Radio Den.....	Santa Ana.....	268	KFAW				X		X		X		X		X		X
Nielsen Radio Co.....	Phoenix.....	238	KFCB					X	X		X	X		X	X		
Post-Intelligencer.....	Seattle.....	270	KFJC			X		X		X		X		X		X	
Star Electric.....	Seattle.....	283	KFHR			X	X		X	X		X	X	X	X	X	X
First Pres. Church.....	Seattle.....	360	KTW	X	X												
Northwest Radio.....	Seattle.....	283	KJR			X	X		X	X		X	X	X	X	X	X
Meyer & Frank.....	Portland.....	248	KFEC			X	X	X	X	X	X	X	X	X	X	X	X
Hallock & Watson.....	Portland.....	360	KGG			X	X	X	X	X	X	X	X	X	X	X	X
Pyle & Nichols.....	Denver.....	360	KDZQ		X	X	X	X	X	X	X	X	X	X	X	X	X
Star-Telegram.....	Fort Worth.....	476	WBAP					X		X		X		X		X	
News and Journal.....	Dallas.....	476	WFAA			X	X		X	X		X	X	X	X	X	X
Southern Egr. Exp.....	San Antonio.....	385	WOAI														
Palmer School.....	Davenport.....	481	WOC	X	X	X	X										
Post Dispatch.....	St. Louis.....	546	KSD			X	X	X	X	X	X	X	X	X	X	X	X
Daily News-Fair.....	Chicago.....	448	WMAO					X		X		X		X		X	
Drake Hotel.....	Chicago.....	360	WDAF			X	X	X	X	X	X	X	X	X	X	X	X
Free Press.....	Detroit.....	517	WCX			X	X	X	X	X	X	X	X	X	X	X	X
News.....	Detroit.....	517	WJ	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Star.....	Kansas City.....	411	WDAF	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Crosley Mfg. Co.....	Cincinnati.....	309	WLW			X	X	X	X	X	X	X	X	X	X	X	X
Radio Cor. of Am.....	New York.....	455	WJZ		X	X	X	X	X	X	X	X	X	X	X	X	X
John Wunemaker.....	Philadelphia.....	509	WOO			X	X	X	X	X	X	X	X	X	X	X	X
Federal Tel. Co.....	Buffalo.....	379	WGR			X	X	X	X	X	X	X	X	X	X	X	X
Westinghouse.....	Pittsburg.....	326	KDKA	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Westinghouse.....	Springfield.....	337	WBZ			X	X	X	X	X	X	X	X	X	X	X	X
Willard Battery.....	Cleveland.....	390	WTAM					X	X	X	X	X	X	X	X	X	X
Woodmen of World.....	Omaha.....	526	WOAW	X	X			X	X			X	X	X	X	X	X
Willard Battery.....	Cleveland.....	390	WTAM			X	X			X	X			X	X	X	X

Murdock Radio Head Phones "Standard Since 1914"

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THE DAVEN COMBINED RESISTOR-
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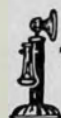
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All Latest Models

6-8 P. M.
PACIFIC TIME

RADIO TIME TABLE

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

STATION	CITY	METERS	CALL	SUN.		MON.		TUES.		WED.		THUR.		FRI.		SAT.	
				6:00-6:30	7:00-7:30	6:00-6:30	7:00-7:30	6:00-6:30	7:00-7:30	6:00-6:30	7:00-7:30	6:00-6:30	7:00-7:30	6:00-6:30	7:00-7:30	6:00-6:30	7:00-7:30
Bible Institute	Los Angeles	360	K J S	X	X												
L. A. Times	Los Angeles	395	K H J		X												
E. C. Anthony	Los Angeles	469	K F I	X	X												
Angelus Temple	Los Angeles	278	K F S G														
Electric Light Supply	Los Angeles	360	K N X														
Echaphone Radio	Long Beach	234	K F O N			X	X		X	X		X	X			X	X
Hefe Bros	San Francisco	423	K P O					X	X		X	X	X				
S. F. Examiner	San Francisco	360	K U O			X	X		X	X		X	X			X	X
Maxwell Electric	Berkeley	278	K A E														
Tribune	Oakland	509	K L X				X		X		X		X				X
General Electric	Oakland	312	K G O				X		X		X		X			X	X
Kimball & Upson	Sacramento	283	K F B K			X	X		X	X		X	X			X	
Fa'lan & Co.	Santa Barbara	360	K F H J			X	X		X	X		X	X			X	
Radio Den	Santa Ana	268	K F A W			X	X		X	X		X	X			X	
Southern Elect.	San Diego	244	K O P T			X	X		X	X		X	X			X	
Nielson Radio Supply	Phoenix	238	K F C B		X		X		X		X		X			X	
McArthur Bros	Phoenix	360	K F A D			X	X		X	X		X	X			X	
Love Elect. Co.	Tacoma	360	K M O			X	X		X	X		X	X			X	
Mullens Elect. Co.	Tacoma	252	K G B					X	X		X		X			X	
Northwest Radio Ser.	Seattle	283	K J R			X	X		X	X		X	X			X	
Excelsior Motor Cycle	Seattle	360	K H O			X	X		X	X		X	X			X	
First Pres. Church	Seattle	360	K T W		X	X			X	X		X	X			X	
Star Electric	Seattle	233	K F H R			X	X		X	X		X	X			X	
State Coll. of Wash.	Pullman	330	K F A E			X	X		X	X		X	X			X	
Oregonian	Portland	492	K G W	X	X	X		X		X		X		X		X	
Hadack & Watson	Portland	360	K G G		X	X											
Meler & Frank	Portland	248	K F E C			X		X		X		X		X		X	
Apple City Radio Club	Hood River	360	K O P			X				X							
Adler's Music Store	Baker, Ore	360	K F O A	X	X	X	X		X	X		X	X			X	
Boise High School	Boise, Ida.	270	K F A U			X		X	X	X		X	X			X	
Bunkerhill-Sullivan Co.	Kellogg, Ida.	360	K F E Y		X			X		X		X	X			X	
Telegram	Salt Lake	360	K D Y L			X	X		X	X		X	X			X	
Reynold's Radio	Denver	360	K L Z			X		X		X		X	X			X	
Western Radio	Denver	360	K F A F			X	X		X	X		X	X			X	
Pyle & Nichols	Denver	360	K Z D Q		X	X											
Fitzsimmons Hospital	Denver	642	A A 3									X	X				
Sparks High School	Sparks, Nev.	226	K F F R														
Westinghouse Elec. Co.	Hastings, Neb.	341	K F K X					X				X					
Star-Telegram	Fort Worth	476	W B A P			X		X	X		X	X	X			X	
News and Journal	Dallas	476	W F A A			X	X	X	X		X	X	X			X	
Palmer School	Davenport	484	W O C		X	X	X	X	X		X	X	X			X	
W. O. W.	Omaha	526	W O A W		X	X		X	X		X	X	X			X	
Daily News-Fair	Chicago	448	W M A Q					X	X		X	X	X			X	
Post Dispatch	St. Louis	546	K S D		X	X	X	X	X		X	X	X			X	
Westinghouse	Chicago	538	K Y W			X	X	X	X		X	X	X			X	
Sweeney School	Kansas City	411	W H B			X	X	X	X		X	X	X			X	
Star	Kansas City	411	W D A F			X	X	X	X		X	X	X			X	
Tribune	Great Falls	360	K D Y S			X	X		X		X		X				
Drake Hotel	Chicago	390	W D A P	X	X												
Crosby Mfg. Co.	Cincinnati	309	W L W			X	X	X	X		X	X	X				
Albertan Pub. Co.	Calgary, Can.	410	C H B C							X	X	X	X				
Detroit Free Press	Detroit	517	W C X					X	X		X	X	X				
Radio Cor. of Am.	New York	455	W J Z	X	X	X	X	X	X		X	X	X			X	
John Wanamaker	Philadelphia	509	W O O			X	X	X	X		X	X	X			X	
Federal Tel. Co.	Buffalo	319	W G R			X	X	X	X		X	X	X			X	
El Buen Tono	Mexico City	425	C Y S					X	X		X	X	X			X	
El Universal	Mexico City	600	C Y L														
Willard Battery	Cleveland	390	W T A M							X	X	X	X			X	

Murdock Radio Head Phones "Standard Since 1914"

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8-10 P. M.
PACIFIC TIME

RADIO TIME TABLE

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

STATION	CITY	METERS	CALL	SUN.		MON.		TUES.		WED.		THUR.		FRI.		SAT.	
				8:00-9:30	9:30-10:00	8:00-9:30	9:30-10:00	8:00-9:30	9:30-10:00	8:00-9:30	9:30-10:00	8:00-9:30	9:30-10:00	8:00-9:30	9:30-10:00	8:00-9:30	9:30-10:00
L. A. Herald	Los Angeles	469	Herald	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Bible Institute	Los Angeles	360	K J S	X	X	X	X	X	X	X	X	X	X	X	X	X	X
L. A. Times	Los Angeles	395	K H J	X	X	X	X	X	X	X	X	X	X	X	X	X	X
L. A. Examiner	Los Angeles	469	Examiner	X	X	X	X	X	X	X	X	X	X	X	X	X	X
E. C. Anthony	Los Angeles	469	K F I	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Angelus Temple	Los Angeles	278	K F S G	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Electric Light Supply	Los Angeles	360	K N X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Echophone Radio	Long Beach	234	K F O N	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Hale Bros.	San Francisco	423	K P O	X	X	X	X	X	X	X	X	X	X	X	X	X	X
S. F. Examiner	San Francisco	360	K U O	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Warner Bros.	San Francisco	360	K L S	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Oakland Tribune	Oakland	509	K L X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Maxwell Electric	Oakland	275	K R E	X	X	X	X	X	X	X	X	X	X	X	X	X	X
General Elec. Co.	Oakland	312	K G O	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Portable Wireless	Stockton	350	K W G	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Herold Lab'y.	San Jose	360	K Q W	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Kimbatt-Upson	Sacramento	283	K F B K	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Gould	Stockton	360	K J Q	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Fallon & Co.	Santa Barbara	360	K F H J	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Southern Elect. Co.	San Diego	244	K D P T	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Kline Bros.	San Luis Obispo	242	K F B E	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Drake Radio	Santa Rosa	234	K F N V	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Univ. of Ariz.	Tucson	350	K F O H	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Nielson Radio Sup. Co.	Phoenix	350	K F C B	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Post-Intelligencer	Seattle	270	K F J C	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Excelsior Motor Co.	Seattle	660	K H Q	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Rhodes Co.	Seattle	455	K F O A	X	X	X	X	X	X	X	X	X	X	X	X	X	X
First Pres. Church	Seattle	380	K T W	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Star Electric	Seattle	282	K F H R	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Mullens Elec.	Tacoma	252	K G B	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Oregonian	Portland	492	K G W	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Hallock & Watson	Portland	360	K G G	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Stubbs Elect.	Portland	360	K G N	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Meier & Frank	Portland	248	K F E C	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Apple City Radio Club	Hood River	360	K Q P	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Pacific Radio Co.	Eugene, Ore.	273	K F A T	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Boise High School	Boise, Ida.	270	K F A U	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Virgin Radio Service	Medford, Ore.	283	K F A Y	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Bunkerhill-Sullivan Co.	Kellogg, Ida.	360	K F E Y	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Reynolds Radio Co.	Denver	360	K L Z	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Pyke & Nichols	Denver	350	K D Z O	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Westinghouse Elec. Co.	Hastings, Neb.	285	K F K X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Star Telegram	Fort Worth	475	W B A P	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Dallas News	Dallas, Tex.	475	W F A A	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Palmer School	Davenport	484	W O C	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Post Dispatch	St. Louis	545	K S D	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Star	Kansas City	411	W O A F	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Woodmen of World	Omaha	526	W O A W	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Westinghouse	Chicago	536	K Y W	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Drake Hotel	Chicago	350	W D A P	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Crosley Mfg. Co.	Cincinnati	303	W L W	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Detroit News	Detroit	517	W W J	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Radio Cor. of Am.	New York	455	W J Z	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Herald	Calgary	420	C F A C	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Federal Tel. Co.	Buffalo	318	W G R	X	X	X	X	X	X	X	X	X	X	X	X	X	X
El Universal	Mexico City	500	C Y L	X	X	X	X	X	X	X	X	X	X	X	X	X	X
El Buen Tono	Mexico City	475	C Y B	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sweeney School	Kansas City	411	W H B	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Edgewater Beach	Chicago	498	W J A Z	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Westinghouse	Springfield	337	W B Z	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Westinghouse	Pittsburg	326	K D K A	X	X	X	X	X	X	X	X	X	X	X	X	X	X

