

OCT 20 1924

Secrets of Selectivity Told by W. W. Harper; New Super-Het Hook-Up Shown; How to Make End Table Radio Set Cabinet; Helpful Hints About Condensers

Radio Digest

EVERY WEEK

PROGRAMS Illustrated

TEN CENTS

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

Vol. XI

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SATURDAY, OCTOBER 18, 1924

No. 2

SUPER POWER STATIONS?

Lodge Says Radio Is Help to Peace

Noted British Scientist Claims Man Has Depended on Ether Messages Since Life Began

LONDON.—In a recent speech at the Wembley exposition on the romance of Radio, Sir Oliver Lodge stated that we were continuously using ether as a means of conveying messages.

According to his statements we have long used it when we smiled, winked or nodded. Thus the sunset ether, quivering by the oscillation of its electric charges, the waves travelled out in all directions and a minute fraction of them stimulated the sensitive receiving instrument that is the eye.

Sir Oliver spoke of the blessings which Radio, by annihilating space, brings to mankind.

Radio has welded the British Empire and the United States together. They constitute the same race and speak the same language. He believes that if these two nations set their faces to the right and determined to preserve international peace they will be able to because of this welding.

"Ether welds worlds together," said Sir Oliver, "and creates a cosmic system of law and order. Radio can weld all humanity together so they can face their common differences in a spirit of co-operation and mutual trust."



HOOVER GIVES FANS SQUARE DEAL POLICY

Secretary Has Received No Applications as Yet for High Power Stations

Is Flooded with Letters

WASHINGTON.—Herbert Hoover has just finished signing over 2,200 letters to Radiophans in a dozen states, assuring them that he is opposed to all forms of Radio trusts and monopoly of the air in broadcasting. Appeals from Radiophans against the monopoly of the air by a so-called broadcasting trust which, it had been reported, planned to establish 5,000-watt broadcasting stations blanketing the whole country and drowning out the smaller stations now on the air, were received by Secretary Hoover and President Coolidge last week.

The origin of the sensational report, which incensed the fans, was an announcement broadcast by a station in the neighborhood of Chicago. It led many listeners to believe that the crystal sets and even tube sets would soon be useless; that all the smaller low-powered stations would

(Continued on page 2)



Edith Day, musical comedy star, who recently sang from Station WJAR, is shown above. Left, Edith Hall, pianist of the Bizet trio, who are heard at Station KQV. Right, Harret Shire, one of the stars at Station WGE. Shire photo by Collgrove Studio, Buffalo.

WEAO'S CHIMES WIN ROUND OF APPLAUSE

COLUMBUS, O.—The Ohio State chimes, which feature the Thursday evening programs of WEAO, have won many friends among Radio listeners. No fewer than 200 cards, letters and telegrams have been received in the past few weeks at the station referring to the chimes music. A listener at Newmarket, Ont., said the chimes reminded him of his days in England when hymns were played on the village church chimes.

HIGH POWER STATIONS

(Continued from page 1)

be crowded off the air and that fans would be forced to listen to a few high-powered transmitters, which would probably provide little if any entertainment, confining their programs to propaganda and advertising.

Misinformation and unfortunate publicity further excited the Radioists, with the result that the President and the secretary of commerce were flooded with requests to save the air for the people and not let the National Radio conference recommend the licensing of stations with a total power of over 1,000 or 1,500 watts.

No Application for License Yet

The personal assurance of Secretary Hoover carries with it the statement that no applications for extremely high-powered stations have been received to date. Although the conference now in session will discuss the advisability of deciding upon a power limit for broadcasting, it must be remembered that to limit the power of broadcasters might handicap this growing industry and art, for the very fact that Radio development has been unrestricted is accountable for its marvelous growth and expansion during the past few years.

Experimental work by broadcasters is beneficial to all. The growth of strong stations has brought about the excellent class B broadcasters, and the opening of new wave bands has broadened and improved broadcasting. High-powered stations would not interfere with present receiving sets in any way, but would bring distant stations within the range of crystal set users, who today hear but one or two local stations. The power of a broadcaster does not prevent reception on a receiving set, but increases its range and improves its reception. Changes in wave lengths to below 200 or over 600 meters would probably prevent reception on the average set, however.

High Power Only Temporary

So much is dependent upon experimental broadcasting that the conference will probably be loath to place a low limit on power. Fans may rest assured, nothing in the nature of a monopoly will come to pass, at least during the administration of Mr. Hoover. When the question of limiting the power of broadcasters is discussed here this week it is indicated that departmental Radio officials will hesitate to recommend anything further than a temporary trail of some additional power to see what results would follow.

In Canada one station is operating on 5,000 watts, another is planned, and a third may try out 15,000 watts it is reported. In this connection, it may be necessary to try a few higher powered stations this side of the border to prevent a Canadian Radio invasion. Some time ago WEAF tried out a 5,000 watt broadcasting set, but returned to its regular 500 power set, after a short interval.

Government Can Only Question Use

Serious difficulty is predicted if the bogey of monopoly becomes real; trouble for the war department is anticipated, bolshevism is foreseen, and lack of political support at the polls is implied.

Neither the government, the department of commerce nor the conference has anything to do with the manufacture of apparatus. Although most broadcasting apparatus is 500 watts or less, there is no limit on what can be made. The question arises as to its use, not manufacture, and it will be up to the purchasers of these transmitters to find a legal method for operation.

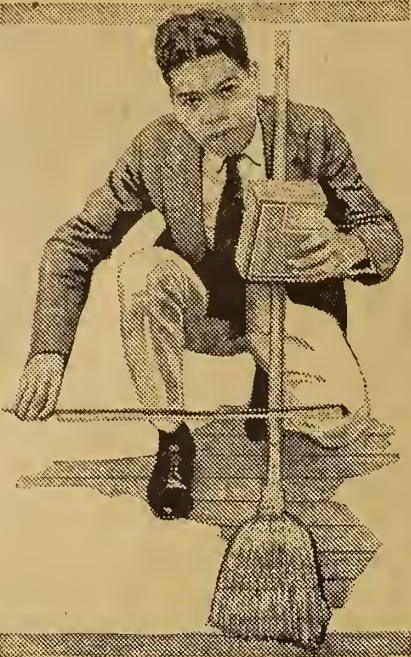
New List of U. S. Stations Now Ready at Washington

WASHINGTON, D. C.—A new and complete list of commercial and government Radio stations of the United States has just been published according to an announcement made by the Radio section of the department of commerce. Copies of this publication may be obtained from the Superintendent of Documents, Government Printing office at 15 cents a copy.

New Signal at Belle Island

QUEBEC.—To assure complete safety for all navigation a new Radio signal has been installed at the north entrance of the strait of Belle Island. This signal operates in time of fog and transmits weather reports to incoming and outgoing ships.

FILIPINO MUSICIAN'S INSTRUMENT UNIQUE



Leader of the Leviathan Filipino orchestra who played from Station WJAX recently. He is shown with his one-string cello made from an ordinary broom and an A string. A number of solos were rendered by Antonio Rodenas and his unique instrument.

The French savant, Abbe Moreux, advances the theory that the recent peculiar Radio disturbances, attributed by the credulous to the nearby planet Mars, are caused by the action of the sun's rays on the earth.

Station WWJ to Hold Receiving Set Contest

Will Judge Best Apparatus From Four General Classes

DETROIT.—Station WWJ, the Detroit News, in conjunction with the Radio trade association of Michigan, has opened a contest in which \$600 in prizes will be awarded to builders of the best Radio sets.

The contest will continue until October 24 and the \$600 will go to nine winners.

The purpose of the contest is to interest Radio listeners in better types of receiving sets.

In addition to the money prizes, there will be other prizes for the winners of second place in the various types of sets.

There will be four general classes of receiving sets eligible for entry in the contest—super-heterodyne, tuned Radio frequency, transformer coupled Radio frequency and reflex types. There will be a junior and senior class for the contestants, the junior to include all those fifteen years old and under, the senior to include those more than sixteen years old.

Scotch Catch Herring by Use of Airplanes and Radio

BIRMINGHAM, Ala.—F. F. Mercer of this city who recently returned from an extended visit to Scotland, tells an interesting story of how the Scotch use the Radio in herring fishing with much success.

He says that for a considerable distance directly overhead one can see many feet down into the water below and that along the Scottish coast he noticed many airplanes flying over the sea looking for herring. The planes were supplied with Radio transmitting sets and when fish were spotted the information, including the location of the fish, was communicated to the waiting boatmen below.

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Looking Ahead

How's Your New Eight Tube Super-Heterodyne Progressing? H. J. Marx will give you further details in his next article so that you can continue with the building of this "Rolls-Royce of Radio." Get ready to bring in the thousand-milers on a loop!

Kennedy Model XV Owners Will Know More About Their Sets after reading the article on operating and finding trouble which will be devoted to this receiver next week. Owners of other makes of sets will also find it profitable reading.

Crystal Enthusiasts May Like to Build the Combination Tube-Crystal Set to be described next issue in the "Kinks" department. Many Radiophans have never given a trial to the time proved crystal. To such listeners in we can only say that they don't know what they are missing.

Detectors, Tube and Crystal, Will Be Explained by Thomas Benson in his next "Helpful Hints." Inasmuch as a Radio receiver without a detector isn't a Radio receiver, the subject is vital to all who hope to appreciate the principles of the science.

Would Your Wife Like a Radio Table with Enclosed Battery Compartment? The next article by Charles F. Smisor on the subject of Radio cabinet making will tell you how to make such a table. Wait for it.

Newsstands Don't Always Have One Left

WHEN YOU WANT

Radio Digest

YOU WANT IT!

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SEND IN THE BLANK TODAY

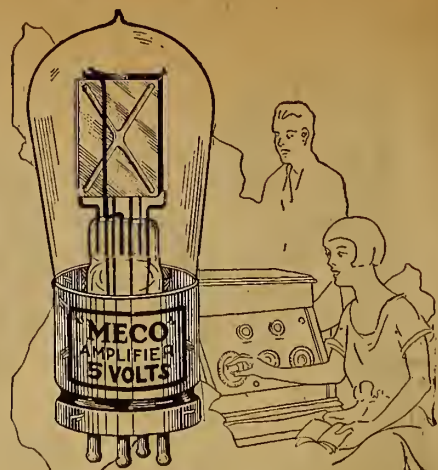
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MECO Radio Tubes fit every receiving set whether an audio-frequency, radio-frequency, regenerative or reflex action. Sold by dealers everywhere at the standard price of \$4 and distributed exclusively through recognized jobbers and set manufacturers. Some territory now open for distributors.

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Des Moines, Iowa



When you listen in on a Crosley—no matter what the price—you wonder, as thousands of others have, that such exceptional results can be obtained and so reasonably.

The answer is simple—quality radio receivers built in quantity production. During the past twelve months, we believe Crosley made and sold more sets than any other manufacturer in the world. This is self-evident proof of Crosley Quality and Crosley Performance. Combined with Crosley excellence are such additional advantages as selectivity, ease of tuning, simplicity and beauty—all at the lowest radio cost.

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For Sale by Good Dealers Everywhere

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Crosley Owns and Operates Broadcasting Station WLW

The combination of one stage of tuned radio frequency with regenerative detector and reflexed amplification assures unexcelled selectivity, volume and ease of operation.

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Crosley Regenerative Receivers are licensed under Armstrong U. S. Patent No. 1,113,119

Prices West of the Rockies: Add 10 Per Cent

FRENCH TRY CANCER CURE, USING WAVES

WORK ON PLANTS SHOWS REMARKABLE RESULTS

Four Celebrated Scientists Give Demonstration—Subjects Receiving Radio Treatment Thrive

PARIS, FRANCE.—Application of a very short Radio wave to infected tissue may prove to be the means of curing cancer.

With this startling statement French scientific members of the Societe de Biologie, one of the foremost scientific societies of Paris, have announced the results of a series of experiments with the Radio wave which have extended over a considerable period of time.

Four of France's most celebrated physicians, Prof. A. Gosset, Dr. A. Guttmann, clinical aide to Prof. Gosset; M. Georges Lahkovsky, scientist and inventor; and M. J. Magrou of the Pasteur institute, conducted the tests with growing plants which produce growths equivalent to the human form of cancer.

Subject Plants to Cancer Growth
In theory the work is based upon the known fact that by the inoculation of various plants with living bacteria of special varieties a peculiar tumorous growth can be brought about similar to cancer. These tumors spread very rapidly and refuse to yield to treatment with the knife.

Twenty plants were selected for the experiments by Prof. Gosset and his associates. These were inoculated and allowed to grow for a month. They were then treated with M. Lahkovsky's apparatus which he calls the Radio-cellulo-oscillator. The oscillator, a simple machine with two vacuum tubes produces oscillations with a wave length of 2 meters.

Treatment Withers Cancer
The first plant selected for the test was treated with the oscillator for two 3 hour periods each day for sixteen days. At the end of this time the tumor began to wither. In fifteen more days it had completely dried up and disappeared. The plant continued to bloom in good health.

Two other plants, while not given the exhaustive treatment of the first, showed immediate results upon being treated. The plants not treated showed steady and tremendous growths which eventually killed them.

Experiments are now being conducted with animals. In a short time it may be possible to determine whether this treatment with the Radio wave will become one of the greatest medical advances of the age.

Northrop to Be Director For New Chicago Station

CHICAGO.—The appointment of Robert ("Bob") Northrop to the directorship of the new broadcasting station being built here for the publishing and printing firm of Foster & McDonnell, has been announced.

Mr. Northrop, who was secured from WCAP, Milwaukee, and who previously had announced from KYW and WLS, Chicago, is now engaged in perfecting plans to make the new station unique in several ways. He will be assisted by H. A. Zook, Jr., lately of KYW and former newspaperman. Mr. Zook will be assistant director and Radio editor of the Southtown Economist, published by the owners of the station.

WINS SECOND PLACE IN CONTEST



J. M. Witten, announcer at Station WOS, who was the runner-up for the Radio Digest Annual Gold Cup. "Don" is well known and liked by Radiophans throughout the country for his perfect enunciation and pleasing voice over the air.

OLD WLAG REOPENS; NEW LETTERS WCCO

MINNEAPOLIS, Minn. — WCCO, meaning "Washburn - Crosby company," is the new call assigned to former WLAG, Minneapolis-St. Paul, the Gold Medal station. Former admirers of WLAG, "In the Land of Ten Thousand Lakes," are asked to change their tuning log books to include the new call. The wave length, 417 meters, remains the same.

WMC "HUSHPUCKINNY" STARTS WINTER TRIPS

Makes First Jaunt Through South and East

MEMPHIS.—The Hushpuckinny, mythical ship of WMC, took its first winter cruise on the night of Tuesday, October 7, at 11 p. m. Starting from Memphis the ship proceeded to New York and from there made a week's tour in an hour.

The occasion was the Midnight Frolic and Mr. Nichols and Skipper Jerry of WMC combined to prepare the cruise.

Two numbers were offered for this first stop, New York city. A brief stop was made at Staten Island. The Hushpuckinny reached Bermuda, touched at Ha-

vana, New Orleans, Natchez, Helena, Ark., and thence returned back to shore at Memphis for the night.

It is planned to make these cruises semi-monthly affairs in the future, some country or series of countries being visited on each trip.

Lutherans Open Station

VALPARAISO, Ind. — Station WRBC, owned by the Valparaiso Lutheran church has been completed and will broadcast church services every Sunday morning.

The station, of 500 watts, was erected by popular subscription. It is a class A station on 278 meters. All broadcasting will have to do with religious topics. According to reports this is the first Lutheran church to operate a station.

ILO, WORLD TONGUE, LESSONS RADIOCAST

WLW, WJAX AND WCX GIVE INSTRUCTIONS IN USE

CKAC in Second Series—Other Stations to Follow—Language Not Hard to Learn

CINCINNATI.—Ilo, the international language, is now being taught to hundreds of thousands of Radiophans by means of broadcasting from Stations WLW here, WJAX in Cleveland, and WCX in Detroit. The new world tongue, formulated in 1907 as a scientific substitute for the older and less practical Esperanto, is winning tens of thousands of new people to its use.

Fred Smith, well-known director of WLW, Crosley Radio corporation, is guiding hand behind the broadcasting of the simple Ilo lessons.

Besides the lessons now being given from the three stations under the supervision of Mr. Smith, Station CKAC, La Presse, Montreal, has been teaching the universal language for some time. CKAC is directed by Jaques N. Cartier.

Other Stations to Follow

The lessons, three of which are given each week, are easily understood by even a child still in grade school. Grammars and vocabularies, now in preparation, will be sold at cost to interested followers of the broadcasts.

Other stations are expected to follow soon and begin teaching the world language. Among these are WGR, Buffalo; WBZ, Springfield, and a Philadelphia broadcaster.

WJAX is owned by the Union Trust company, Cleveland, and WCX by the Detroit Free Press.

International reception of programs arranged in Ilo will undoubtedly stimulate the use of the universal tongue and swell the numbers of its adherents to a point where it may eventually undo the work of the fall of the Tower of Babel.

Donate WSY to Observation Squadron at Roberts Field

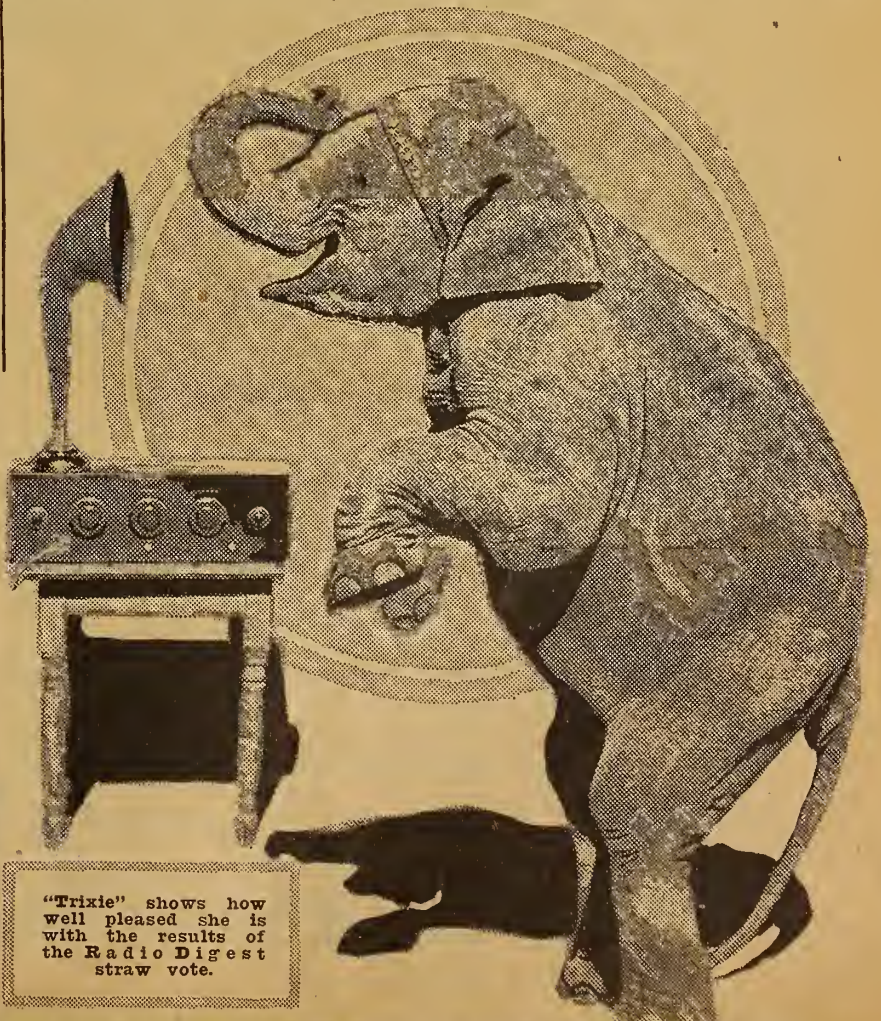
BIRMINGHAM. — WSY, owned and operated by the Alabama Power company, has been donated by the company to the 106th Observation squadron, stationed at Roberts field, near here. The acquiring of this station will qualify Roberts field for a United States air mail station.

A program probably will be broadcast from this station every evening.

All lighthouses on the coast of England are being fitted with Radio to warn ships at sea of impending danger. Experiments carried out so far have proven highly successful.



Listening in to the results of the Radio Digest straw vote. Evidently "Dominick" was not very well satisfied with the ominous results.



"Trixie" shows how well pleased she is with the results of the Radio Digest straw vote.

DE FOREST STARTS SUIT FOR RECOVERY

ASK INJUNCTIONS AGAINST FUTURE INFRINGEMENT

Millions Alleged to Have Been Received Through Illegal Use of Pioneer's Basic Patents

PHILADELPHIA.—Wholesale charges of infringement, conspiracy, applications for injunctions against further sale or manufacture and accountings involving many millions of dollars alleged to have been received through the illegal use of basic patents awarded to Dr. Lee De Forest for Radio equipment, were joined in a series of suits against the Westinghouse electric and manufacturing and Westinghouse lamp companies, filed in the federal district court recently, by the De Forest Radio Telephone and Telegraph company.

Similar actions making the same general charges were filed simultaneously in the federal district court of Delaware against the Radio Corporation of America.

Allege Patent Infringement

The complaints and restraining order petitions allege the generic patents of Dr. De Forest on oscillators, detectors, amplifiers, the three electro audion or vacuum tube and certain other of his essential Radio inventions have been infringed upon in certain equipment made or sold by the three defendant corporations. Further charges are made concerning an alleged trade agreement now in force, under which the Westinghouse interests manufacture 40 per cent of the transmitting, receiving and miscellaneous equipment sold by the Radio Corporation, much of which embodies infringements on De Forest letters patents.

Samuel E. Darby, Jr., counsel for the De Forest interests said that the actions were based on previous decisions which had held the inventor's basic patents to be incontrovertible. He said:

"Apparatus, including the De Forest three electrode audion or tube patent and other devices making for perfect reception, modulation and amplification are being infringed upon without license or permit and this is being sold in direct competition with the original De Forest products. We have asked for an accounting of all profits accruing to the three defendant corporations and injunctions that will prevent future infringement."

FAMED OPERA STAR SINGS FOR WIP FANS



Josephine Lucchese, world famous and much lauded coloratura soprano of the San Carlo Opera company, who recently appeared in a program at Station WIP, Gimbel Brothers, Philadelphia. Hundreds of requests were received during her recital.

Stage Director Tells Secrets

NEW YORK.—Ned Wayburn, famous stage director of the Ziegfeld follies, America's greatest stage genius, recently made his Radio debut from Station WHN, Loew's State theater. Mr. Wayburn told his secrets of stage dancing and the production of gigantic spectacles for the stage.

License "Ham" in India

CALCUTTA, India.—The first Radio license in India has been given to E. C. Sinher of this city.

UNITE 10,000 DINERS AT BIG ANNIVERSARY

GREAT BROADCAST COVERS WESTERN HEMISPHERE

Speakers at Pittsburgh Talk to Company Employes in 60 Cities of Four Countries

PITTSBURGH.—The 10,000 or more diners who attended the H. J. Heinz company dinner on October 12 in more than sixty different cities over the United States, Canada, England and Scotland were banded together for the first time at the banquet table by means of Radio.

Westinghouse Station KDKA at East Pittsburgh Radiocast President Coolidge's speech to those in attendance at the various banquets by means of a direct wire from the White House. Several members of the cabinet also spoke. Speeches of prominent speakers at the Pittsburgh meeting were Radiocast and the stupendous task of providing dinner talks for the thousands of diners at one time was successfully accomplished by the Westinghouse company.

Called Greatest Radio Event

The novelty features and immense scope this Radiocast, represented is a new departure in the work. It was done with two separate wave lengths. The usual 326 meter one was used for the local broadcasts. A special super-frequency carrier wave—a recent development of the Westinghouse company—carried the messages from station to station.

Receiving sets were installed in each of the banquet halls. Thus almost a quarter of the globe was covered from a central point during the Founder's Day exercises of the Heinz company—a Radio event unparalleled in history.

Inventor of "Death Ray" To Appear on London Stage

LONDON, Eng.—H. Grindell-Matthews, inventor of what may become one of the most revolutionary methods of warfare and power transmission (or, according to some scientists, one of the greatest hoaxes in history), has announced his intention of appearing in person in a new dramatic production to open soon in London. He says that he will devote all his proceeds from this play to the trust fund for the further development of his invention.

Launch Dirigible from Big Pittsburgh Station

Mythical Aircraft to Make Regular Weekly Trip

PITTSBURGH.—Aerial traffic rules will soon be necessary.

What with thousands of Radiophans crowding nightly onto mythical railroad trains, automobiles, steamboats, carrier waves, rocking chairs and other transportation devices, cautious listeners in believe regulation will soon come to pass.

Station WCAE of Pittsburgh claims the latest. Each and every Monday night at 11 o'clock Eastern standard time their great dirigible, "Press-Kaybee," loaded with songs as ballast and a crew of entertainers leaves its aerial moorings and passes rapidly over the country, dropping the song ballast as they go.

The ship was officially launched on September 22 after it had been christened with all the attending ceremonies. Although only a short local trip was contemplated on its maiden voyage hundreds of telegrams and telephone calls swamped the station and a country-wide jaunt was made.

WCAE has invited all its listeners to let them know what ballast to drop as it passes over their towns.

Mix Music With Stocks to Make Reports Interesting

COLUMBUS, O.—To add interest to the market report programs at WEAQ, Ohio State university at 9 a. m., 11 a. m., and 1:30 p. m., eastern time, daily, arrangements have been made with the Marguerite Manley Siedel school of music to furnish artists.

WBAV, Erner and Hopkins company here, has added a Sunday afternoon religious service feature to its schedule. The Columbus council of churches will furnish a pastor and choir each Sunday from a different church for a two-hour program from 2:30 to 4:30. The feature was arranged by the Columbus Dispatch as a result of the popularity of Thursday noon religious programs given under Dispatch auspices.

A progressive manufacturer in Paris, France, has offered 1,000 francs to the amateur devising the best receiving circuit using a certain type of transformer and the alternating current from the regular lighting service.

Why it is Better

LOOK at this illustration—see for yourself the eleven distinctive features in the construction of the Federal Condenser. Every feature is a distinct point of superiority—essential to clear, sharp tuning and clear reception.

You can get the outstanding advantages of Federal Tone and Federal Selectivity in your pet hook-up only by insisting on Federal Parts.

There are over 130 Federal Standard Radio Parts bearing the Federal iron-clad performance guarantee. Use them—for your own protection and enjoyment.

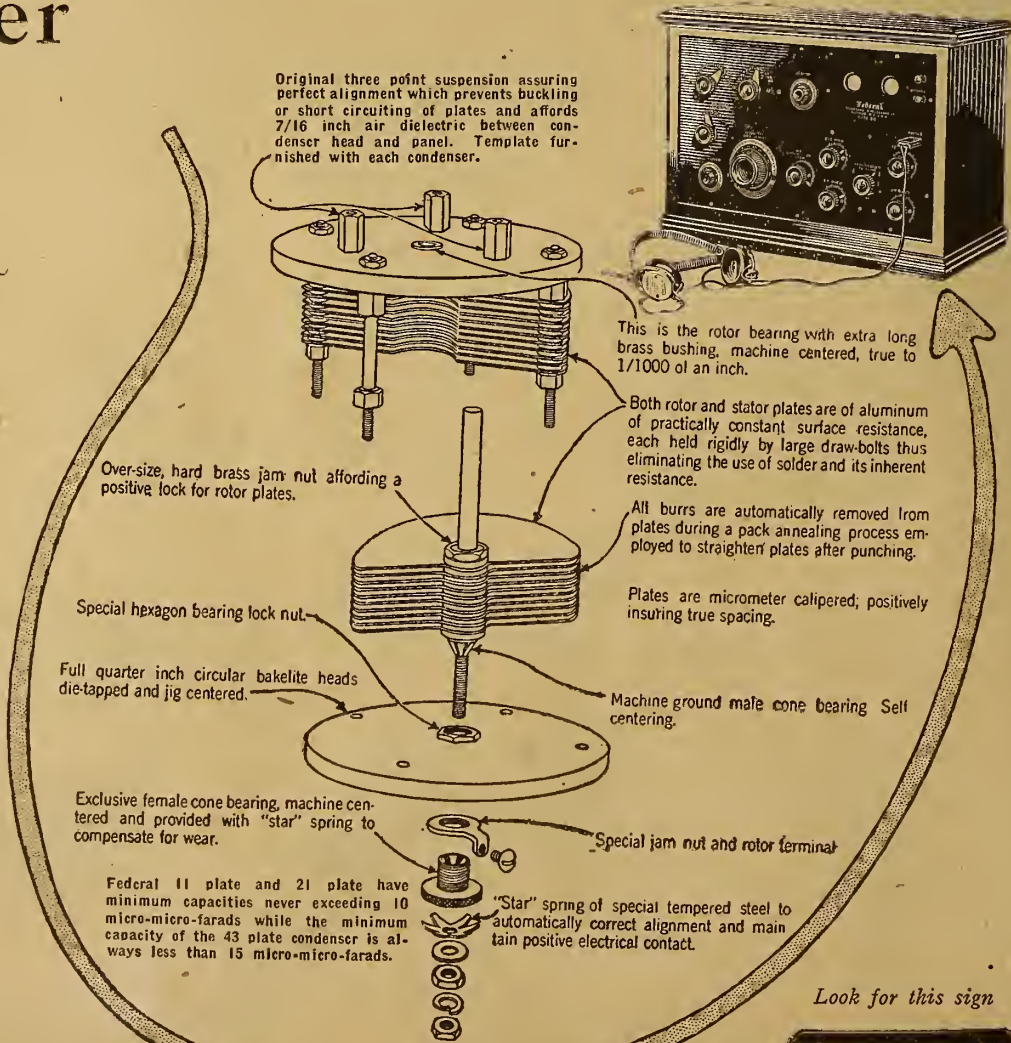
FEDERAL TELEPHONE MANUFACTURING CORPORATION
BUFFALO, N. Y.

Boston New York Philadelphia Pittsburgh Chicago
San Francisco Bridgeburg, Canada



Federal

Standard RADIO Products



Look for this sign



STAMP COLLECTING IS LATEST OF FADS

STATIONS TO GIVE STAMPS AS PROOF OF HEARING

Ekko Company Brings Out Latest Innovation for Radiophan—Game Is to Fill Album

CHICAGO.—Radiophans will soon become philatelists as a result of the innovation brought out here this week by the Ekko company, consisting of a special stamp album, which provides places for stamps from every broadcasting station in this country and Canada.

Each stamp will mean certified reception of a certain station. The game is to see who can fill their album first.

With each album comes twenty "proof of reception" cards. When a Radiophan dials a new station he fills the blanks on the card, encloses a dime to cover cost of stamp and mailing, and sends the card to the station in question. The card provides space for the absolute proof of the authenticity of the claim of reception, and this is checked by the station before sending the Radiophan the beautifully engraved (specimen herewith) and colored stamp bearing the surcharge of the station. Ten beautiful shades and colors of stamps will be distributed by the broadcasting stations of the United States and Canada.

Stamps Proof of Stations Heard
The stamps, issued by broadcasters on receipt of the Ekko card, are conclusive proof of reception of the stations and cannot be issued spuriously. The album therefore represents a bonified list of Radiocasters heard by the stamp collector. The scheme also provides each station with a true list of its actual audience, that is, its actually certified audience.