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| 9 WorkRite Marked Binding Posts | 1—.001 mfd. Condenser |
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| 1 Brass Panel Shield | 1—5-ohm Grid Leak |
| | Screws, solder, lugs, etc. |

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PACIFIC TIME

RADIO TIME TABLE

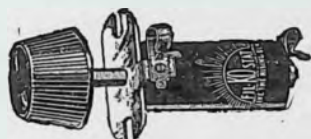
11- 1 Mountain Time
12- 2 Central Time
1- 3 Eastern Time

STATION	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	Los Angeles	395	KH J					X	X	X	X	X	X	X	X	X	X
Post-Intelligencer	Seattle	270	KF J Q					X	X	X	X	X	X	X	X	X	X
Earle C. Anthony	Los Angeles	469	KF I	X	X			X	X	X	X	X	X	X	X	X	X
Northwest Radio	Portland	360	KGN			X	X			X	X	X	X	X	X	X	X
Oregonian	Portland	492	KGW					X	X			X	X	X	X	X	X
W. W. Grant	Calgary	440	CFCN					X	X			X	X	X	X	X	X
Hale Bros.	San Francisco	423	KPO			X	X	X	X	X	X	X	X	X	X	X	X
Herald	Calgary	420	CFAO			X	X			X	X	X	X	X	X	X	X
Pyle & Nichols	Denver	360	KDZO	X	X					X	X	X	X	X	X	X	X
Westinghouse	Chicago	538	KYW							X	X	X	X	X	X	X	X
Sweeney School	Kansas City	411	WHB	X	X					X	X	X	X	X	X	X	X
Drake Hotel	Chicago	360	WDAP					X	X	X	X	X	X	X	X	X	X
Edgewater Beach	Chicago	448	WJAZ					X	X	X	X	X	X	X	X	X	X
Fallon & Co.	Santa Barbara	360	KFHJ					X	X	X	X	X	X	X	X	X	X
General Electric Co.	Oakland	312	KGO					X	X	X	X	X	X	X	X	X	X

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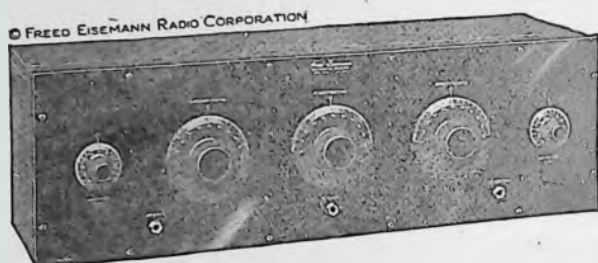
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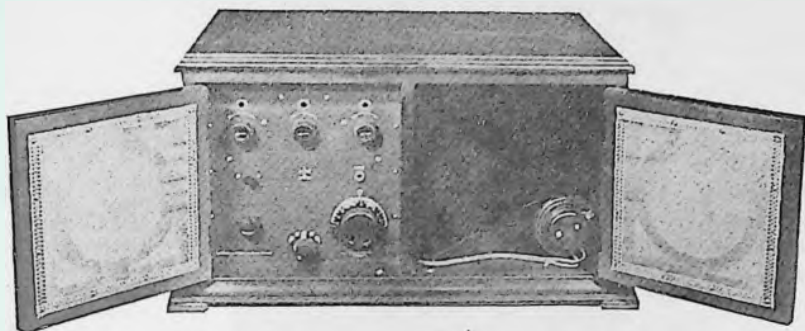
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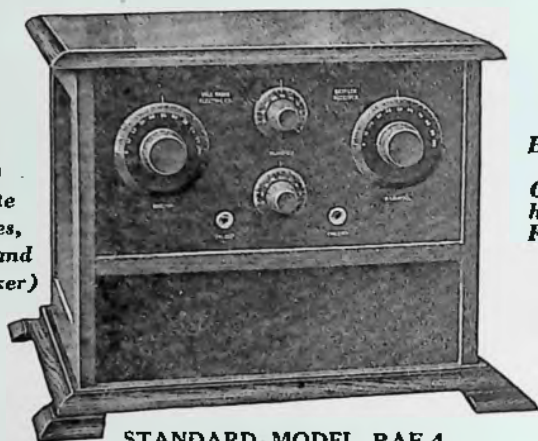
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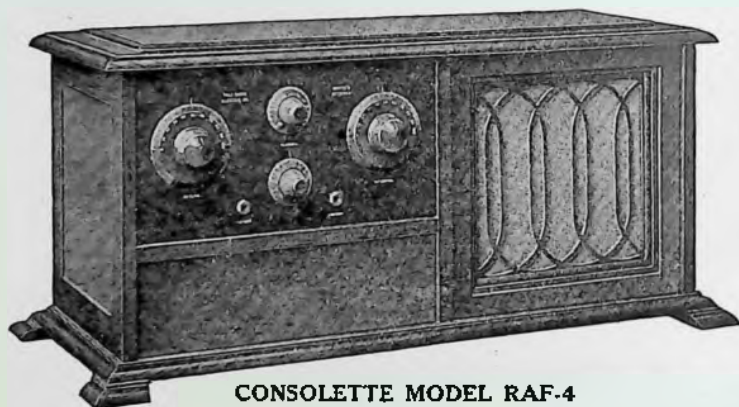
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WEEK COMMENCING SUNDAY, APRIL 20

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

SUNDAY, APRIL 20—

10:00 a. m.

Sermon from KHJ studio by Rev. A. L. Webb, pastor of the University 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.

Program arranged through the courtesy of Mr. Sam Hinds. Floryane Thompson, soprano. Mario Rubini, operatic tenor, accompanied by Carlo Scipia, through the courtesy of the Cheney Shop, Hollywood.

MONDAY, APRIL 21—

12:30 to 1:15 p. m.

Program presenting Elizabeth Carroll Swan, mezzo-soprano. Silent balance of day.

TUESDAY, APRIL 22—

12:30 to 1:15 p. m.

Program presenting White's Californians. Virginia Pearce, soprano, accompanied by Gladys Richardson, through the courtesy of La Parisienne Cosmetic Co.

2:30 to 3:30 p. m.

Program presented through the courtesy of Barker Bros.

6:30 to 7:30 p. m.

Children's program presenting Prof. Walter Sylvester Hertzog, Florence Minott, lyric soprano, accompanied by Doris Chilcott. Weekly visit of the Sandman and Queen Titania. Bedtime story by Uncle John.

8:00 to 10:00 p. m.

Program presented through the courtesy of the Paul G. Hoffman Co.

WEDNESDAY, APRIL 23—

12:30 to 1:15 p. m.

Program presenting Wally Wallenius, tenor.

2:30 to 3:30 p. m.

Program presented through the courtesy of Barker Bros.

6:30 to 7:30 p. m.

Children's program presenting Prof. Walter Sylvester Hertzog. Dick Winslow, juvenile reporter. Baby Muriel MacCormac, screen juvenile. Aaron Blackman, pianist, 7 years old, pupil of Esther Denniston. Bedtime story by Uncle John.

8:00 to 10:00 p. m.

Program presenting the Studebaker Radio Orchestra of Long Beach. Felton Tompkins, monologist. Dr. Mars Baumgardt, lecturer.

THURSDAY, APRIL 24—

12:30 to 1:15 p. m.

Program presenting Helen S. Elworthy, dramatic soprano. Doris Chilcott, pianist. Sylvia Harding, violinist.

2:30 to 3:30 p. m.

Program presented through the courtesy of Barker Bros.

6:30 to 7:00 p. m.

Children's program presenting Prof. Walter Sylvester Hertzog. Jane Badenoch, pianist, 11 years old, and Ruth Badenoch, pianist, 13 years old, pupils of Mrs. Walter M. Reckord. Bernard Berger, reader and impersonator. Onolee Jones, child 'cellist and reader. Bedtime story.

8:00 to 10:00 p. m.

Program presented through the courtesy of the Fitzgerald Music Co.

FRIDAY, APRIL 25—

12:30 to 1:15 p. m.

Program of news items; weather report and music.

2:30 to 3:30 p. m.

Program presented through the courtesy of Barker Bros.

6:30 to 7:30 p. m.

Children's program presenting Richard Headrick, screen juvenile. Prof. Walter Sylvester Hertzog. Bedtime story.

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.

Program presenting Ruth Markell, soprano. A play by the Pasadena Community Broadcaster; Edward Murphey, director. Gladys Terrell, soprano; Sol Cohen, violinist; Mina Hellekson, pianist.

SATURDAY, APRIL 25—

12:30 to 1:15 p. m.

Program presenting E. J. Goins and the Highlanders.

2:30 to 3:30 p. m.

Program presented through the courtesy of Barker Bros.

6:30 to 7:30 p. m.

Children's program presenting Prof. Walter Sylvester Hertzog. Helene Pirie, screen juvenile. Bedtime story by Uncle John. Kathryn Stillwell, soprano.

8:00 to 10:00 p. m.

Program presenting the Mary Christine Albin Trio. Floryane Thompson, soprano.

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 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

Program Detail Anthony Studio (Pacific Time) April 20 to April 26, inclusive
 (Does not include detail of remote control stations)
 (Subject to change)

SUNDAY, APRIL 20—

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.	Concert.
8:00 to 9:00 p. m.	Ambassador Hotel Concert.
10:00 to 11:00 p. m.	Dutch Mill Orchestra.

MONDAY, APRIL 21—

10:00 to 11:00 p. m.	Ambassador-Max Fischer Coconut Grove Orchestra.
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TUESDAY, APRIL 22—

6:45 to 7:30 p. m.	Globe Five Orchestra.
8:00 to 9:00 p. m.	Ambassador-Max Fischer Coconut Grove Orchestra.
10:00 to 11:00 p. m.	Sarah Crosby arranging vocal concert.

WEDNESDAY, APRIL 23—

6:45 to 7:30 p. m.	Nick Harris Detective Stories and concert.
10:00 to 11:00 p. m.	Hollywoodland Community Orchestra.
11:00 to 12:00 p. m.	Ambassador-Max Fischer Coconut Grove Orchestra.

THURSDAY, APRIL 24—

6:45 to 7:30 p. m.	Y. M. C. A. Concert, sales lecture.
8:00 to 9:00 p. m.	Ambassador Hotel Concert.
10:00 to 11:00 p. m.	Concert arranged by Birkel Music Co.

FRIDAY, APRIL 25—

10:00 to 11:00 p. m.	Vocal and instrumental concert arranged by Myra Belle Vickers.
11:00 to 12:00 p. m.	Ambassador-Max Fischer Coconut Grove Orchestra.

SATURDAY, APRIL 26—

6:45 to 7:30 p. m.	Ruth May Shaffner, arranging vocal concert.
8:00 to 9:00 p. m.	Oscar Seiling, violinist, arranging program.
10:00 to 11:00 p. m.	Popular concert.
11:00 to 12:00 p. m.	Ambassador-Max Fischer Coconut Grove Orchestra.

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WEEK OF APRIL 20-26

SUNDAY—

Program presented by Kremer and Walker.

MONDAY—

5:15 p. m. News items.
9:00 to 10:00 p. m. Concert.

TUESDAY—

5:15 p. m. News items.
9:00 to 10:00 p. m. Concert.

WEDNESDAY—

5:15 p. m. News items.
9:00 to 10:00 p. m. Concert.

THURSDAY—

5:15 p. m. News items.
9:00 to 10:00 p. m. Concert.

FRIDAY—

5:15 p. m. News items.
9:00 to 10:00 p. m. Concert.

SATURDAY—

5:15 p. m. News items.
9:00 to 10:00 p. m. Concert.

Evening Herald, Los Angeles

Phone METropolitan 5100

Evening Herald Programs Via Radio Central Station KFI

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

MONDAY, APRIL 21—

8:00 to 9:00 p. m. Evening Herald Radiolians, popular dance music. Cora Knapp and Prof. Ridderhoff.

WEDNESDAY, APRIL 23—

8:00 to 9:00 p. m. The Lawrence Lambert Concert Company. Direction Harry Nixon, Manager. Oscar Belmont, phenomenal boy pianist.

FRIDAY, APRIL 25—

8:00 to 9:00 p. m. Concert program presented by Barker Brothers.

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SUNDAY, APRIL 20—

10:45 to 12:30 noon.

Regular Services of the Church of the Open Door, including sermon by Dr. R. A. Torrey. Mrs. Irvin S. Fallis, soprano; Mr. Paul S. McConnell, organist.

6:00 to 6:45 p. m.

Radio Vesper Service with sermon by Rev. Wm. H. Pike. Miss Paulene Plummer, organist. Vocal selections.

8:00 p. m.

Sermon by Dr. R. A. Torrey. Mr. C. M. Brooks, baritone; Mr. Paul S. McConnell, organist.

TUESDAY, APRIL 22—

8:00 to 9:00 p. m.

Special Easter program, arranged by courtesy of Mr. James Forshaw, choir director, El Monte Presbyterian Church, El Monte, Cal.

THURSDAY, APRIL 24—

8:00 to 9:00 p. m.

Program given by the Salvation Army Band of Los Angeles (20 pieces), assisted by Mr. Harold C. Boyd, baritone; Mr. Robert Fields, cornetist, and Miss Esther Elder, organist. Band selections: "Soldiers of Christ," "Adeste Fidelis," "Redemption," "Bridgewater March," "American Melodies."

K F S G—Angelus Temple—278 Meters

Echo Park, Los Angeles.

AIMEE SEMPLE McPHERSON, Evangelist Pastor

Gladwyn N. Nichols, Announcer.

Essie Binkley Locy, Hostess.

K. G. Ormiston, Operator.

SUNDAY, APRIL 20—

10:30 to 12:30 p. m.

Easter Chimes—great organ, Esther Fricke Green. Ada Lantz, soprano, in Eastertide Solo. "Easter Message," "Christ Is Risen," Aimee Semple McPherson.

2:30 to 4:30 p. m.

Angelus Temple Service; Choir; Band; Musical Features. "Go and Tell," "The Baptism of the Holy Spirit," Aimee Semple McPherson.

7:00 to 7:30 p. m.

Ada Lantz, soprano; James R. Hood, baritone; Dorothy Sauter, Cellist; Abrasha Orlikoff, concert violinist. Cantata by choir.

8:00 to 10:00 p. m.

Revival Rally, Aimee Semple McPherson.

TUESDAY, APRIL 22—

3:30 to 4:30 p. m.

Organ Recital of well known and beloved "Melodies" by Esther Fricke Green, assisted by Alfred C. Green, lyric tenor.

4:30 to 5:30 p. m.

Ada Lantz, soprano; Mrs. Eva Jennison, evangelistic singer; John Walker, tenor; Selma Johanson, Swedish singer and accordionist.

6:30 to 7:30 p. m.

"Kozy Hour," Inez Lasley, soprano; Paul DeRonde, age 1b, marimba soloist; Grace Waldron, soprano; "Fireside Story."

8:00 to 9:00 p. m.

Great Auditorium Service.

9:00 to 10:00 p. m.

The Swannee Jubilee Singers; Margaret Knox McGraw, contralto; "Taps"—Aimee Semple McPherson. Roy Reid Brignall, accompanist.

WEDNESDAY, APRIL 23—

2:30 to 4:30 p. m.

Auditorium Service—Congregational singing and organ.

6:30 to 7:30 p. m.

"Kozy Hour"—"Mothers Story"; Mr. A. J. W. Galbraith, basso; Francis Floto, bird whistler; Reading—Frances Henking; Essie Binkley Locy, cornetist; Annie Lacey, child soprano. Ruth Thomas accompanist.

THURSDAY, APRIL 24—

3:30 to 4:30 p. m.

Organ Recital—B. Earnest Ballard.

4:30 to 5:30 p. m.

Margaret Kennedy, dramatic soprano; Sarah Karcher, violinist; Mrs. W. C. Corning, soprano.

6:30 to 7:30 p. m.

"Kozy Hour"; "Sallie's Cookies," by Ruth Clayton; Blanche Clay, soprano; Bessie Lincoln, piano solo; Mr. S. T. Lashbrook, tenor; "Talk on Boy Scout," by Thomas B. Brown, Deputy Scout Commissioner; "Mother's Story."

8:00 to 9:00 p. m.

"Splashing Waters"—Auditorium Service.

9:00 to 10:00 p. m.

Gray Studio Program furnished by Wm. Butts Music Co., featuring Carl Edward Hatch and associates.

FRIDAY, APRIL 25—

3:30 to 4:00 p. m.

Organ Recital, Historical Church Music—Roy Reid Brignall.

4:00 to 5:30 p. m.

Madeline Gilliland "The Happy Song Girl"; Mildred Wetkawska, violinist; Gladwyn N. Nichols, cornetist; Ruth Russell, soprano.

6:30 to 7:30 p. m.

"Kozy Hour"; "Mother's Story"; Anne Burr Jecker, soprano; Dwight Sankey Tock, baritone; Roy Reid Brignall, accompanist.

8:00 to 9:00 p. m.

Crusaders; address, "Christ the Ideal Citizen," by Judge Carlos S. Hardy, Justice Superior Court.

9:00 to 10:00 p. m.

Gray Studio Program: Margaret Knox McGraw, contralto; L. F. Peckham, baritone; Madeline Gilliland "The Happy Song Girl"; Angelus Temple Silver Band.

10:00 to 10:30 p. m.

Organ Recital—Roy Reid Brignall.

SATURDAY, APRIL 26—

3:30 to 5:00 p. m.

Cheery Words for Shut-ins—Ruth Clayton; "Inglewood Trio"; Elsie Noah, piano; Blanche Noah, violin, and Rita Bell, cello.

5:00 to 5:30 p. m.

Organ Recital "German Composers"—Roy Reid Brignall.

6:30 to 7:30 p. m.

Gertrude Wilding, child soprano; James R. Hood, baritone; Frances Henking, reading; International Sunday School Lesson pre-view.

Jene Kennedy, boy soprano.

K N X—California Theatre Radiophone—360 Meters

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WEDNESDAY, APRIL 23—7:00 p. m.

THURSDAY, APRIL 24—2:50 p. m.

FRIDAY, APRIL 25—9:15 p. m.

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

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6:00 to 6:45 p. m. Children's period; Tijuana race results; late news items.

TUESDAY—

1:30 to 2:30 p. m. Late Victor releases.

6:00 to 6:45 p. m. Children's period; Tijuana race results; late news items.

WEDNESDAY—

1:30 to 2:30 p. m. Victor classic program.

8:00 to 10:00 p. m. De luxe program.

THURSDAY—

1:30 to 2:30 p. m. Special dance program.

6:00 to 6:45 p. m. Children's period; Tijuana race results; late news items.

FRIDAY—

1:30 to 2:30 p. m. Victor popular releases.

6:00 to 6:45 p. m. Children's period; Tijuana race results; late news items.

SATURDAY—

1:30 to 2:30 p. m. Dance program.

6:00 to 6:45 p. m. Children's period; Tijuana race results; late news items.

SUNDAY—

10:00 to 11:00 a. m. Sacred Services.

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(Pacific Time)

WEEK OF APRIL 20, 1924

SUNDAY, APRIL 20—

3:30 p. m.

MONDAY, APRIL 21—

1:30 p. m.

3:00 p. m.

4:00 to 5:30 p. m.

6:45 p. m.

TUESDAY, APRIL 22—

1:30 p. m.

4:00 to 5:30 p. m.

6:45 p. m.

8:00 p. m. Address,

10:00 p. m. to 1:00 a. m.

WEDNESDAY, APRIL 23—

1:30 p. m.

3:00 p. m.

4:00 to 5:30 p. m.

6:45 p. m.

THURSDAY, APRIL 24—

1:30 p. m.

4:00 to 5:30 p. m.

6:45 p. m.

8:00 p. m.

FRIDAY, APRIL 25—

1:30 p. m.

3:00 p. m.

4:00 to 5:30 p. m.

6:45 p. m.

SATURDAY, APRIL 26—

12:30 noon

4:00 to 5:30 p. m.

8:00 p. m.

10:00 p. m. to 1:00 a. m.

Concert by KGO Little Symphony Orchestra and soloists.

New York Stock Exchange and U. S. Weather Bureau reports. Short musical program. Address by Mrs. W. J. Hayes on the subject, "The Parent-Teacher Association in Small Towns and Rural Communities."

Music by the St. Francis Hotel Dance Orchestra, San Francisco, Henry Halstead, leader.

Final reading, stock exchange and weather reports, and news items.

New York Stock Exchange and U. S. Weather Bureau reports. Music by the Concert Orchestra of the St. Francis Hotel, San Francisco, Fermin Cardona conducting.

Final reading, stock exchange and weather reports, and news items. "The Joys of Spring," Otto Riehl. Musical program.

Music by the St. Francis Hotel Dance Orchestra, San Francisco, Henry Halstead, leader.

New York Stock Exchange and U. S. Weather Bureau reports. Short musical program. Address by John Collier on "What the Pueblo Indian Has to Contribute to Our Knowledge of the Civic and Ethical Training of Youth."

Music by the Concert Orchestra of the St. Francis Hotel, San Francisco, Fermin Cardona conducting.

Final reading, stock exchange and weather reports, and news items.

New York Stock Exchange and U. S. Weather Bureau reports. Music by the Concert Orchestra of the St. Francis Hotel, San Francisco, Fermin Cardona conducting.

Final reading, stock exchange and weather reports, and news items. Magnavox Company co-operating, with Ernie Milliken's Jazz Orchestra and other artists.

New York Stock Exchange and U. S. Weather Bureau reports. Short musical program. Also, third in series of studies on "Our Poets of Today," by Wilda Wilson Church.

Music by the Concert Orchestra of the St. Francis Hotel, San Francisco, Fermin Cardona conducting.

Final reading, stock exchange and weather reports, and news items.

New York Stock Exchange and U. S. Weather Bureau reports. Music by the Concert Orchestra of the St. Francis Hotel, San Francisco, Fermin Cardona conducting.

University Christian Church Orchestra, Berkeley, and vocalists.

Music by the St. Francis Hotel Dance Orchestra, San Francisco, Henry Halstead, leader.

TUESDAY, APRIL 22, 8:00 P. M.