Each page of the album provides spaces for twenty stamps, and each space is keyed with the call of the station and its location. The position of a station's stamp on a page is determined by its power, those having the greatest power being at the top of each page. The color of a broadcaster's stamp depends upon the wave length.

Not alone is there the stamp section in the album, but lists and information designed to make reception less difficult. There is a list of stations arranged alphabetically by call letters which provides blank spaces for the entering of dial readings, a list of broadcasters arranged in order of wave lengths, and a map of the United States and Canada showing the location of stations.

TRANSMIT SIGNALS OF STANDARD FREQUENCY

Give New Test Schedule for WWV and 6XBM

WASHINGTON, D. C.—Standard frequency signals will be transmitted by the Bureau of Standards, Station WWV, and Leland Stanford University, 6XBM, simultaneously. These signals which have heretofore been sent out twice a month, will be sent on the dates listed below, with the wave length used:

| Time* | Oct. | Nov. | Nov. | Dec. |
|-------------------|------|------|------|------|
| 10:00-10:08 p. m. | 21 | 5** | 20 | 5 |
| 10:12-10:20 p. m. | 158 | 100 | 2400 | 1000 |
| 10:24-10:32 p. m. | 150 | 88 | 2254 | 952 |
| 10:36-10:44 p. m. | 136 | 79 | 2097 | 869 |
| 10:48-10:56 p. m. | 125 | 71 | 1934 | 800 |
| 11:00-11:08 p. m. | 115 | 65 | 1800 | 705 |
| 11:12-11:20 p. m. | 107 | 60 | 1463 | 600 |
| 11:24-11:32 p. m. | 100 | 55 | 1153 | 500 |
| | 94 | 50 | 952 | 450 |

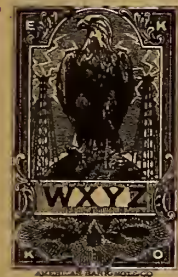
* Eastern standard time for WWV, Washington, D. C. Pacific standard time for 6XBM, Stanford University, California.

** The schedule for November 5 is tentative for Station 6XBM, Stanford University. Later announcement will be made if there is any change.

Belin, Television Expert, Coming to United States

PARIS, France.—Edouard Belin, inventor of the teleradiograph system of transmitting pictures, writing, or drawings by means either of wires or Radio telegraphy, intimated in a recent interview that he planned to sail for America within about three or four weeks.

M. Belin says that his wire photograph transmission is in a state of practical perfection, although, of course, the Radio system still requires certain improvements to keep it from trouble due to atmospheric.



Football Radiocasts

October 18

Carnegie Tech-Washington Jefferson at Washington, KDKA (326).
Harvard-Holy Cross at Cambridge, WBZ (337).
Indiana-Chicago at Stagg field, Chicago, KYW (536), WMAQ (443).
Lawrence-Iowa at Iowa City, WHAA (484).
Pitt-Johns Hopkins at Baltimore, KDKA (326).
West Point-Notre Dame at Polo grounds, New York, WEAJ (492), WGY (380), WJZ (445).

October 25

Chicago-Ohio at Columbus, WEAQ (294).
Harvard-Dartmouth, WBZ (337).
Michigan-Wisconsin at Michigan, WGN (370).
Minnesota-Iowa at Iowa City, WHAA (484).
Princeton-Notre Dame at Princeton, WEAJ (492), WGY (380), WJZ (455).

Radio broadcasting in Germany is a source of revenue to the government.

Maintain Service with Shenandoah

WBAP, Acting as Liason Agency for Government, Gives Orders to Dirigible During Trip

FORT WORTH.—Acting as an official liason agency between the helium plant here and the U. S. dirigible Shenandoah which arrived on October 5, Station WBAP maintained communication with the giant ship during the entire time of its voyage.

Fans familiar with the continental code had an opportunity to listen to the exchange messages between the great flier and WBAP as it flew from the east to Fort Worth.

WBAP was held in readiness during the entire time of the trip and all orders, information, weather reports and other matter which either the helium plant or the dirigible desired to convey was transmitted.

A reception was given the aviators upon their arrival at the city.

Southern Baseball Games Announced From 3 Stations

MEMPHIS.—Three Dixie stations broadcast the play by play accounts of the post-season series of baseball games between Memphis and Fort Worth. WMC, WSB and WBAP were in the air daily during the series, giving the story of the game as it was played.

Lambdin Kay at WSB made his announcements as though WMC and WBAP were playing, referring always to Memphis as WMC and Fort Worth as WBAP.

Weather Reports by Radio

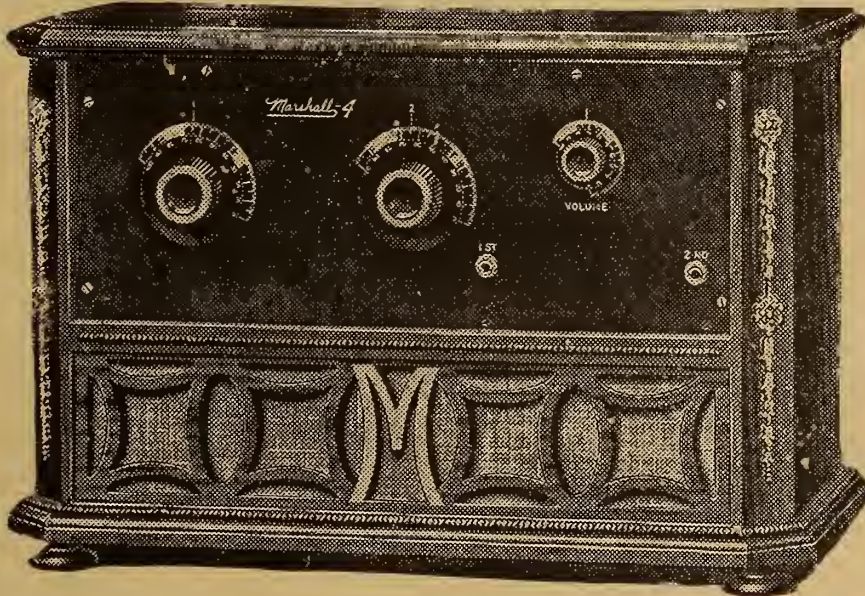
WASHINGTON.—According to reports issued by the United States weather bureau, the use of Radio in collecting weather reports has made very rapid progress within the last few years. In Europe, Radio has almost replaced wire telegraphy in this field.

Improve Aircraft Radio

WASHINGTON, D. C.—Continual attention is being given by experts at the Radio experimental laboratory, Bellevue, D. C., to aircraft Radio.

The Greatest Advance yet made in RADIO

Marshall
3-4 and 5 Tube Sets



Receiver and Loud Speaker in Combination Cabinet of Solid mahogany

This Beautiful Marshall 4 Tube Non-Oscillating Receiver Complete with all accessories only \$5.00 DOWN

WRITE TODAY for full particulars of this most exceptional offer. Marshall Sets embody the very latest improvements known to radio. The wonderful new principle involved is proving the sensation of the 1924-25 radio season. Zero Coupling—the problem which radio engineers have been working on for years—has at last been solved. As a result, the Marshall has no need for neutralizing condensers or other make-shift methods of avoiding internal oscillations which invariably reduce efficiency. The Marshall Tuned Radio Frequency Receiver brings to radio a new degree of musical quality. Its selectivity will delight the experienced radio operator. Yet it is so easy to tune that the novice will handle it like an expert.

Easy Monthly Payments—2 Weeks Free Trial

This is the remarkable offer we are prepared to make you! Two weeks to prove that the outfit you select is everything we have said for it. If it doesn't make good our claims, back it comes, and your deposit will be cheerfully refunded. But if it fulfills all your expectations, you may pay for it in easy monthly installments. You don't risk a cent when ordering from us. You must be satisfied, or we don't do business. Is it any wonder that radio buyers the country over are rushing to take advantage of such an offer? If YOU are interested, figure on getting your order in early, while prompt shipment can be made. Everyone predicts a serious shortage of radio supplies this season. Send for full particulars today.

Beautiful Solid Mahogany Combination

Compare the beautiful Combination Cabinet, pictured above, with the usual radio box and horn. Here the receiver and Loud Speaker are contained in a single handsome cabinet. Or, if you prefer, we also have the Receiver in a separate cabinet of the same design. These cabinets are the work of a master designer—fashioned of solid mahogany. They will harmonize with the furnishings of the finest homes. In spite of the extra value, these Marshall sets are surprisingly low in price. Compare them with others which sell for cash. Then remember you can order a Marshall outfit on two weeks' free trial and pay for it on very easy terms.

Complete Outfits If Desired

In buying from Marshall, you have the choice of a set complete with all accessories, or the set alone. You have choice of dry cell or storage battery outfits. Unless you already own the accessories, you can buy them from us at less-than-market prices, with your set, on easy terms. Your outfit will come all ready to set up and operate within a few minutes,—saving time and trouble—and saving money, too.

MARSHALL RADIO PRODUCTS, INC.

Marshall Blvd. and 19th Street, Dept. 98-47 Chicago

Send Coupon for Special Offer!

If you have any idea of buying a radio set this year, don't let this chance slip by. Our terms and liberal guarantees have set a new pace in the radio business. The low prices we will make you on a 3, 4, or 5 tube Marshall set will surprise you. A letter, postcard, or just coupon will do. But send it today.

We also have a most favorable offer for radio dealers. Write.

Marshall Radio Products, Inc.
Marshall Blvd. and 19th St., Dept. 98-47 Chicago

Please send me your special offer price, terms and full description of Marshall Radio Outfits. Though I may change my mind on receiving your proposition, my preference now is for a:

.....3 Tube4 Tube5 Tube (Please check)

Name

Address

FARM RADIO SHOWS IMMENSE INCREASE

AGRICULTURISTS POSSESS 364,800 RECEIVERS

Department of Commerce Figures Show Increase of 200 Per Cent in Rural Radio Equipment

WASHINGTON, D. C.—Over a third of a million receiving sets are in use on farms according to figures just compiled by experts of the department of agriculture.

The compilation is the result of a questionnaire sent out a short time ago by the department, to county agents throughout the country. The answers are especially interesting inasmuch as they are comparative to similar figures which were tabulated one year ago.

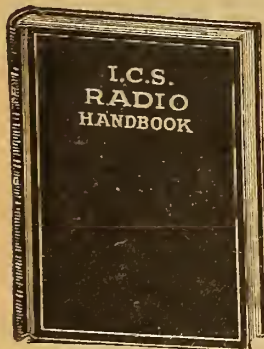
As a result of the tabulation the department estimates that this year there are 364,800 Radio sets on farms in 2,850 agricultural counties of the country out of a possible 4,000. Last year the estimate was that there were 145,350 sets owned by farmers.

Only Five Per Cent of Field

The department estimates that 110,905 Radio sets are owned by farmers in the counties which reported as compared with 39,869 owned last year. The estimated number of sets per county this year is 128 as compared with 51 last year.

Officials who have been making a study of the answers received state that the questionnaires returned show that there is considerable progress being made by Radio in the country districts. Although only about 150 county agents out of some 2,000 own Radio sets themselves, nevertheless they seem to be able, say the experts, to speak with considerable de-

The Greatest Book on RADIO ever written



only \$1
514 pages
Pocket Size

100,000 SOLD

Compiled by HARRY F. DART, E.E. Formerly with the Western Electric Co., and U. S. Army Instructor of Radio. Technically edited by F. H. DOANE

NEW edition just off the press! The greatest book on radio ever written. Price only \$1. Filled with sound, practical, tested information for every radio fan, from beginner to hard-boiled owl. Written, compiled and edited by radio experts of national reputation.

Every page tells you something useful. And there are 514 pages! More than 150 illustrations and diagrams!

You may dip into this I. C. S. Radio Handbook at random, or hunt up special information you want, or read it right through. Different types of receiving and sending hook-ups are explained; electrical terms and circuits; antennas; batteries; generators and motors; electron (vacuum) tubes; interesting experiments; definitions, and thousands of suggestions for getting more pleasure out of radio. Will save you from wasting money on things that won't work. More than 100,000 sold.

Send \$1 to-day and get this 514-page I. C. S. Radio Handbook before you spend another cent on parts. Money back if not satisfied.

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Box 8278-N, Scranton, Penna.

I enclose One Dollar. Please send me—post-paid—the 514-page I. C. S. Radio Handbook. It is understood that if I am not entirely satisfied I may return this book within five days and you will refund my money.

Name.....

Address.....

Send Applause Card by Carrier Pigeon from Icy Wastes of British Columbia

MONTREAL, Canada. — Messages received by way of carrier pigeons flying from the Byron Harmon moving picture expedition now up in the icy wastes of British Columbia to Banff, Alberta, have brought information that the party has heard Station CKAC of the Montreal "La Presse."

According to Lewis R. Freeman, noted

author, who is writing the story of the expedition, reception has been very difficult. The first time La Presse was heard was near the Continental divide on Lake Bow. As the altitude increases, says the pigeon delivered dispatch, reception has steadily improved. In the event of good weather while the party is on the Great Columbia Ice Field, the expedition expects to pick up CKAC nightly.

The expedition is making moving pictures in this wild region for the first time. Freeman, who writes the log of the trip is one of America's foremost adventurers and travelers. His home is in Pasadena, Cal. He has in his search for thrills and writing material ranged from Thibet to the Argentine; from Alaska to the islands of the south Pacific. The use of Radio on this trip will mark a point, probably the furthest north, that a receiving set has ever been taken by an exploring or scientific expedition.

degree of familiarity of broadcasting stations, programs and schedules and use the expressions peculiar to those familiar with Radio reception. It is estimated by the department that there are more than 200 per cent more sets on the farms this year than there were last year, although the number is less than five per cent of the total number of farms in the country, so that the farm field for Radio has hardly been more than scratched.

LONDON TO HEAR HYENA'S LAUGHS

British Broadcast Company to Attempt Transmission of Animal Voices from Central Zoo

LONDON, Eng.—A broadcast of the London zoo is to be made within the next few weeks by the British Broadcasting company. A microphone on a perambulator somewhat resembling a tea wagon will be wheeled round from cage to cage and the various sounds transmitted to another part of the zoo and thence to 2LO, the central London broadcasting station.

In the opinion of experts there will be no difficulty at all in broadcasting such creatures as sea lions, parrots, hyenas and jackasses. Throw the sea lions a fish (or even show them one) and they will roar finely. Clatter a bone in the cages of the hyena and the jackass and they, too, will do their best for the listeners in. These creatures have been chosen only after careful tests.

The New Bradleystat

A Remarkable Achievement

Many refinements are embodied in the new Bradleystat. The graphite disc columns are enclosed in a smaller container; two terminals suffice for ALL tubes; a new mounting simplifies installation; the knob is of a daintier pattern. And the noiseless, stepless control of the old Bradleystat remains, unchanged. Such a combination of advantages can be found in no other filament rheostat.

Every radio set can be improved by substituting the new Allen-Bradley radio devices.

Only One Hole required in Panel

A DISTINCTLY new and valuable contribution to radio! That is the verdict of all radio engineers and designers who have seen the new Allen-Bradley radio devices and have witnessed their amazing performance. The new "one-hole mounting," which replaces the older clip mounting, makes for marvelous compactness and simplicity of installation. The new Bradleystat, Bradleyleak and Bradleyohm require only a 11/16-inch space behind the panel, and the Bradleyometer only 7/8-inch. Thus, the new models can replace inferior wire rheostats and potentiometers without disturbing the arrangement of the set. Our new literature is ready. Send for it, today!

Allen-Bradley Co.
Electric Controlling Apparatus

290 Greenfield Ave. Milwaukee, Wis.

Ask your radio dealer about the new Allen-Bradley line.

Baltimore
Birmingham
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Buffalo
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Philadelphia
Pittsburgh
Saint Louis

Saint Paul
San Francisco
Seattle

WJZ INAUGURATES NEW "AIR COLLEGE"

SPEECH ON ARCHAEOLOGY OPENS FALL SCHEDULE

Series to Include Lectures on Economics, History, Geology, Politics, Biology and English

NEW YORK.—If you have ever had any lurking desires to study biology, geology, history, economics, politics or archaeology now's your chance.

The "Air College" of New York university and the Radio Corporation of America opened on October 6 with its first series of lectures on "Facts, figures and fancies of archaeology," given by Prof. V. D. Magoffin. Other courses will be given until December 23.

The college, which has as its primary object the dissemination of educational information of the non-technical of popular type, opened its fall term with addresses by members of the staffs of the university and the Radio company. The address as well as the lecture courses were Radio-cast from Station WJZ.

To Teach Eight Subjects

Lectures will all be confined to subjects of public interest. They will attempt also to stimulate interest in the arts and science. Human interest and non-academic treatment will be stressed in the choice of the subjects and instructors.

The curriculum for the first term includes eight subjects, each of which will

NEW GAME MAKES BIG HIT WITH FANS

GENEVA.—A Swiss Radio paper, "Radio," has inaugurated a new sport in Radio detection, a sort of "hare and hounds." A boat with a small transmission set puts out about dark on one of the lakes. Twenty minutes afterward the "hounds," boats equipped with one-tube loop sets row out in chase. A prize is given to the boat that locates the transmission set.

be completely covered before going to the next. All work will be simplified to such a degree that even the most casual listener in will be able to understand and follow it. The schedule follows:

October 13-17, "Politics and Statesmanship," by Prof. E. C. Smith.

October 20-24, "Co-operative Economics," by Mrs. Clara E. Breakey.

October 27-November 7, "Economics," by Prof. Reid L. McClung.

November 10-26, "Geology," by Prof. J. Edmund Woodman.

December 1-5, "Biology," by Prof. Charles E. Bristol.

December 8-12, "English."

December 15-23, "History and Development of Civilization," by Prof. E. George Payne.

Squire Infringement Suit Dismissed by Judge Knox

NEW YORK.—Basing its opinion on the ground that Major-General George O. Squire, former chief signal officer of the United States army, freely and openly dedicated his patents to the public, suit which he brought against the American Telegraph and Telephone company for infringement was dismissed by Judge Knox of the United States District court here.

The court found that in March, 1909, Congress appropriated \$30,000 for experiments in wireless telegraphy and telephony experimentation and put General Squire in charge. The device was patented about two years later for the protection of the government.

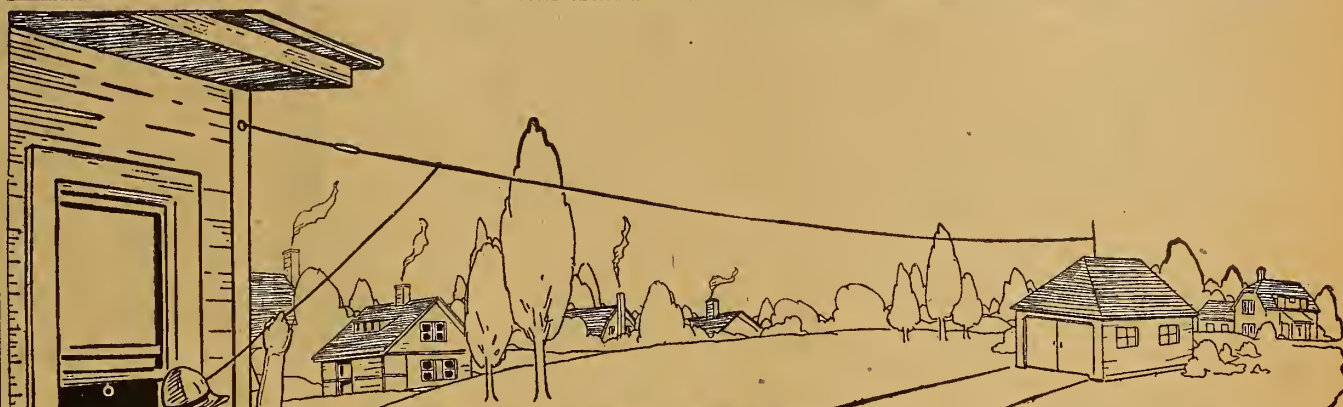
Italian Phantasies Are Broadcast from KGO

Stringed Instruments to Occupy Center of Stage

OAKLAND, Calif.—"One Night in Naples," a musical phantasy, will be broadcast by KGO, Tuesday evening, October 21. A combination of eight mandolins, one violin, two mandolas, five guitars and one tambourine will play "The Carnival of Venice Overture," by Thomas, and Harry Robertson, tenor, will sing Milanese street songs.

This novelty in Radio programs is offered by Laurie A. de Graca, San Francisco instructor of stringed instruments. Following the musical program, J. E. Barnes, travel talker, will give a brief word picture of the City of Naples.

The feature at KGO, Thursday, October 23, will be a violin ensemble of eleven instruments. Orley See, well known California violinist, will lead in an interpretation of a Sochting Suite. Wandzsetta Biers, soprano, will also be heard.



Your Outdoor Aerial Should be *Enameled*

Smoke, grime and moisture attack the outer surface of ordinary bare aerial wire. The corroded surface introduces resistance in the aerial circuit, because high-frequency currents flow along the surface of conductors. This means that ordinary aerial wire deteriorates as soon as it is installed, and its resistance to radio-frequency oscillations increases daily.

Belden Aerial Wire is coated with several layers of weatherproof, corrosion-proof enamel. Its conductivity does not change, because the Beldenamel coating keeps the wire surface bright and shiny. With a Beldenamel Aerial, your signal strength remains constant from year to year, other things remaining the same, and does not weaken through increased aerial resistance. Tests made by U. S. Bureau of Standards establish the superiority of enameled aerial wire.

Get all the facts in our latest booklet, "Helpful Hints for Radio Fans." Read how to install an outdoor aerial and how to increase your range with Beldenamel Aerial Wire. It's free! Use the coupon.

Other Belden Radio Products

Belden Radio Products, sold in distinctive cartons, include insulated or shielded hook-up wire, magnet wire, battery cords, loop and litz wire, sockets, headset cords, tips and terminals and dozens of other items.

Belden

Manufacturing Company
2315 S. Western Ave. • Chicago, Ill.

DEALERS! Attach the coupon to your business letterhead for complete dealer information on the Belden Line of Radio Products.

Free Booklet!



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2315 S. Western Ave., Chicago, Ill.
Please mail me, free, your new booklet
—"Helpful Hints for Radio Fans."

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Address _____

Hansen "BIRD-CAGE" Radios



4 Tube Radio Set \$32.50
Without Accessories



NIGHTINGALE RADIO

A simplified, loud speaking, long range set at a price within the reach of all.

| | |
|---|----------|
| Hansen BOBOLINK. 2 Tube Reflex..... | \$25.00 |
| Hansen CARDINAL. 3 Tube Reflex..... | \$50.00 |
| Hansen BLUE BIRD. 4 Tube Radio Frequency..... | \$57.50 |
| <i>E. S. Mumm</i> RECEIVERS 1-tube very selective..... | \$90.00 |
| 6 tube loop..... | \$135.00 |



AMERICAN EAGLE. This we believe to be the best high grade 6-tube loop set on the market today..... \$150.00

It is ultra selective and brings in distant stations with wonderful volume.

Write for New Catalogue
Dealers and Jobbers—Our line is interesting and profitable.



RADIO DEPARTMENT
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"THE MILLION DOLLAR WAREHOUSE CO."
120-134 JEFFERSON ST., MILWAUKEE

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| Badger Radio Co..... | Milwaukee, Wis. |
| Phil Gross Hdw. Co..... | Milwaukee, Wis. |
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| Maxwell Elec. & Radio Co..... | Toledo, Ohio |
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Inameled Aerial Wire
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THE ANTENNA BROTHERS

Spir L. and Lew P.

When Dreams Come True



Canada Plans Great Programs for Winter

Announcement Already Made of Elaborate Preparations

CALGARY, Alta.—With winter and the best season possible for Radio rapidly approaching, western Canada broadcasting stations are making elaborate preparations.

CFAC, The Calgary Herald; CHBC, The Calgary Albertan; CFCN, The W. W. Grant Radiocast at Calgary, The Edmonton Journal, The Regina Leader, The Vancouver Province and other stations have already made preliminary announcements saying that tentative plans for a big season are now under way, and that the class of entertainment which will be provided this winter will be better than any season since Radio became popularized.

CFCN at Calgary was the first station to come on the air with one of its winter features, when it broadcast the Plaza Imperial orchestra from the Plaza cabaret here.

Magnolia Refinery Opens New Station at Beaumont

BEAUMONT, Texas.—KFDM, the Magnolia Petroleum company's Radio station, located here, Radiocast its initial program October 1.

Station KFDM was inaugurated in response to the reception by listeners when the Magnolia Petroleum company's refinery band took the air last year on four occasions by remote control through Station WFAA of the Dallas News and Journal of Dallas, Texas.

The station is a 500 watt set, operating on a wave length of 306 meters.

Maitra Lectures at WOR

NEWARK.—At WOR, Bambergers, recently Harendranath Maitra, considered one of the greatest lecturers ever to come from India to the United States, addressed the Radio audience on Tagore and Hindu literature, a topic that has in the past few years come into considerable prominence. Mr. Maitra is appearing at WOR through the courtesy of Charles I. Reid, Lecture and Concert bureau. Hindu songs featured Mr. Maitra's broadcast.



Radiotron UV-199 A Small Tube That's a Big Performer

Radiotron UV-199

for detection or amplification

\$4.00

The new UV-199 is proving a mighty popular member of the Radiotron family, particularly for portable sets.

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

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433 California St., San Francisco, Cal.

This symbol of quality is your protection.

Radiotron

REG. U. S. PAT. OFF.

Herald MODEL B

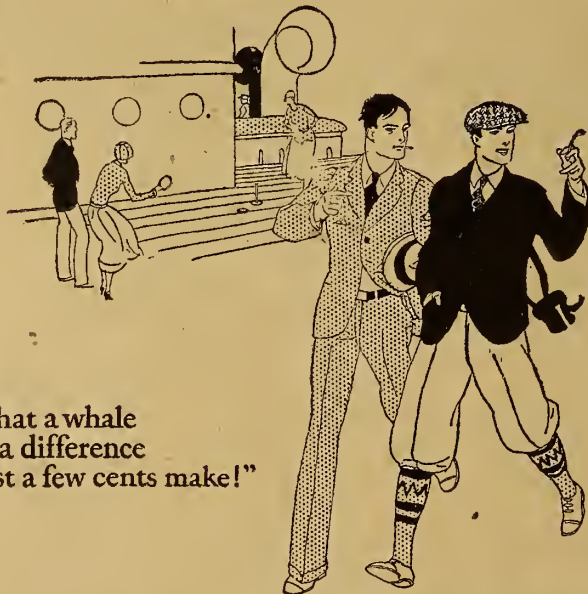


The Big, Clear Voice of Radio!

\$18

A NEW Herald—clear—loud—with a tone that is wonderfully mellow and sweet. Height 25 inches. Bell 12 inches. Fibre horn and art metal base. No batteries required. No adjustment necessary. Hear the Herald Model B at your dealer's.

Herald Electric Co., Inc. 113 Fourth Avenue, New York



"What a whale of a difference just a few cents make!"

"A whale of a difference" is right—

It's a big difference in TASTE at a slight difference in price. It's a big difference in enjoyment at a small difference in cost. It's all the difference between an ordinary cigarette and—FATIMA, the most skillful blend in cigarette history.

FATIMA

Liggett & Myers Tobacco Co.

Secrets of Selectivity and Regeneration

Part I—Resonance and Other Underlying Principles

By William W. Harper

WITH the advent of increased broadcasting, the Radio world has been compelled to devote a great amount of consideration to the problem of selectivity. Although numerous methods for gaining a high degree of selectivity have been developed, the most desirable systems constitute the same general principles. It is the purpose of this series of articles to explain these basic principles and their application, so that benefit may be derived by those experimenters who desire to construct highly selective receivers.

As a starting point, we should thoroughly understand the prerequisites for a selective condition in a simple Radio tuning circuit.

Sharpness of Resonance

In a system such as shown in Figure 1 it is well known that the selectivity depends upon a factor which is called the "sharpness of resonance." The latter characteristic is often depicted graphically and is known as a "resonance curve."

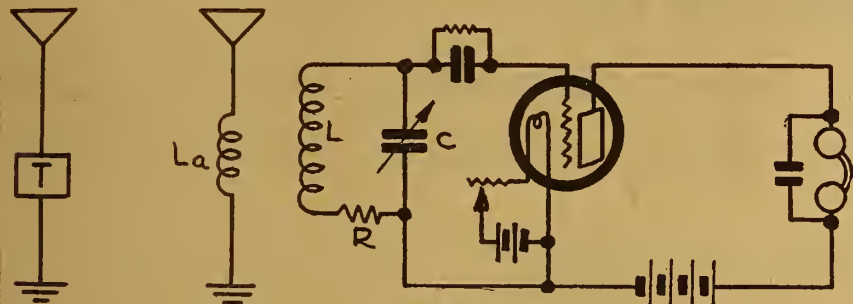


Figure 1

From this curve we may predict how sharply our receiver will tune and in that way estimate the selectivity or its ability to eliminate an interfering station. A resonance curve is shown in Figure 2 which may be applied to the tuning circuit of Figure 1, which comprises the coil L and the condenser C.

This curve, as will be noted from the

diagram, is made by taking a series of observations of the intensity of a certain signal with the condenser C adjusted to various positions. It is obvious that as we rotate the condenser C we will find one particular point at which the signals from a certain transmitter, T (Figure 1), are of the greatest intensity in the head receivers. At this point our receiver is said to be "tuned" to the wave length of the transmitter T, or more technically, it is in resonance with T. This point is shown on the resonance curve of Figure 2 corresponding to a condenser setting of 60.

Interference Between Stations

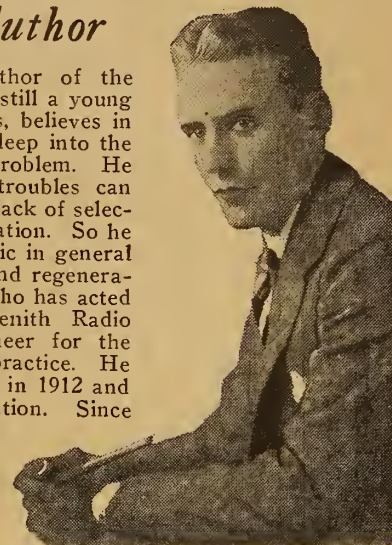
It is noted, however, that the signal is also received with diminishing intensities on each side of this point. If it happens that another transmitting station is broadcasting on a wave length which would necessitate rotating the condenser C to a setting of 70, in order to be in exact resonance, it is apparent from the curve that we will still hear the sig-

nals from T with an intensity equal to 9 and the result will be "overlapping" or interference between the two stations.

Therefore, we learn that in order to have high selectivity we must strive to make this resonance curve as sharp as possible, so that we are enabled to hear a given station at only one setting of the condenser and to either side the intensity

Introducing the Author

WILLIAM W. HARPER, author of the article appearing herewith, is still a young man, and, as his photograph shows, believes in smoking a pipe when going down deep into the solution of some difficult Radio problem. He has suggested that many Radio troubles can be attributed to one of two things; lack of selectivity, and improper use of regeneration. So he has proposed to tell the Radio public in general some of the secrets of selectivity and regeneration he has learned. Mr. Harper, who has acted as research engineer for the Zenith Radio corporation, is experimental engineer for the A. R. R. L. and has a consulting practice. He put on his first Radio "long pants" in 1912 and 9TQ as his first transmitting station. Since then his Radio experience itself would make an interesting series of articles. Many code fans will remember 9TQ, 9GK, 9XAD, 9CK or 9DRF, the author's calls during the last twelve years.



of the station should decrease with the greatest possible rapidity. Then, by tuning to a second station operating on an adjacent wave length, no interference will exist due to the first station.