Instrumental Selections.....Paradise Hawaiian Trio

Soprano Solo—I hear a Thrush at Eve (Cadman).....Geraldine Jackson (Courtesy Homer Henley)

Piano Duet—Dance Macabre (Saint-Saens) (After a poem by Henri Cazalis).....William and Bonita Keasbey

Reading—"The Forgotten Actor".....Richard Mill

Vocal Selection—It Was a Lover and His Lass (Walthew).....The Rose Florence Ladies' Quartet

An Original Paper—"The Joys of Spring".....Otto Riehl

Baritone Solos—(a) Shipmates o' Mine (Sanderson); (b) My Jacqueminot (Waldo).....Leslie H. Jackson (Courtesy of Homer Henley)

Piano Solos—(a) Rhapsodie in G Minor (Brahms); (b) Love Song (Paderewski).....Norma MacPherson (Courtesy of Loraine Stebinger)

Vocal Selection—Barcarole (Offenbach).....Ladies' Ensemble from Studio of Rose Florence

Instrumental Selections.....Paradise Hawaiian Trio

Vocal Selections—O del mio dolce ardor (Gluck).....Reva T. Ker

Vaghiissima Sembra (Donaudy).....Irene Carroll

Nymphs and Shepherds (Purcell).....Janie Johnston

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- Ritorna (Aida) (Verdi)..... Emily Beal
 From the Studio of Rose Florence—Helen McGlory, Accompanist
 Piano Duet—A la bien aimee (Eduard Schuett)..... William and Bonita Keasbey
 Three Spanish Songs—(a) Preguntale a las Estrellas; (b) Me Gustan Todos; (c) Clavelitos..... Leonore Keithley (Courtesy of Rose Florence)
 Instrumental Selections..... Paradise Hawaiian Trio
 Baritone Solos—(a) Until (Sanderson); (b) There'll Never Be One Like You (Fancher)..... Leslie H. Jackson (Courtesy of Homer Henley)
 Two Finish Songs—(a) Lullaby; (b) Since You Left Me..... Martha Jalava (Courtesy of Rose Florence)
 Soprano Solos—(a) I Heard a Cry (Fischer); (b) When Song Is Sweet (San Souci)..... Geraldine Jackson (Courtesy of Homer Henley)
 Vocal Selection—The Gypsies (Schumann)..... The Rose Florence Ladies' Ensemble
 Irma H. Vogt, Accompanist
 Instrumental Selections..... Paradise Hawaiian Trio

THURSDAY, APRIL 24, 8:00 P. M.

- Program given with the co-operation of The Magnovox Company, Oakland, California
 Instrumental Selections..... Ernie Milliken's Jazz Orchestra
 Address—"The Future of Radio"..... Herbert E. Metcalf of The Magnovox Co., Oakland, Calif.
 Soprano Solos—(a) The Cuckoo (Lehmann); (b) Believe Me If All Those Endearing Young Charms (Moore)..... Miriam Sellander
 Piano Solos..... Helen Merchant
 Tenor Solo—Sleep Little Baby of Mine (Dennee)..... Richard A. Brown
 Instrumental Selections..... Ernie Milliken's Jazz Orchestra
 Address—"Radio Engineering"..... Don Lippincott of The Magnovox Co., Oakland, Calif.
 Contralto Solos—(a) The Message (Caverly); (b) A Song of Gold (Metcalf)..... Elise Banta Crane
 Accordion Solos..... Max Schmidt
 Bass Solos—(a) The Arrow and the Song (Pinsuti); (b) Drink to Me Only (Old English)..... Harry E. Fossey
 Address—"Business Philosophy"..... Coleman Cox
 Soprano Solo—Care Selve (Atalanta) (Handel)..... Miriam Sellander
 Instrumental Selections..... Ernie Milliken's Jazz Orchestra
 Tenor Solo—Sweet Genevieve (Tucker)..... Richard A. Brown
 Piano Solos..... Helen Merchant
 Accordion Solos..... Max Schmidt
 Contralto Solos—(a) Evening (Ring); (b) Sweet as Tipperary (Fisher)..... Elise Banta Crane
 Instrumental Selections..... Ernie Milliken's Jazz Orchestra

SATURDAY, APRIL 26, 8:00 P. M.

- Feature numbers furnished by the University Christian Church Orchestra of Berkeley, Calif.
 Harold Matthews, Director
 Instrumental Selection—Coronation March from "Le Prophete" (Meyerbeer)..... University Christian Church Orchestra
 Mezzo-Soprano Solo—Nuit resplendissante (from Cinq-Mars) (Gounod)..... Daisy O'Brien
 With orchestral accompaniment
 Violin Solo—La Capricieuse (Elgar)..... Mme. Swartfager, with orchestral accompaniment
 Instrumental Selection—Fest Overture (Leutner)..... University Christian Church Orchestra
 Mezzo-Soprano Solo—Song of the Robin Woman (from Shanewis) (Cadman)..... Daisy O'Brien
 Mrs. J. H. Reed, Accompanist
 Instrumental Selection—Angelus (from Scenes Pittoresques) (Massenet)..... University Christian Church Orchestra
 Vocal Duet—O for the Wings of a Dove..... Georgia Carpenter, Soprano; Daisy O'Brien, Mezzo-Soprano
 Instrumental Selection—Nocturne (from Midsummer Night's Dream) (Mendelssohn)..... University Christian Church Orchestra
 Violin Solo—Souvenir (Drdla)..... Madam Swartfager, with orchestral accompaniment
 Mezzo-Soprano Solo—The Open Road (Ross)..... Daisy O'Brien; Mrs. J. H. Reed, Accompanist
 Instrumental Selection—The Sea and Sinbad's Ship (first movement of "Scheherazade") (Rimsky-Korsakov)..... University Christian Church Orchestra
 Violin Solo—Serenade (Pierne)..... Madam Swartfager, with orchestral accompaniment
 Instrumental Selection—Wedding of the Wings (Hall)..... University Christian Church Orchestra

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FOR WEEK BEGINNING APRIL 20

SUNDAY, APRIL 20—

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

MONDAY, APRIL 21—

7:00 to 7:30 p. m. News items; United States Weather Bureau report; market and financial summary; garden hints.

8:00 to 10:00 p. m. Program by the Radio Club of the University of California, broadcast from Stephen's Union Hall, on the campus over private leased wires through KLX: (1) News by A. S. U. C. Publicity Bureau; (2) piano solos by Miss Edith L. Jones, '26; (3) readings from Kipling, by Prof. Frederick M. Blanchard of the public speaking department; (4) dance music.

TUESDAY, APRIL 22—

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

7:00 to 7:30 p. m. News items; United States Weather Bureau bulletin; market and financial news; garden hints.

WEDNESDAY, APRIL 23—

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

7:00 to 7:30 p. m. News items; United States Weather Bureau bulletin; market and financial news; garden hints.

8:00 to 10:00 p. m. Studio program, under direction of Walter Horace Bundy. 1. Selections by Sunset Club (mixed chorus)—(a) Italian Beloved (Borgia); (b) Garden Scene from "Faust." 2. Orchestra selections. 3. Vocal solo by Raymond Ramsey, Perfect day (Bond). 4. Ladies' Trio—Mrs. Hampel, Misses Hammell and Clevenger—(a) Old Uncle Moon (Scott); (b) Angel Serenade (Braga) (Violin obligato by Lee Mack). 5. Selections by Sunset Club—(a) Sunrise and You; (b) One Sweet Day (violin accompaniment by Martin Thornton). 6. Orchestra selections. 7. Duet by Misses Hammell and Clevenger—Barcarolle from "Tales of Hoffmann." 8. Saxophone duet by Messrs. Roe and Fournier—Somewhere a Voice Is Calling. 9. Piano solo by H. D. B. Sole—selected. 10. Duet by Messrs. Cereilli and Lindquist—Absent (Metcalf). 11. Orchestra selections. 12. Vocal duet by Misses Dolly and Thelma Jones.

THURSDAY, APRIL 24—

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

7:00 to 7:30 p. m. News items; United States Weather Bureau bulletin; market and financial news; garden hints.

FRIDAY—

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

7:00 to 7:30 p. m. News items; United States Weather Bureau bulletin; financial and market summary; garden hints.

8:00 to 10:00 p. m. Studio program: 1. Vocal solos by Jeanne Eubank Edwards, soprano, accompanied at the piano by Nadine Shepherd—(a) Birthday (Woodman); (b) Dawn (Curran). 2. Instrumental selections. 3. Vocal solos by Jeanne Eubank Edwards, soprano; Nadine Shepherd at the piano—(a) Were My Songs With Wings Provided (Hahn); (b) My Heart at Thy Sweet Voice, from "Samson and Delilah." 4. Instrumental selection. 5. The Belmont Trio—Miss Matilda Stross, dramatic soprano; E. E. Lichtig, baritone; Miss Ethel Irwin, violinist; J. C. Tripp, accompanist—(a) Soprano solos by Miss Stross—Yesterday and Today (Spross); Nocturne, (Curran). (b) violin solos by Miss Irwin—Meditation, from "Thais" (Massenet); Mighty Lak a Rose (Nevin).

SATURDAY, APRIL 26—

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

7:00 to 7:30 p. m. News items; United States Weather Bureau report; garden hints.

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ADA MORGAN O'BRIEN, Program Manager

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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—

Silent 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.

K F A E—State College of Washington—330 Meters

(State College of Washington, Pullman, Wash. Miss Alice L. Webb, News Editor.)

MONDAY, APRIL 21—

7:30 p. m. Agricultural Engineering talk, Prof. C. C. Johnson; "The Peace Movement to 1914," Prof. C. H. Woody; "Cow Testing and Its Value," Dan G. Magruder; Contralto song recital, Mrs. Laverne Askin Kimbrough; Piano solos, Mrs. Ruth Bradley Keiser.

WEDNESDAY, APRIL 23—

7:30 p. m. Animal Husbandry Talk, Prof. Richard T. Smith; "The League of Nations—What Is It?", Prof. Carl Mauelshagen; "Keeping Tab on Farm Costs," R. N. Miller; Piano solos, Miss Frances Bates, Greenacres; Violin solos, William Just, Ritzville; Women's Collegiate Orchestra.

FRIDAY, APRIL 25—

7:30 p. m. "The League of Nations—Its Achievements and Failures," Prof. N. J. Alken; Agricultural Talk; "Treatment of Foul Brood in Bees," B. A. Slocum, apiary specialist; Mezzo-contralto solos, Miss Mildred Smalling, Donald; Cello solos, Vincent Hiden, Rochester; piano numbers; other instrumental selections.

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CARL E. HAYMOND, Program Announcer

MONDAY, APRIL 21—

8:30 p. m. Pacific States Electric Company of Seattle giving a special program of dance music presented by Bab's B. B. Girls Orchestra; Margaret Dicken, leader.

WEDNESDAY, APRIL 23—

8:30 p. m. The Sunset Electric Company of Seattle, giving a special program of vocal music presented by Prof. Karl Schwerdtfeger, prominent voice instructor. An instructive talk on "Automotive Ignition" will be given by a representative of the Sunset Electric Co.

FRIDAY, APRIL 25—

8:30 p. m. The Seattle Chamber of Commerce, presenting a special program of vocal and instrumental music, and talks of an instructive nature.



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K G W—The Morning Oregonian—492 Meters

PORTLAND, OREGON
(PACIFIC TIME)

PROGRAM FOR WEEK APRIL 20 TO APRIL 26, 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 20—

- 6:00 p. m. Church services by First Presbyterian Church, Rev. Harold Leonard Bowman, pastor.
7:00 p. m. George Olsen's concert orchestra in dinner program.
8:00 p. m. "Seven Last Words of Christ," by St. Mary's Cathedral Choir.

MONDAY, APRIL 21—

- 3:30 p. m. Literary program by Portland Library Association.
7:00 p. m. Talk by Florence Holmes Gerke of the City Park Bureau.
8:00 p. m. Joint harp recital by Ruth Lorraine Close and Helen Martin.
9:30 p. m. Musical program by Portland Civic Music Club.

TUESDAY, APRIL 22—

- 11:15 a. m. Market Basket.
12:30 p. m. Concert by Civic Music 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 23—

- 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.
7:00 p. m. Forest Protection Week Talk.
8:00 p. m. Orchestra concert by Ladies Columbia Concert 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, APRIL 24—

- 11:15 a. m. Window Shopping.
12:30 p. m. Concert.
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.

FRIDAY, APRIL 25—

- 11:15 a. m. Market Basket.
12:30 p. m. Program by Peck Holton's Orchestra of Christiansen's Hall.
3:30 p. m. Lecture by Esther B. Cooley, Clothing Expert of Extension Service, Oregon Agricultural College.
7:00 p. m. Forest Protection Week Talk.
8:30 p. m. Silent to 10:30 p. m.
10:30 p. m. Hoot Owls.

SATURDAY, APRIL 26—

- 3:30 p. m. Children's program. Forest fire story by Aunt Nell.
10:00 p. m. Weather forecast and dance music by George Olsen's Metropolitan Orchestra of Hotel Portland (2 hours).