Cause of Broad Resonance Curve

It is essential, then, to know the cause for a broad resonance curve. We find that this broadening of the curve is due to the electrical resistance in the tuning circuit consisting of L and C, which is represented at R. From the study of circuits of this type with various amounts of resistance, it has been brought out that the less the resistance present, the sharper will be the resonance curve of the tuning circuit. To improve the selectivity we then reduce the resistance of the circuit as much as possible. This involves the

reduction of the resistance of the coil L and the condenser C, which is effected by proper design.

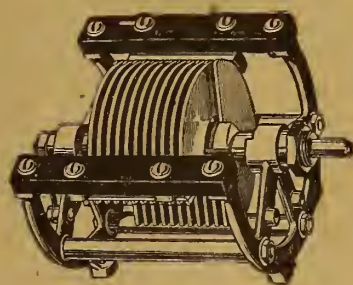
Fortunately, due to the "low loss" campaign which has recently been waged, we have a fairly decent assortment of low resistance coils and condensers available on the market. For this reason no attempt will be made here to go into the merits of coil and condenser construction.

Further Reduction of Resistance

Having reduced the circuit resistance as much as possible by careful design, a further increase in the degree of selectivity will obtain through the utilization of regenerative action. In the past, regeneration has been used with the intent of increasing the volume of received sig-

(Continued on page 10)

BUSELL E. J. Flewelling RADIO APPARATUS



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

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

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

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

BUSELL MANUFACTURING CO.

2977 Cottage Grove Ave., Chicago, Ill.

Write for circular on our entire line

NEW MODELS Bristol Radio Receivers

Incorporating the Patented
Grimes Inverse Duplex System

Watch for further announcements in all leading
radio publications.

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

Ask for Bulletin No. AY-3017

Manufactured by
THE BRISTOL COMPANY
Waterbury, Connecticut

GRIMES SYSTEM INSURES NATURAL TONE QUALITY



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

SELECTIVITY SECRETS

(Continued from page 9)

nals, and little consideration was given its ability to better the selectivity by virtue of the reduction of the resistance which it effectively accomplishes.

In the application to a simple Radio receiver, we have two possible methods for securing regenerative action. The most popular method is based on electromagnetic coupling between plate and grid circuits. Such an arrangement is shown in Figure 3. The second method is illustrated in Figure 4 and depends upon the electro-static coupling which exists by reason of the capacity in the vacuum tube from grid to plate. This capacity is represented by Cn.

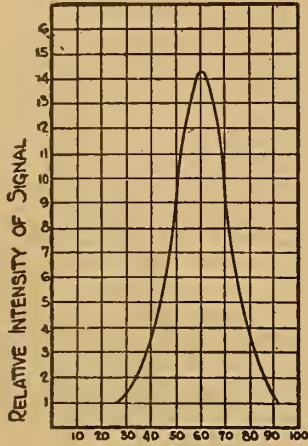


Figure 2

With reference to Figure 3, the energy which is fed back from the plate circuit by means of the "tickler" coil, L1, is in phase with the signals induced into the LC circuit from the antenna coil and the result is intensified signals. This feedback of energy in phase with a received signal also effectively reduces the resistance, R, of the circuit LC. The extent of reduction depends upon the electromagnetic coupling between L1 and L. As L1 is moved in the direction of the arrow so as to approach L, the resistance R is gradually reduced, reaching a zero value at some point P.

At this point the set goes into a state of oscillation and the quality of a modu-

lated signal is impaired, so it is necessary to adjust the electromagnetic coupling between L1 and L to a point just above P where the resistance R is greater than zero. This point, just above zero resistance, is termed "critical regeneration" and is the point at which maximum

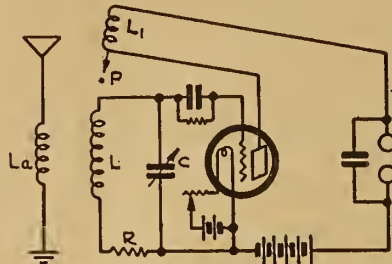


Figure 3

signal strength without distortion is attained. Since the resistance has been so noticeably reduced we obtain the maximum selectivity at this adjustment.

Tuned Plate Regeneration

In the circuit of Figure 4 the same end is attained, but in this case the feedback of energy occurs through the natural electrical capacity of the vacuum tube, as represented by Cn. The variometer L2 serves to tune the plate circuit to the wave length of the impressed signal. This impressed signal having been induced into the LC circuit, causes pulsations in the current of the plate circuit and when the latter is even partially tuned to the wave length of the

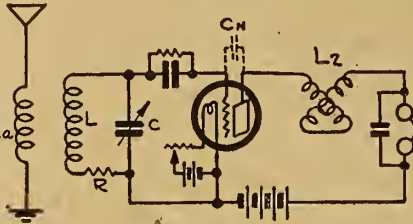


Figure 4

incoming signal, energy in the plate circuit will be reflected back to the LC circuit through the tube capacity Cn. Fortunately, the natural phase relationship within the tube is such that this reflected energy reinforces the incoming signals and in that way gives rise

(Continued on page 18)

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KODEL is the name of a circuit discovered by an independent experimenter. So wonderful is the KODEL circuit that it picks up stations 1000 miles away, using only one tube and no antenna, when conditions are right. Add tubes and you increase distance and volume until you succeed in covering 3000 miles on the loud speaker. All this with only a single dial to turn!

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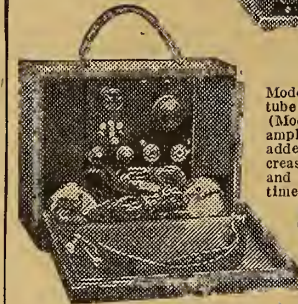
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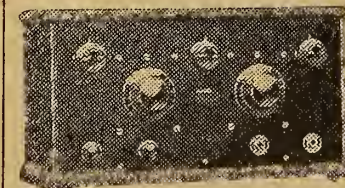
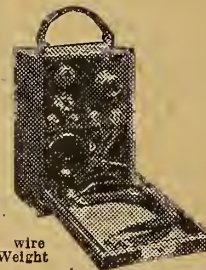


Model P-12 two-tube Portable (Model P-11 with amplifying tube added, which increases distance and volume many times.)

\$22.50

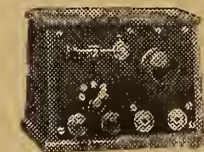
\$16.00

Model P-11 One-tube Portable—the Camera of Radio—price \$16.00 without accessories. Tube, batteries, head-phones, antenna and ground wire all self-contained. Weight 4 1/2 lbs. complete.



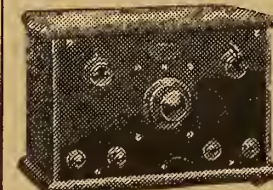
Model C-13 Three-tube Receiver. Gives fire-tube volume with only three tubes, due to reflex amplification.

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Model S-1, KODEL Crystal set. Sensitive, selective, low priced.



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KODEL Model C-14 Four-tube Receiver. Price \$32.50 (without battery cabinet, loud speaker or accessories). Battery cabinet can be furnished with any KODEL set at slight additional cost.

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ALL-AMERICAN

RADIO FOR EVERY PURPOSE AND ANY PURSE—\$5 TO \$32.50

CAMPAIGN SPEECHES CROWD ETHER

Wednesday, October 15

Silent night for: CKAC, KGO, WEAQ, WGY, WFI, WMC, WOAW, WRC, WSAI, WWJ.

CHCY, Montreal, Can. (Eastern, 341), 8:45-11 p. m., studio program.

CKAC, Montreal, Can. (Eastern, 424), 1:45 p. m., Mount Royal hotel luncheon concert.

CNRO, Ottawa, Can. (Eastern, 435), 8 p. m., Chateau Laurier orchestra; Dr. Wallace McKay, tenor; J. Hughes-Johnson, pianist; A. Lewis, saxophonist; Mrs. E. G. Howe, soprano. "What the C. N. R. Is Doing to Attract British Settlers to the Dominion," Dr. W. J. Black.

KDKA, E. Pittsburgh, Pa. (Eastern, 326), 12:15 p. m., concert, Daugherty's orchestra; 6:30, dinner concert, Scialzo's orchestra; 7:15, Kindergarten Goodnight circle; 7:30, "Red Cross Home Services," Grace L. Stokes; 8:15, "The Joke of Chemistry in Every-day Life," Mrs. E. G. Howe; 8:30, "What the C. N. R. Is Doing to Attract British Settlers to the Dominion," Dr. W. J. Black.

KFAE, Pullman, Wash. (Pacific, 330), 7:30 p. m., Heber Nasmyth, baritone; Mrs. Louis Nasmyth, pianist; "Where Some of Our Textiles Come From," E. Belle Alger; "How Sweet Clover Has Been Utilized," E. G. Schafer; "New Fall Books," Alice L. Webb.

KFI, Los Angeles, Calif. (Pacific, 469), 6:45-7:30 p. m., detective stories, Detective Nick B. Harris; concert; 7:30-8, one-act play, "The Stranger," 8-9, Evening Herald concert; 9-10, Examiner studio concert; 10-11, Hollywoodland community orchestra; 11-12, Ambassador hotel Coconut Grove orchestra.

KFKB, Mifflord, Kans. (Central, 286), 7:20 p. m., college of the air; 7:30, "How to Care for a Furnace," J. P. Calderwood; 7:45, "Protection from Contamination," H. B. Walker; 8, KFKB orchestra; 8:30, "Insanity, Cause and Treatment," Dr. J. R. Brinkley; 9, KFKB artists; 10-12, KFKB orchestra.

KFNF, Shenandoah, Ia. (Central, 266), 7:30 p. m., harmonic contest, listeners' vote on winners.

KFSG, Los Angeles, Calif. (Pacific, 278), 2:30-4:30 p. m., divine healing service; sermon, Aimee Scouple McPherson; ladies' revival chorus; Florence Glauser, soprano; Ruth Frances Thomas, pianist; Esther Fricke Green, organist; 6:30-7:30, Gray studio children's program, nature study program, Mrs. Edward Hughes and daughters, Mary Elizabeth and Helen.

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

KGW, Portland, Ore. (Pacific, 492), 12:30 p. m., Bill Darby's orchestra 5; children's program; 8, program,

Headliners of the Week

THIS PRESIDENTIAL campaign resembles the old town hall meetings of the early days of our Republic. Everyone may hear the voices and get an unbiased idea of the platforms of all the candidates by listening in. KSD broadcasts both the speeches of Robert La Follette Tuesday, October 14, and John W. Davis Saturday. The Republican party will be represented by Charles E. Hughes at WJZ Wednesday and Charles Dawes Tuesday, October 21, at WJAR. Tune in and vote intelligently.

Seven well known pianists will keep the air vibrating Thursday night. The Marguerite Manley Siedel School of Music is on the air from WEAQ, Columbus.

A clever burlesque, "The Dark-town National Convention," given by the "Georgia Mintsrel Boys" Friday at WGY and rebroadcast by WJZ will amuse the Radiophans who enjoyed the convention proceedings of both the Republican and Democratic parties.

Fiddlers, jewsharpists, mouth organists, bonists and accordionists will reproduce French folk songs hoary with age at CKAC, Montreal, Saturday. Conrad Gauthier, the director of this program, has prepared a program of historical musical interest.

KGW proudly announces the debut Monday of its own orchestra, called the Oregonian Concert orchestra.

Let the Gold Dust Twins wash your cares away Tuesday evening. These dusky artists will broadcast a program of song and humor through WEAQ, New York. KGO will present another splendid program later on this same evening, entitled "One Night in Naples." A combination of eight mandolins, one violin, two mandolas, five guitars and one tambourine will play "The Carnival of Venice Overture." Following the music J. E. Barnes will give a brief vivid word picture of the city of Naples. Laurie A. de Graca, instructor of stringed instruments, is the director of this novelty program.

dren," Mrs. Louise Love; 4:30, Edna Finestone, pianist; 7:30, Dream Daddy's bedtime stories; 8, "Conversation Corner," Arnold Abbott; 8:15, Green Mills Farm dance orchestra, direction Herman Kentner; 10, Arcadia cafe dance orchestra.

WEAF, New York, N. Y. (Eastern, 492), 11-11:30 a. m., musical program; 11:30-11:45, young mothers' program; 12-12:30 p. m., chapel services, Columbia university; Chaplain Knox; 4-5, musical program; 6-7, dinner music, Waldorf-Astoria hotel; 7:30, synagogue services; 7:30-8, Marie Ellerbrook, contralto; 8-8:15, talk, American Agriculturist; 8:15-10, musical program.

WEAQ, Columbus, Ohio (Eastern, 294), 9 a. m., music, Marguerite Manley Siedel School of Music talent; 11, music, Siedel artists; 1:30 p. m., music, Siedel artists.

WEEL, Boston, Mass. (Eastern, 303), 7 p. m., Edison Big Brother club; 7:30, music; 7:45, "Our Industrial Relationship with Chicago," Dorothy H. Goodwin; 8, St. John's Baptist quartet, H. T. Beard, director; 9, music; 9:30, concert, Luther C. Emerson, baritone; 9:40, Reo Motor talk; 10, program, Charles L. H. Wagner; 11, dance music, Dok-Eisenberg and his Sinfonia.

WFAA, Dallas, Tex. (Central, 476), 12:30-1 p. m., musical program, Red-Headed girl.

WFI, Philadelphia, Pa. (Eastern, 395), 1 p. m., Meyer Davis Bellevue Stratford concert orchestra; 3, report Chicago grain market; 3:05, Louis A. Starr, bass; 6:30, Meyer Davis Bellevue Stratford concert orchestra; 7, Sunny Jim, the Kiddee's val.

WGN, Chicago, Ill. (Central, 37C), 1:40 p. m., luncheon concert; 2:30, Lyon & Healy concert; 3, rocking chair hour; 5:30, Skeezix time; 6-7, dinner concert; 8-9, classical concert; 10-11, jazz hour.

WGR, Buffalo, N. Y. (Eastern, 319), 12:30-1 p. m., George Albert Bouchard, organist; 2:30-4:30, Radio dealers musical program; 6:30, dinner music; 9-10, musical program, direction Vee Curtis; 10-11, recital, Gertrude Hutchinson; 11, supper-dance music, the Vincent Lopez Hotel Statler dance orchestra, Harold Gieser, director.

WHAS, Louisville, Ky. (Central, 400), 4-5 p. m., Alamo theater orchestra, Harry S. Currier, conductor; "Just Among Home Folks"; 7:30-9, Kieth Kannard and his Kentucky Ramblers.

WHB, Kansas City, Mo. (Central, 411), 2-3 p. m., ladies' hour program, Sweeney Radio trio; 7-8, "Par-



Tune in for WGY this Thursday evening at 11:20 p. m. and hear the swelling notes of a great organ. Stephen E. Boisclair (left) is the popular organist of this Station. Arthur McCormick (below) is the baritone who sings Friday afternoons at WRC. You might like to know that Mr. McCormick's voice, disguised, is often heard less romantically reading stock reports and giving time signals.



courtesy, Elizabeth Hoben; 10, dance music, George Olsen's Metropolitan orchestra.

KHJ, Los Angeles, Calif. (Pacific, 395), 12:30-1:15 p. m., Oaks Tavern orchestra; garden talk, Fred C. McNabb; 2:30-3:30, matinee musicale; 6-6:30, Art Hickman's concert orchestra; 6:30-7:30, children's hour, "American History," Prof. Walter Sylvester Hertzog; Dick Winslow, screen juvenile and reporter; bedtime story, Uncle John; 8-10, Dr. M. F. Baumgardt, lecturer; the Piggly-Wigly girls; 10-11, Art Hickman's dance orchestra.

KOB, State College, N. M. (Mountain, 360), 7:30-8:30 p. m., "Range Management," Prof. John Lantow; "Co-operative Bull Associations," Prof. O. C. Cunningham; Kathryn Hoyt, pianist; Dan Wager-Smith, baritone.

KPO, San Francisco, Calif. (Pacific, 423), 1-2 p. m., Rudy Selger's Fairmont hotel orchestra; 2:30-3:30, Garry Fisher's Amphians; 4:30-5:30, Rudy Selger's Fairmont hotel orchestra; 5:30-6:30, children's hour stories, Big Brother; 7-7:30, Rudy Selger's Fairmont hotel orchestra; 8-11, E. Max Bradford's Versatile band; popular songs, Woolley sisters.

KSD, St. Louis, Mo. (Central, 546), 6:45 p. m., Aberg's concert ensemble; Arne Arnesen, violinist.

KYW, Chicago, Ill. (Central, 536), 11:35 a. m., table talk, Mrs. Anna J. Peterson; 7-7:30 p. m., children's bedtime story, Uncle Bob; 7-7:30, dinner concert, Congress hotel; 7:30-8, Duncan Sisters Music Publishing company; 8-8:30, musicale; 8:30-8:45, around the town with KYW; 8:45-9:05, Florence Gazaway, contralto; William Hoke, tenor; lecture on the piano, Morgan L. Eastman; 9:05, "Good Roads," Chicago Motor club; 9:15, talk, H. Archibald; 9:15-12:30 a. m., midnight revue; 12:30, W. Remington Welch, organist.

PWK, Havana, Cuba (Eastern, 400), 8:30-11:30 p. m., Cuban Army band.

WBAP, Fort Worth, Tex. (Central, 476), 7:30-8:30 p. m., musicale, Hemphill Heights Masonic Lodge, No. 1164, Chester Hollis, secretary; 9:30-10:45, popular dance music, Texas hotel orchestra.

WEAQ, Columbus, Ohio (Eastern, 423), 12 m., Ila Lorbach Owens, pianist.

WBBR, New York, N. Y. (Eastern, 273), 8 p. m., Dr. Hans Haas, violinist; 8:15, Bible lecture, Adam Donald; 8:45, Dr. Haas.

WBZ, Springfield, Mass. (Eastern, 337), 6 p. m., dinner concert, Westinghouse Philharmonic trio; 7:10, "Home Lighting Effects," Lighting Educational committee of New York; information concerning Civil Service examinations; 7:30, bedtime story for the kiddies; 7:40, William L. Spittal, tenor; Dorothy Birchard Mulrooney, accompanist; Westinghouse Philharmonic trio; 8:15, Earl Oliver, baritone; Elizabeth Bates, pianist; 8:45, John Merker, pianist; 9, Women's Philharmonic orchestra; L. S. Wiggin orchestra; 9:30, Jean Livingston Sherburne, soprano; Mertina Bancroft, accompanist; Albert Faucon, violinist; 10, Mrs. Fred Winslow Adams, soprano; Willard Clark, baritone; Benjamin Buxton, accompanist; 11:30, Leo Reisman and his Hotel Brunswick orchestra; 12, popular songs, Violet Gridley, Frank Bernier; 12:15 a. m., Leo Reisman and his Hotel Brunswick orchestra.

WCAE, Pittsburgh, Pa. (Eastern, 462), 3 p. m., Fred Rosenfeld, pianist; 6:30, dinner concert, William Penn hotel; 7:30, Sunshine girl; 8:30, Nevlin trio.

WCAP, Washington, D. C. (Eastern, 469), 7:30-9 p. m., U. S. Army band, Capt. Raymond G. Sherman; 9-9:15, "The Political Aspect," Hon. Gilbert Work; 9:15-9:30, musical numbers; 9:30-9:40, Washington trio; Sol Minster, violinist; Dorothy Minster, violinist; J. Edgar Robinson, pianist; 9:40-9:50, "Science News of the Week," National Research council and Science service; 9:50-10, Washington trio.

WCAY, Milwaukee, Wis. (Central, 266), 6:30 p. m.,

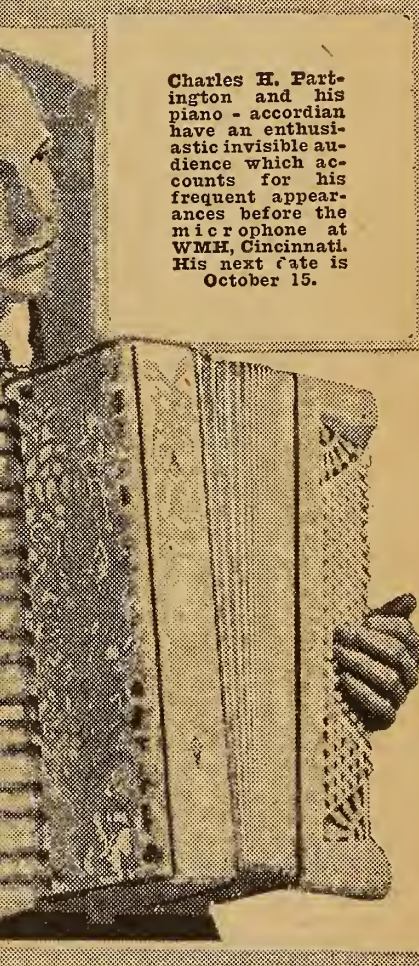
Margie Mackin, soprano; Mr. Franz P. Lindl, zither soloist; the Cullen sisters, violinist and pianist; Tony Wachtel, reader.

WCDO, Minneapolis-St. Paul, Minn. (Central, 417), 10:45 a. m., "Make Every Minute Count," Betty Crocker; 2 p. m., woman's hour; 2:30, Warmacins saxophone quartet; Alice Moore, soprano; 4, "Tempered Peace," Sophie Kerr; 5:30, children's hour, Alpha Stalson; 6:30, Billy's concert orchestra; 7:30, lecture hour; 9, Esther Sanford Hagquist, cellist; Arnold Frank's Cashio orchestra.

WCX, Detroit, Mich. (Eastern, 517), 4:15 p. m., musical program; 6, dinner concert; 8:30, old time songs, Norman White, director.

WDAF, Kansas City, Mo. (Central, 411), 3:30-4:30 p. m., the Star's string trio; 6-7, school of the air, piano tuning-in number on the Duo-Art; address auspices, Health Conservation association; address, Meat Council of Greater Kansas City; the Tell-Me-a-Story lady; music, Trianon ensemble; 8-9:15, monthly program, second district of the Missouri Federated Music clubs; Mrs. Florence M. Woodard, president; 11:45-1 a. m., Nighthawk frolic, the "Merry Old Chir" and the Plantation Players.

WDAW, Philadelphia, Pa. (Eastern, 395), 11:45 a. m., daily almanac; 12:02 p. m., organ recital, Stanley theater; 12:30, services, auspices of Philadelphia Federation of churches; Arcadia cafe concert orchestra; 2, Arcadia cafe concert orchestra; "Caro of Chil-



Charles H. Partington and his piano - accordion have an enthusiastic invisible audience which accounts for his frequent appearances before the microphone at WMMH, Cincinnati. His next rate is October 15.

lamentary Law," Mrs. Glenn D. Brown, president of the Missouri association of Parliamentary Law teachers; music, Sweeney Radio trio.

WHK, Cleveland, Ohio (Eastern, 283), 6 p. m., Marjorie Moore's Melodious Maid, Giebe's Miskeller.

WHN, New York, N. Y. (Eastern, 360), 2:15-3 p. m., Jimmy Clarke entertainers; 3-3:30, Original Kansas City Five; 3:45-4, Madeline Groff, soprano; 5-5:30, John Dedroit's New Orleans orchestra; 6:30-7:30, Alamo orchestra; 7:45-8:15, Alan Colby and his Boston society orchestra; 8:30-8:45, J. Emmett Kelly, tenor; 8:45-9, boys' period; 9-9:15, Alfred Dulin, pianist; 9:15-9:30, Joseph C. Wolfe, baritone; 9:30-10, Leo Wood's air troopers; 10-11, Clover Gardens orchestra.

WHO, Des Moines, Ia. (Central, 526), 7:30-9 p. m., Bankers Life Radio orchestra, W. L. Marsh, director; Margaret Leech, soprano; Jack Eberhart, baritone.

WIP, Philadelphia, Pa. (Eastern, 509), 1 p. m., Gimbel Brothers tea room orchestra; 3, recital, Temple University School of Music, program; piano solos, Lillian Tyas; soprano solo, Mary Vickers; Marie Gluckert, violinist; 4, piano solo, Sara Schaffer; violin solo, Anderson Rapp; soprano solo, Gertrude Willard; violin solo, William Palauer; 6:05, Walter Schwartz orchestra; 7, Uncle Wip's bedtime stories.

WJZ, New York, N. Y. (Eastern, 455), 10-10:20 a. m., housewives' league menu, Mrs. Julian Heath; 10:20-10:30, "Household Equipment," Ethel R. Peysler; 10:30-10:45, "Runabout Child," Marguerite A. Wales; 10:45-10:50, talk, Tribune institute, Bertha Baldwin; 10:50-11, fashion talk, Eleanor Gunn; 1:15-2:15 p. m., Orlando's Hotel Roosevelt orchestra; 4-5, specialty numbers; 5:30-6:30, New York Stock Exchange quotations and reports, Evening Post news; 7-8, Irving Selzer's Cafe Boulevard orchestra; 8-8:15, Waif Street, Journal review; 8:10-8:15, "Politics and Statesmanship," Prof. E. C. Smith; 8:45-9:05, "Naval Aviation," Rear Admiral Moffett; 9:05-9:45, talk, Secretary of State Charles E. Hughes, auspices National Republican committee; 10:30-11:30, Billy Wynne's Greenwich Village Inn orchestra.

WKAQ, San Juan, P. R. (Central, 360), 6 p. m., Municipal band.

WLS, Chicago, Ill. (Central, 345), 12-1 p. m., Seers-hints, fall and winter styles, Ellen Rose Dickey; "Electricity in the Home," Helen Norris; 6:30, Ralph Emerson, organist; 6:45, Ford and Glenn; 6:50, Ralph Emerson, organist; 7, Ishau Jones and his College Inn (Continued on page 12)

FRENCH FOLKLORE AT CKAC SATURDAY

Where to Hear Concerts

Central Standard Time

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

Wednesday: 6, KGO, WGN, WKAQ; 6:30, WEEL, WLS, WOO; 6:40, WBZ; 6:45, KSD, WLS, WTAY; 6:50, WLS; 7, CNRO, KYW, WBBR, WBZ, WBAF, WEEL, WLS, WQJ, WTAM; 7:20, KFKE, WLS, WOO; 7:30, KDKA, KFNE, KYW, WBAP, WCAP, WCX, WHAS, WHN, WOR; 7:35, WLS; 7:45, CHYC, WBBR, WBZ, WLS; 8, KFKE, KYW, WBZ, WDAF, WEEL, WGR, WOC, WSB; 8:15, WHN, WOR; 8:30, KOB, WBZ, WEEL, WGN, WHN; 8:45, KYW; 9, KFKE, WBZ, WCOO, WOO; 9:15, WCAP, WLS; 9:30, KFAE, WBAP, WMH; 9:45, WLS; 9:50, WCAP; 10, KFI, KGW, KHJ, WLS; 10:30, WBZ; 10:45, WSB; 11, WBZ; 11:15, WBZ; 12, KFI; 12:30, KYW.

Thursday: 6, KPO, WDAF, WGN; 6:30, WEEL, WLS; 6:45, WBZ, WLS, WTAY; 7, KYW, WBAW, WHK, WJAX, WLS, WQJ, WRC; 7:10, KYW, WIP; 7:30, KDKA, KFNE, WBAP, WDAF, WHAS, WRC; 7:35, WLS; 7:45, WEAF, WFI; 8, KFKE, WAAW, WBBR, WGBD, WCCO, WEEL, WGN, WMH, WSB; 8:15, WEAF; 8:30, KYW, WBZ, WEAF, WFAA, WHN; 8:50, WBBR; 9, KFKE, WBZ, WOC; 9:15, WMAQ; 9:30, KFSG, WBAP; 10, KDKA, KGO, KHJ, KPO, KYW, WHN; 10:20, WGY; 10:30, WLS, WLW; 10:40, WLS; 10:45, WSB; 11, KFI, KPO, WFAA, WLW; 11:15, KFSG; 11:30, WLS; 12, KFI, KFSG, WLS.

Friday: 6, WGO, WGN; 6:30, WBAF, WLS; 6:50, WLS; 6:45, WLS, WTAY; 7, CNRT, KYW, WBAV, WEAF, WHK, WLS, WQJ; 7:20, KFKE, WLS; 7:30, KDKA, KFNE, KYW, WBAP, WEAF, WHAS, WHO, WCCO, WSB; 8:30, KOB, WCAE,

WFAA, WJZ, WMAQ; 8:45, KFI; 9, KFKE, WBZ, WHN, WMAQ; 9:15, WCAP; 9:30, KFAE, KYW, WBAP, KFSG, WGY, WOO; 10, KHJ, WBZ, WGN, WHN, WQJ; 10:30, KYW; 10:45, WSB; 11, KFI; 11:15, KFSG; 12, KFI, KFSG; 12:30, KGW; 1, KFI.

Saturday: 6, KGO, KYW, WGN; 6:30, WEAF; 6:40, WBZ; 6:45, WTAY; 7, KYW, WBBR, WFI, WHK, WHN, WRC; 7:15, WHN, WIP, WJZ; 7:30, KDKA, KFNE, KGO, WBZ, WHAS, WQJ, WRC; 7:45, WBBR, WEAF, WHN; 8, KFKE, KYW, WBZ, WGN, WJZ, WLS, WOR, WRC, WSB; 8:15, WEAF; 8:30, WCAE, WCCO, WFAA, WMC; 8:40, WHN, WOR; 9, WBZ, WHK, WHN, WMAQ; 9:20, WSAI; 9:45, WHN; 10, KFI, KGO, WIP, WMH; 10:30, KHJ, WSB; 11, KFI, WFAA; 12, KFI, KFKE.

Sunday: 6:30, KFNE; 7, KYW; 7:15, WJZ; 7:30, WHO; 7:45, CHYC; 7:50, WJZ; 8, WHK, WQJ; 8:15, WEAF, 9, WFAA, WGN; 10, KGO.

Monday: 6, WCX; 6:30, WEAF; 6:45, WGY; 7, WEAF, WTAM; 7:30, WAAW, WBAP, WHO, WOO; 8, WGBD, WGR, WHAZ, WHO, WMH, WSB; 8:15, WCCO; 8:30, WMC; 9, WCX, WDAF, WGR, WOO; 9:15, WMH; 9:30, KFAE, WBAP; 10, KGW, KPO; 10:30, KGW, 10:45, WSB; 11, KPO, WSAI; 11:15, WHO.

Tuesday: 6, WDAF, WGN; 6:45, KSD, WGY, WJAX; 6:45, WTAY; 7, CNRO, WIP, WRC; 7:20, WEAF; 7:30, KFNE, WBAP, WEAF, WHAS, WJZ, WSAI; 7:45, CHYC, WSAI; 8, KSD, WQJ, WGN, WHB, WSB; 8:15, WJZ; 8:30, WFI, WMC; 9, WEAF, WTAM; 9:10, WMAQ, WSAI; 9:30, WBAP; 10, KGO; 10:10, WLW; 10:45, WSB; 11, WLW, WMC.

Wednesday, October 15

(Continued from page 11)

orchestra; 7:20, Sears-Roebuck's 4 Aces of harmony; 7:35, Isham Jones and his College Inn orchestra; 7:45, lullaby time, Ford and his College Inn orchestra; 7:50, radio questions and answers, Matt Friedman; "Farm Flickers," E. B. Heaton; "Marketing Livestock Co-operatively," Charles A. Stewart; 9, Isham Jones and his College Inn orchestra; 9:15, WLS tribe of Lone Scouts; 9:45, Helen Lawrence Bammon, harpist; 10, sound poems of Robert W. Service, Saddler's feature; 10:30, Ford and Glenn time.

WLW, Cincinnati, Ohio (Central, 423), 1 p. m., concert for shut-ins; 10 lesson, Fred Smith, instructor; 8, Virginia entertainers; Formica band and orchestra; Arthur Grafenhan, saxophone soloist; Walter Esberger, director.

WMAQ, Chicago, Ill. (Central, 447.5), 1 p. m., speeches, weekly luncheon of the association of commerce; 4, sports; 4, child life; 4:30, program; 6, Chicago theater organ recital; 6:30, stories for children, George de Paulmer; 8, weekly Northwestern university talk; 8:30, WMAQ day night, William Ziegler, director; 9, May Graves Atkins, soprano; 9:45, talk, one of the Chicago charities.

WMC, Memphis, Tenn. (Central, 500), 8:30 p. m., program, Chisca hotel concert orchestra.

WMH, Cincinnati, Ohio (Central, 309), 8 p. m., Goodrich Silverman orchestra; 9, address, "The Probate Court," Judge William H. Lueters; 9:30, Temple male quartet, Carl, Edward, Ralph and Willard Understradt, Marie Houston, accompanist; soprano solos, Marie Houston; 10, Auburn orchestra, Lawrence Alchibiz, director.

WOC, Davenport, Ia. (Central, 484), 12 m., chimes; 7 p. m., sandman's visit; 8, Evelyn Siedel, organist; Richard Reid, dramatic reader; Step and Collins, entertainers.

WOO, Philadelphia, Pa. (Eastern, 509), 11 a. m., Mary E. Vogt, organist; 12:02 p. m., Wana-maker crystal tea room orchestra, direction Robert E. Golden; 5:15, Mary E. Vogt, organist; 7:30, A. Candelari and his ensemble from Hotel Adelphi; 8:15, Robert Curtis Ogden band, direction J. Lawrence Grinnell; 9, WOO orchestra, direction Robert E. Golden; 10:03, organ recital, Mary E. Vogt; 10:30, Vincent Rizzo and his orchestra from Hotel Skyvania.

WOR, Newark, N. J. (Eastern 405), 7-8 a. m., WOR sym class; 2:30-3:30 p. m., Frank Cunniff's Pat Trio room orchestra; 8-8:30, Gene Inghram's Great North Inn orchestra; 8:30-9:15, recital, Morris Goldberg, violinist; Elsie Feldman, pianist; 9:15-9:45, Jascha Guerich; 10:45-11, Manhattan serenaders.

WQJ, Chicago, Ill. (Central, 448), 11-12 m., "Thrill Is Not Miserliness," Mrs. Willbur E. Fribley; "Bread and Fancy Rolls," Hamilton Westling; 7-9 p. m., "Fritters—Plain—Fruit—Vegetable," Helen H. Downing; "Buying for Two," Martha Logan; 7-8, dinner concert, Ralph Williams and his Ralph Garden orchestra; Lancaster Smith, bass; Mrs. Lancaster Smith, accompanist; Lillah Older Bell, reader; 10-12, Ralph Williams and his Ralph Skylarks; Sandy Meek, Scotch tenor; the Melodians, Laurio, Eddie and Bonnie; Clarence Theders, tenor; George A. Little, Larry Shaw, harmony singers; Rita McPaw, soprano; Dolores Edwards, contralto.

WRC, Washington, D. C. (Eastern, 469), 2 p. m., fashion developments of the moment, women's wear; 3:10, songs; 3:30, songs; 7:15, Eleanor Glynn, pianist; 8:30, sports for women; 9, songs; 6, stories for children, Peggy Abillon.

WSC, Clemons College, S. C. (Eastern, 360), 8 p. m., general farm news timely hints, horticulture; 10-minute talk, seasonal; 10-minute talk, poultry.

WSB, Atlanta, Ga. (Central, 429), 12 m., entertainment; 8 p. m., bedtime story, Bonnie Barnhardt; 10:45, Radlowi entertainment.

WTAM, Cleveland, Ohio (Eastern, 390), 8 p. m., program of French numbers arranged by Cleveland Plain Dealer; Cassius Chapel, tenor.

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

WWJ, Detroit, Mich. (Eastern, 517), 8 a. m., setting-up exercises, R. J. Horton; 9:30, talk, women's fashion news; orchestra; 7, Detroit News orchestra; Wanda Hill, Charles Cooper, baritone; edit.; Detroit News; 12 m., musical program; 3 p. m.,

Thursday, October 16

Silent night for: KSD, KYW, WCAP, WDAF, WGR, WHO, WOO.

KDKA, E. Pittsburgh, Pa. (Eastern, 326), 12:15 p. m., concert, Scallo's orchestra; 5:30, dinner concert, KDKA Little Symphony orchestra; 7:15, Uncle Ed visits the radio children; 8:30, Victor Saulek's KDKA Little Symphony orchestra; Mrs. Emma Albert Dean, soprano; Marian Deuel McDade, accompanist; 11, Pittsburgh Post studio.

KFI, Los Angeles, Calif. (Pacific, 469), 6:45-7:30 p. m., Y. M. C. A., lecture; pupils of Eugenia Ames in recital; 7:30-8, concert, Harry Porter, baritone, and Sylvia Marotta; 8-9, Ambassador hotel concert orchestra; 9:10, Examiner concert; 10:11, Spanish program.

KFKE, Milford, Kans. (Central, 285), 8 p. m., KFKE orchestra; 8:30, "Clubs as Regulators of Personality," Dr. J. R. Brinkley; 9, KFKE artists; 10-12, KFKE orchestra.

KFNH, Shenandoah, Ia. (Central, 266), 7:30 p. m., concert, Tingley, Ia. direction Roe Eighme.

KFSG, Los Angeles, Calif. (Pacific, 469), 3:30-4:30 p. m., organ recital, E. Ernest Ballard; Margaret Kennedy, soprano; Harold Lloyd, tenor; 7:30-9:15, auditorium service, evangelistic sermon and water baptism; music by choir; band and organ; 9:15-10, Gray studio concert, featuring the Angelus temple choir; 10-11, organ hour, Esther Fricke Green; Alfred C. Green, tenor; Dr. Joseph Marple, tenor; S. R. Donaldson, trombonist; Tilda Rohr, Swiss contralto.

KGO, Oakland, Calif. (Pacific, 312), 4:30-5:30 p. m., concert orchestra, Hotel St. Francis; 8, Mid-Pacific Hawaiian quartet; Mrs. Cyril Roche, soprano; Reinhard Y. Losser, bandsaw musician; Margaret Fish, pianist; Mme. Jeanne Lowenberg, reader; Ethel Isaacs, violinist; "The Bolshevism of the Bee," Rev. George W. Phillips; Audrey Beer Sorel, pianist; Walter Kliegel, baritone; Melrianna Towler, accompanist; San Francisco Chapter Jazz orchestra of De Molay; De Molay, Charles H. Victor; 10-11 a. m., Henry Halstead's orchestra.

KGW, Portland, Ore. (Pacific, 492), 12:30 p. m., Civic Music club; 5, children's program, stories by Maude E. Stevens.

KHJ, Los Angeles, Calif. (Pacific, 395), 12:30-1:15 p. m., Coy Barkley and Palace ballroom orchestra; 2:30-3:30, matinee musicale; 6-6:30, Art Hickman's concert orchestra, direction Edward Fitzpatrick; 6:30-7:30, children's hour, "America History," Prof. Walter Sylvester Hertzog; pupils of Carter Weaver, dramatic teacher; bedtime story, Uncle John; 8-10, concert, courtesy, Bozalan Motor company, arranged by J. Howard Johnson; 10-11, Art Hickman's dance orchestra, direction Earl Burnett.

KPO, San Francisco, Calif. (Pacific, 423), 1-2 p. m., Rudy Selzer's Fairmont hotel orchestra; 4:30-5:30, Rudy Selzer's Fairmont hotel orchestra; 5:30-6:30 children's hour stories; 7-7:30, Rudy Selzer's Fairmont hotel orchestra; 8-9, Theodore J. Irwin, organist; 9-10, Mabel Niekerson Bailey, contralto; Ruth May Friend, soprano; 10-11, E. Max Bradford's Versatile band.

KYW, Chicago, Ill. (Central, 536), 11:35 a. m., table talk, Mrs. Anna J. Peterson; 2:35-4 p. m., afternoon frolic; 6:35-7, children's bedtime story; Uncle Bob; 7-7:30, Congress hour; 8-8:20, "Twenty Minutes of Good Reading," Rev. C. J. Penning; 8:20-8:30, "Better Lighting," W. A. Durkin; 8:30-9:15, musicale, Hinchshaw conservatory; 9:15, "Safety First," Z. C. Eikin; 10:11:30, at home program.

WAAW, Omaha, Neb. (Central, 286), 8-9 p. m., talks, Agricultural department, C. P. system; talk, Rev. E. M. Brown.

WBAP, Fort Worth, Tex. (Central, 476), 7:30-8:30 p. m., concert; 9:30-10:15, Do! Echoes follies.

WBVA, Columbus, Ohio (Eastern, 423), 12 m., religious service, Columbus Council of churches, Rev. N. W. Sager; Eighth Avenue Evangelical church, speaker; sacred music.

WBBR, New York, N. Y. (Eastern, 273), 9:10 p. m., I. B. S. A. York; 9:25, International Sunday school lesson; I. B. S. A. Van Slipa; 9:50, I. B. S. A. trio.

WBZ, Springfield, Mass. (Eastern, 337), 6:30 p. m., popular songs, Violet Gridley, Frank Bernier; 6:40, talk, Mrs. Anna J. Peterson; 7:10-7:30, "At the Theaters," A. L. S. Wood; 7:30, bedtime story for the kiddies; 7:45, Charles R. Hector with his St. James theater orchestra; 8:15, program, Amherd studio, Chelering and Sons Piano company; 9:30, Katherine A. White, soprano; Mrs. Louis S. Cox; 10, musical program.



Phyllis Campbell, whose soprano voice is clear and sweet over the Radio, will please the fans again Tuesday, October 21, at WLS, Chicago.

WCAE, Pittsburgh, Pa. (Eastern, 462), 4:30 p. m., Sunshine girl; 6:30, dinner concert, William Penn hotel; 7:30, Uncle Kaybee; 8:30, Moore's Cafeteria weekly Radio review, E. T. Moores, manager.

WCAY, Milwaukee, Wis. (Central, 266), 10:30 p. m., Arcadia ballroom orchestra; Marian Henke, violinist; Arthur Kluth, baritone; Monna Henderson, child soloist; John Kohr, comedian.

WCBBD, Zion, Ill. (Central, 345), 8 p. m., Celestial bells; uale quartet, Barton, Bull, Paxton, Thomas; vocal trio, Wiedman, Ludlow, Uhlrik; Hermann, Becker, cellist; Mrs. Esther Cook Rendall, soprano; Mrs. Hester Robinson, reader.

WCCO, Minneapolis-St. Paul, Minn. (Central, 417), 10:45 a. m., "More Halloween Plans," Betty Crocker; 2 p. m., "Rainy Days for Children"; 4, magazine hour, "Sunshine, Fresh Air and View"; 5:30, Irish Fairy tales, Gold Medal lady; 6:15, George Osborn's Nicollet hotel orchestra; 7:30, feed talk; 8, classical concert; 10, George Osborn's Nicollet hotel orchestra.

WCX, Detroit, Mich. (Eastern, 517), 4:15 p. m., musical program; 6, dinner concert; 8:30, Ford Motor band.

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

WDAR, Philadelphia, Pa. (Eastern, 395), 11:45 a. m., daily almanac; 12:02 p. m., organ recital, Stanley theater; Arcadia café, dance orchestra; 4:30, Edna Finesone, pianist; 5, "What Kind of a House Should I Buy?" Wm. H. Ball; 7:30, Dream Daddy's bedtime stories.

WEAF, New York, N. Y. (Eastern, 492), 11-11:30 a. m., musical program; 11:30-11:45, talks to housewives; 4-4:15 p. m., Fay Milbar, pianist; 4:15-5, "Thias," lecture recital, Mme. Charlotte Lund, operatic star; N. Val Penney, pianist, Columbia university; 6-7, dinner music, Waldorf-Astoria hotel; 7:30-8, G. C. Smith and his modern dance orchestra; 8-8:15, talk, Bank of America; 8:15-8:30, "Touring with the Packard," George Elliot Cooley; 8:45-9, Fred Ruzka, violinist; 9-9:15, Joseph White, tenor; 9:15-9:30, Helen Graves, soprano; 9:30-9:45, Jimmy Clark, pianist; 11-12, Vincent Lopez and his Hotel Pennsylvania orchestra.

WEAO, Columbus, Ohio (Eastern, 294), 9 a. m., music, Marguerite Manley Siedel School of Music talent; 11, music, Siedel artists; 1:30 p. m., music, Siedel artists; 8, chimes concert, Prof. A. P. McManical; 8:15, concert, faculty of Marguerite Manley Siedel School of Music; Cecile Fanning, baritone; Unidentified Dixon School, soprano; Charlotte Hunter Edwards, contralto; Robert Barr, baritone; Lillian Belfield, violin; Edwin Stainbrook, piano; Blanche Neuffer, piano; Louise Shoeky Cobb, piano; Gladys Poston Trickett, piano; Robert Grey Myers, piano; Louise Renneck, piano; Margaret Gallant, piano.

WEEL, Boston, Mass. (Eastern, 303), 1 p. m., assembly luncheon; Boston Chamber of Commerce; 7, Big Brother club; 7:30, musicale; 9, program from WEAF, New York; 11, Dok-Eisenburg and his Sinfonians.

WFAA, Dallas, Tex. (Central, 476), 12:30-1 p. m., "Fit for Every Fight," Charles E. Osborne; 8:30-9:30, Walter J. Fried, violinist; 11-12, Dwight Brown, organist.

WFI, Philadelphia, Pa. (Eastern, 395), 1 p. m., Meyer Davis Bellevue Straford concert orchestra; 3, report, Chicago grain market; 3:05, Housewives' Radio exchange; Ethel Skelton Shumaker, soprano; Adele Wendler Bates, contralto; Loretta Kerk, pianist; 6:30, Meyer Davis Bellevue Straford concert orchestra; 7, Sunny Jim, the Kiddies' pal; 8, Boy Scouts Radio meeting; 8:40, Advancement of Medicine in the "United States," Dr. W. W. Keen; Trinity choir, Dr. Charles Penniz, tenor.

WGN, Chicago, Ill. (Central, 370), 1:10 p. m., luncheon concert; 2:30, rocking chair hour; 5:30, Skeesiz time; 6-7, dinner concert; 8-9, classical concert; 10-11, jazz hour.

WHS, Buffalo, N. Y. (Eastern, 319), 12:30-1 p. m., George Albert Bonchard, organist; 2:30-4:30, Radio dealers' musical program; 6, Hallipryd string quartet.

WGY, Schenectady, N. Y. (Eastern, 380), 7:45 p. m., "A Few Moments with New Books," William F. Jacobs; 9, "The Path of Glory," WGY players; 11:20, Stephens E. Bolsinger, organist.

WHAS, Louisville, Ky. (Central, 400), 4-5 p. m., Alamo theater orchestra; readings, Courier-Journal and Louisville Times editorials; 7:30-9, Dix Bluegrass serenaders, Henry L. Dixon, director; Mrs. M. E. Burehett, contralto; four-minute digest of International Sunday school lesson.

WHB, Kansas City, Mo. (Central, 411), 2-3 p. m., ladies' hour program, Sweeney Radio trio; 8-9, program by Mrs. Bernice Griffith, soprano; Mildred Redfield Conolly, pianist; Clayton Wolfe, tenor; Ota Swartz, violinist; Mrs. Emily Foley, contralto; 9-10, dance music, Sweeney Radio orchestra.

WHK, Cleveland, Ohio (Eastern, 283), 6 p. m., Marjorie Moore's Melodious Molds; 8, program arranged by

Cleveland Press; Joseph Feldman's orchestra; Roselle Sieler, soprano; Helene Allmendinger, contralto; Grace E. Makepeace, reader; Raymond Gerkowski, cellist.

WHN, New York, N. Y. (Eastern, 360), 12:30-1 p. m., Charles Strickland's Palais D'Or orchestra; 2:15-2:30, Mrs. Bob Schaefer, the Radio girl; 2:30-3, Original Louisville jazz band; 3-3:45, Bob Miller and Ira Schusters, songs; 3:45-4, Belle Thorne, soprano; 4-4:15, Arthur Ball, tenor; 4:15-4:45, recital, Genevieve Williams, coloratura soprano; Charles Strickland, pianist; Sam Steinberg, violinist; 4:45-5, "Tea Time Talk," Loretta C. Lynch; 4:55-5:05, Victor Wilbur, baritone; 5:05-5:30, Original Cambria serenaders; 6:30-7, Olcott Vail, violinist; Stephen Balogh, pianist; 7-7:30, Paul Specht's Alamae orchestra; 9:30-10, Cantor Joseph Rosenblatt; 10-10:30, Spear's dance orchestra; 10:30-11, Phil Romano's Roseland dance orchestra; 11-11:10, Billy Burke, tenor; Matty Levine, accompanist; 11:10-11:30, Henny Cogert's Revue with Sol Hirsch, pianist; 11:30-12, Lou Gold's Wigwam club orchestra and entertainers; 12-12:30 p. m., Parody club orchestra.

WIP, Philadelphia, Pa. (Eastern, 509), 1 p. m., Gimble Brothers tea room orchestra; 3, Red Sted and his WIP symphony orchestra; Mother Goose rhymes, Edith Plank Shirley; 6:05, dinner dance orchestra, direction Charles Sansonne, featuring Richard Brothers; 7, Uncle Wip's bedtime stories; 8, "Timely Talks to Motorists," Gene Hogle, secretary Annabothel club; 8:15, Philadelphia Police band, direction Lieutenant Joseph Klefer; 9, sigma Catholic club concert; program; 11:05, Harvey Marburger's vaudeville dance orchestra.

WJAX, Cleveland, Ohio (Eastern, 390), 8 p. m., Hotel Cleveland orchestra, Ivan Francisel, director; Ionic quartet, Warren Whiteley, first tenor; V. V. Woberill, second tenor; Alfred C. Frost, baritone; Fred R. Ripley, bass; Pauline France, pianist; Mrs. Fred G. Nicholas, violinist; 10:30, Ponce De Leon orchestra, Herbert Heyward, director.

WJY, New York, N. Y. (Eastern, 405), 7:30-8 p. m., Berlitz weekly French lesson; 8-9, "Path of Glory," drama presented by WGY players; 9-10, Al Reiser's Club Ferrari orchestra; 10-10:30, talk, Democratic National committee.

WJZ, New York, N. Y. (Eastern, 455), 10-10:20 a. m., housewife league menu, Mrs. Julian Healy; 10:20-10:30, "The Progress of the World," Review of Review talk; 10:50-11, fashion talk, Eleanor Gunn; 1-2 p. m., Nathan Abas Hotel Pennsylvania orchestra; 4:30-5:30, Bernhard Levitov's Hotel Commodore orchestra; 5:30-6:30, New York Stock Exchange reports, Evening Post News; 7-7:55, Bernhard Levitov's Hotel Commodore orchestra; 7:55-8, Collier's Weekly, John H. Kennedy; 8-8:10, Wall Street Journal review; 8:10-8:30, "Politics and Statecraft," Prof. E. C. Smith; 8:30-9:30, Wana-maker organ concert; 10:30-11:30, Waldorf-Astoria dance orchestra.

WLS, Chicago, Ill. (Central, 345), 12-1 p. m., Rudolph C. Bryant, string music; 3:45-4:45, "The Intelligent Use of Pictures," Walter Murrays; "Mrs. Bradley Goes a Marketing," Mrs. Grace Viad Gray; 6:30, Ralph Emerson, organist; 6:45, Ford Rush, Glenn Rowell; 6:50, Ralph Emerson, organist; 7, Isham Jones and his College Inn orchestra; 7:20, "Melody Girls," Roma and Irene; 7:35, College Inn orchestra; 10:30, College Inn orchestra; 10:15, Saddler's feature, "Robin Hood"; 11:30, Isham Jones and his College Inn orchestra; 11:40, Ford and Glenn time; 12, midnight, Marcell-Gras, Ralph Emerson, organist; Isham Jones and his College Inn orchestra.

WLW, Cincinnati, Ohio (Central, 423), 4 p. m., French lesson, Madame Templelds, instructor; piano recital, Adelhide Apfel; 10, United States Civil Service message; 10:02, Doherty orchestra; 10:30, Milnor trio; comedy, "Vote for Mayor," Senator Schultz; 11, Milnor trio.

WMAQ, Chicago, Ill. (Central, 447.5), 4 p. m., sports; 4:10, household hour, Elizabeth O. Eiller; 4:20, musicale; 6, Chicago theater organ; 6:30, Hotel LaSalle orchestra; 8, garden talk, James A. Burdett; 8:15, Boy Scout program; 9, auto trails, Rockwell R. Stephens; 9:15, Melodiosm trio.

WMC, Memphis, Tenn. (Central, 500), 12:30 p. m., Shrine roof cafe, Skyline serenaders; 8:30, Chisca hotel concert orchestra.

WMH, Cincinnati, Ohio (Central, 309), 8-10 p. m., special musical program arranged by Cincinnati Good Goods company.

WFI, WLV, WMB, WIF, WBU, WSAI.
CKAC, Montreal, Can. (Eastern, 425), 1:45 p. m., Mount Royal hotel luncheon concert; 4:30, Ho lesson.
CNRT, Toronto, Can. (Eastern, 400), Elsie Bennet, pianist; Arthur Davies, tenor; Kathleen Keer, soprano; vocal duet, Winifred Frazer, Ernest Shildrick; Jessie Butt, contralto; vocal trio, Arthur Davies, Ernest Shildrick, Arthur Fisher; "What the C. N. R. Are Doing to Attract British Settlers to the Dominion," Dr. W. J. Black; Laura Shildrick Green, contralto.
KDKA, E. Pittsburgh, Pa. (Eastern, 326), 12:15 p. m., Daugherty's orchestra; 12:30, the International Sunday school lesson, James C. Mae; 6:30, Samuel Winters Elletson, organist; 7:15, Daddy Winkum, Radio hymnster; 7:30, "Some Question before the Electorate on November 4," Dr. Louis K. Manley; 8, "Home Lighting Effects," 8:15, "Six Recent Novels," F. P. Mayer; 8:30, MacDowell quartet, Caroline Braezy, soprano; Mrs. L. Wallace Ohl, contralto; Arthur Ray Davis, tenor; Clair Anderson, bass; Lyman Almy Perkins, accompanist; Pierre de Backer, violinist; program closes 9:55.
KFKB, Milford, Kans. (Central, 286), 7:20 p. m., college of the air; 7:30, "Order, Inquiry and Acknowledgment Letters," J. O. Faulkner; 8, KFKB or-

WCAY, Milwaukee, Wis. (Central, 266), 8 p. m., "Tune Tinkers"; Mrs. F. T. Bremer, mezzo soprano; Morris Klippen, violinist.
WCCO, Minneapolis-St. Paul, Minn. (Central, 417), 10:15 a. m., "Food for Health," Betty Crocker; 2 p. m., "What the Community Fund Has Done for Minneapolis," W. D. Gordon; 2:30, musicale; 4, magazine story, "A Lickpenny Lover" and "A Comedy in Rubber"; 5:30, "Mother Goose Village Stories," Ellen Nye; 6:15, Dick Long's Nankin cafe orchestra; Margaret Thomas, soprano; 7:30, lecture; 8, Thelma Halvorsen, soprano; Eleanor Freemantel, accompanist; 11, Dick Long's Nankin cafe orchestra.
WCX, Detroit, Mich. (Eastern, 517), 4:15 p. m., musical program; 6, dinner concert; 8:30, musical program, Ukrainian choir.
WDAF, Kansas City, Mo. (Central, 411), 3:30-4:30 p. m., the Star's string trio; 6-7, school of the air, piano tuning-in number on the Duo-Art; address, speaker, Children's bureau; the Tell-Me-a-Story lady; music, Triton ensemble; 8-9:30, popular program, the WDAF minstrels with the Star's Radio orchestra; 11:45-1 a. m., Nighthawk frolic, the "Merry Old Chief" and the Plantation players.

Astor organ recital; 5:30-6:30, New York Stock Exchange reports, etc., Evening Post News; 7-8, Orlando's Hotel Roosevelt orchestra; 8-8:10, Wall Street Journal; 8:10-8:40, "Politics and Statesmanship," Prof. E. C. Smith; 8:40-9, talk, National Republican committee; 9:05-9:15, looseleaf current topics, William H. Allen; 9:20-10:30, "The Darktown National Convention," Georgia Minstrel boys.
WLS, Chicago, Ill. (Central, 345), 12-1 p. m., Sears-Roebuck Four humming birds; 3:45-4:45, beauty hints—care of the complexion, Ellen Rose Dickey; "The First Trip Over," George H. Connor; 6:30, Ralph Emerson, organist; 7, Isham Jones and his College Inn orchestra; 7:20, Sears-Roebuck's four axes of harmony; 7:55, Isham Jones and his College Inn orchestra; 7:45, lullaby time, Ford Rush, Glenn Rowell; 8-9, music, Prof. Charles Kowae's Marquette Mandolin club, Prof. Rudolph C. Bryant, director; "The Story of the Guernsey," Charles W. Hill; "Co-operative Marketing and Low," Walter Lynch; "Join Turnseed," George Thiem; 10, Isham Jones and his College Inn orchestra; 10:15, Saddler's feature, Radio drama; 10:30, Ford and Glenn time.

children's choir; 10:30-9:30, auditorium service, divine healing-Bible teaching, Aimee Semple McPherson; altar call; Temple choir; Marion McGlashen Muller, Salvation Army, soprano.
WGO, Oakland, Calif. (Pacific, 312), 12:30-1:15 p. m., concert; 2:30-3:30, matinee musical; 6-6:30, Art Hickman's concert orchestra, Edward Fitzpatrick, director; 6:30-7:30, children's program, "American History," Prof. Walter Sylvester Hertzog; Vendelle Dar, screen juvenile; bodimo story, Uncle John; 8-8:45, one-act playlet, Edward Murphey, director; 8:45-10, concert, courtesy the Marlin Music company, arranged by J. Howard Johnson; 10-11, Art Hickman's dance orchestra, Earl Burnett, director.
WPO, San Francisco, Calif. (Pacific, 423), 1-2 p. m., Rudy Seiger's Fairmont Hotel orchestra; 3:30-5:30, E. Max Bradford's versatile band; 8-12, Art Weidner's dance orchestra.
 (Continued on page 14)

1, 4:10 p. m., Hott Jenkins; 6, Salle orchestra; 8:30, musicale; Marx E. Obern-
 2:30 p. m., sky-eteria orchestra, ht frolic.
 6 p. m., story d; 6:30, dinner s C. B. & Q. 12 m., chimes; Laughlin; 7:20, man; 8, musical
 11 a. m., Mary namaker, crystal 2. Golden; 5:15, ndelori and his , program from estra, direction, pianist; 10:05, ncent Rizzo and
 -8 a. m., WOR delberger; 6:15- saw; 6:30-6:45, ; 7-7:15, Alex- ilk, Jolly Bill
 m., Fred Mann m., "Pumpkin Mrs. Harry T. Mary Hale Mar- lino Garden or- soprano; Arthur st; 10-2 a. m., yarks; Langdon aer, tenor; Nubs tenor; Maridene O'Hara, harmony
 , 3 p. m., fash- en's wear; 3:10, Beauty and Per- et topics, editor ; 3:50, Magazine , Pokgy Albion , entertainment; ardt; 8-9, Kimo 1, Emilio Volpi.
 6:45-7:45 p. m., ftone; Black Cat
 a. m., setting-up women's editor, a; 3 p. m., De- orchestra; Wen-

er 18

WEAD, WEEI, WGO, WWJ.
 7 p. m., kid- 7:30, Rex Bat- orchestra; Ben- uch folklore con- ers, jewsharpists, ls, old songsters and his Mount l Brown, Alex
 8 p. m., Regi- 's Foot Guards;
 26), 11:30 a. m., Hopkins football Washington Jef- 30, Westinghouse , and his story ng; 7:45, uniform 8, feature; 8:30, gram closes 9:55.
 1), 6:45-8 p. m., Rohr; 9-10, Ex- kard Radio club -Cocoanut Grove
 KFKB orchestra;

6), 7:30 p. m., old director.
 Pacific, 278), 3:30-4:30 p. featuring talented tots from
 10:30-9:30, auditorium service, di- vine healing-Bible teaching, Aimee Semple McPherson; altar call; Temple choir; Marion McGlashen Muller, Salvation Army, soprano.
 12:30-1:15 p. m., concert; 2:30-3:30, matinee musical; 6-6:30, Art Hickman's concert orchestra, Edward Fitzpatrick, director; 6:30-7:30, children's program, "American History," Prof. Walter Sylvester Hertzog; Vendelle Dar, screen juvenile; bodimo story, Uncle John; 8-8:45, one-act playlet, Edward Murphey, director; 8:45-10, concert, courtesy the Marlin Music company, arranged by J. Howard Johnson; 10-11, Art Hickman's dance orchestra, Earl Burnett, director.
 1-2 p. m., Rudy Seiger's Fairmont Hotel orchestra; 3:30-5:30, E. Max Bradford's versatile band; 8-12, Art Weidner's dance orchestra.
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Saturday, October 18

(Continued from page 13)

KSO, St. Louis, Mo. (Central, 546), 8 p. m., talk, John W. Davis.

KYW, Chicago, Ill. (Central, 536), 11:35 a. m., table talk, Mrs. Anna J. Peterson; 6:35-7, children's bedtime story, Uncle Bob; 7-7:30, dinner concert, Congress Hotel; 8-8:58, Chicago Mandolin orchestra; Jacob Schatz conductor; 9:35, Youth's Companion; 9:53-11:30, radio show.

WBVA, Columbus, Ohio (Eastern, 423), 12 m., 11a Lorchbach Owens, pianist.

WBWR, New York, N. Y. (Eastern, 273), 8 p. m., Arthur Martens, mandolinist; 8:15, Bible questions and answers, Judge J. H. Spencer; 8:45, Arthur Martens; 9-9:15, E. F. Scott; 9:30, Leo Reisman and his Hotel Brunswick orchestra; 7:30, bedtime story for the kiddies; 7:40, Hotel Klumball trio; Jan Geerts, violinist; Arnold Janser, cellist; Lloyd Stoneman, pianist; 8:30, Women's Philharmonic orchestra; L. S. Wignin orchestra; 9, Mariote Messer, violinist; Dorothy Morgan, soprano; 10, Lucie Morse, pianist.

WCAE, Pittsburgh, Pa. (Eastern, 462), 3 p. m., Prof. Otto Kaltels, pianist; 6:30, dinner concert, William Penn hotel; 7:45, songs, Lew Kennedy; Irene Setzler, accompanist; 8:30, musicale.