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

(PACIFIC TIME) DALLAS, TEXAS

MONDAY, APRIL 21—

10:30 to 11:00 a. m.

(San Jacinto Day in Texas)

Address, Prof. J. D. Boon, Southern Methodist University, department of astronomy, on "Practical Astronomy."

Hugh Slocum and his dancing orchestra.

TUESDAY, APRIL 22—

6:30 to 7:30 p. m.

10:30 to 11:00 a. m.

Address, DeWitt McMurray, editor The Semi-Weekly Farm News, in a medley of humor, pathos and wisdom.

Musical program presenting Mrs. Anna Ledford in piano and piano-logue of popular numbers.

G. Haydn Jones and artists in musical recital.

WEDNESDAY, APRIL 23—

9:00 to 10:00 p. m.

10:30 to 11:00 a. m.

Musical program. Station WFAA will be silent for remainder of the day.

THURSDAY, APRIL 24—

10:30 to 11:00 a. m.

Address, Epps G. Knight, pioneer business man, on "As Dallas Grows."

4:45 to 5:00 p. m.

Boy Scout program, H. W. Wester, scout executive.

6:30 to 7:30 p. m.

Musical recital by the Wednesday Morning Choral Club.

9:00 to 10:00 p. m.

Melrose Orchestra in popular dance music recital.

FRIDAY, APRIL 25—

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.

4:45 to 5:00 p. m.

Address on "Wonders of Alaska."

6:30 to 7:30 p. m.

Recital by W. A. Green Company Choral Club, Earle D. Behrends, director.

SATURDAY, APRIL 26—

10:30 to 11:00 a. m.

Address, Dr. Ellis W. Shuler, department of geology, Southern Methodist University, in "Earth History in Rocks."

6:30 to 7:30 p. m.

Piano recital, Prof. Julius A. Jahn, one of ten pianists to be in massed piano recital on May 1.

9:00 to 10:00 p. m.

Adolphus Hotel Orchestra, Lawrence Morrell, director, in dance music broadcast from the Junior Ballroom of the Adolphus.

SUNDAY, APRIL 27—

4:00 to 5:00 p. m.

Radio Bible Class, 9,000 enrolled, Dr. William M. Anderson Jr., pastor First Presbyterian Church, teacher; Bible study and Gospel song.

TIMMONS TALKERS

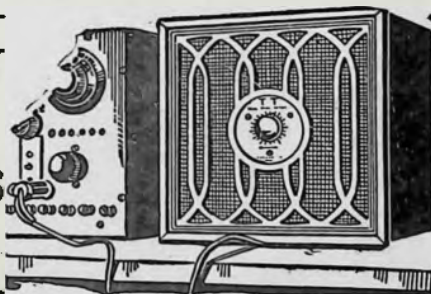
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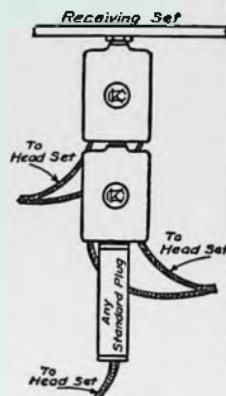
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WOC—Palmer School of Chiropractic—484 Meters

Davenport, Iowa—Pacific Time

SUNDAY, APRIL 20—

- 5:00 p. m. Organ recital from the B. J. Palmer residence; Erwin Swindell, organist.
- 5:30 p. m. Sport news.
- 6:00 p. m. Church service—Very Rev. Marmaduke Hare, Dean of Trinity Episcopal Cathedral, Davenport, Iowa.
- 7:30 p. m. Musical program (one and one-half hours)—The Palmer School Radio Orchestra, Erwin Swindell, conductor. Margaret Frank, soprano; Erwin Holbrook, baritone.

MONDAY, APRIL 21—

- 5:00 p. m. Educational lecture, under the auspices of the Masonic Service Association. Subject, "Business Ethics," by Henry S. Nollen, president of Equitable Life Insurance Co., Des Moines, Iowa.
- 6:00 p. m. Musical program. Program by a group of artists from Clinton, Iowa, directed by Harry Yeazelle Mercer.
- 8:00 p. m. Musical program. Program by Methodist Episcopal Church choir of Kewanee, Illinois.

TUESDAY, APRIL 22—

No broadcasting after 4 p. m. Silent night for WOC.

WEDNESDAY, APRIL 23—

- 5:00 p. m. Educational talk, "Beautifying the Home Grounds," by J. H. Paarmann, curator, Davenport Academy of Sciences.
- 6:00 p. m. Musical program (one hour). Program by Presbyterian Church Orchestra, of Fulton, Illinois.

THURSDAY, APRIL 24—

- 5:00 p. m. Educational lecture, "The History and Aim of Odd Fellowship," by Justin Washburn, county superintendent of schools, Rock Island County, Illinois.
- 7:00 p. m. Orchestra program (one hour)—The Palmer School Radio Orchestra, Erwin Swindell, conductor. Featuring popular selections released through the National Association of Broadcasters, of which WOC is a member. V. B. Rochte, baritone soloist.

FRIDAY, APRIL 25—

- 6:00 p. m. Musical program (one hour)—Girls' Glee Club of Buffton College, Buffton, Ohio.
- 7:00 p. m. Weekly Tourists' Road Bulletin, as compiled by Touring Bureau, Davenport Chamber of Commerce.

SATURDAY, APRIL 26—

- 7:00 p. m. Orchestra program (one hour)—The Palmer School Radio Orchestra, Erwin Swindell, conductor. Featuring popular selections released through the National Association of Broadcasters, of which WOC is a member. V. B. Rochte, baritone soloist.

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Open Evenings

Los Angeles

KYW—560 Kilocycles (536 meters), Westinghouse, Chicago

FOR WEEK OF APRIL 20 TO APRIL 27, 1924

KYW, "The World Crier," will broadcast the latest news of the world every half hour during the twenty-four. This service is furnished from 5 a. m. to 5 p. m. by the Chicago Evening American, International News Service and Metropolitan News Service. 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.

SUNDAY, APRIL 20—

- 9:00 a. m. Central church service broadcast from Orchestra Hall, Chicago. Dr. F. F. Shannon, pastor. Musical program under the direction of Daniel Frotheroe.
- 12:30 p. m. Studio chapel service given under the direction of the Chicago Church Federation. The speaker will be announced by radiophone.
- 5:00 p. m. Preliminary service of the Chicago Sunday Evening Club, boardcast from Orchestra Hall, Chicago.
- 6:00 p. m. Regular meeting of the Chicago Sunday Evening Club. The speaker of the evening will be announced by radiophone. Special musical program will be given under the direction of Edgar Nelson.

MONDAY, APRIL 21—

- 4:45 p. m. Children's Bedtime Story.

TUESDAY, APRIL 22—

- 12:35 p. m. Studio program.
- 2:00 p. m. "Bringing the World to America," furnished by the editor of "Our World."
- 4:02 p. m. News, financial and final market furnished by the Union Trust Co., Chicago Journal of Commerce and U. S. Dept of Agriculture.
- 4:18 p. m. "Safety First" talk by Mrs. Elkin of Chicago Motor Club.
- 4:33 p. m. Talk by Rev. D. J. McHugh, DePaul University, Chicago.
- 4:45 p. m. Children's Bedtime Story told by "Uncle Bob," also known as Walter Wilson.
- 5:00 p. m. Dinner concert broadcast from the Congress Hotel, Chicago. Joska DeBabary's Orchestra playing in the Pompeian Room. Clyde Doerr's Orchestra playing in the Louis XVI Room. Poska DeBabary's orchestra playing in the Pompeian Room.
- 6:00 p. m. Musical program furnished through the courtesy of the following artists: Susan Marbach, soprano; George Marbach, tenor; Louis Puppilo, violinist; Alice Phillips, accompanist; George Horne, baritone; Sallie Menkes, accompanist.
- 6:20 p. m. American Farm Bureau Federation program. The speakers of the evening will be: Ellis McFarland, secretary, Percheron Society of America, whose subject will be "The Farm Horse Situation"; L. A. Rumsey, whose subject will be announced by radiophone.

WEDNESDAY, APRIL 23—

- 9:35 a. m. Table talk by Mrs. Anna J. Peterson of Peoples Gas Company.
- 4:00 to 12:00 p. m. Spanish Lesson by Prof. A. A. Braschi. News, financial and final markets furnished by the Union Trust Co., Chicago Journal of Commerce and U. S. Department of Agriculture. Children's Bedtime Story. Musical program: Margaret Norum, soprano; Sallie Menkes, accompanist; Frank D. Greif, tenor; Martha Greif, accompanist; the Tripoli Trio; Elsie Clement, pianist. Detailed program will be announced by radiophone. "Good Road Talk" furnished by the Chicago Motor Club. Program furnished under the auspices of the Union Trust Company. Book reviews by Llewellyn Jones, literary editor of the Chicago Evening Post. Midnight Revue.

THURSDAY, APRIL 24—

- 12:35 to 1:30 p. m. Studio program.
- 4:02 to 7:15 p. m. News, financial and final markets furnished by the Union Trust Co., Chicago Journal of Commerce and U. S. Department of Agriculture. Talk—speaker will be announced by radiophone. Children's Bedtime Story. Dinner concert broadcast from Congress Hotel, Chicago. Talk "Sports," given by Mr. Leo Fisher of the Chicago Evening American staff. Talk on "Finance and Markets," given by Mr. Thos. 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. Musical program: Miss Likura Giermann, soprano; Sallie Menkes, accompanist; Edith Stone, pianist; the Valentino Inn Orchestra.

FRIDAY, APRIL 25—

- 9:35 a. m. Table talk by Mrs. Anna J. Peterson of Peoples Gas Co.
- 10:30 a. m. "The Progress of the World," furnished by Review of Reviews.
- 4:00 to 12:00 p. m. Spanish Lesson by Prof. A. A. Braschi. News, financial and final market furnished by the Union Trust Co., Chicago Journal of Commerce and U. S. Department of Agriculture. Dinner concert broadcast from the Congress Hotel. Program furnished by the American Farm Bureau. Midnight Revue.

SATURDAY, APRIL 26—

- 9:35 a. m. Table talk by Mrs. Anna J. Peterson of Peoples Gas Co.
- 4:02 to 11:00 p. m. News, financial and final markets furnished by the Union Trust Co., Chicago Journal of Commerce and U. S. Department of Agriculture. Talk—speaker will be announced by radiophone. Children's Bedtime Story. Dinner concert from the Congress Hotel, Chicago. Musical program: Alice McMahon, contralto; Mac and Mike, Jubilee Gospel Singers; Delphine Sames, soprano; Sallie Menkes, accompanist; Mary Golden, reader. Program will be

WTAM—Willard Storage Battery Co.—390 Meters

CLEVELAND, OHIO

WEDNESDAY, APRIL 23, 1924—5 P. M. PACIFIC STANDARD TIME

- If I Were a King (Adams); Die Hydropaten (Gung'l).....WTAM Symphony Orchestra
 Clarinet Solo (Selected).....Frank Hruby
 Roses of Picardy; An Old Fashioned Garden.....Thomas Lidyard, Boy Soprano
 Gladye Mae Parsons, Accompanist
 Cello Solo (Selected).....Mak Schmitt, Cellist
 Love and Music from "La Tosca" (Puccini); As Through the Streets from "La Boheme" (Puccini).....Emma Johnson Wise, Soprano
 Gladye Mae Parsons, Accompanist
 Chimes of Normandy (Planquette); Just a Girl That Men Forget.....WTAM Symphony Orchestra
 Charity (Hagaman); I Bring You Hearts Ease (Branscombe); Joy of the Morning (Ware).....Georgia Field, Soprano
 Gladye Mae Parsons, Accompanist
 Fantaisie (Chopin); Oriental Dance (Denec).....Gladys Mae Parsons, Pianist
 Celeste from "Aida" (Verdi); O Sole Mio (De Catua); For You Alone (Geehl).....Enrico Seville, Tenor
 Blanche Hankinson, Accompanist
 Violin Solo (Selected).....Ben Silverberg, Violinist
 An Old Fashioned Dear; Little Grey Home in the West.....Thomas Lidyard, Boy Soprano
 Gladye Mae Parsons, Accompanist
 Singing of You (San Souci); A Rose, A Kiss and You (San Souci).....Georgia Field, Soprano
 Gladye Mae Parsons, Accompanist
 Little Nellie Kelly (Cohen); Le Zingana.....WTAM Symphony Orchestra
 Ballade in G Minor (Chopin).....Gladys Mae Parsons, Pianist
 Cornet Solo (Selected).....Alois Hruby
 When the Rest of the World Don't Want You; Mother Machree.....Thomas Lidyard, Boy Soprano
 Gladye Mae Parsons, Accompanist
 Call Me Back Pal O' Mine (Dickson).....WTAM Symphony Orchestra

SATURDAY, APRIL 26, 1924—5 P. M. EASTERN STANDARD TIME

Dance Program

WTAM Dance Orchestra

North East Y. M. C. A. Minstrel Troup and

Edwards' Jolly Five

Soloists

Joseph Kuhn—Edson Hill

Jack Clemons—Tom Lidyard

Gerald Forstner

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KDKA—Westinghouse Electric—326 Meters

EAST PITTSBURGH, PA.