WCCO, Minneapolis-St. Paul, Minn. (Central, 417), 10:45 a. m., "Good Things with Toast"; 8 p. m., lecture hour; 8:30, Albert Larson, baritone; Eleanor Lamb, reader; Lawrence Reddy, baritone; Eleanor Freeman, accompanist; 10, Joe Peyer's St. Paul Athletic club orchestra; Jack McKenzie, Scotch songs.

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

WOAF, Kansas City, Mo. (Central, 411), 3:30-4:30 p. m., the Star's string trio; 6-7, school of the air, piano tuning-in number on the Duo-Art; address member of the editorial staff of the Star; the Tell-Me-a-Story lady; music; Trianon ensemble; 11:45-12, m., Nighthawk frolic, the "Merry Old Chief" and the Plantation players; Eddie and Bobbie Kuhn's K. C. A. C. orchestra.

WOAR, Philadelphia, Pa. (Eastern, 395), 11:45 a. m., daily situation; 12:02 p. m., organ recital; Stanley theater; Arcadia cafe concert orchestra; 2, Arcadia cafe concert orchestra, Feri Sarkozik, director; Edna Finestone, pianist; 7:30, Dean Daddy's bedtime stories.

WEAF, New York, N. Y. (Eastern, 492), 1:45-4 p. m., play by play description of West Point-Notre Dame football game, direct from Polo Grounds, New York City, Graham McNamee announcing; 4-5, Bruno Brothers orchestra; 6-7, 7-30, boys' stories; 7:30-8:30, recital, Dorothy Haze, violinist; Jessica Kenyon, soprano; James Haput, tenor; Mme. Florence Wessel, pianist; 8:45-9, Detborn and Howard, Hawaiian guitarists; 9:15-9:30, Ruth Friedman, pianist; 9:30-9:45, talk, Lieut. R. E. Day of U. S. Blind Veterans of the World War; 11-12, Vincent Lopez and his Hotel Pennsylvania orchestra.

WEAD, Columbus, Ohio (Eastern, 294), 9 a. m., music, Marguerite Manley Siedel School of Music talent; 11 a. m., music, Siedel artists; 2:30 p. m., play by play report Ohio State-Ohio Wesleyan football game; 8-9, Guy R. Shattuck, piano; 12-12:30 p. m., address, Hugo Sauer; 8:30-9:30, Red Hot Rammers; 11-12, Adolphus hotel orchestra.

WFI, Philadelphia, Pa. (Eastern, 395), 1 p. m., Meyer Davis' Bellevue Stratford concert orchestra; 3, report, Chicago grain market; John Irvine, elocutionist; 6:30, Meyer Davis' Bellevue Stratford concert orchestra; 7, Sunny Jim, the kiddies' pal; 8, recital, Loretta Kerk, pianist.

WGN, Chicago, Ill. (Central, 370), 1:40 p. m., luncheon concert; 2:30, rocking chair hour; 5:30, Skeezix time; 6:7, dinner concert; 8-9, classical concert; 10-11, jazz hour.

WGR, Buffalo, N. Y. (Eastern, 319), 12:30-1 p. m., George Albert Bouchard, organist; 2:30-4:30, Radio dealers' musical program; 6, Halcyon string quartet; WGY, Schenectady, N. Y. (Eastern, 380), 8:30 p. m., Kenmore hotel orchestra.

WHAS, Louisville, Ky. (Central, 400), 4-5 p. m., Alamo theater orchestra; 7:30-9, Louisville Railway Inspectors' quartet.

WHB, Kansas City, Mo. (Central, 411), 2-3 p. m., ladies' noon program, Sweetest Radio trio.

WHK, Cleveland, Ohio (Eastern, 283), 6 p. m., Marjorie Moore's Melodious Maids; 8 p. m., Rainbow Club program; WHK Bellhops' orchestra, Dean Smith, director; soloists; 10, Ray Stillwell's orchestra; Ethel Rhode, pianologue; Jessie Semple, Alice Crandall, solos, duets; 10:15-11, Lucille Snider, soprano; Betty Booth, Violet Perry, Billie Bucher, Bobbie and Debby Fitzpatrick, soloists; Scotty Middleton, Harry Bloom, songs; John Peattie, banjoist; Dean Smith, pianist.

WHN, New York, N. Y. (Eastern, 360), 2:15-2:30 p. m., Cooper and Bourne, songs; 2:35-2:45, songs, Natalie Shand; 2:45-2:55, songs, Lou Gordon and Leo Jacobs; 2:55-3:15, Bert and Betty's Southern harmonists; 3:45-4:15, Ellen Montague Cross concert company; 4:15-4:30, Irene Kessler, contralto; 4:30-4:45, Kiwanis club boys' period, conducted by Wm. J. Stuart; 4:45-5, Kathryn Connolly, soprano; 5-6, Johnson-Davison Society orchestra; 6:30-7, Oleott Vall, violinist, accompanied by Stephen Balogh, pianist; 7-7:30, Paul Specht's Amateur orchestra; 7:30-8, Michael Spiccolo and his Hotel Carlton Terrace orchestra; 8-8:15 Jimmy Flynn, tenor; 8:15-8:30, Arthur Steen, pianist; 8:30-8:45, Harry Harris, tenor; 8:45-9, Barbara Well, soprano; 9-9:30, Harry Ash's Royal Novelty orchestra; 9:30-9:45, "Un-Americanizing America," Robert E. Condon of the National Security League; 9:45-10, Tom Braeken and Bob King; 9:50-10, Joseph King, novelty instrumentalist; 10:10-15, Victor Wilbur, baritone; 10:15-10:45, Clarence Williams Radio Trio, Blue Five orchestra; 10:45-10:55, Fitzpatrick brothers; 10:55-11:05, Abner Silver and L. Wolfe Gilbert, singing; 11:05-11:30, Jimmy Clarke and his entertainers; 11:30-12:30, Fletcher Henderson's Roseland dance orchestra.

WIP, Philadelphia, Pa. (Eastern, 509), 1 p. m., Karl Bonawitz, organist; 3, play by play of football game between University of Pennsylvania and Columbia university; 6:05, St. James hotel dinner dance orchestra; 7, Uncle Wip's bedtime stories; 8, talk, ex-Congressman Thomas S. Cravo; 8:15, evening with Philadelphia composer, featuring Louis Armstrong and Gus Arnheim, Camille Zeckler, Frederick E. Hahn, H. Alexander Matthews, Harl McDonald and Edward Shippen Barnes, with the following artists: Marie Zeckler, Holt, soprano; Lena Weber Bricker, contralto; Frederick E. Hahn, violinists, and Harl McDonald, pianist; 8:15, concert, Haines Evangelist; party: Negro spirituals, Edmont Jones and his College Inn orchestra; Edmont Jones, piano; "The Crucifixion," Edmont Hains; 4, Swedish songs, John A. Scott; vocal solo, Edmont Hains; "How to Be Happy," Edmont Hains; 10:05, Hotel St. James dance orchestra; 11:05, Karl Bonawitz, organist.

WJZ, New York, N. Y. (Eastern, 455), 1:15-2:15 p. m., Oriando Hotel, Roosevelt orchestra; 4-5:30, play by play description of the Army-Notre Dame football game direct from Polo Grounds, announcing by Major J. Andrew White; 5:30-6:30, New York Stock exchange reports, etc., Evening Post News; 7-8, Waldorf-Astoria orchestra; 8-8:15, talk, Democratic National committee; 8:15-8:30, Helen E. Davis, banjoist; 8:45-9, Mrs. Harry Comstock, author; 9-10, program arranged by the French line S. S. Paris orchestra; 10:30-11:30, Hotel Astor dance orchestra.

WLS, Chicago, Ill. (Central, 345), 7:45 p. m., a trip to Hawaii, Glenn Rowell, Ford Rush; 8-1 a. m., Saturday Night Mardis Gras, Harmony girls; Ralph Emerson, organist; Lenora Jones and his College Inn orchestra; Walter Peterson, "The Kentucky Wonderbean," barn dance fiddlers; Ford and Glenn.

WMAQ, Chicago, Ill. (Central, 447.5), 6:30 p. m., Hotel LaSalle orchestra; 8, Western Electric Hawthorne club; 8:10, Radio photologue, E. M. Newman; 9, weekly Chicago theater review.

WMC, Memphis, Tenn. (Central, 500), 12:30 p. m., sky-line serenaders; 8:30, Lyle quartet.

WNH, Cincinnati, Ohio (Central, 309), 10 p. m., popular songs, Gertrude Kessell, Mrs. E. Herbstreit, accompanist; piano solos, Clarence R. Reeve; popular songs, Melvin Bettinger, Bob Surran; 11, Auburn orchestra.

WOAW, Omaha, Nebr. (Central, 526), 6 p. m., dinner program; 9, program, auspices of the Omaha Printing company.

WOC, Davenport, Iowa (Central, 484), 12 m., chimes; 7 p. m., sandman's visit, Val McLaughlin; 9, The Palmer School Radio orchestra; Ralph W. Fuller, baritone.

WDO, Philadelphia, Pa. (Eastern, 509), 11 a. m., Mary E. Vogt, organist; 12:02 p. m., Wanamaker crystal tea room orchestra, direction Robert E. Golden; 5:15, Mary E. Vogt, organist.

WOR, Newark, N. J. (Eastern, 405), 7-8 a. m., WOR symphony class; 2:30-2:45 p. m., Bertha C. Wallach, soprano; 2:45-3:15, concert, Crescendo, Mandolin club; 3:15-3:30, Bertha C. Wallach; 6:15-7:15, Chiderella Volverines orchestra; 7:15-7:30, sports talk, Jolly Bill Steinke; 8:30-8:45, program, Mabelanna Corby; 9-9:30, David Margulies trio; 9:30-9:45, humorous talk, Sam Hellman of Saturday Evening Post; 9:45-10:45, Mabelanna Corby program.

WQJ, Chicago, Ill. (Central, 448), 11-12 m., "Pressure Cookers," H. F. West; talk, Mrs. Frank Hubbard; 3-4 p. m., coffee klatsch; 7-8, Jenkins School of Music; 10-2, Ralph Williams and His Rainbow Skylarks; Malla and Little, song writers; Jerry Sullivan; The Melodians, Laurie, Eddie, Bonnie; songs, Lew Butler; Marion Morgans, prima donna, "Around the Rainbo."

WRC, Washington, D. C. (Eastern, 469), 6 p. m., children's hour, Peggy Albion; 7:45, Bible talk; 8, Roso Polio, soprano; 8:15, political talk, J. Walter Drake; 8:30, Albert Shefferman, baritone; 8:45, music; 9, In-Com-Co band, Charles S. Wengart, director; program doses and ailments.

WSAI, Cincinnati, Ohio (Central, 309), 8 p. m., chimes concert; 8:15, mezzo contralto solos, Tecla Richter; baritone solos, Mowdo Pulinder; soprano solos, LaVergna Sluis; piano solos, Ann Cockburn; 9, weekly news review, Rutherford H. Cox; 9:20, mixed quartet, Kathleen Wise, soprano; Marguerite Katenbrink, contralto; Harry L. Taylor, tenor; Ezra Hoffman, bass; Elba Davis, accompanist.

WSB, Atlanta, Ga. (Central, 429), 12 m., entertainment; 5 p. m., bedtime story, Bonnie Barnhardt; 8-9, concert, Ed and Grace McConnel; 10:45, Fred Hughes, Nora Allen.

WTAM, Cleveland, Ohio (Eastern, 390), 9 p. m., WTAM dance orchestra, Ev Jones, director; solo number program, recitals.

WTAY, Oak Park, Ill. (Central, 283), 6:45-7:45 p. m., Helen Raub, pianist; Dr. Hugh B. Marshall, tenor; Frank Sortino, accompanist; 9-9:45, 10:15-11:15, Guyon's Paradise orchestra.

WWJ, Detroit, Mich. (Eastern, 517), 8 a. m., setting-up exercises, R. J. Horton; 9:30, talk, women's editor, Detroit News; 12 n., musical program; 3 p. m., Detroit News orchestra; 7, Detroit News orchestra; Wendell Hall.

Sunday, October 19

Silent night for: CKAC, KGW, WBAP, WCAE, WCX, WOAF, WOAR, WHN, WIP, WMC, WOR, WOR, WSAI, WTAY.

CHYC, Montreal, Can. (Eastern, 341), 8:45-11 p. m., studio program.

CKAC, Montreal, Can. (Eastern, 425), 4:30 p. m., sacred concert.

KFI, Los Angeles, Cal. (Pacific, 469), 10 a. m., L. A. church federation service; 6:45-7 p. m., musical appreciation talk, Paul Reese; 7-8, Metropolitan theater concert; 8-9, Ambassador Hotel Concert orchestra; 9-10, Examiner studio concert; 10-11, Packard Six orchestra.

KFNH, Shenandoah, Iowa (Central, 266), 7:30 p. m., religious services, Evangelical church, C. M. Mutchler, director; 6:30, sacred song service.

KFSG, Los Angeles, Cal. (Pacific, 278), 10:30-12:30 noon, worship and praise, temple revival chorus; triple male quartet; vocal selections; Esther Fricke Green at the organ; sermon, Almer Semple McPherson; 2:30-3:30 p. m., dispensation message and Bible teaching, Almer Semple McPherson; temple silver band; combined choir and musical features; Roy Reid Brignall, organist; Ruth Thomas, pianist; 7-9:30, musical hour; silver band, choir, male quartet, assisting; Esther Fricke Green, organist; evangelistic salvation sermon, Almer Semple McPherson; alter call and altar service; 10-11, benediction; "eventide," Roy Reid Brignall, organist; vocal artists.

KGO, Oakland, Calif. (Pacific, 312), 11 a. m., church service; 3:30 p. m., KGO Little Symphony orchestra; 7:30, church service.

KGW, Portland, Ore. (Pacific, 492), 6 p. m., church services, Fourth Council of Churches.

KHI, Los Angeles, Cal. (Pacific, 395), 10 a. m., sermon from KHI studio; 10:30-12:30 noon, organ recital and service from First M. E. church; Arthur Blakely, organist, and Rev. E. E. Helms, pastor; 6:30-7 p. m., Art Hickman's concert orchestra, Edward Fitzpatrick, director; 7:30-8:30, organ recital from First M. E. church; Arthur Blakely, organist; 8-10, special de luxe concert.

KPO, San Francisco, Calif. (Pacific, 423), 11-12 m., church services, Dr. William J. Fisher; Judge T. G. Walker, tenor; Theodore J. Irwin, organist; 8:30-10, Rudy Seiger's Fairmont Hotel orchestra.

KSO, St. Louis, Mo. (Central, 546), 4 p. m., Missouri Theater Symphony concert; 9, Grand Central specialties concert program.

KYW, Chicago, Ill. (Central, 536), 11 a. m., Central church service, Dr. F. F. Shannon, pastor; 2:30 p. m., studio chapel service; 7, Chicago Sunday Evening club, Edgar Nelson, director.

WBAP, Fort Worth, Texas (Central, 476), 11 a. m., services, First Methodist church, Rev. J. W. Bergin, pastor; 4 p. m., concert, Rialto theater.

WBVA, Columbus, Ohio (Eastern, 423), 2:30 p. m., religious service at studio, arranged by Columbus Council of churches, including sermon and choir music.

WCCO, Minneapolis-St. Paul, Minn. (Central, 417), 8 p. m., Detroitic Murray, harpist; Sigurd Thorngren, soprano.

WCX, Detroit, Mich. (Eastern, 517), 10:30 a. m., services, Central M. E. church, Dr. Lynn Harold Hough; Hudson quartets; 2:30 p. m., organ recital, Prof. Guy C. Pitkins, broadcast from Central M. E. church.

WDAF, Kansas City, Mo. (Central, 411), 4-5 p. m., classical and semi-classical musical recital; Mrs. E. N. Brinton, director.

WEAF, New York, N. Y. (Eastern, 492), 2-5 p. m., hymn singing and services; 7:20-9:15, Capitol theater; 9:15-10:15, Skinner organ recital.

WEEI, Boston, Mass. (Eastern, 307), 7:20 p. m., Mark Strand theater.

WFAA, Dallas, Texas (Central, 476), 6-7 p. m., Radio Heals, Dr. William M. Anderson, pastor; 9-9:30, sacred song recital, chorists from Oak Cliff Presbyterian church.

WFI, Philadelphia, Pa. (Eastern, 395), 4:30 p. m., sermon, Rev. H. Vernon Slawter, Church of the Brethren, Fortstown; 7:30, services, Arch Street Presbyterian church.

WGN, Chicago, Ill. (Central, 370), 11 a. m., Uncle Walt's reading of comics; 11:45, Chicago theater musical program; 2:30 p. m., Tribune Master artists' concert; 9-10, Drake concert ensemble.

WGR, Buffalo, N. Y. (Eastern, 319), 3 p. m., vesper service, the Rev. Wallace Thompson; music, Prof. DeWitt C. Garretson; 7:20, Central Presbyterian church; pre-service organ recital, William Wall Whitfield; 7:30, Central church service, the Rev. Robert J. MacAlpine, speaker.

WGY, Schenectady, N. Y. (Eastern, 380), 10:30 a. m., Bellevue Reformed church, Rev. J. A. Thurston, pastor; 3:45 p. m., WGY Symphony orchestra; Isabelle Franklin, soprano; 7:30, Bellevue Reformed church.

WHAS, Louisville, Ky. (Central, 400), 9:57 a. m., organ; 10, church service, Broadway Christian church, Rev. Dr. W. N. Briney; 4-5 p. m., vesper song service, First Unitarian church; Reginald Billin, organist.

WHB, Kansas City, Mo. (Central, 411), 9:15-11 a. m., services, Linwood Boulevard Christian church, Dr. Burris Jenkins, pastor; 8-9:15 p. m., services, representative church of Kansas City.

WHK, Cleveland, Ohio (Eastern, 283), 8 p. m., chapel services, auspicea Cleveland Federated churches, Rev. E. W. Hunt, conductor; Current recital, Mervyn Black, soprano; Helene Alimendinger, contralto; O. A. Bryan, baritone, pianist; Leonard Z. Bryan, Jr., tenor, violinist; Laurel Masonie quartet; Jean Webster Erisman, soprano; Roy J. Crocker, pianist.

WHN, New York, N. Y. (Eastern, 360), 3-4 p. m., Queens Country Club, general program, Rev. James Mayne, B. D. of the St. Alban's Presbyterian church.

WHO, Des Moines, Ia. (Central, 526), 7:30-9 p. m., concert.

WIP, Philadelphia, Pa. (Eastern, 509), 11 a. m., services, Holy Trinity chapel.

WJAX, Cleveland, Ohio (Eastern, 390), 9 p. m., concert program arranged by Radio Apparatus company, Warren R. Cox, vice president, and General Manager; R. A. C. concert orchestra, Max Schmitt, director.

WJY, New York, N. Y. (Eastern, 405), 8:15-10 p. m., Bernhard Leitvort's Hotel Commodore orchestra.

WJZ, New York, N. Y. (Eastern, 455), 9-11 a. m., children's hour, original stories, etc.; 11-12, West

End Prasbyterian church service direct, Dr. A. E. Klegwin; 2:30-3:30 p. m., Radio Biblia club, Greater N. Y. Federation of churches, Church Community chorus; 3:30-4:30, special address, Rev. Dr. Harry Emerson Fosdick; 4:30-5:30, Rev. Edmont Hains, contralto; John A. Scott, tenor and pianist; 7-8:15, Nathan Abas Hotel Pennsylvania orchestra; 8:15-8:30, Howard and Detborn, Hawaiian guitarists; 8:50-9:30, violin recital, Godfrey Ludlow.

WLS, Chicago, Ill. (Central, 345), 6:30 p. m., Ralph Emerson, organist; 7, program, Robert W. Stevens.

WW, Cincinnati, Ohio (Central, 423), 9:30 a. m., Sunday school; 11, sermon, Rev. Frank Staroson, Church of the Covenant; 7:45 p. m., sermon, Rev. Frederick McMillin, First Presbyterian church of Walnut Hills; 8:45, Western & Southern orchestra.

WOAW, Omaha, Nebr. (Central, 526), 9 a. m., Radio chapel service, conducted by Rev. R. R. Brown, pastor of World Radio congregation; 9 p. m., musical chapel service, First Presbyterian church, Dr. E. H. Jenks, pastor.

WOC, Davenport, Iowa (Central, 484), 9 a. m., sacred chimes concert; 1 p. m., The Palmer School Radio orchestra; 8, church service; 9:30, Palmer School Radio orchestra.

WOO, Philadelphia, Pa. (Eastern, 509), 10 a. m., services, Bethany temple; 2:30 p. m., Sunday school exercises, Bethany temple; 6:05, Clarence W. Bawden, organist.

WQJ, Chicago, Ill. (Central, 448), 10:30 a. m., sermon, Dr. Preston Bradley; 8-10, Ralph Williams and His Rainbow Garden orchestra; Langdon Brothers, steel guitarists; Maria Dneprowa, Russian soprano; James J. Whalen, tenor; Carl G. Liner, pianist.

WSAI, Cincinnati, Ohio (Central, 309), 3 p. m., ceremonial; 8:10, sacred chimes concert.

WSB, Atlanta, Ga. (Central, 429), 5-6 p. m., Sabbath twilight service, Grant Park Baptist church.

WWJ, Detroit, Mich. (Eastern, 517), 5 p. m., Detroit News orchestra; 7:30, services, St. Paul's Episcopal cathedral.

Monday, October 20

Silent night for: CKAC, KFN, KFSG, KHJ, KYW, WEAQ, WFI, WGN, WHAS, WIP, WJY, WLS, WMAQ, WQJ, WRC, WTAY.

CHNC, Toronto, Can. (Eastern, 350), 8:30 p. m., Bilton trio, Clarence Causton, violinist, Lionel H. Bilton, cellist, Simeon Joyce, pianist; Paramount quartet, Gerald J. Kelly; 8:45, concert, F. Rogers, second tenor; Dwight Wilson, baritone, E. Forrester, bass; Mrs. Genevieve Kelly-Schreiner, soprano.

CKAC, Montreal, Canada (Eastern, 425), 1:45 p. m., Mount Royal Hotel luncheon concert; 4:30, 10 lessons.

KFAE, Pullman, Wash. (Pacific, 330), 7:30 p. m., Lusianna Barakian, soprano; Reba Collins, reader; "How to Care for Linoleum," Gladys Gallup; "Air Service in Washington," E. V. Ellington.

KFI, Los Angeles, Cal. (Pacific, 469), 8-9 p. m., Evening Herald concert; 9-10, Examiner studio program; 10-11, concert.

KGO, Oakland, Calif. (Pacific, 312), 3 p. m., studio musical program, parent-teacher association speaker; 4-5:30, Henry Halstead dance orchestra; 5:30-6, Aunt Betty stories, KGO Kiddies' club; 8, educational program; Arlon trio; 10-11, Henry Halstead's orchestra.

KGW, Portland, Ore. (Pacific, 492), 5 p. m., children's program; 8, Oregonian concert orchestra.

KOB, State College, N. M. (Mountain, 360), 7:30-8:30 p. m., musical program.

KPO, San Francisco, Calif. (Pacific, 423), 1-2 p. m., Rudy Seiger's Fairmont hotel orchestra; 4:30-5:30, Rudy Seiger's Fairmont hotel orchestra; 5:30-6:30, children's hour; 7-7:30, Rudy Seiger's Fairmont hotel orchestra; 8-9, Theodore J. Irwin, organist; 9:10, Millicent Benhoff, soprano; Alice McClelland, pianist; 10-11, Max Bradfield's versatile band.

KSO, St. Louis, Mo. (Central, 546), 6:45 p. m., Statler Hotel dinner concert; 9, Missouri Theater specialties.

WAOW, Omaha, Nebr. (Central, 286), 7:30-9 p. m., Union Pacific System Radio orchestra.

WBAP, Fort Worth, Texas (Central, 476), 7:30-8:30 p. m., "Moments from the Majestic"; Dot Echols, organist; Max Bradfield's versatile band; George Orin, director; 9:30-10:45, Old Time Fiddler music, Bruison Fiddle band.

WBVA, Columbus, Ohio (Eastern, 423), 12 m., Ila Lorchbach Owens, pianist.

WCAY, Milwaukee, Wis. (Central, 266), 8 p. m., Sundaysingers' Mrs. Calkins, soprano; Mr. Babick, accompanist; Mrs. Lanzetta, soprano; Mrs. Zink, pianist.

WCBO, Zion, Ill. (Central, 345), 8 m. m., Zion Junior choir; Thomas, baritone; Mrs. Thomas, soprano; cornet duets, "Studebaker, Klawonn.

WCCO, Minneapolis-St. Paul, Minn. (Central, 417), 10:45 a. m., "A Good Pudding," Betty Crocker; 2 p. m., woman's hour; 4 magazine, "The Madonnas of the Tenors"; 5:30 children's hour, the Gold Medal lady; 8 "Minnesota, an Interpretation," Theodore C. Blegen; 8:15, Hamlin Hunt, organ recital.

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

WDAF, Kansas City, Mo. (Central, 411), 3:30-4:30 p. m., the Star's string trio; 5-5:30, weekly Boy Scout program, presented by the Kansas City Council; 6-7, school of the air, piano tuning-in number on the Duo-Art; personal message from Roger W. Babson, statistical expert; the Tell-Me-a-Story Lady; music, Trianon ensemble; 8-9:15, dance music, the Star's Radio orchestra; 11:45-1 a. m., Nighthawk frolic, the "Merry Old Chief" and the Plantation players.

WOAR, Philadelphia, Pa. (Eastern, 395), 11 a. m., organ recital, Stanley theater; 11:45, daily almanac; 12:02 p. m., organ recital, Stanley theater; 12:30, Arcadia cafe concert orchestra; 2, Arcadia cafe concert orchestra; music from Stanley theater; 5, Pierce School educational talk; 7:24, overture, Stanley theater orchestra; 8:24, overture, Stanley theater; Dream Daddy's bedtime stories; 10, Arcadia cafe dance orchestra; vaudeville features from Fay's theater.

WEAF, New York, N. Y. (Eastern, 492), 4:15-5 p. m., Columbia university, Prof. Franklin H. Giddings; 5-5:30, children's program, Greater New York Federation of churches; 6-7, dinner music, Waldorf-Astoria hotel; 7:30-7:45, Danilo Dowd, soprano; 8-8:15, Mears and company; 8:30-9, John C. Smith and his modern orchestra; 9-10, A. and P. Gypsies.

WEAD, Columbus, Ohio (Eastern, 294), 9 a. m., music, Marguerite Manley Siedel School of Music talent; 11 a. m., music, Siedel artists; 1:30 p. m., music, Siedel artists.

WFAA, Dallas, Texas (Central, 476), 12:30-1 p. m., address, Dr. J. D. Boon; 8:30-9:20, Magnolia Petroleum company band, Paul E. Ashley, director.

WFI, Philadelphia, Pa. (Eastern, 395), 1 p. m., Meyer Davis' Bellevue Stratford concert orchestra; 3, report closing prices Chicago grain market; 3:05, Loretta Kerk, pianist; 6:30, Meyer Davis' Bellevue Stratford concert orchestra; 7:30, Sunny Jim, the kiddie pal; 8:30, W. M. Schenck and Healy artists concert; 3, rocking chair hour; 5:30, Skeezix time.

WGR, Buffalo, N. Y. (Eastern, 319), 12:30-1 p. m., George Albert Bouchard, organist; 2:30-4:30, Radio dealers' musical program; 6:30, dinner music; 8:30, address, Rev. McIntosh; 8:45, reading, W. H. F. Tenny, author, from "Songs of the North"; 9-10, concert, Ray Klein Club orchestra; 10, Malle and Little, popular songsters; 11, supper-dance music, Vincent Lopez Hotel Statler dance orchestra, Harold Glezer, director.

WGSJ, San Francisco, Calif. (Pacific, 423), 2 p. m., "Better Bedding," Leo J. Simon; 7:45, WGY orchestra; Marion E. Starkweather, pianist; Edward A. Hice, violinist; Peter Schmidt, clarinetist.

WHAS, Louisville, Ky. (Central, 400), 4-5 p. m., Alamo Theater orchestra.

WHZZ, Troy, N. Y. (Eastern, 380), 9 p. m., Blue Bird club orchestra; Raymond Burgess, director, "Hunters, Fishermen and the Park Bond Issue," Herbert E. Prescott.

WHB, Kansas City, Mo. (Central, 411), 2-3 p. m., ladies' hour program, Sweeney Radio trio; 7-8, "Automobile Ignition," Dale Ziegler, member of the faculty of the Sweeney school; music, Sweeney Radio trio; Blue Moon orchestra; Schoenberg, director.

WHK, Cleveland, Ohio (Eastern, 283), 6 p. m., Ponce DeLeon orchestra, Herbert Heyward, director.

WHN, New York, N. Y. (Eastern, 360), 2:15-2:45 p. m., Clarence Williams Italo trio; Blue Five orchestra; 3:15-4, Uncle Robert's chat to children; 5-6, Louisiana Ramblers, courtesy of Harry Mays; 6:30-7, Oleott Vall, violinist; Stephen Balogh, pianist; 7-7:30, Paul Specht's Alarm orchestra; 7:30-7:35, "Adventure of the Sea and Hiccheleu Pearla," Rudolph Porter; 7:30-8, Hotel Carlton Terrace orchestra; 8-8:30, Phil Romano and his Roseland dance orchestra; 8:30-8:45, "March and Water Waving," H. W. Carliough; 9-9:15,

Kiwanis Club boys period, conducted by William J. Stuart; 9:30-10, Dan Gregory's Crystal Palace orchestra 10-11, Jack Shack orchestra 12-12:30, Wigwam Club orchestra and entertainers.

WHO, Des Moines, Ia. (Central, 526), 7:30-9 p. m., Jack Elliott, ukulele; artist, Charles L. Roy; Pat's popular songster; 8-9, program, Drake Conservatory of Music; 11:15-12, L. Carlos Maier, organist.

WIP, Philadelphia, Pa. (Eastern, 509), 1 p. m., Glimbe Brothers Tea Room orchestra; 3:15, Flora Ripka, pianist; 6:05, Hotel St. James dinner dance orchestra; 7, Uncle Wip's bedtime stories.

WJZ, New York, N. Y. (Eastern, 455), 10-10:20 a. m., housewives league man, Mrs. Julian Heath; 10:20-10:35, Etiquette talk, Vogue; 10:35-10:50, "Steers Ara Falling for Mah Jong," John C. Cutting; 10:50-11, fashion talk, Eleanor Gunn; 1-2 p. m., Henry Vander Zanden's Hotel Ambassador trio; 3:30-4:30, special program; 4:30-5:30, Roger Wolfe's Billmore orchestra; 5:30-6:30, New York Stock Exchange reports, Evening Post News; 7-8, Bernhard Leitvort's Hotel Commodore orchestra; 8-8:10, Wall Street Journal; 8:10-8:30, "Co-operative Economics," Mrs. Clara E. Breakey of N. Y. U. Air College; 8:30-9:30, special numbers; 9:30-9:45, talk, F. T. Johns, candidate for president on Socialist Labor ticket; 9:45-10, "Philadelphia, A Nutritional Affair," M. Canaan; 10-10:45, Plaza Theater concert orchestra; 10:45-11:45, Jacques Green and his Club Deauville orchestra, with Clarks Hawaiians.

WLW, Cincinnati, Ohio (Central, 423), 8 p. m., Alvin Rohr's orchestra; 9, Cooper orchestra and male quartet.