Pacific Standard Time

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.

SUNDAY, APRIL 20—

1:00 p. m. Organ Recital by Dr. Charles Heinroth, Director of Music Carnegie Institute,

Pittsburgh, directly from the Carnegie Music Hall.

1:45 p. m. Vesper Services of the Shadyside Presbyterian Church, Pittsburgh, Pa.,

Rev. Hugh Thomson Kerr, Minister.

3:30 p. m. Dinner Concert by the Pittsburgh Athletic Association Orchestra, Gregorio

Scalzo, director.

4:45 p. m. Services of the Calvary Episcopal Church, Pittsburgh, Pa., Rev. E. J. Van

Etten, Minister.

6:15 p. m. Open Forum conducted by Rev. John Ray Ewers, D.D. From the East End

Christian Church, Pittsburgh, Pa.

MONDAY, APRIL 21—

5:30 p. m. Concert by the KDKA Little Symphony Orchestra, Victor Saudek, conductor; assisted by Mrs. Gertrude Sykes King, soprano; and Mrs. Ida Mae Claudy, contralto. Program: Selections by the Orchestra: Overture from "The Messiah" (Mendelssohn); Pastoral Symphony from "The Messiah"; "Reve Angelique" (Rubenstein), With Cathedral Chimes; "The Voice of Chimes" (Lugini); "Moment Musical" (Schubert); "Narcissus" (Nevin); "Easter Musc." from "Cavalleria Rusticana" (Mascagni). Soprano solos: "I Know That My Redeemer Liveth," from "The Messiah" (Mendelssohn), with orchestral accompaniment; "Come Unto Him," from "The Messiah".

TUESDAY, APRIL 22—

5:30 p. m. Concert by Nevin Trio consisting of Miss Eleanor Conly, soprano; Dr. John M. Hierholzer, flute; and Mrs. Blanche Sanders Walker, piano. Anthony M. Jones, tenor. Program: Tenor solos: "The Sailor's Grave" (Sullivan); "The Sweetest Story Ever Told"; "Mary O'Neill" (Hardy); "The Last Watch" (Pinsuti). Trio program to be announced by radiophone.

8:30 p. m. Concert by Queen City Orchestra, assisted by talent from the Pittsburgh Theatres.

WEDNESDAY, APRIL 23—

5:00 p. m. Literary program interspersed with music, arranged by Marjory Stewart, including a discussion of the life of Willa Cather, and a review of her book "The Song of the Lark."

5:30 p. m. Special Feature.

THURSDAY, APRIL 24—

5:30 p. m. Concert by KDKA Little Symphony Orchestra, Victor Saudek, conductor; assisted by Christine Miller Lucas, soprano, and E. L. Malaterra, tenor. Program: Selection by Orchestra, Overture "Minutemen" from the Ballet Suite "Nutcracker" by Tchaikowski; "La Chanson de Louise" (Dinet); Waltz, "Sleeping Beauty" (Tchaikowski); Quartet from "Rigoletto" (Verdi); "Persian March" (Strauss); Group of popular numbers;

Concert.

FRIDAY, APRIL 25—

5:30 p. m. Concert by Westinghouse Employees Band, T. J. Vastine, conductor, assisted by Eleanor March, soprano, and Jack Smalley, baritone. Program: Selections by Band: Overture, "Zampa" (Herold); Paraphrase "My Grandfather's Clock" (Amsden); "Three Spanish Dances" (Moszkowski); Serenade "Beneath Thy Window" (Di Capua); "A Medley of Southern Plantation Songs" (Hayes); Serenade "D'Autrefors" (Silvestri); Oriental Dance, "Echoes from the Harem" (Hughes); "Largo" (Handel);

SATURDAY, APRIL 26—

4:00 p. m. Feature.

5:30 p. m. Grand Day Dinner of the Americus Club.

NOTICE

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Letters to the Editor

Editor's Note:—In reading the following letters, readers should note the location from which they come. Long distance reception is, naturally, easier to receive in places where interference is at a minimum than in our cities.

961 Larch St., Inglewood, Calif., April 3, 1924.

Dear Sir:

H. Hamilton's inquiry about the station that was on the air on a Sunday morning was no doubt WLW, Cincinnati, as I have heard him several times, and they announced very fast on a few meters below Oakland.

Mr. Reeves of Salt Lake no doubt heard KDKA, Pittsburg, as they broadcast Tuesdays and Thursdays with a late concert on 326 meters. I receive them about twice a week.

GEORGE HINSON.

Editor Radio Doings:

Would you be so kind as to inform me what station was "on the air" Monday evening until 12:30 a. m. and signed off by playing a strain of "My Country 'Tis of Thee."

FLOYD BAUME,

Box 320, Palms, Calif.

Hamlin, Kans., April 1, 1924.

Gentlemen:

My first R. D. arrived yesterday. Allow me to thank you, and to answer a few questions. To Mr. Pohl of Hemet: "Amtr. stns." often get far above their regular 200 m. wave. Learn code and you will find many above 400. To Mr. Hamilton of 1220 W. 40th Place, L. A.: You no doubt heard WLW, wave 309. Did very well to hear it with KGO three meters higher. They interfere here. WLW announcer does talk rather fast. To J. B. Smith, Prescott, Ariz.: WCP, "Wild Cabbage Patch," Stevens Point, Wis., is the station you and M. J. Kent of San Pedro mention. To Lewis Androus, Pomona, Calif.: WOG put on a test or two when they put up their new towers, tops of which are 224 feet from street level. WOC had before been heard in Italy and the P. I., so should be heard in Calif. O. K. To Radio Doings: If you care for such reports as above, let me know and I will do what I can. Just received a card of acknowledgment and verification of my reception of CKCD, Vancouver, B. C., 1480 miles, on one tube. My best D. X. is 310 stations heard. 73 1-3 Cul.

J. A. BROCKHOFF, Hamlin, Kans.

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

Gentlemen: I am subscribing to your magazine for a year this time as I think it is well worth it. A person can get all kinds of radio information from the Radio Doings, and it is getting better all the time. I sure appreciate the articles contained in each issue.

When I first subscribed it was for half a year. I told you that I would continue if I liked it. I have enjoyed it very much, and true to my promise am subscribing again.

Your reader,

Fullerton, Calif.

Our one, two and three tube Harkness Sets are built with the best of parts and the most careful workmanship, and give perfect results, in clarity of tone, volume, selectivity and distance.

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Letters to the Editor

Dear Sirs:

Perhaps some of your readers could tell me the station broadcasting between 11:10 p.m. and 11:30 p.m., Monday, April 8, on about 450 meters?

The announcer would say something then a girl would say something and an organ would play a few notes. At one time the announcer said they had received a telegram from Los Angeles, Calif.

The station was very weak. My set is a single circuit detector, and I have received the following distant stations: WDAH, WDAP, WCAL, KDKA—(not relayed),—KFKX, WHB, CFCN, CFAC and twenty-five others.

This information would be greatly appreciated.

Yours truly,

JAMES RICHMOND, 296 Lime St., Riverside, Calif.

Gentlemen:

Perhaps you or some of your readers can tell me what station was broadcasting from Chicago, Ill., on about 440 meters, Monday night, April 7, about 11 o'clock? I missed the call letters but distinctly heard Chicago, Ill.

I am using a two-tube Harkness reflex, with a tuned crystal.

I get KGW, KGO, KPO, KUO on the loud-speaker. Have also heard KFHJ, KFJC.

Yours truly,

D. L. BROWN, 1624½ N. Kenmore St., Los Angeles, Calif.

Dear Sirs:

I would appreciate it very much if you or any of your readers could tell me who was broadcasting songs and such, March 28th, about 8 o'clock, Pacific time? He was on about 443 meters or so.

As near as I could find out he said CFCE, Montreal, Canada, and would then say something about some railway, and ending up saying to write to some address, which was, I guess, French.

Thanking you for your trouble, I remain.

Yours truly,

LOUIS J. WOOD, 145 E. G Street, Colton, Calif.

Gentlemen:

Request information as to station broadcasting from seven-thirty to eight p. m., on Thursday, April 10. Music was from a certain hotel ballroom and station started and finished concert with a single blast of a trumpet or horn.

Station, I also believe gave certain stock quotations on the same program.

ALEXANDER BURRELL, 523 Richard St., Los Angeles, Calif.

April 10, 1924.

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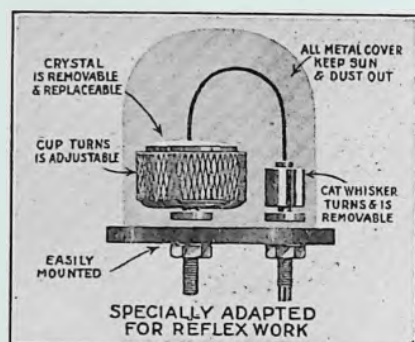
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This clever device has caused a sensation throughout the country, and Radio fans declare the "Lincoln" Detector is ideal for bringing in distant stations loud and clear. Thousands are improving their Harkness Sets by using the "Lincoln."

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Each "LINCOLN" Detector is carefully tested before leaving the factory and is guaranteed for one year. If crystal—defective, will be replaced within six months. Price of the "Lincoln" only \$2.00. Ask for it at any dealer.

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Supply Co.

San Francisco

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San Francisco

Portland

Seattle

Mention this Advertisement—Address Dept. O-10

Letters to the Editor

Dear Sir:

I would appreciate very much if you could tell me who was broadcasting Hawaiian music between 9:00 and 10:00 p. m., Wednesday, April 9th, at about 500 or 600 meters. I could only catch two letters, which I understood to be W. L., when the station was announced.

Hoping some one can give me this information. I remain,

Yours,

CHARLES DAVIS, General Delivery, Fresno, Calif.
April 11, 1924.

Gentlemen:

I have been a reader of your wonderful little magazine for some time. Think it a World Beater. My wife and I could hardly do without it.

Enclosed you have my check for eight dollars for four subscriptions, send one to my father, S. G. Davis, 1016 South Windsor boulevard, city; one to an uncle, A. C. Wilson, 3921 Worth street, Dallas, Texas; one to another uncle, W. J. Davis, 401 Main street, Terrell, Texas, and the last to the writer, whose address you will find below.

I notice some of the fans have sent in lists of their DX stations. Below you have mine. KFBK, WBAP, KPO, KDYL, KGO, KLX, KGW, KYW, WOI, WHB, WFAA, WOAW, WOC, WLW, KPKA, WMC, WDAH, KZN, CFAF, CFCB, KFON, WOS, KNJ, CHBC, KSD, KDPT, KFAD, KMJ, WTAM, WOR, KFMS, KFKX, KFAF, KUO, KLS, KFAW, KFHJ, KFMD, WHAS, WDAP, WDF, WJAS and PWX.