WMAQ, Chicago, Ill. (Central, 447.5), 4:30 p. m., better English, Mrs. E. Jenkins; 6, Chicago theater organ recital; 6:30, Hotel LaSalle orchestra.

WMC, Memphis, Tenn. (Central, 500), 8:30 p. m., Hotel Gayoso orchestra.

WMH, Cincinnati, Ohio (Central, 309), 8 p. m., WMH concert orchestra, Werner Bertram, director; 9, talk; 9:15, tabloid musical program.

WOAW, Omaha, Nebr. (Central, 526), 6 p. m., dramatic hour, Davis Studio of Expression; 6:30, dinner program, Randall's Royal orchestra; 9, Hotel Fontaine Concert orchestra.

WOO, Philadelphia, Pa. (Eastern, 509), 11 a. m., Mary E. Vogt, organist; 12:02 p. m., Wanamaker Crystal Room orchestra, Robert E. Golden, director; 5:15, Mary E. Vogt, organist; 7:30, M. Canaan and his concert orchestra from Hotel Adelphi; 8:30, Harriet G. Ridley, pianist; 9:25, Erno Rapea and his Fox Theater grand orchestra; 10:03, organ recital, Mary E. Vogt; 10:30, Vincent Rizzo and his dance orchestra from Hotel Sylvania.

WOR, Newark, New Jersey (Eastern, 405), 7-8 a. m., WOR quartet; 2:45-3 p. m., talk, New York Y. M. C. A.; 3:45-4, talk, "Fashion"; 6:15-6:45, "Music While You Dine," Cordes Marks orchestra; 7:15-7:30, sports talk, Jolly Bill Steinke; 9-9:30, Charles Wald and his musical glasses; 9:30-10, Arthur Murray dancing lessons.

WQJ, Chicago, Ill. (Central, 448), 11-12 m., "Who Pays for Advertising," Mrs. A. M. White; "Some Interesting Facts About Silk," Minerva A. Agur; 4 p. m., "How to Store Vegetables and Prepare a New England Boiled Dinner," Helen H. Downing; "Ariel," book review, Rev. Fred Harrison.

WRC, Washington, D. C. (Eastern, 469), 3 p. m., fashion developments of the moment, women's wear; 3:10, songs; 4:25, current topics, editor, New York Y. M. C. A.; 3:45-4, talk, "Fashion"; 6:15-6:45, "Music While You Dine," Cordes Marks orchestra; 7:15-7:30, sports talk, Jolly Bill Steinke; 9-9:30, Charles Wald and his musical glasses; 9:30-10, Arthur Murray dancing lessons.

WSD, Washington, D. C. (Eastern, 469), 3 p. m., fashion developments of the moment, women's wear; 3:10, songs; 4:25, current topics, editor, New York Y. M. C. A.; 3:45-4, talk, "Fashion"; 6:15-6:45, "Music While You Dine," Cordes Marks orchestra; 7:15-7:30, sports talk, Jolly Bill Steinke; 9-9:30, Charles Wald and his musical glasses; 9:30-10, Arthur Murray dancing lessons.

WSAI, Cincinnati, Ohio (Central, 309), 10 p. m., Cliff Burns Country Club orchestra; songs, Bert Lindsay; 11, Lutz & Kolkmeyer, novelty entertainers; piano solos, Doyle Wyr.

WSB, Atlanta, Ga. (Central, 429), 12 m., entertainment; 5 p. m., bedtime story, Bonnie Barnhardt; 8-9, Mrs. Gertrude L. Johnson's quartet; 10:45, Radioliw entertainment.

WTAM, Cleveland, Ohio (Eastern, 390), 8 p. m., concert program arranged by faculty Oberlin Conservatory of Music, WTAM symphonic ensemble.

WWJ, Detroit, Mich. (Eastern, 517), 8 a. m., setting-up exercises, R. J. Horton; 9:30, talk, women's editor, Detroit News; 12 n., musical program; 3 p. m., Detroit News orchestra; 8:30, Detroit News orchestra.

Tuesday, October 21

Silent night for: WBWR, WCAP, WCCO, WEAQ, WGR, WHO, WOC, WOO, WOR, WWH.

CHYC, Montreal, Can. (Eastern, 341), 8:45-11 p. m., studio program, Wendall Hall.

CKAC, Montreal, Can. (Eastern, 425), 7 p. m., kiddies' stories in French and English; 7:30, Ite Battle and his Mount Royal hotel concert orchestra; Herbert Spencer, organist; 8:30, White Star Line orchestra; 10:30, Joseph Smith and his Mount Royal dance orchestra; George Fishberg, pianist.

CKY, Winnipeg, Can. (Central, 450), 8:15 p. m., concert, Alvin Male quartet.

KFI, Los Angeles, Calif. (Pacific, 469), 6:45-8 p. m., Aeolian organ recital; 8-9, Hotel Ambassador Coccoanut Grove orchestra; 9-10, Examiner studio concert; 10-11, concert program.

KFNH, Shenandoah, Iowa (Central, 266), 7:30 p. m., concert from Johnson, Nebr., H. J. Schneider, director.

KFSG, Los Angeles, Calif. (Pacific, 278), 3:30-4:30 p. m., organ "rems," Esther Fricke Green; vocal artists; 6:30-7:30, "Cousin Jim," in song, music and story, (Harry James Beardsley); Eugene Lamb, pianist.

KGO, Oakland, Calif. (Pacific, 312), 4-5:30 p. m., concert orchestra, Hotel St. James; 5:30, "A Night in Naples," Prof. Laurie A. de M. Francis; 8, "Naples, Pompeii and Rome," J. E. Barnes; 8:15, employees of the General Electric company; 10-11, Henry Halstead's orchestra.

KGW, Portland, Ore. (Pacific, 492), 5 p. m., children's program; story, Nina Pettibone; 8, agricultural lecture, Oregon Agricultural college; 8:30, Premier concert, the Northwest musicians' director.

KHI, Los Angeles, Cal. (Pacific, 395), 12:30-1:15 p. m., m. concert; 2:30-3:30, mafine musicale; 6-6:30, Art Hickman's concert orchestra, Edward Fitzpatrick, director; 6:30-7:30, children's program, "American History," Prof. Walter Sylvester Hertzog; the Sandman and Queen Titania; bedtime story, Uncle John;

Radio Digest

PROGRAMS
Illustrated

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New Ideas Sought

Radical Changes Not to Be Expected

ON THE surface of things it is very difficult to tell whether equipment to be brought out will be different or the same as that sold up to last spring, for manufacturers are saying very little for publication so far about plans for the coming season. In fact, it is almost impossible to get definite information without being very much on the inside of developments which are now being perfected.

The experimenter immediately asks about new circuits. There is disappointment in store for those who expect radical changes which will make obsolete the present methods of building Radio equipment, for attention is being devoted to the perfection of details and the elimination of losses rather than to working out new or greatly improved hook-ups. The regenerative receiver probably will be more popular than ever this winter.

The real improvements—and there will be, from the point of view of the public, more important improvements than any new circuits that have been introduced in the last year—will come from greater efficiency, which means longer distances, better reproduction, sharper tuning and the simplification of tuning adjustments.

In appearance, too, great strides have been made to produce Radio sets in a more attractive setting. The cabinets will be far more handsome in appearance than the plain boxes which have been used in the past; they will be better made and of better material. Some of them are quite elaborate with carving and inlay work, while others are of a simpler and more ornate appearance.

Preparing for Storm at Sea

Steps Taken for Protection on Advance Information

THE ultimate interest of man in the discoveries and inventions of science is, or at least should be, concerned with the practical value that will accrue from them to the human race. Of course there is a great deal of curiosity evinced over innovations of any kind when they begin to be introduced to the public, and the people are glad to amuse themselves with things for a time while scientists are working out more practical applications.

This has been true of Radio. The practical value of Radio has never been seriously doubted. In fact, it is perhaps impossible for the ordinary person to conceive in how many ways and to what extent the Radio will eventually be used for the benefit of mankind.

It is getting to be next to impossible nowadays for dangerous storms to form in any part of the seas and travel any distance without their existence and general direction being known. Practically all vessels are equipped with Radio, and some vessel is apt to be in the vicinity of any storm that develops. If, of course, the information is broadcast, it enables other ships to take such steps as are necessary to insure their protection as the storm advances.

By the same means the weather bureau is able to compile information of storms before they have had time to do much damage, and to send out warnings which will enable vessels to postpone their sailings or to get to places of safety. It is easy to conceive that such a system means an annual saving of millions of dollars to shippers, to say nothing of what it means to human life.

While advance information is, of course, valuable to many other interests than those engaged in the shipping business, it is obvious that in the shipping realm lies the greatest advantage which the Radio offers in meteorological circles. Thus is the Radio a great boon to mankind by making international commerce, as well as domestic coastal trade, safer and of greater service. Man cannot control the elements, but modern science is fast enabling him to frustrate them in many instances.

RADIO INDI-GEST

News Bulletins from Milwaukee Furnished in Co-operation with the Milwaukee Daily Beverage

Milwaukee Milk Men, Inc., have opened a broadcasting station. The slogan will be, "In the land of sky blue waters."

The James Boys of Missouri have established an agency in Milwaukee. They will solicit Radio advertising for Station WEAJ.

Mr. Schlitz is one of the latest to take up broadcasting. He will establish a reputation for spirited programs with a genuine, old-time kick. Hours will be regulated so as not to interfere with Zion City. Mr. Schlitz says he will broadcast till beer comes back. A long season of enjoyment is assured to Radiophans.

Overseer Revolver of the aforementioned Zion broke up a drunken brawl in Moonshine Joe's Soft Drink Parlor when he began preaching on, "General Cussedness as Such." A three tube set was used.

Hoping you are the same and a Merry Christmas to you.
THE THIRD TROMBONE PLAYER.

Same to You, Many of Them

May your last days be full of cheer
From Radio, instead of beer,

And when you reach the "Saints' Delight,"
Just tune in on the Owls each night.

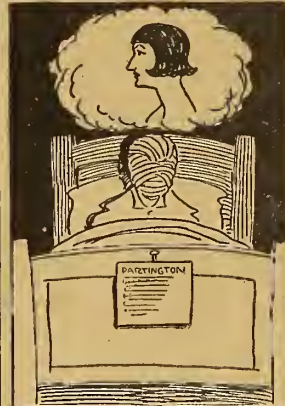
Ten forty-five's the mystic hour,
When Lambdin Kay turns on the power,

And if the angels chance to hear
They'll buy receiving sets, we fear—

While all the others shed their cowls
And seek to join the "Radiowls." P. S. ROY.

Mrs. Partington Speaks Out

Dear Indi: Mizz Partington says she learns that Prof. Todd is after the Ham DX record, a straining of his Superdileodyne short wave set trying to tune in some amateur up in Mars. She says she don't know just what the air line Mars DX is, but thinks it might beat the New Zealand record, right smart. She don't understand who Prof. Todd would find to decode his message when he gits it, and besides, supposin' the op. over to Mars did offer him a case of their best Scotch free, "Jus come and git it," she don't believe a boot-legger, even, could deliver the goods; so what's the use.



She says she ain't heard which Broadcasting station has the honor of making the transterrestrial test of getting a message across from this side, but whoever it is, Graham McNamee is liable to be the announcer, for after all his experience announcing big politics, lately, he should ought to be well posted up on how to put things across.
SIGNING OFF.

Radio Announcers

We greet you, Oh Announcers,
And wonder if you know
What joy your voices bring us
By way of Radio.
How eagerly we greet you!
How we appreciate your joke!
How much you mean to people
In districts far remote
From means of entertainment,
From music and events.
YOU give us songs, and dances,
And men of eloquence.

With keen anticipation
We tune our sets to hear
Your kindly tones, familiar,
And now to us grown dear.
You cannot hear our praises,
Our laughter, nor applause,
Nor can you sense the great suspense
When there's a lengthy pause.
So we're sending thanks in this way
And feel we have expressed
The thoughts of millions like us
In North, South, East and West.

DEDICATION

We dedicate these verses
To Graham McNamee.
RUTH HILLS BACON.

Why Not Use Roller Skates?

Dear Indi: Being dissatisfied with the results I obtained with my boughten Radio. I made myself one, using the Simplidyne circuit.

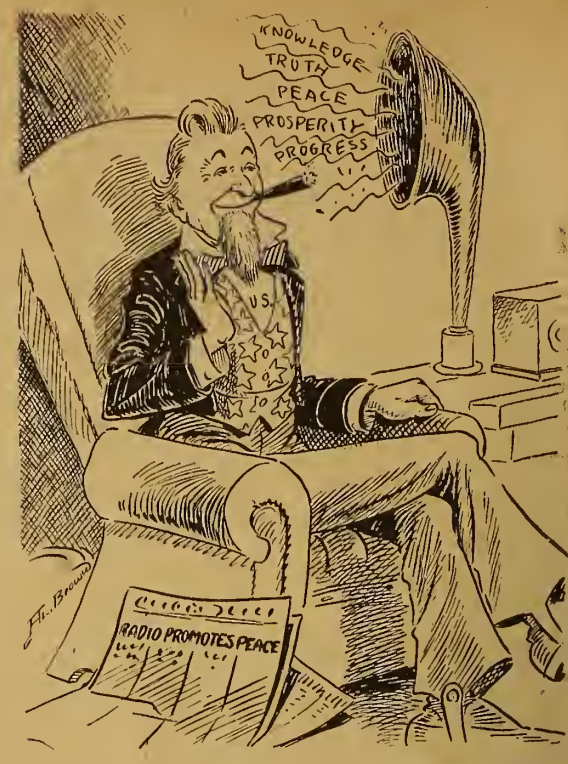
As yet I use only 19 tubes on this set. Only the other night, using only 18 of the tubes, I was able to listen for 3 whole minutes to Station COD, which is all of 5 blocks from where I live. Would you call this DX or not?

The only fault I have to find with this set, so far, is that I have to employ an assistant to help me turn on the rheostats, and replace the tubes, which I blow out while listening in.
GLOOMY GUS.

What Is the Answer to This?

A whisk broom was received the other day in the morning's deluge of acceptable contribs. Up to the present time, we have been unable to tell whether or not it was sent as a hint. Will the contrib who sent it please send instructions. Any member of our little family who guesses the correct solution to this problem will be presented with a handful of ohms and a handsomely engraved electron.
INDI HISSELF.

Asking for Nothing More



Condensed

By DIELECTRIC

"The play's the thing," if it comes through as did "Innocent Eyes" from WNAC. We listeners couldn't see "Uncle" trying to sidestep incrimination, but his words and tone painted the audible picture for us. Having Douglas Levis there to tip us off on the plot between acts meant a great deal. Let mike have more of these humorous plays.

If the Radio audience had difficulty in picturing to themselves the long, lank figure of Tilden driving over his acc shots against the wiry little Californian, Johnston, then the fault lay somewhere else than at the door of WEAJ's announcer whose description of the National Tennis Finals was beyond reproach. He was never behind in description.

To rain or not to rain is a quandry taken care of by Wendell Hall, usually, though others covet his prophetic vision. It was the "Red Headed Music Maker" all right singing from WOS, and though he did not impress me as having a glaringly new weather announcement at the top of the sheet, there were some new jokes worth listening to. This fellow talks to a mike like he'd always known it. Some don't.

One of the really pleasing song recitals so far this season came out of the studio of WCAP when a well chosen group of songs was sung by Robert Prune. Coax that gentleman back again some evening.

Anyone finding pleasure in trio (instrumental) music has a fair assortment of stations to choose between. A very good one is the Wardman Park Hotel trio playing at WCAP. Their ensemble is excellent and they play with a freshness and vigor entirely satisfying.

The dials seldom miss stopping at WTAM sometime during the listening periods for Dielectric and when they do Willard has a good number waiting. This was true of the Musical Magpies' offering which kept up a fast and furious tempo through some foot-tickling phrases. One attraction of WTAM lies in its unbroken programs; no long waits between numbers and announcement. That's an old theme but still fresh.

Just as my car muffs were adjusted for real concentrated harkening, the strains of "Old Black Joe" from an equally antiquated warbler came through to thrill me. Never mind the station. I'll try them again.

Of course, where you were never bothered with that confounding daylight saving (saving so much you sit up all night to get outside the home circle) the gracious explanations via Radio how to alter the facial appearance of timepieces meant nothing. To the rest of us it was wonderful. Move hands ahead on Elgins, Hamiltons and Gruens; try both ways on Ingersolls; stop grandfathers in the first round and short circuit electricies.

Youth bears no such extenuation when operating from a Radiocast station as often occurs in a stage appearance. You don't see the engaging manners; you hear the pitiful blunders. Those two young ladies of seventeen and nineteen, harpist and violinist respectively, who entertained from WGY were not in need of apologies. Both the duo work and solo renditions were of a kind to demand encores.

Console and Cabinet Making for Receiving Sets

Chapter V—Fancy End Table Stand

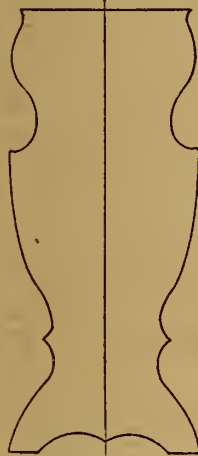
By Charles F. Smisor

IN THE last chapter a design of a table was given that required very little hard work to prepare the parts and to make the assembly. The stand here presented is of a similar type, but the ends must be cut out on a scroll saw or taken to a mill and have the curves sawed out on a band saw. The latter method is the best, for the edges will come out true and straight, and if a fine tooth saw is used, the edges will require very little work to finish them.

MATERIAL LIST

- 1 top, 32 inches long, 12 inches wide and 1 in. thick.
- 2 end pieces, 28 inches long, 12 inches wide and $\frac{3}{8}$ inch thick.
- 1 shelf front, 28 inches long, 12 inches wide and $\frac{3}{8}$ inch thick.
- 1 shelf, 28 inches long, 8 inches wide and $\frac{3}{8}$ inch thick.

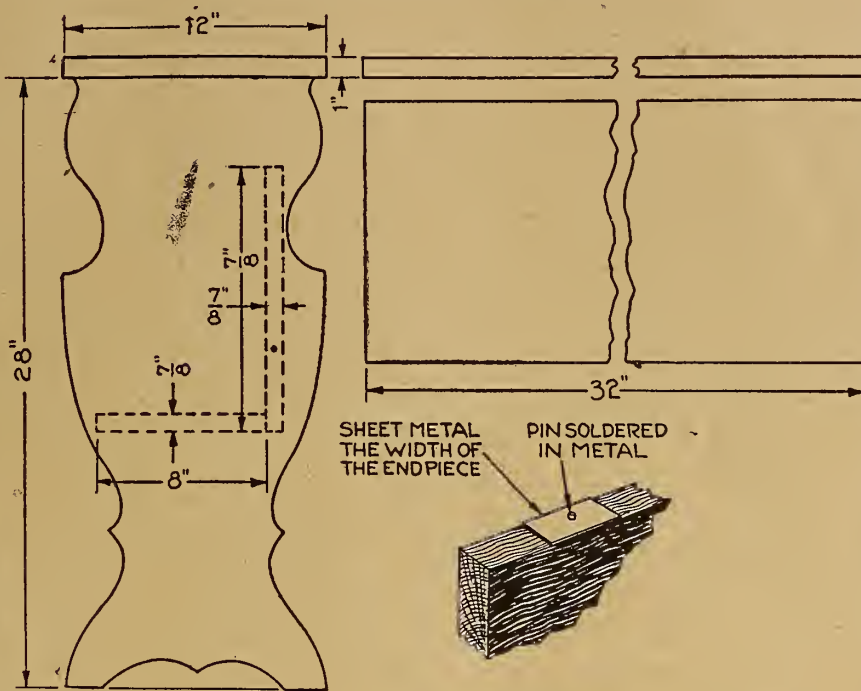
In laying out the end pieces procure a piece of paper large enough to draw the pattern on as shown in the illustration. Draw a rectangular frame on the paper 28 inches long and 12 inches wide. Lay out on one side the shape as shown, making sure to have the curves and points to take approximately the same locations as given.



When one side is drawn fold the paper in the center and draw or cut on the outline. When this is done and the paper laid out flat the curves will be exactly the same on both sides. This paper pattern is then placed on the end piece to serve as a guide in sawing on the outline.

Both end pieces may be clamped together and sawed as one piece. But before doing this make sure that the surfaces are planed smooth, sanded and prepared as before mentioned in the finishing article. After sawing out the pieces go over the edges and smooth them up with a medium coarse grade of sandpaper to remove the roughest part and then finish with a fine grained paper.

There are two methods of fastening the top to the end pieces, with dowels and with angle irons. The latter is the most popular on account of its simplicity and there is no difficult work to secure a close fitting joint. In either case a line



is drawn on the underside of the top exactly two inches from each end. This line is to be the exact location for the inner surface of the end pieces. If dowels are used holes must be bored in the top from the underside and to a depth of $\frac{3}{8}$ inch, no more. If in boring these holes the new kind of a bit is used, one that has no point, the holes may be bored deeper. A hole $\frac{3}{4}$ inch deep may be made with this kind of a bit and the holding means of the dowel will be much better.

Locating Dowel Holes

The illustration shows a device for locating the center of the dowel holes in both the top and end pieces. It consists of a piece of sheet metal the exact width of the end piece thickness, or, in this case, $\frac{3}{8}$ inch, with a short pin soldered in the exact center.

The pin end on one side is stuck into the end grain of the end piece, then the end piece is adjusted to the line on the underside of the table top and a light blow of a mallet will locate the place for the bit point in both pieces.

A dowel placed in the first pair of holes bored will keep the pieces in place until a second marking is made. Three or four dowels will be necessary in each end piece. When all the holes are bored for one end piece the dowels are given a coat

of glue and the joint driven together. No mention has been made about the side of the dowels, but for this joint one of $\frac{1}{4}$ inch will be sufficient. Make sure that

the length of the dowel is not over the depth of both holes.

The second method by angles is not so difficult, as screws are used to hold the angles in the angles of the parts. This does not produce as neat a joint as the one made with the dowels, but it is quite solid when properly attached.

The shelf joins the lower part of the end pieces and it is also used for the batteries, the front board keeps them out of sight and a chance of ruined clothes in getting up against the batteries. The shelf and front board may be fastened in a like manner as the top, but use the same joint throughout, whatever you do.

Woods to Be Used

This stand can be made of the regular woods and for this reason can be made to match other furniture, or that of the receiving set box. The box, of course, is set on top of the table. While the dimensions are given for a receiving set 28 inches long, it can be made in a length to be more suitable to the set that you may have on hand. In making a different length than these dimensions given herein, remember that the shelf and front board are always 4 inches shorter than the top.

The finishing is no different than for the other tables. Just follow the instructions as given in chapter three.

(The next article deals with quite a different table stand, one which has an enclosure for the batteries. The doors and ends are paneled, which requires more skill in building the parts and to get the joints perfect, but the table is much neater for this kind of work.—Editor's Note.)

Does Your Family Miss the Radio?

While you are away on business is your family unable to "listen-in" because they cannot tune your receiver?

Then delight them with a Pfanstiehl Model 7. Its quality of reproduction is perfect—many owners assure us that no other receiver has yet approached such a matchless tone quality.

This purity and clarity is not obtained at the expense of simplicity; tuning is reduced to the simplest possible operation. A "station finder" engraved on the panel tells you exactly where to set the dials to bring in any station desired.

Your dealer will be pleased to demonstrate the

Pfanstiehl
Model 7
Receiver



PFANSTIEHL RADIO CO.

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NO Neutralizing OR Balancing Condensers Required

when you build with this kit to produce a radio frequency receiver that will bring in even the most distant stations with the volume and clarity of locals. So selective that stations can be brought in day after day at the same dial settings. A set that will be the equal, if not the superior, to any 5 tube receiver on the market, and what's more, it's the easiest set in the world to operate.

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

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Each and every Freshman Masterpiece Coil bears a serial number and Trademark—our guarantee of electrical and mechanical perfection. Every genuine Freshman Coil is made of specially insulated wire to prevent short-circuiting, so often caused by inferior coils. For your protection demand only the genuine.

At your dealers, otherwise send purchase price and you will be supplied without further charge.

CHAS. FRESHMAN CO., INC., 106 Seventh Ave., New York

Tuesday, October 21

(Continued from page 14)

- Hill; 8:30-9, Gold Dust twins; 9-10, National Carbon company; 10-10:15, Boris Kreinin, violinist.
- WEAO, Columbus, Ohio (Eastern, 294), 9 a. m., music; Marguerite Manley Stedell School of Music talent; 11 a. m., music; Stedell artists; 1:30 p. m., music.
- WFAA, Dallas, Texas (Central, 476), 12:30-1 p. m., address, DeWitt McMurray; 8:30-9:30, special musical program, anniversary celebration of the General Electric company; 11-12, Adolphus hotel orchestra.
- WFI, Philadelphia, Pa. (Eastern, 395), 1 p. m., Meyer Davis Bellevue Stratford concert orchestra; 3, closing prices Chicago grain market; Caroline Hoffman, pianist; 6:30, Meyer Davis Bellevue Stratford concert orchestra; 7, Sunny Jim, the kiddies' pal; 9:30, Jonathan A. Rawson, Jr., President Coolidge's college mate at Amherst.
- WGN, Chicago, Ill. (Central, 370), 1:10 p. m., luncheon concert; 2:30, Lyon & Healy concert; 3, rocking chair hour; 5:30, Skeezix time; 6-7, dinner concert; 8-9, classical concert; 10-11, jazz hour.
- WGR, Buffalo, N. Y. (Eastern, 319), 12:30-1 p. m., George Albert Bouclair, organist; 2:30-4:30, Radio dealers' musical program; 6, Hallpyrd string quartet.
- WGY, Schenectady, N. Y. (Eastern, 380), 2 p. m., "When Should You Vote," Irene E. Taylor; 6:30, trio from Hotel Ten Eyck; 7-7:15, General Electric night program; Edward A. Rice, violinist; Leo Kilwen, violinist; Walter Hasben, cellist; Peter Schmidt, clarinetist; John G. Yettie, pianist; male quartet, selections; John F. Quinlan, baritone; 11:20, Stephen E. Boisclair, organist.
- WHAS, Louisville, Ky. (Central, 400), 4-5 p. m., Alamo theater orchestra; 7:30-9, Carl Zoeller's melodists.
- WHB, Kansas City, Mo. (Central, 411), 2-3 p. m., ladies' hour program, Sweeney Radio trio; 8-9, classical program, Rhea Sheldon, director; 9-10, dance music, Sweeney Radio orchestra.
- WHK, Cleveland, Ohio (Eastern, 283), 6 p. m., Ponce de Leon orchestra, Herbert Hayward, director; current news furnished by the Cleveland Press.
- WHN, New York, N. Y. (Eastern, 360), 12:30-1 p. m., Chas. Strickland's Palms D'Oro orchestra; 2:15-3:15, vaudeville, Loew's State theater, N. Y. C.; 5-6, Chas. B. Allen and his Chanteur orchestra; 6:30-7, Oleott Vall, violinist; Stephen Engh, pianist; 7-7:20, Paul Specht's Alamo orchestra; 7:20-7:30, "Personal Chats of the Screen," E. S. Colling of the New York Evening Post; 9:30-10, Bertram J. Goodman's orchestra; 11:30-12, Sam Wooding's Club Alabam orchestra; 12-12:30 a. m., Parody club orchestra.
- WIP, Philadelphia, Pa. (Eastern, 509), 1 p. m., Karl Bonawitz, organist; 3, talk, auspices of Coolidge Women's club of America; 6:05, Harry Ehrenzeller's concert orchestra; 7, Uncle Wip's bedtime stories; 8, WIP magazine, talks on city government, Radio, economics, the theater, motion pictures, science, invention and music, director, Mrs. Helen Pulaski Innes; 10:05, Harry Marburger's vaudeville dance orchestra from Cafe L'Alceon.
- WJAX, Cleveland, Ohio (Eastern, 390), 7:30 p. m., program arranged by Cleveland News-Leader; E. G. Johnson, bedtime story; Don Palmer, Radio cartoon; Mary Kessler, pianist; Mrs. Harry E. Phillips, soprano; Jeanette Watts, soprano; John Rieble, baritone; Joe South-Martha Lee Club orchestra.
- WJY, New York, N. Y. (Eastern, 405), 8:15-8:30 p. m., current events; Prof. Rufus D. Smith; 8:35-9, Radio Franks, Wright & Bessinger; 9-9:15, talk, National Republican committee; 9:15-10, Estey organ recital; 10-10:15, "Aeroplane Angling," Harold McCracken.
- WJZ, New York, N. Y. (Eastern, 455), 10-10:20 a. m., housewife league menu, Mrs. Julian Heath; 10:20-10:35, "Home Beautiful," Dorothy Ethel Walsh; 10:35-10:50, hook review, Grace Isabel Colbron; 10:50-11, fashion talk, Eleanor Gunn; 1-2 p. m., Nathan Abas Hotel Pennsylvania orchestra; 3:30-4:30, specialty number; 4:30-5:30, Bernhard Levittow's Hotel Commodore orchestra; 5:30-6:30, New York Stock Exchange reports, Evening Post News; 7-7:15, "Dogs—Doberman Pinchers," Frank Dole; 7:15-8, Joseph Strissof's Hotel Vanderbilt orchestra; 8-8:15, Wall Street Journal review; 8:15-8:30, "Co-operative Economics," Mrs. Clara E. Breakey of N. Y. U. Air collector; 8:30-9:30, General Electric miscellaneous program; 10:30-11, Brooklyn string quartet; 11-12, Roger Wolfe's Biltmore Cascades orchestra.
- WLW, Cincinnati, Ohio (Eastern, 423), 10 p. m., Cummins orchestra; 10:10, Ohio Rubber male quartet; 11, Instrumental trio; 11:10, Cummins orchestra; 11:35, Rutz Pumpkin Vine orchestra; 11:55, Chubb-Steinberg orchestra.
- WMAQ, Chicago, Ill. (Central, 447.5), 4:10 p. m., lecture, Red Cross; 4:30, pupils, Gunn School of Music; 6, Chicago theater organ recital; 6:30, Hotel La Salle orchestra; 8, Harry Hansen, literary editor; 8:20, travel talk, Clara E. Laughlin; 8:40, ton-

- minute talks, Association of Commerce of Chicago; 8:50, U. S. civil service commission; 9:15, Gunn School of Music.
- WMC, Memphis, Tenn. (Central, 500), 12:30 p. m., Sky-line serenaders; 8:30, program, George W. Hushes, Dixie's Harry Lauder; Bluff City quartet; 11, Harry D. Nichols, organist.
- WOAW, Omaha, Nebr. (Central, 526), 6 p. m., popular half-hour; 8:25 p. m., dinner program transmitted from WOAW's studio in May Seed and Nursery company; 9, program, B. P. O. E. Omaha lodge, No. 39, arranged by Charles M. Fixa.
- WOO, Philadelphia, Pa. (Eastern, 509), 11 a. m., Mary E. Vogt, organist; 12:02 p. m., Wanamaker crystal tea room orchestra, Robert E. Golden, director; 5:15, Mary E. Vogt, organist.
- WOR, Newark, N. J. (Eastern, 405), 7-8 a. m., WOR 9300 class; 2:15-3:15 p. m., Leo Wood entertainers; 6:15-6:30, Clifford Lodge orchestra; 8:30-7, man in the moon stories; 7-7:15, Clifford Lodge orchestra; 7:15-7:30, sports talk, Jolly Bill Steinke.
- WQJ, Chicago, Ill. (Central, 448), 11-12 m., "A Message to the Mothers About Basketball," Walter Crowe; talk, Col. A. M. Damon; 7-8, Ralph Williams and his Rainbo Garden orchestra; dramatic readings, Walter McPeck; Cambridge Sisters; 10-2 a. m., Ralph Williams and his Rainbo Skylarks; James Mitchell, baritone; Merle Boyd Mitchell, soprano; Harry Gelse and his "How Do You Do" song; Paul Lougher, tenor; Nubs Allen, contralto; O'Flannigan and O'Hara, the two Frenchmen; Edna Solomon, contralto; Will Rossiter, "The Daddy of Them All."
- WRC, Washington, D. C. (Eastern, 469), 6 p. m., children's hour, Peggy Albion; 8, "Electric Night," General Electric company; program closes 9:55.
- WSAI, Cincinnati, Ohio (Central, 309), 7 p. m., Hotel Gibson orchestra, Robert M. Visconti, director; 7:30, dimes concert; 7:15, child stories, Ethel Knapp Behrman; 8, Gibson orchestra; 9, talk, "Management Week"; 9:10, mezzo soprano solos, Charlotte Metzner; piano solos, Eleanor Wenning.
- WSB, Atlanta, Ga. (Central, 429), 12 m., entertainment; 5 p. m., bedtime story, Bonnie Barnhardt; 8-8, Central Baptist male chorus of New-Nan, Ed McConnell, director; 10:45, General Electric company program.
- WTAM, Cleveland, Ohio (Eastern, 390), 10 p. m., program arranged by Nela Park Lamp Works of General Electric company; Nela Park saxophone quartet, E. W. Commyer, Klrk Reld, S. C. Perkins, C. R. Holm, U. A. Norris, H. M. Sharp; Hazel A. McCullough, soprano; George A. Halne, baritone; duets; Kathryn, pianist; General Electric dance orchestra, Fred Klser, director; Frank Morrow, Harold Walker, John Goldsmith, William Haake; T. B. Zimmerman, talk, "Electricity in your life and mine"; Mr. Robert Lindsay, talk; W. S. Murtfeldt, violinist.
- WTAY, Oak Park, Ill. (Central, 283), 6:45-7:15, bedtime story, Glenn Bruce; Sandy Meek, baritone; Raynor Dalheim and company orchestra.
- WWJ, Detroit, Mich. (Eastern, 517), 8 a. m., setting-up exercises, R. J. Horton; 9:30, talk, women's editor, Detroit News; 12 m., musical program; 3 p. m., Detroit News orchestra; 8:30, Detroit News orchestra.

Additional Programs

(Received Too Late for Classification)

Wednesday, October 15

- KFOA, Seattle, Wash. (Pacific, 455), 12:30-1:30 p. m., noonday luncheon program, Seattle Rotary club; 8:30, Relsig trio, Rhea Relsig, violinist; Blanche Forkey, pianist; Eleanor Hale, cellist.

Thursday, October 16

- KFOA, Seattle, Wash. (Pacific, 455), 8:30 p. m., Seattle Post-Intelligencer.

Friday, October 17

- KFOA, Seattle, Wash. (Pacific, 455), 12:30-1:30 p. m., noonday luncheon program, members Council of the Seattle Chamber of Commerce; 8:30, concert, Howe College of Music, James Hamilton Howe, director.

Use Good Phones

The phones are one of the necessities of the Radio set. If the phones are poor, it will not be possible to receive long distance stations because the weak current that flows through the telephone windings will not be strong enough to actuate a movement of the diaphragm. Be sure that the phones are of good make and avoid disappointment.

SELECTIVITY SECRETS

(Continued from page 10)

to regeneration. The circuit resistance is also reduced as the wave length of the plate circuit approaches the wave length of the circuit LC; and zero resistance is reached even before these circuits are adjusted to resonance. By adjusting the variometer to a position just above this point of zero resistance, we have the same condition of critical regeneration mentioned in the preceding paragraph.

The use of critical coupling between the antenna coil La and the secondary coil L is also recommended for the best selectivity. This condition may be approximately realized by using a comparatively few number of turns for the antenna coil wound in close proximity to the secondary.

Conclusion

The data which has been given merely suggests the basic factors which are important in gaining desirable selectivity in a simple receiving system. It is to be understood that the degree of selectivity in such a receiver is insufficient under existing broadcasting conditions.

Through the understanding of these principles, however, we will be in better position to comprehend the article which will follow, wherein, the new application of regeneration and cascade regeneration to a more satisfactory solution of the selectivity problem, will be presented.

(TO BE CONTINUED)

SUPER-HETERODYNE

(Continued from page 15)

as high an insulator as good hard rubber stock.

The fixed condensers should be of the mica dielectric type and tested capacities only should be used. Paper condensers are detrimental for use in any good receiving set.

The impedance of the windings of the audio transformers must match that of the type of tube used. In two or three tube sets—slight variations have created no serious difficulties, but in a circuit of the super-heterodyne type, it will very often produce howling and distortion. Avoid all use of high ratios. About 4 1/2 to 1 is the maximum limit.

The rheostat must be sturdy enough to carry the amperage required by the tubes. The N tube circuit is easily taken care of, but when A tubes are used the dram is over 1.5 amperes, which may be excessive for the standard rheostat.

The voltmeter should read to 12 volts and the ammeter about 2 or 3 amperes if the N tubes are used. The 99 type tubes will require 6 volts and 2 or 3 ampere scales. The A tube range will be 6 volts and 3 amperes. Good quality accurate reading instruments should be purchased.

(In the next of the series on the super-heterodyne Mr. H. J. Marx will lead you into the mysteries of this set. You cannot afford to miss an article if you desire to know all about supers.—Editor's Note.)



Model A
2400 ohms
\$4.00
List

The Air Belongs to You

Tune in tonight with the confidence that the air-world is yours. Your set, no matter how powerful, will be matched by Repeater Phones. No distance is too great to lose any single note of quality when received through Repeater Phones.

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Repeater Phone is known as the "Single Pole" Phone. Much of the extra power and unusual quality of reproduction is due to the "Single Pole" feature. Our illustrated booklet explains in detail. Send for it.

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Think what it means to carry a line like Repeater Phones. You can cheerfully recommend the nationally advertised Repeater and know your sale will be complete.

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The kind of Letters Thordarson gets No. 2

500 West 112 St.,
New York City, N. Y.

Thordarson Electric Mfg. Co.,
Chicago,
Sales Manager:

Dear Sir:

I would like to make a suggestion to you as an "Old Timer" amateur in the radio game, regarding your products.

I have been a BUG at radio, long before the broadcast business started, and since then have built many sets for friends of mine, using yours, and other makes of transformers for amplification, but have never had a "come back" vote from defects on your transformers and they certainly produce strong clear signals.

Now my point is this, why not give your products more publicity, and educate the Radio Public to buy a transformer with "REAL GUTS" instead of the pretty little "enamel and paraffine" junk that they do purchase, that are not worth a blank to start with and which develop all kinds of rattles, hums and distortion.

Many a set that I have rebuilt for people, who were ready to pass up from the junk, were like pleased children, when the transformers (that they had purchased from a salesman, that didn't know the \$0 from a door knob, told them that the \$0 & \$0 transformers, were the best) were ripped out and Thordarsons put in.

Isn't there some way you can get to these builders of outfits, and tell them the advantage of a shielded, well made, plain connection markings, transformer, THAT WILL WORK RIGHT!!!

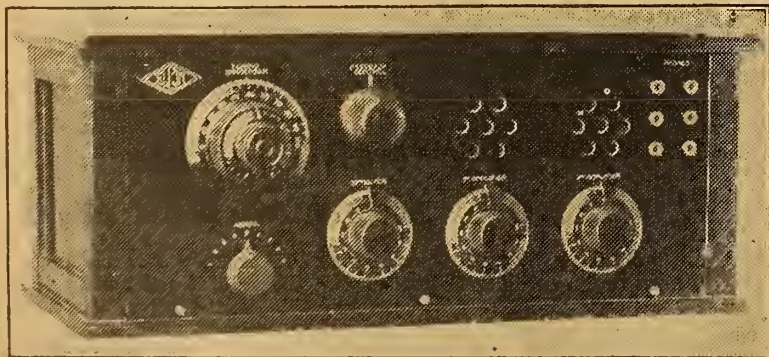
Your prices are not high, and you can deliver "Good-Goods", so why not get after the Amateur and tell him so.

I'm not in the Radio business, and I'm not in the Advertising business, I'm just a poor, old bookkeeper, with a radio hobby, but I hate to see so many people get stuck with a lot of "JUNK" because they don't know of any other kind.

Well, now that that's out of my system, I'll sign off.

Best wishes,
(Signed) Jack R. Lynch.

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in the United States and
Canada to Know About
The New 1925 Model
Elgin Super-Reinartz
(The Ford of Radio)



The same circuit which copied 2LO, London, at two different times and places last season, but with the following improvements:

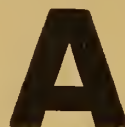
- EASIER ASSEMBLED—No soldering
- EASIER TUNED—One dial; stations may be logged. Regeneration varied without change in tuning.
- MORE SELECTIVE—May be made extremely selective by setting aerial switch to the left.
- BETTER APPEARANCE—Beautiful solid mahogany cabinet, with all wires brought through the back to a sub-panel. Mahogany—any finished, engraved panel.
- WIDER RANGE—Tunes all stations between 150 and 750 meters.
- MORE COMPACT—Three tube set six by fifteen inches.
- SHORT AERIAL—May be used on a loop or angle wire as short as ten feet with astonishing results.
- NO STORAGE BATTERY—Very efficient with all dry battery tubes.
- UNUSUAL VOLUME—Louder with one tube than most regenerative sets are with two.

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Send a two cent stamp for a folder containing one, two and three bulb hook-ups and the price list of parts necessary to assemble this beautiful and wonderfully efficient circuit.

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Write for some real bulletins!

Helpful Hints to Get the Most from Radio

Chapter V—Pointers on Radio Condensers

By Thomas W. Benson

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

- Chapter VI—Crystal and Tube Detectors.
- Chapter VII—Sockets and Rheostats.
- Chapter VIII—Grid Leaks and Biasing.
- Chapter IX—Jacks and Switches.
- Chapter X—Amplifying the Signals.
- Chapter XI—Care of Radio Batteries.

SOMEONE has remarked that any Radio receiver is made or broken by the condensers in it. This is more nearly true than many persons believe for there are possibilities of trouble developing in the condensers that is practically impossible to locate.

Construction of a Condenser

A condenser is nothing more or less than two conductors separated by an insulator. The conductors are referred to as the condenser plates while the insulating medium between them is the dielectric. When two such plates are supported close together they have the property of storing an electric charge. The greater the area of the plates the greater the charge that will be stored and the condenser capacity is said to be greater. However, the capacity is decreased when the plates are separated a greater distance and likewise increased as they are brought closer together. In addition the kind of insulator between the plates has an effect upon the capacity of a condenser.

Since air gives the lowest capacity with a given spacing of the plates, all other solids have the effect of increasing the capacity to a greater or less extent and this property is listed as their specific inductive capacity and is expressed by a figure showing the number of times

the capacity is increased when they replace air as the dielectric. Thus mica has a S. I. C. of 6, plate glass 5 to 10, paraffin about 2, etc.

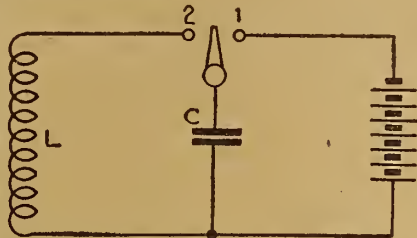


Figure 10—Arrangement of apparatus to demonstrate effect of capacity in tuning a circuit.

A condenser is rated according to the amount of electricity it can store under a unit pressure. Thus a condenser that will store 1 ampere of current per second under a pressure of 1 volt has a capacity of 1 farad. This unit is entirely too large for practical work so we use the unit microfarad which is one thousandth part of a farad.

Function of a Condenser

Just how a condenser functions to tune a Radio circuit may best be understood by a consideration of Figure 10 which shows an inductance, a condenser C and a battery B of say 10 volts. A two point switch permits the condenser to be connected to either the Battery or the inductance. When the switch is placed on point 1, current from the battery will start to flow into the condenser and as it charges up the voltage across it will increase till it equals the voltage of the battery.

Keep this in mind clearly, the current flows into the condenser like water into a tank but the voltage builds up slowly depending upon the capacity of the condenser. Now when the switch is moved to point 2 the condenser starts to discharge through the inductance. It will be recalled that an inductance resists a

change in the current flow through it, therefore, when the condenser starts to discharge the inductance tends to hold it back so that it takes time for the condenser to discharge. When the current flow starts to fall off the inductance again resists this falling off, the falling lines of magnetic force around the inductance induce a current in the circuit to help the condenser discharging current with the result that the condenser over discharges or charges up with its polarity reversed. It then discharges back in the opposite direction and the action is repeated. The circuit is then said to be oscillating.

Where there is no resistance in the circuit these oscillations would continue indefinitely but the resistance of the wiring is always present while hysteresis

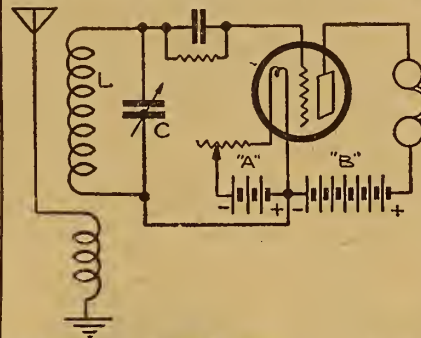


Figure 11—A simple detector circuit with condenser tuning and an untuned aerial circuit.

losses in inductance and condenser absorb energy with each surge of the current and the oscillations are gradually damped out.

We now can understand how a circuit tunes. When the condenser across an inductance is increased it takes longer

for it to charge and discharge and it will require more time for each oscillation, giving fewer oscillations per second, hence a lower frequency. Or, when the inductance is increased, the same effect is obtained because it has a greater choking effect on each discharge of the condenser and a greater reactive effect to keep the current flowing after the discharge stops. By properly adjusting the capacity and inductance present we are able to control the time constant of the circuit and thus the frequency to which it will respond best.

How a Circuit Tunes

For instance when a tuned circuit is coupled to an untuned primary as shown in figure 11, it should be clear that the secondary or tuned circuit will only absorb the currents from the aerial coil that have the same frequency as that to which the circuit is tuned.

Another very important point that might well be brought out here is that the smaller the capacity to tune a given wave length the greater the voltage impressed upon the detecting device. Say we have a certain amount of current induced in the secondary circuit of Figure 11. With each oscillation of the circuit this amount of energy is stored in the condenser and then discharged.

Sharpness of Tuning

Knowing that the smaller the condenser the greater the rapidity with which the voltage across it is built up, we can readily see that when a small condenser is used with a relatively large inductance, the voltage across the condenser will be greater than when the reverse is the case. This increased voltage is impressed upon the grid of the detector tube with an increase in signal strength.

Sharpness of tuning in a tuned circuit will depend upon the damping present and damping is caused by energy losses (Continued on page 20)

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Lincoln Low-Loss Grounded Rotor Condenser, 23-plate model is most efficient electrically, strongest mechanically. Several radical improvements. List price \$4.50.

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3. Perfect tone mates.
4. Made of standard double pole construction (no single pole nonsense to save expense.)
5. Made of the best materials money can buy. Powerful magnets, genuine insel cords, aluminum cases.
6. Manufactured under ideal working conditions.

GET MOST FROM RADIO

(Continued from page 19)

whether they be due to ohmic resistance of the circuit, hysteresis losses in inductance or condenser or in the presence of metal in the magnetic field of the inductance or wiring.

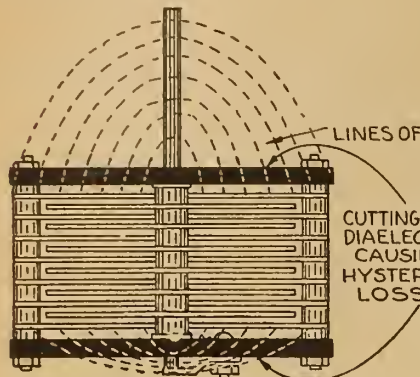
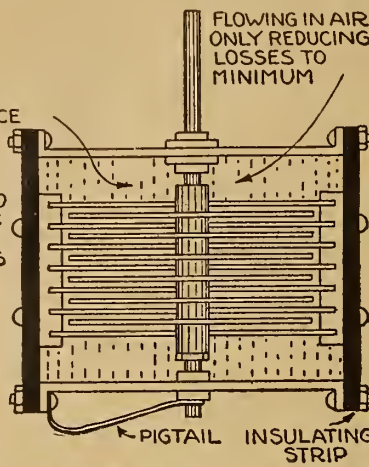


Figure 12—A comparison between the old style condenser and a new type low loss condenser showing elimination of losses by removing insulation from electrostatic field of condenser.

It is well to remember that the wires connecting Radio apparatus all have a magnetic field around them and running the wires close to metal parts or to masses having high hysteresis losses will result in a loss of energy.

A really efficient variable condenser has no dielectric except air within the electrostatic field between the plates. There are practically no losses with an air dielec-

tric while the use of heavy moulded heads on condensers introduce large masses into the field of a variable condenser as shown in figure 12. It is apparent that the electrostatic field existing between the shaft of the rotor and the stator plates flows through the solid head and this introduces losses.



To overcome this defect the low loss condenser was designed with grounded end plates thus eliminating the field between stator and rotor shaft as shown in Figure 12 and employs only a narrow strip of hard rubber as the insulating medium. A good condenser also has full metallic bearings, that is, the shaft is carried in a metal sleeve to reduce wear, has means for adjusting the friction on the

rotor without disturbing the alignment of the plates. Another requirement is that the rotor have a flexible lead to prevent any resistance that might be caused by poor contact at the rotor pivots.

Fine Adjustment of Capacities

The problem of making fine adjustment of capacities for tuning is met in several ways the common method of using a vernier condenser is effective but not the best method. A separate vernier condenser is to be avoided, it doubles the condenser losses as a rule, while the use of condensers with a single vernier plate gives trouble from the single plate developing poor contacts. The better method is to use some attachment on the main rotor to turn it very slowly, either a friction drive on the knob or the shaft being a good arrangement.

The least troublesome method is the employment of what is termed decremeter or the straight line wave length type. The usual variable condenser has semi-circular plates, for every degree movement of the dial the capacity is increased by a certain amount giving what is known as a straight line capacity condenser or one in which the capacity varies directly as the scale reading. The wave length of a tuned circuit does not vary directly as the capacity, that is, doubling the capacity of the condenser does not double the wave length but increases it by an amount equal to the square root of 2.

The straight line wave length condenser overcomes this nicely; here the wave length varies directly as the dial reading with the result that with the shorter waves the stations are spread out more and the longer wave stations brought closer together. The use of a straight

line wave length condenser makes unnecessary a vernier, even less so when the maximum capacity of the condenser is kept down to .0003 mfd. giving one of the best tuning arrangements possible.

(Mr. Benson will give in detail the functions of crystal and tube detectors in the following issue. This vital part of a set will be fully explained.—Editor's Note.)



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STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST, 24, 1912.

Of Radio Digest, Illustrated, published weekly at Chicago, Illinois, for October 1, 1924.

State of Illinois, County of Cook, SS.—Before me, a notary public in and for the State and county aforesaid, personally appeared E. C. Rayner, who, having been duly sworn according to law, deposes and says that he is the publisher of the Radio Digest, Illustrated, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form, to-wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, E. C. Rayner, 745 Junior Terrace, Chicago, Ill.; Editor, Chas. F. Smisor, 4757 Lake Park Ave., Chicago, Ill.; Managing Editor, Evans E. Plummer, 934 Lawrence Ave., Chicago, Ill.; Business Manager, Harry J. Marx, 903 Lawrence Ave., Chicago, Ill.
2. That the owner is: (If the publication is owned by an individual his name and address, or if owned by more than one individual the name and address of each, should be given below; if the publication is owned by a corporation the name of the corporation and the names and addresses of the stockholders owning or holding one per cent or more of the total amount of stock should be given.) E. C. Rayner, 745 Junior Terrace, Chicago; S. O. Bronstein, 4600 Lincoln Ave., Chicago; F. T. Ryan, 123 W. Madison St., Chicago; A. R. White, 7015 Ellwood Ave., Chicago; Jos. Seaman, 200 5th Ave., New York City; Geo. Seaman, 2350 Parkway, W. Chicago; D. R. Seaman, 49 Cedar Ave., Chicago; Chas. S. Peterson, 1450 Lake Shore Drive, Chicago.
3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.
4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and security in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.
5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is..... (This information is required from daily publications only.) E. C. RAYNER, Publisher.

Sworn to and subscribed before me this 25th day of September, 1924.
(SEAL) FLORENCE A. SMITH.
(My commission expires September 21, 1926.)



12 Cells 24 Volts Solid Rubber Case

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For a limited time only, and to introduce this new and superior Storage "B" Radio Battery to the Public, we are selling it for \$3.50. Regular Retail Price is \$5.50. You save \$2.00 by ordering NOW. A finer battery cannot be built than the **World Storage "B" Battery** (12 CELLS—24 VOLTS)

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This FREE "B" Storage Battery takes the place of dry cell "B" batteries. Can be recharged and will last indefinitely. To be sold retail for \$5.00. It is the only battery of its kind equipped with solid rubber case—and insurance against acid and leakage. Take advantage of this remarkable introductory offer NOW. (To those who prefer it, we will send FREE a handsome nickel finish Auto Spotlite, instead of the "B" Battery. Be sure to specify which is wanted.)

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



Amplifying Volume on One Tube Set

Special One Tube Set Has Two Tube Volume

Not many parts are required for this set and the coils are easily made. To make the coils use a 4-inch tube 6 inches long to wind them on beginning

WORKSHOP KINKS EARN A DOLLAR—

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

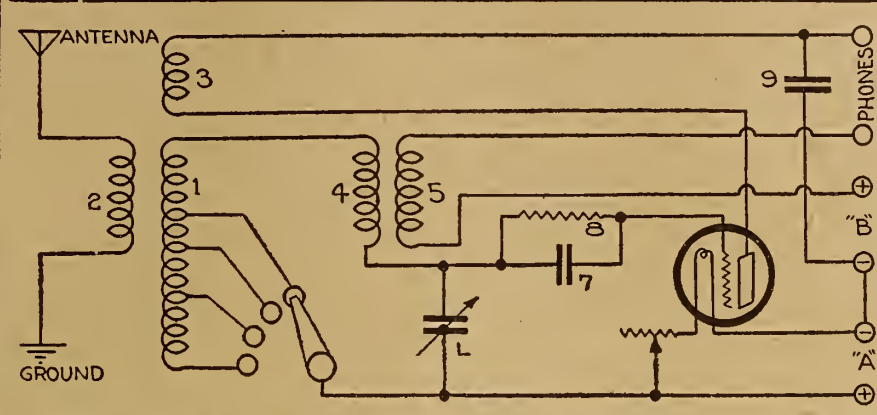
RADIO KINKS DEPARTMENT
Radio Digest,
510 North Dearborn St., Chicago

at 1/2 inch from one end and place on 16 feet of the wire, which will make about 60 turns. At 35 turns take off a tap and leave a space of 1/2 inch then wind on 10 more turns and take off a second tap and the third tap at 10 more turns. Cover the first 35 turns with two layers of ordinary wrapping paper. The untuned primary winding is placed on top of the paper insulation, using 15 turns of wire spaced 1/2 inch between the turns.

Seventeen turns of the wire is wound on each side of the rotor ball, making 34 turns in all.

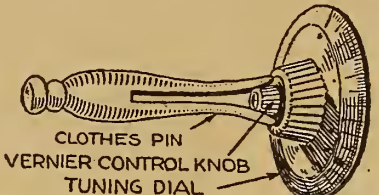
The coils designated by 4 and 5 on the diagram are made of 20 turns of the wire on two tubes 3/4 inch long.

HOMEMADE COIL IN CIRCUIT



In wiring up this set the rotor ball or tickler coil number 3 should revolve in the center of the secondary tube, the shafts of the ball passing through the 1/2 inch space left between the winding for that purpose. Coils 4 and 5 should be fastened upright on the baseboard exactly 1 inch apart. The set was designed for the use of a WD-12 tube with 45 volts on the plate and an A battery of 1 1/2 volts.—Ernest J. George, Loogootee, Ind.

change will be noticed in reception when the hand is removed from the clothespin. —Elmer L. Goodwin, Warren, N. H.



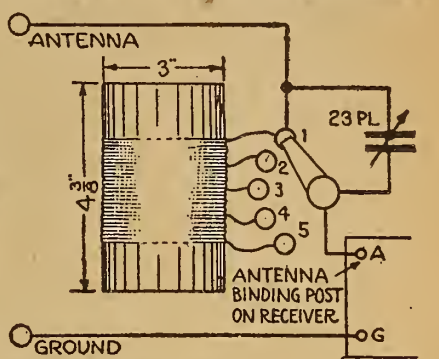
Tuning In with a Clothespin

If you happen to have a Radio set that is subject to body capacity caused by your hand in tuning the variable condenser, try slipping a clothespin on the vernier control knob. It will first be necessary to hollow out the nibs slightly with a jack knife. Next insert a lead pencil between the nibs, spreading them until they slip on easily over the vernier knob. Then release the pencil by twisting,

Don't use more than one standard block plate battery (22.5 volts) on the plate of a UV-201 detector tube.

Wave Trap Inductively Coupled Cuts Out Code

With my set I have been bothered with code and other air troubles, and seeing in a recent issue of Radio Digest how to construct a wave trap I set to work on the inductively coupled wave trap as illustrated and was unable to get any results with this type of instrument. A more recent issue gave instructions for a different type and I proceeded to make one of these and this one operated fairly well, so I started to experiment with the coil windings and found by taking off taps at



each 10 turns I was able to get better results. The illustration shows the trap as I am now using it. When the switch is on point 1 it acts as a shorting switch.—Clinton E. Carpenter, Muskegon, Mich.

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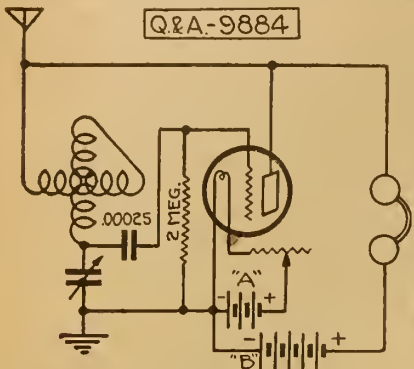
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Questions and Answers

Single Tube Circuit
(9884) BC, Versailles, Pa.

I am a reader of your Digest and I would like to ask a little favor, and that is to publish a good DX hook-up for



these parts: One U. S. Tool company condenser, 43-plate, with vernier. One Dayton Fan Variometer, one audio transformer, rated 5 to 1; one 6-ohm rheostat, one single circuit jack, two mica con-

Radio Applause Cards Free. For quantity write Lettow & Co., 208 Hanover St., Baltimore, Md.

Radio Log Book. Space for 350 Stations. Postpaid 25 cents. Jobbers and dealers wanted. Roy Stacy, Rockford, Ill.

Cash in on Radio! Build and sell sets for us. No trouble to earn \$5 an hour in spare time at home. Auburn Radio Co., Dept. H, Cincinnati, Ohio.

For Sale: Fully equipped Radio Broadcasting Station. Standard make of parts. Two generators 500 and 250 watts. Ready for operation. Reasonable terms to responsible parties. Hardy Sanitarium, Ardmore, Oklahoma.

Agents—90c an hour to advertise and distribute samples to consumer. Write quick for territory and particulars. American Products Co., 2148 American Bldg., Cincinnati, Ohio.

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

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

YOUR CRYSTAL SET

will work 400 to 1,000 miles if made by my plans. No tubes or batteries. Copyrighted plans \$1.00. Satisfied customers everywhere. Particulars free.

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501 Kaufman Bldg. Wichita, Kansas

One Standard of the World



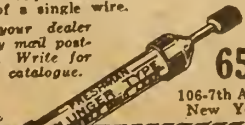
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At your dealer's, otherwise send purchase price and you will be supplied postpaid

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Has Grid Leak any more?

FRESHMAN PLUNGER TYPE VARIABLE GRID LEAK was designed especially for the non-technical set owner who can replace in an instant the fixed grid leak with this new, efficient cartridge type Variable Grid Leak without requiring the change of a single wire.

At your dealer or by mail postpaid. Write for free catalogue.



65c
106-7th Ave. New York

densers, .002; one WD-12 tube, and one socket. I also have a Tri-coil Radio frequency transformer, but a reflex circuit is not very good for DX work, so I would like to try another kind of circuit.

A.—The diagram gives an effective circuit employing the apparatus of your specifications.

Long Wave Transformers

(8901) LCS, South Pekin, Ill.
I have built a number of circuits which were published in your paper and have had good results with all of them.

I am now contemplating building a 6-tube super-heterodyne and would like a little of your advice.

Would it be necessary to use the special long wave Radio frequency transformers? Or could I use the standard makes of short transformers? I should like to receive from 200 to 600 meters.

WE REPAIR

All Types of Radio Tubes
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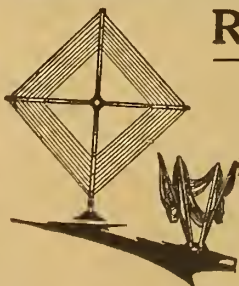
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(9464) RH, Greer, So. Car.
Please tell me if I should have a license to operate a spark coil transmitter with

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Address.....

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A.—The operation of any type of transmitter, regardless of its range, without a license is a violation of governing regulations.

We are referring you to the Radio inspector of your district for further details.

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Just right for week-end try outs where the period of flight is no longer than 18-24 hours at a time. Hydrogen for inflating balloon can be made in a jug with iron, water and vitriol supplied in steel tanks. Price, \$5.00 plus postage. Discount to dealers. Shipping weight, 3 lbs. All complete with instructions; rubber stopples and fixtures for making your own hydrogen; large reel with snap connections; 300 feet of special, duraluminum antenna wire and three, tested, 30-inch pure gum, pilot balloons.
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AA3, Denver, Colo. 440 meters. Fitzsimmons Gen. Hospital. (Educational Dept. U. S. Army). Announcer, Joseph L. Turre. Tues, 7:30-8:30 pm, music, entertainment. Mountain.

AQ6, Canton, O. 425 meters. Hdqts. 135th Field Artillery O. N. G.

AT9, Fort Bragg, N. C. 345 meters. 500 watts. U. S. Government. Announcer, Lieut. James Y. LeGette. Slogan, "The Pioneer Broadcasting Station of the Field Artillery." Tues, Thurs, Sat, 8-9:35 pm, dance music, talks, bands, fights. Sun, 8-9 pm, service. Eastern.

AV7, St. Paul, Minn. 400 meters. 6th Inf. Minn. Natl. Guard, St. Paul Armory. Irregular schedule. Central.

AW5, Dayton, O. McCook Field, U. S. Army. Experimental work only.

CFAC, Calgary, Alta., Can. 430 meters. 1000 watts. Calgary Herald. Announcer, Fred Carleton. Daily ex Sun, 1 pm, news, markets, music. Daily ex Sat, Sun, 3:30-4:30 pm, music. Mon, 10-12 midnight dance. Tues, 7:45-8:45 pm, songs. Wed, 7-8 pm, organ. Thurs, 9-11 pm, music. Fri, test program. Sun, 11 am, 7:30 pm, church services. Mountain.