Anyone having a Freed-Eisemann wanting the above calibrations, I will be glad to send them.

Truly yours,

STANLEY G. DAVIS, 320 N. Plymouth Blvd., Los Angeles, Calif.

Radio Doings.

Dear Sir:

Perhaps some of your readers could tell me what station was broadcasting some kind of an orchestra between 9:30 and 9:45 p. m., April 11, around 450 meter wave length.

Owing to too much static and an announcer who spoke in a low voice, I was unable to make out the call letters. They sounded something like KFOM, but I am not certain about the O.

Hoping that this will attract the attention of some one.

Sincerely yours,

CURTIS HANSON, Vista, Calif.
April 10, 1924.

Announcing the Opening of **The Reliable Radio Shop**

208 East Fourth Street, Long Beach, Calif.,

On
April 21, 1924

Sets
HARKNESS

Parts
NEUTRODYNE

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

Pacific Time

WEEKLY PROGRAM, WEEK OF APRIL 21

MONDAY, APRIL 21—

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

TUESDAY, APRIL 22—

6:00 p. m. Studio artists' recital by Lavina Gauen, contralto; Grace McGowan, soprano; arranged by E. A. Taussig. Addresses by C. A. Stookey, Jr., on "Spraying the Orchard for a Good Yield of Fruit," and B. H. St. John on "Natural Water Supply."

WEDNESDAY, APRIL 23—

8:30 p. m. Program of Abergh's Concert Ensemble, broadcast direct from Hotel Statler.

7:00 p. m. Program by Alumni of Washington University.

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

THURSDAY, APRIL 24—

Silent.

FRIDAY, APRIL 25—

6:00 p. m. Studio recital by Mrs. John E. Stoker, soprano; Hunter Jones, pianist.

SATURDAY, APRIL 26—

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

Hoo-Radio!

Dedicated to the HOOT OWLS.

(Tune: "Marching Through Georgia.")

I.

Let's tune in the radio and have another song,
 Music smooths the ruffled spots and helps us all along,
 If we get inspired by it we can't go very wrong—
 So we'll turn on the loud speaker.

CHORUS

Hoo-ray, hoo-ray, hoo-ray, hoo-radio!
 It costs us sleep, it also costs us dough,
 But we get our money back with every program show,
 As it comes through the loud speaker.

II.

We hear from the movie girls down at Los Angeles,
 Lectures about farming stunts and how to make good cheese,
 What to cook and how to sew gee-gaws on a chemise,
 All coming through the loud speaker.

III.

Orchestras and operas that set us in a trance,
 Jazzy little music hits that make us want to dance,
 And the Hoot Owls' goat each Friday night gets his big chance—
 All coming through the loud speaker.

CHORUS

G. F., Boise, Idaho.



"I said," go to
 Headquarters
 for our
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Radio in the Grand Canyon

COL. C. H. BIRDSEYE,

Leader of Grand Canyon Exploratory Surveying Expedition of U. S. Geological Survey

I have often asked what scientific invention has contributed most to the betterment, convenience, and enjoyment of man. Of course, replies have varied, depending on the point of view of the speaker. Physicians have told me that antiseptic surgery deserves first rank, and engineers are apt to award the palm to the development of the steam engine or the gasoline motor, but I am inclined to believe that the mechanical transmission of the human voice occupies a more important place in our daily life than any other single invention. Our modern business and industrial activity would stagnate if the telephone were removed, and our rural population would lose half its pleasure if deprived of the opportunity of listening to neighborhood gossip on a party line.

I have watched people in isolated sections at their first glimpse of a locomotive and heard such expressions as "Poor old iron horse—you must be tired after dragging that heavy load up the hill," and have seen others look with awe at their first sight of an automobile. Then I have watched people listen for the first time to a phonograph or a telephone and invariably seen their eyes flood with tears of emotion to hear the human voice come out of a thing of wood or metal. So I think that if not the most useful, such transmission is at least the most wonderful achievement of science.

Transmission of messages by wire has become an old story. Now we hear the human voice projected by wireless half way around the globe. Certainly no activity in recent years has made such rapid strides as radio transmission. In the cities our houses are topped with a maze of wires. In the country nearly every farm house is equipped with an aerial.

Scientists now engaged on explorations in out of the way places need not be isolated and out of touch with world events. McMillan in the Arctic knows that Washington, as well as the entire country, is seething with investigations of this and that, from oil scandals to radio broadcasting. Last summer in the Grand Canyon, a United States Geological Survey party, boating almost in the bowels of the earth, heard of President Harding's death forty-five minutes after it occurred and through the instrumentality of the radio were able to join with

THE CHANCE OF A LIFETIME FOR SALE

A well established, profitable Radio Retail Business in the heart
of Los Angeles.

Owner will sacrifice stock and good will at a loss

For particulars call or write the Editor, Radio Doings.



the Nation on August 10, in observing that day of mourning, even though the party was in a mile-deep gorge, hundreds of miles and weeks of travel from the nearest habitation.

Before starting on this trip we read in the Literary Digest a statement that radio reception in a deep canyon was impossible, and the article, copied from one of the radio magazines, claimed that the waves passing over the rim of the canyon would not reach down to the bottom of the gorge. We now know that they do reach to the most inaccessible places and that the topography has little if any effect on their transmission. Radio reception in deep mines and in the tunnels under the Hudson offer further substantiating evidence.

As a first step in the harnessing of the Colorado River for the use of man, the Geological Survey has been making a detailed survey of its 1400-mile course through seven States. The roughest and most dangerous 300 miles of the river, including the Grand Canyon, was left until the last.

Starting from Lees Ferry, Arizona, on August 1, 1923, our little party of ten men fought its way in four wooden boats through rapid after rapid in Marble and Grand Canyons, and, after three months of hardships and thrills, reached its destination at Needles, California. Time and time again the boats were swamped and on two occasions were overturned, not to mention several attempts on the part of the boats to knock the rocks out of the channel.

Just before leaving I received a letter from an old prospector in Colorado which read, in part, as follows:

"Dear Sir: I have noticed in Denver papers that you are organizing a party to shoot the rapids of the Colorado River. I have had considerable experience in the use of dynamite and think I would be a valuable member of your party. Please let me know if you can make use of my services." Of course, the offer was not accepted, but there were times when we wished this old prospector had preceded us and blown some of the rocks from the channel.

One of the four boats is on exhibition at the Radio Show now being given in Convention Hall and it shows the marks of its rough passage. The boats carried all the supplies and instruments, and, except at a few portages, the men themselves. All equipment was selected with care, standardized as to weight and bulk, and packed in water-tight bags or boxes. In addition to the usual instruments carried by engineers and geologists, the party had a radio receiving outfit—a standard regenerative set with two steps of audio amplification. A Westinghouse Aeriola Sr. receiving set was remodeled and amplified, using U. V. 201-A tubes throughout. Wet batteries could not be recharged, so dry cells were

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1646 West Adams

Where your dollars have more cents

OPEN EVENINGS

READ THIS

Any man who is a salesman can sell a Radio set. After the set is purchased, is it installed properly? Are you going to get the service in the future? I am qualified to furnish it all. Following the Radio business since 1907. I rebuild, repair, and fix any kind of a set so it works like it should.

C. R. PARKER

Phone TUCKER 2747 Personal Service 1216 So. Hill St., Los Angeles
RADIOLA—ECHOPHONE—NEUTRODYNE—REFLEX SETS

carried—four 1½-volt dry cells being used to light the filaments and a small 22½-volt B battery to charge the plate. The complete set, including batteries and phones, was packed in a water-tight box, weighing about 20 pounds, and on several occasions was under water with no ill effects. A string antenna was used, the wire being carried on a small reel to facilitate handling. It was usually strung in the direction of Los Angeles, but it worked—no matter what the direction.

Arrangements had been made with the Los Angeles Times—KHJ—to broadcast, each night at nine o'clock, items of especial interest to the party. John Daggett, the radio manager, better known as "Uncle John," entered into the spirit of the venture with zest, and on many a dark night the little party was cheered by hearing his jovial voice in greeting or message for our especial benefit.

At Lees Ferry, near the Utah-Arizona line, KHJ came in clear and strong in spite of static interference caused by the mid-summer thunderstorms. We also heard stations in Phoenix, Salt Lake City, San Francisco, Denver, Colorado Springs, and on one occasion Chicago.

Passing down the river the walls reared higher and higher until the narrow chasm was a mile deep, but still the radio waves reached the bottom, and nearly every night the radio apparatus was set up and not once did we fail to hear KHJ.

Besides hearing the news of President Harding's death, we were able to follow the course of the funeral train across the country and when newspapers were brought in at the first supply point we read little of importance that we had not learned by radio. Important news items, weather reports, time signals, and baseball scores were received daily—so different than on similar expeditions in the old days.

The piling up on the rocks near Santa Barbara of a fleet of destroyers was a piece of news which came in one night after our little navy had suffered a somewhat similar, but not so disastrous, experience in the rock-strewn rapids. We knew of the Japanese earthquake and fire probably as soon as did most of you who are listening to me now.

Each night during the World Series there was a scramble for bleacher seats around the radio set and again we had reason to feel that "Uncle John" had a real interest in us, for, after giving the scores he would invariably say "The boys in the Grand Canyon have not seen a paper tonight, so let's spend a moment and give them a few of the details." Then followed briefly an account of the game.

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Complete Line of Radio Sets and Supplies

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

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SURACO RADIO RECEIVERS

A two-tube Reflex so designed that the complete set fits nicely in any phonograph

Wholesale Distributors

BARTLETT MUSIC CO.

5500 South Vermont, Los Angeles

Manufactured by

SUMMERS RADIO CO.

1105 W. First St., Los Angeles

Once, only did the radio fail us—and then it was not the fault of the radio but the result of a hitch in our supply arrangements. At Havasu Creek, one of our supply points on the west edge of the Grand Canyon National Park, the packers failed to bring fresh batteries and the intense heat in the Canyon had about ruined those then in use. So we sent the set out to be overhauled and brought in at Diamond Creek, the next supply point 60 miles below. A few days later the river went on a rampage and rose 21 feet over night. Flood warnings were broadcast to us for three days before the rise, but they were sent in vain and we were caught at sundown in a treacherous place. Shoving off in the boats after dark, the boys found a safe mooring a short distance below, but at that were up all night pulling up first one boat and then another to keep them from being carried away on the crest of the flood. The high water held us there four days and delayed our arrival at Diamond Creek, where we found that the papers were full of stories of our probable loss, based largely on wildly exaggerated tales of capsized boats seen floating down the lower river. The packers were sent back to the railroad immediately with telegrams announcing our safety. One of these was sent to "Uncle John," and he opened his evening program by broadcasting our message.

So we proved that radio reception in a deep canyon is not only probable but highly successful, and I can assure you that no single item of our equipment gave more satisfaction or pleasure than our little twenty-pound radio box. Men in out of the way places need no longer be out of touch with civilization and as equipment and methods are improved even closer contact will be possible and it is not too much to expect that light, portable sending apparatus will soon be available so messages can be sent as well as received.

"Truth in Advertising"

Dedicated to MR. FERRIS R. MILLER of The Better Business Bureau

We just heard an apostle, upon the radio,
Of Truth in Advertising; we're rooting for this "bo."
We harkened keenly to his talk, it was so neatly put—
We'd surely like to hear the truth—not covered o'er with soot.

We're truly tired of vacuums, that do not always vac.
We're weary of the gasoline that hasn't any smack.
We're sick and tired of standing so often in a line,
To pay a dollar for a thing—that's stretched another dime.

We're "fed up" on the things we buy, 'cause some artistic ad
Has told us they're gold mine—and then they turn out bad.
It's rather disconcerting to buy a "model" gown;
And meet it's replica upon some husky, sloppy clown.

We really feel it's not too much, this favor, then, to ask
The "birds" who advertise their stuff, to get down to the task
Of not diluting good old truth with pretty ads so fickle,
And we will guarantee to spend our very hindmost nickle.

JEAN SHILLINGFORD.

McQUAY & CASSELL

RADIO SALES

Exclusively Featuring "KENNEDY"

Model V \$127 complete—Model X \$290 complete—Portable \$137.50 complete

"Come and see the new KENNEDY PORTABLE"

We carry a large stock of Standard Parts.
Demonstrations in your home by appointment.

115 WEST MAIN ST., ALHAMBRA, CALIFORNIA

"Open Evenings Till 9 P. M."

?? ??

Dear Sir:

After reading others' questions, I thought I would fire mine in, so here goes:

Question 1.—Will a 201-A work as good as a 200 when used for a detector? If so, what plate voltage do I need?

2.—Is it possible for you to send me the hookup of the Crosley set, type 51?

3.—Will a step of tuned radio frequency added to a single circuit receiver reduce its radiating qualities to any extent?

4.—Will the condenser-tuned-secondary type of single ariometer 3-circuit set work as good as the 2-variometer type regenerator?

Thanking you very much, I beg to remain,

Yours radioally,

ARTHUR HARRISON, 617 Steel St., Denver, Colo.

P. S.—Radio Doings can boast that it is a real radio magazine. This is more than a lot of the 25-cent magazines can do. 'Nuff sed!!!

Answer 1.—Yes, in certain circuits—45 volts.

2.—We cannot show circuits of standard equipment.

3.—Yes.

4.—Yes.

Dear Sir:

I would be very much obliged to you if you could give me any information on a program I heard last evening. When I first heard them they were playing musical selections. (About 10:58 p. m.) The announcer said the name of the station which began in W—and then said that it was the State Normal School, in Pennsylvania. The whole call sounded like WFAL. Also, through which station does the Biltmore Hotel, Los Angeles, broadcast?

Thanking you for the favor, I remain,

Respectfully,

PAUL SMITH, 321 South Eleventh St., Tacoma, Wash.

(Note.—Biltmore Hotel broadcasts through KHJ.)

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Quality and Satisfaction or No Charge

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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
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 Sodium Tube.....	6.50
Homecharger Gold Seal.....	18.50
No. 4500 Cotocoil Transformer.....	2.50
Harkness Coil—Silk Wound.....	pair 3.00
Sodium Tubes, 1/4 amps, Detector Tubes, 1 1/2, 3, 4, 6.....	4.50
Sodium Tubes, 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. Superhetrodyne Transformer.....	Each 3.50
Tungar Charges, 50 cyc., 2 amp.....	22.50

Sleeper Monotrol

The Long Distance Set

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

No. 65 Federal Transformer.....	7.00
Mercury Table Talker.....	8.50
Parts for Fada 5-tube Set.....	65.60

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

We have for Immediate Delivery

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

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

1924 Price List Now Ready

RADIO SUPPLY CO.

Successor to MOTOR CAR SUPPLY CO.

Open Evenings Till 9 P. M.

Telephone VAndike 6063

920 South Broadway

Los Angeles, California

Our New and Complete Price List Now Ready

?? ??

March 25, 1924.

Question.—I would appreciate it very much if you would let me know through the "Question" column of Radio Doings whether it is possible to convert a single circuit receiver into a Cockaday 4-circuit set, still using one tube, and also continue to use in connection with same a Kennedy, Type 525, two-stage amplifier? Would this give results equal to that of having all tubes in one set? I am using UV-200 for detector tube and WD-12 for amplifiers.

Now, just a word of thanks and appreciation for Radio Doings. I have copies of other books from different parts of the country giving programs, schedules, etc., but can truthfully say that they do not, in my estimation, come up to Radio Doings.

Thanking you in advance for the information asked for above, and for past favors, I remain,

Yours very truly,

IVOR C. BROOKER, Glendale, California.

Answer.—Yes, this is possible. Your volume will decrease and selectivity will increase.

March 25, 1924.

Question.—When I am dialing for Long Distance I have so everlasting much trouble with some enemy artillery that it is impossible to get any satisfaction out of it. When I get close to the station this "cat fighting" sets up. Sometimes after an armistice had, apparently, been declared, if I touch, or get near the dial with my hand, the whole regiment starts firing again. Some say shield your instrument. If this will solve the problem, I would much appreciate your telling me how and with what this is done?

I have been a constant reader of the "Doings" for six months, but what's the use going down town and buying it. So enclosed find \$2.00.

Yours truly,

R. A. WRIGHT, 2646 Atlantic Ave., Long Beach, Calif.

Answer.—Shielding will stop body capacity. Your trouble to a great extent is caused by radiating receivers. Place metal shield on panel insulating it from instruments. Ground this shield.

Dear Sir:

Enclosed is copy of Harkness reflex, which seems to be so popular at this time.

Question.—Can a detector tube be used instead of a crystal? If so, how would it be hooked up? Any advantage?

I think your magazine is simply great, and would not like to do without it.

Wishing you continued success.

Sincerely yours,

J. SADORF, 178 E. 45th St., Los Angeles, Calif.

Answer.—Yes; more volume and distance.

DOES YOUR SET "PERK" RIGHT

IF NOT, SEE

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4301 South Western Avenue

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SETS

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"No Regrets With Arco Sets"

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?? ??

Question 1.—Could you tell me what station was broadcasting a program on the night of Thursday the 27th of March, between 7:30 and 8:00 p. m.? There was a lady announcer, and she said that the station was in Minnesota. At least that is what I understood her to say. It was very weak, but I would probably have heard it had not KPO came on just then and drowned them out. The wave length must have been about 420. Anyone that can tell me who it was will be doing me a great favor.

ROY HIGGINSON, Box 4, Del Mar, California.

Answer 1.—We cannot help you. Perhaps some of our readers can.

Question 1.—Can I use a two-stage Atwater-Kent audio frequency amplifier in connection with a 3-tube neutrodyne?

2.—Will a low "B" battery in the amplifiers cause a noise if other batteries bring the voltage up to the required point?

Thanking you for the answers, I am,

Yours truly,

CLYDE JONES, 584 U. C. Apts., Bingham Canyon, Utah.

Answer 1.—We do not advise this combination.

2.—Yes.

Dear Sir:

March 26, 1924.

As I was reading over your wonderful little book, called "Radio Doings," I noticed in the back, the advice that you have given radio fans about their radio sets, so I thought I would write you and ask a few questions about mine.

Question.—I have a one-tube Erla Reflex, and I want to know how far I should be able to hear on this set? I also notice that when I tune out one of the local stations I can hear all the rest of them. What causes this? If I put a Variometer on it would it help any?

Thanking you for your troubles, and hoping you may answer.

Yours truly,

LAWRENCE WILDE, 1078 Euclid Ave., Los Angeles, Calif.

Answer.—It is impossible to say how far any set will receive. To sharpen tuning change vario-coupler, or try .00025 fixed condenser in antenna circuit.

Dear Mr. Berringer:

March 23, 1924.

Question.—In answering one of your questions on body capacity in "Radio Doings" you said to shield your receiver properly. (I have trouble with body capacity, too.) What would you use and how would you shield a set? Would lining my cabinet with sheet brass help any?

Yours inquiringly,

CHAS. H. BEAL, Redlands, Calif.

Answer.—Yes.

Murdock Radio Head Phones "Standard Since 1914"

ANNOUNCING

THE HARRIS REFLEX

This two-tube set incorporates two entirely new features in Reflex sets.

Three coils and three condensers are used where only two were used before.

The first tube is neutralized the same as in the Neutrodyne circuit.

These two main features aid greatly in receiving distant stations and more volume on local stations.

A DEMONSTRATION IN YOUR HOME WILL CONVINCE YOU.

HARRIS ELECTRIC COMPANY

2812 W. 9th St.

Phone DRexel 6801

Los Angeles, Cal.

"Out of the Air"

By LISTENER-IN

President Coolidge will be heard over the radio by many in the East when he addresses the Associated Press in New York on Tuesday, April 23. The address is scheduled for 1:45 P. M., Eastern time, which would make it 10:45 Pacific time, or 11:45 Mountain time. WMAQ, Chicago, will broadcast the speech and other stations are planning to rebroadcast it. It is hoped that some Pacific Coast station will be able to pick it up so that the listeners in the West may have an opportunity to hear their President.

Beginning with our next issue we will print a series of articles dealing with what is termed by many radio engineers "the year's greatest development in radio," the "Phusiformer." The Phusiformer is a non-oscillating, non-radiating radio frequency transformer which incorporates in its construction coil windings which automatically neutralize the tubes as they are placed in the sockets. Radio Doings is conducting a series of tests and experiments with the Phusiformer the results of which will be announced.

The Yale Radio Electric Co., Los Angeles, has been appointed the exclusive coast distributor for the "Rayflex" receivers. Through an error in their advertisement in our last issue this word "Rayflex" was printed Reflex.

The teacher was giving the class a lecture on "gravity."

"Now, children," she said, "it is the law of gravity that keeps us on this earth."

"But, please teacher," inquired one small child, "how did we stick on before the law was passed?"

The Southern California Radio Association is to have its own broadcast station in the near future. It will be located on their own building, and will be constructed by members of the association under direction of Mr. H. W. Leighton (6CFT), who is fully capable of handling the job. This association has grown in membership during the last year, and radioland owes them much. They maintain nightly "air cop" service," which is doing much to keep the air clear during broadcasting, all without pay and for the betterment of radio. Radio amateurs and enthusiasts who do not belong to a radio club or association should get in touch with the Southern California Radio Association.

An old farmer and his wife were standing before their pig-sty looking at their only pig, when the old lady said, "Say, John, it will be our silver wedding tomorrow. Let's kill the pig."

John replied with disgust: "What's the use of murdering the pig for what happened twenty-five years ago?"—Elmira Rotary Roar.

South Pasadena has reason to boast of an up-to-date radio store. The name of the new concern is The Radio Electric Co., and it is under the management of E. M. Reach and is located at 1165 South Fair Oaks Ave.

Members of the Radio Trades, both wholesale and retail, are vigorously protesting against the 10 percent tax on radio sets and parts as proposed by the Tax Revision Committee in Washington, and they have sent letters and telegrams to Senators and Congressmen requesting 100 percent cooperation in opposing this measure.

The Radio Manufacturers' Agents held their regular semi-monthly meeting at the City Club on Thursday, April 10th. Those included were J. D. Colford, N. F. Lewis, S. M. Levy, W. D. Scott, Fred F. Burgh, A. Guyer, David N. Marshank, C. E. Marshall and President Stone.

"Going Up"—that is the cry we have to deliver to the printer each week. Last week our circulation was 20,500, this week it is 23,000.



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.

Write for catalog

THE MAGNAVOX CO.
OAKLAND, CALIFORNIA

New York Office: 370 Seventh Ave.

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ORIGINAL ARGENTITE

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Office and Factory to 303 East 4th St.

More Space Needed for Manufacturing

THE BEST RADIO CRYSTAL IN THE WORLD

The Crystal with a Reputation and

A REAL GUARANTEE



The Rare Mineral Crystal contained in this package has been tested and is guaranteed to be the finest detector obtainable. Money will be refunded if not absolutely satisfactory.

Mineral Products Co.
303 E. 4th St.
Los Angeles



The growth of this business in two years is rather unusual. From a bench and one man to a factory with 3,000 feet floor space. There is only one answer: Appreciation by the Radio Public for

A Crystal of Merit—with Quality, Service, Efficiency

Our aim is to grow big. To do this we must sell the public quality merchandise, so we sell

THE BEST RADIO CRYSTAL IN THE WORLD

Alive, anywhere
Reaches Farther
Guaranteed absolutely
Entertainment assured
Not synthetic
Thoroughly reliable
Interested?
Try one today.
Every Fan a Booster.



YES, IT CAN BE DONE

A Manhattan Loud Speaker, No. 2555, operated on crystal set with

Original Argentite

Loud enough to hear plainly over large room.

Show You? Any Time

If interested call TU.

5015. Ask for

The Argentite Man

Only One ORIGINAL ARGENTITE—Accept No Substitute

Sold by All Real Radio Dealers

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