CFCA, Toronto, Ont., Can. 400 meters. 1000 watts. Toronto Star. Announcer, E. J. Bowers. Daily ex Sun, 12 m. weather, news, stocks; 5:30-6 pm, news; Tues, Wed, Thurs, Sun, 8-9 pm. Mon, 8-9 pm. (CHNC). Fri, 8-9 pm. (CNRT). E. J. Jackson, announcer. Sun, 7 pm, church services. Eastern.

CFDF, Montreal, P. Q., Can. 440 meters. 400 watts. Montreal Free Press. Announcer, C. Walter Darling. Daily ex Sun, 1-1:30 pm, stocks, music. Mon, Fri, 7:30-10 pm, reports, music. Eastern.

CFCH, Trois Rivieres, Ont., Can. 400 meters. 250 watts. Ahtihni Power & Paper Co., Ltd. Slogan, "The Call of the North." Experimental station for forest protection.

CFQ, Quebec, Que., Can. 410 meters. La Cie de L'Evenement. Mountain.

CFKQ, Edmonton, Alta., Can. 410 meters. 115 watts. Radio Supply Co. Ltd. Daily ex Sun, 8-8:30 pm, music. Sun, 3:30-4:30 pm, concert. Mountain.

CFON, Calgary, Alta., Can. 440 meters. 1000 watts. W. W. Grant. Slogan, "Voice of the Prairies." Tues, 8 pm, Sat, 8-9 pm, dance music. Sun, 11 am, church service. Test program, Sat after midnight. Mountain.

CFOD, Bellevue, P. Q. 450 meters. Semmelhaack-Dickson, Ltd. Daily ex Sat, Sun, 9:45-10:30 pm, news, markets, reports, sports, time, music. Sat, 9:30-11 pm, music. Sun, 9:15-10:45 sacred music. Eastern.

CFQV, Vancouver, B. C., Can. 450 meters. 10 watts. Radio Specialties, Ltd. Daily 4:30-5:30 pm. Music. Pacific.

CFCR, Sudbury, Ont., Can. 410 meters. 100 watts. Laurentide Air Service, Ltd. Daily ex Sun, 1 pm, 6 pm, stocks, financial news. Wed, 8:30 pm. Eastern.

CFCT, Victoria, B. C., Can. 410 meters. 500 watts. Victoria City Slogan, "Where Religion Cheers." Tues, Thurs, 7-8 pm, music. Wed, Fri, 8-9:30 pm, concert. Sun, 11 am, 7:30 pm, church services. Pacific.

CFCW, London, Ont., Can. 420 meters. 500 watts. London Radio Co. Irregular schedule.

CFDC, Nanaimo, B. C., Can. 370 meters. 50 watts. Sparks Co. Announcer, Stanley M. Grd. Mon, Wed, Fri, 7:30-8:30 pm. Pacific.

CFQC, Saskatoon, Sask., Can. 400 meters. 250 watts. The Electric Shop, Ltd. Announcer, D. F. Streb. Slogan, "The Hub City of the West Where No. 1 Northern Hard Wheat Grows." Daily ex Sun, 12:15-12:45 pm, markets, reports, music. Mon, Tues, Thurs, Fri, 7:30-9 pm, news, reports, markets, entertainment. Sun, 9:45-10:30 pm, church services. Mountain.

CFRC, Kingston, Ont., Can. 450 meters. 500 watts. Queen's University. Discontinued temporarily.

CFUC, Montreal, P. Q., Can. 400 meters. Univ. of Montreal.

CFXC, New Westminster, B. C. 440 meters. 20 watts. Westminster Trust Co. and Hume & Rumble, Ltd. Slogan, "Voice of the Fraser River." Mon, Wed, Fri, 7:30-8:30 pm. Pacific.

CFVQ, Vancouver, B. C. 400 meters. Victor W. Odium. CHAC, Halifax, N. S., Can. 400 meters. 20 watts. Radio Engineers. Slogan, "Come to Nova Scotia." CHBC, Calgary, Alta., Can. 410 meters. The Calgary Albertan. Daily ex Thurs, Sat, Sun, 8:45-9 pm, news, stock quotations, music. Thurs, 7:45 pm. Mountain.

CH2, Toronto, Ont., Can. 440 meters. Marconi Wireless Tel. Co.

CHCD, Quebec, Que., Can. 410 meters. Canadian Wire- less and Electric Co. Mon, 7:30-9 pm; Wed, 8-9:30; Sat, 6-10, music. Eastern.

CHCE, Victoria, B. C., Can. 310 and 400 meters. Western Canadian Radio Suppl., Ltd. Slogan, "The Voice of the Island." Mon, Wed, Fri, 7-8 pm, music, stock reports, entertainment. Sun, 9-10 pm, music entertainment. Pacific.

CHCL, Vancouver, B. C., Can. 440 meters. 2000 watts. The Vancouver Merchants Exchange, Ltd.

CHCM, Calgary, Alta., Can. 440 meters. 750 watts. W. W. Grant, (Biley & McCormick, Ltd.) 10 pm, music. Mountain.

CHG, Hamilton, Ont. 410 meters. Hamilton Spectator Bldg. Daily ex Sun, 6:45 pm, news, markets, baseball. Eastern.

CHNC, Toronto, Can. 350 meters. 240 watts. Toronto Radio Research Society. Announcer, R. H. Combs. Mon, 8:30 pm, concert. Eastern.

CHYC, Montreal, Que., Can. 311 meters. 500 watts. Northern Elec. Co. Announcer, J. W. Johnson. Wed, 8:30 pm. Sun, 7 pm. Eastern.

CHYL, Salt Lake City, Utah. 360 meters. 100 watts. Newhouse Hotel, Announcer, H. C. Mallander. Slogan, "Better Radio." Daily ex Sun, 3-4 pm, 6:30-8, news, music, entertainment. Mountain.

KDYM, San Diego, Calif. 280 meters. 100 watts. Savoy Theater. Closed for the summer.

KDYO, Portland, Ore. 390 meters. 50 watts. Oregon Institute of Technology. Announcer, L. H. Simson. Slogan, "The Radio School." Educational programs.

KDZB, Bakersfield, Calif. 360 meters. 100 watts, Frank Siefert. Daily ex Sun, Mon, 8-9 pm, reports, music. Sun, sacred program, irregular. Pacific.

KDZR, Bellingham, Wash. 261 meters. 50 watts. The Bellingham Pub. Co. Announcer, A. M. Brown. Slogan, "Tulip Town." Daily ex Thurs, 7-8 pm. Pacific.

KFAD, Phoenix, Ariz. 360 meters. 100 watts, McArthur Brothers Mercantile Co. Announcer, Arthur C. Anderson. Daily ex Sun, 7:30-8:30 pm, news, weather, stock reports, music. Mountain.

KFAE, Pullman, Wash. 330 meters. 500 watts. State College of Washington. Announcer, Lillian Pettihoe. Slogan, "Your Service Station." Wed, Fri, Mon, 7:30 pm, talks, music. Pacific.

KFAF, Denver, Colo. 278 meters. 500 watts. Western Radio Corp. Announcer, George D. Walker. Slogan, "Voice from the Rockies—Out Where the West Is." Mon, Tues, Thurs, Fri, Sat, 8-9 pm, music, reports, news. Mountain.

KFAJ, Boulder, Colo. 261 meters. 100 watts. Univ. of Colo. Tues, Thurs, Sat, 9 pm, time, music, addresses by faculty. Sat, 2:30-5 pm, sports. Mountain.

KFAR, Hollywood, Calif. 280 meters. 100 watts. Studio Lighting Service Co.

KFAU, Boise, Ida. 270 meters. 750 watts. Boise H. A. Announcer, David Taylor. Slogan, "Follow the Oregon Trail to Boise." Daily ex Sat, Sun, 3:30-4:15 pm, markets, weather, news. Mon, Wed, Fri, 8-9 pm, concert. Mountain.

KFAW, Santa Ana, Calif. 280 meters. 10 watts. Radio Den. Daily ex Sun, 4:30-5 pm, news, reports, music. Mon, Thurs, 6:30-7:30 pm, concert. Pacific.

KFBB, Havre, Mont. 360 meters. 50 watts. F. A. Buttery Co. Announcer, C. W. Willey. Daily ex Sun, 1 pm, markets, weather, reports. Mountain.

KFBC, San Diego, Calif. 278 meters. 15 watts. W. K. Azbill. Thurs, Sun, 8-9 pm, Bible lesson, sermon. Pacific.

KFBE, San Luis Obispo, Calif. 242 meters. 50 watts. R. H. Horn. Sun, Wed, 8-9 pm, music. Pacific.

KFBB, Tacoma, Wash. 360 meters. 50 watts. First Presbyterian Church. Announcer, Frank, Touey. Sun, 11-11 pm, 7:30-9. Pacific.

CKCO, Ottawa, Ont., Can. 400 meters. Dr. G. M. Geidert (Ottawa Radio Assn). Tues, 8:30-10:45 pm. Sun, 7 pm, services; 8, sacred concert. Eastern.

CKCX, Calgary, Alberta, Can. 440 meters. 500 watts. P. Burns & Co., Ltd. Tues, 9-10 pm, music, lectures. Mountain.

CKOC, Hamilton, Ont., Can. 410 meters. 50 watts. Wentworth Radio Supply Co., Ltd. Announcer, H. Slack. Slogan, "In the Garden of Canada." Mon, Wed, Fri, 8-9 pm, music entertainment. Mon, 7-8 pm, church services. Eastern.

CKY, Winnipeg, Man., Can. 450 meters. 500 watts. Manitoba Tel. System, Announcer, D. R. P. Coats. Daily ex Sun, 12:30-1:30 pm, music, lectures, etc.; markets, weather. Tues, Fri, 8:15-10 pm, concert. Thurs, 8:30 pm, markets; 9, Canadian Nat. Railways concert. (CNRW). Announcer, J. Bartram. Sun, 7 pm, church services. Central.

CNRO, Ottawa, Can. 435 meters. 500 watts. Canadian National Railways. Announcer, G. A. Wright. Wed, Sat, 8 pm. Eastern.

CW, Paris, France. Eiffel Tower. 2,600 meters. Sun, Wed, 9:15-9:55 pm, concert. G. M. T.

CYB, Mexico City, Mex. 370 meters. 500 watts. El Buen Tono. Tues, Sat, 7:30-9 pm. Thurs, 8-10 pm, concert. Mexican.

CYL, Mexico City, Mex. 510 meters. 500 watts. La Casa del Radio. Daily ex Sun, 1:30-2 pm, weather, financial reports, music. Tues, Fri, 9-10:30 pm. Mexican.

CYO, Monterey, Mex. 284 meters. 200 watts. Tarnava & Cia. Daily ex Sun, 12-6 pm, news, markets, baseball. W. M. S. D. Mexican.

CYX, Mexico City, Mex. 330 meters. 1000 watts. Excelsior & Cia. Parker. Announcer, Nicolas de la Raza. Slogan, "Land of the Aztecs." Mon, 8-10:30 pm. Fri, 7-9 pm. Mountain.

ESP, Paris, France. 450 meters. 480 watts. Superior School P. T. Mon, Wed, Fri, Sat, Sun, 8:30 pm, talks, music. Tues, 8:30 pm, English course. Thurs, 8:15 pm, topics of the day. G. M. T.

HBI, Geneva, Switzerland. 1100 meters. 600 watts. Marconi's Wireless Telegraph Co., Ltd. Daily ex Sun, 8:15 pm, music, news, Swiss.

KBELY, Prague, Czechoslovakia. 1150 meters. 1000 watts. Radio-Journal Broadcasting Co. Daily ex Sun, 10 am, 1:30, 4:30 pm, 5-8, exchange rates, stocks, markets; 15-8 pm, concert; 8:15-9 concert. European mean time, one hour in advance G. M. T.

KDBG, San Pedro, Calif. 146 meters. 100 watts. Thomas H. Ince private yacht "Edris."

KFBK, Sacramento, Calif. 283 meters. 100 watts. Kimball-Upton Co. Announcer, L. E. Grogan. Slogan: "Gateway to California." Daily ex Sun, 5:45-6 pm, concert, news, codes. Pacific.

KFBL, Everett, Wash. 224 meters. 20 watts. Lesse Bros. Announcer, R. H. Leese. Daily, 7:15-8:15 pm. Sun, 2-3 pm. Pacific.

KFBS, Trinidad, Colo. 280 meters. 10 watts. Chronicle News & Gas & Elec Supply Co. Mon, 8-10 pm. Mountain.

KFBV, Laramie, Wyo. 283 meters. 50 watts. The Cathedral, Sun, 7:30 pm, church service. Mountain.

KFCB, Phoenix, Ariz. 278 meters. 10 watts. Nielson Radio Supply Co. Slogan: "When It's Wintertime in Michigan, It's Summertime Down Here." Daily, 7-7:30 pm, bedtime stories. Mountain.

KFCF, Walla Walla, Wash. 360 meters. 100 watts. Frank A. Moore. Mon, Fri, 8-9:30 pm. Pacific.

KFCP, Ogden, Utah. 360 meters. 25 watts. Ralph W. Flyers.

KFCV, Houston, Tex. 360 meters. 10 watts. Fred Mahaffey, Jr. Daily ex Sun, 7:30-8 pm, entertainment. Sun, 2-3 pm, entertainment. Central.

KFCZ, Omaha, Neb. 258 meters. 50 watts. Central H. S. Announcer, H. Thompson. Mon, Wed, Thurs, Fri, 8-5 pm. Mon, Tues, Thurs, 7:30-9 pm. Sat, midnight program. Central.

KFDD, Boise, Idaho. 252 meters. 10 watts. St. Michael's Episcopal Cathedral. Announcer, Paul Roberts. Sun, 11:15-12:30 pm, 7:30-9:15. Mountain.

KFDH, Tucson, Ariz. 268 meters. 50 watts. Univ. of Ariz. Irregular schedule.

KFDI, Corvallis, Ore. 360 meters. 50 watts. Oregon Agri. College. Closed for the summer.

KFDL, Denver, Colo. 226 meters. 5 watts. Knight Campbell Music Co.

KFDX, Shreveport, La. 360 meters. 100 watts. First Baptist Church. Announcer, Dr. M. E. Dodd. Sun, 11 am, 7:30 pm. Central.

KFDY, Breckinridge, S. D. 273 meters. 50 watts. S. D. State College. Announcer, G. A. Rietz. Daily ex Sun, 12:15 pm, livestock markets. Tues, 11 am, music, lecture. Central.

KFDZ, Minneapolis, Minn. 231 meters. 10 watts. Harry O. Iverson. Sat, Sun, 9 pm, pipe organ.

KFEC, Portland, Ore. 248 meters. 50 watts. Meier & Frank Co., Inc. Daily ex Sun, 12 m, weather, reports; 4-5 pm, music; 6:30 pm, weather, crop, markets, reports. Thurs, 9-10 pm, concert. Sat, 11 am-12 m, children's hour. Pacific.

KFHA, Gunnison, Colo. 252 meters. 50 watts. Western State College of Colorado. Announcer, E. Russell Wightman. "Where the Sun Shines Every Day." Tues, Fri, 6:30 pm, bedtime story; 7:30 pm, music; 10:30, orchestra. Mountain.

KFHJ, Santa Barbara, Calif. 360 meters. 100 watts. Fallon & Co. Wed, Fri, 6-6:45 pm; Wed, Sat, 10-11 pm, dance music. Sun, 10 am, church services. Pacific.

KFHR, Seattle, Wash. 263 meters. 100 watts. Star Elec. & Radio Co. Announcer, R. Matnueller. Slogan: "The Voice of the Charmed Land." Daily ex Sun, 4:30-5:30 pm. Mon, Wed, Fri, 6:30-7:30 pm. Tues, Thurs, Sat, 6:30-8:30 pm. Sun, 1-3 pm; 4:30-7:15. Pacific.

KFI, Los Angeles, Calif. 469 meters. 500 watts. Earle C. Anthony, Inc. Announcer, Paul W. Reese. Slogan: "The Radio Central Station." Daily ex Sun, 5-6 pm, 6:45-8 pm, 8-11 pm. Wed, Fri, Sat, 8-12 midnight. Sunday, 10-10:45 am, 4-5 pm, 6:45-8, 8-11. Pacific.

KFIF, Portland, Ore. 360 meters. 200 watts. Benson Tech. Student Body.

KFIO, Spokane, Wash. 252 meters. 50 watts. North Central High School.

KFIQ, Yakima, Wash. 242 meters. 50 watts. First Methodist Church. Announcer, Dr. I. M. Miller. Sun, 11 am, 7:30 pm. Pacific.

KFIU, Juneau, Alaska. 226 meters. 10 watts. Alaska Elec. Light & Power Co. Announcer, O. E. Shoehell. Mon, Wed, Fri, 7-8 pm. Alaskan.

KFIK, Independence, Mo. 210 meters. 250 watts. Reorganized Church of Jesus Christ of Latter Day Saints. Tues, Thurs, 9 pm. Sun, 11 am, 7:30 pm. Central.

KFIZ, Fond du Lac, Wis. 273 meters. 100 watts. Daily Commonwealth and Seyfert Radio Corp. Daily ex Sun, 5 pm, music, news, markets, weather. Central.

KFJB, Marshalltown, Iowa. 248 meters. 10 watts. Marshall Elec. Co. Announcer, E. M. Peak. Slogan: "Marshalltown, the Heart of Iowa." Daily ex Sun, 10 am, markets. Tues, Fri, 8:30 pm. Central.

KFJF, Oklahoma City, Okla. 252 meters. 125 watts. National Radio Mfg. Co. Announcer, Tired Hand. Slogan: "Radio Headquarters." Daily ex Sun, 7 pm. Tues, Fri, 8:30 pm, special concerts. Sun, First Baptist church. Central.

KFJJ, Astoria, Ore. 252 meters. 10 watts. E. E. Marsh and Liberty Theater. Announcer, E. E. Marsh. Wed, Fri, 10-11 pm. organ. Sun, 10:30-11 pm. Pacific.

KFKJ, Bristow, Okla. 233 meters. 100 watts. Delano Radio & Elec. Co. Daily ex Sun, 9-4 pm, music. Thurs, 8-9:30 pm, music. Sun, 7:30 pm, church services. Central.

KFKM, Grand Forks, N. D. 280 meters. 100 watts. University of North Dakota.

KFKQ, Grand Forks, N. D. 280 meters. 5 watts. Valley Radio Div. of Elec. Constr. Co. 50 watts. Iowa KFJK, Cedar Falls, Iowa. 280 meters. 50 watts. Educational programs.

KFKJY, Fort Dodge, Iowa. 246 meters. 50 watts. Tunwall Radio Co. Announcer, Carl Tunwall. Daily, 12 m, 5:45 pm, markets, news, weather. Wed, 9 pm, orchestra. Thurs, 6 pm, agriograms, weather bulletins, news. Sun, 11 am, 7:30 pm, church services. Central.

KFKZ, Fort Worth, Texas. 240 meters. 20 watts. Texas National Guard, 112th Cavalry. Wed, 8:30-9:30 pm. Sat, 8:30-10 pm, program. Central.

KFKA, Greeley, Colo. 273 meters. 50 watts. Colorado State Teachers College.

KFKB, Milford, Kans. 286 meters. 500 watts. Brinkley-Jones Hospital Assn. Announcer, T. R. Brinkley. Slogan, "The Home of Global Programs." Daily ex Sun, 7:20-8 pm, College of the Air, 8-8 pm, lecture; 8:30, 9, 12:45, 2 am, music. Sun, 10-12 m, 8-10:30 pm, church services. Central.

KFKQ, Conway, Ark. 250 meters. 100 watts. Conway Radio Lab. Tues, Fri, 8 pm, music. Central.

KFKV, Butte, Mont. 283 meters. 50 watts. F. P. Gray. Sun, Wed, Fri, 8:30-9:30 pm. Mountain.

KFKX, Hastings, Neb. 291 meters. 1000 watts. West- inghouse Elec. & Mfg. Co. Mon, Thurs, 9:30-11 pm, broadcasts own program. Rebroadcasts KDKA's programs. Central.

KFKZ, Colorado Springs, Colo. 234 meters. 26 watts. Nassour Bros. Radio Co. Daily ex Sun, 12-1 pm, 5-6, matinee musicale. Sun, 11-12 m, church services. Mountain.

KFLA, Butte, Mont. 283 meters. 5 watts. Abner R. Willson.

KFLD, Franklinton, La. 234 meters. 20 watts. Paul E. Greenlaw.

KFLF, Denver, Colo. 268 meters. 100 watts. National Education Service. Daily ex Wed, 6-6:30 pm, Broadcasts for schools on request. Mountain.

KFLQ, Little Rock, Ark. 261 meters. 100 watts. Bizzell Radio Shop. Irregular schedule.

KFLR, Albuquerque, N. M. 254 meters. 100 watts. U. of N. M. Slogan, "The Sunshine Center of America." Fri, 8 pm, educational program. Mountain.

KFLU, San Benito, Texas. 236 meters. 100 watts. Rio Grande Radio Supply House. Announcer, R. W. Thacker. Slogan, "Heart of the Magic Valley." Mon, Thurs, Sat, 8:30-10 pm, concert. Sat, 8:30 pm, Sunday school lesson. Central.

KFLV, Rockford, Ill. 229 meters. 100 watts. Swedish Evangelical Mission Church. Announcer, A. T. Frykman. Mon, Fri, 8:30 pm. Sun, 12:30 pm, service for shut-ins (Swedish); 9:30, service (English). Central.

KFLW, Missoula, Mont. 234 meters. 5 watts. Missoula Elec. Supply Co. Announcer, Sid Howard.

KFLX, Galveston, Texas. 240 meters. 10 watts. George R. Clough.

KFLZ, Atlantic, Iowa 273 meters. 100 watts. Atlantic Automobile Co. Slogan, "The Garden Spot of Iowa." Wed, 6:15-10 pm, dinner program ex Sun, 11, music, Sat, 11-12:30, midnight, dance music. Sun, 8 pm, church service. Central.

KFMB, Little Rock, Ark. 254 meters. Christian churches of Little Rock.

KFMG, Fayetteville, Ark. 263 meters. 500 watts. U. of Arkansas. Announcer, C. V. Bullen. Tues, 9 pm. Central.

KFMH, Sioux City, Ia. 261 meters. 10 watts. Morningside College. Tues, 7 pm. Tues, Thurs, Fri, Sat, 9:15 am. Central.

KFMT, Minneapolis, Minn. 231 meters. 5 watts. Dr. George W. Young. Announcer, Gordan Volkenant. Tues, Thurs, 7:45 pm. Central.

KFMW, Houghton, Mich. 266 meters. 50 watts. M. G. Sater.

KFMX, Northfield, Minn. 283 meters. 500 watts. Carleton College. Announcer, Dr. Bruno Meinecke. Wed, 9 pm. Sun, 7 pm. Central.

KFNH, Shenandoah, Ia. 266 meters. 500 watts. Henry Field Seed Co. Announcer, Henry Field. Slogan: "Friendly Station in a Friendly Town." Daily ex Sun, 12:30-1:10 pm, dinner program ex Sun, 11, 7:30-9 pm, concert. Sun, 3 pm, services; 6:30-7:30, sacred song service. Central.

KFNG, Coldwater, Miss. 254 meters. 10 watts. Wooten's Radio Shop. Announcer, S. D. Wooting. Sat, 9:30-10:30 pm. Sun, 4-5 pm. Central.

KFNJ, Warrensburg, Mo. 254 meters. 50 watts. Central Missouri State Teachers College.

KFNV, Santa Rosa, Calif. 234 meters. 5 watts. L. A. Drake.

KFNY, Helena, Mont. 261 meters. 5 watts. Montana Phonograph Co. Slogan, "Helena, Heart of the Rockies." Daily, 7:15-7:45 pm, concert and bedtime story. Mountain.

KFNZ, Burlingame, Calif. 231 meters. 10 watts. Royal Radio Co. Daily ex Sun, 4-5:30 pm, concert; 7-7:30, news, weather. Wed, 8-10 pm, classical music. Sat, 8-12 pm, dance music. Pacific.

KFOA, Seattle, Wash. 455 meters. 500 watts. Rhodes Dept. Store. Announcer, Carl E. Raymond. Tues, Wed, Fri, 12:30 pm. Mon, Tues, Wed, Thurs, Fri, 8:30-10 pm. Pacific.

KFNL, Paso Robles, Calif. 240 meters. 10 watts. Radio Broadcast Assn. Announcer, Early W. Moore. Slogan: "The Home of the Nut." Mon, 8-10 pm, music. Pacific.

(Note—The second part of the station data list will appear next week.)

CHALLENGE!

ONE DOLLAR will be paid to the Radiophon submitting the most errors in any one station's listing. Letters must reach Radio Digest office not later than one week from date of issue corrected. Readers are not limited to correcting one station, but such corrections must be certified by the stations themselves, and NOT by comparison to other so-called accurate Radiocast directories and lists.

That's just how sure Radio Digest is that this Radiophon station directory is correct! To make the challenge fair for everyone, Radiocast stations and their employees are barred from this offer. Why? Because the Radiocasters are the source of all the data given herein. They are (or should be) interested enough to answer the inquiry sent them every time data on their station appears. This inquiry contains a proof of their last listing and must either be corrected or O K'd as correct and returned to the Digest. Nevertheless, sometimes the stations are careless

and mistakes are made. But Radio Digest is so sure of the exactness of this directory that this challenge is made unconditionally.

With reference to the directory: It appears in five parts, serially continuously; the first four parts are station data listings, arranged alphabetically; the fifth part is a state, city index of stations. The information contained in each station data listing is given in the following order: Call letters, city, state, wave length used, watts antenna input, owner's name, announcer's name, slogan used if any, name of listener in "club," schedule of operating hours, and kind of time used, as "Central," "Mountain," etc.

Five successive issues of Radio Digest will give one the most complete and accurate list of Radiocast stations obtainable. This service is original with this publication, and has been maintained from the start. Right of reproduction without permission of any or all of the data contained herein is denied.

How many radio miles did you go last night?

HOW many radio miles did you travel last night—that's the up-to-the-minute question. Did you voyage from New York to Chicago? Did you look in on Boston fifty seconds after, and on Philadelphia half-a-minute after that? If you didn't, why didn't you? There's fun and excitement, too, in a De Forest Radio—and it's ready to "get to work" five minutes after it enters your home.

Here is a Radiophone so astonishingly simple for the work it does that it's your best introduction to the marvels of radio space. Here is one so perfectly developed that it invites graduation from other less efficient instruments.

Here is a receiving set sponsored by the very genius who made radio, as we know it, possible—an instrument which offers a really remarkable demonstration in radio performance at a price far less than any instrument whose achievements compare with it. Here is a practical, a modern Radiophone, depending upon no out-strung wire to obtain results, but which with a simple loop the size of a picture frame opens to you a far-flung range of concert, speech and lecture—and all with a tonal purity, a sensitive choice, as between station and station, that is rare to any but De Forest users.

The De Forest Radiophone is a complete four-tube receiver, built on the best reflex principle. Its four tubes and crystal detector do the work of seven tubes. We could be extremely technical in telling you how the four tubes do the work of seven and why the crystal detector gives both power and economy to this instrument. If you are technically inclined we shall be glad to do so if you will write us. Technical or not, however, know this: You can get splendid results from a De Forest D-12 Radiophone. Its upkeep is low. Its tone is clear and pure. It can be moved easily from room to room.

Why it pays to look for the De Forest agent

De Forest from first to last stands for all that is substantial and thorough and fundamentally right in radio. De Forest agents are qualified to give



sound and practical advice and help in radio. When you find a De Forest agent you find a man who knows radio—a man who has given us his word that he will see that every instrument he sells is thoroughly inspected and properly serviced after the sale. He has been carefully picked and schooled in the operation and servicing of De Forest Radiophones.

He will install your instrument and explain to you simply how to get the fullest satisfaction and enjoyment from it.

DE FOREST RADIO COMPANY
Jersey City, N. J.

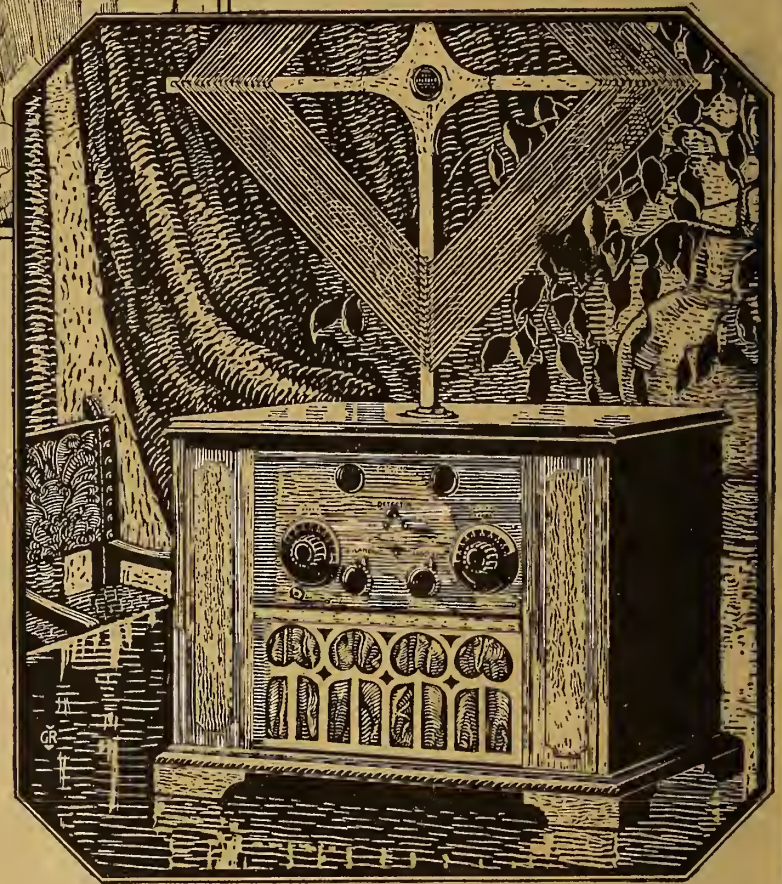
Prices on De Forest D-12 Radiophones

COMPLETE
Including loop, self-contained loud speaker, four De Forest tubes, A and B batteries, and all equipment ready to operate.

WITH DRY BATTERIES
In two-tone gray and black Fabrikoid cabinet . . . \$161.20
In two-tone Mahogany cabinet \$176.20

WITH STORAGE BATTERIES
In two-tone gray and black Fabrikoid cabinet . . . \$180.00
In two-tone Mahogany cabinet \$195.00

DE FOREST D-14 RADIOPHONE
In burl walnut cabinet with loop and loud speaker built in. Price, including five DV-2 tubes, four B batteries, and storage batteries . . \$371.50



DE FOREST D-12 RADIOPHONE
No outside aerial or ground wires are required.
Ask the De Forest agent to demonstrate.

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D-12 REFLEX



For beauty and clear reproduction—

Use the De Forest Loud Speaker. It reproduces naturally, brilliantly, and without distortion. The adjustment of the reproducing unit assures uniform response over entire range of audible frequencies. Its horn is shaped to retain the full brilliancy of the original sound, and also to add volume.

Every De Forest Loud Speaker is guaranteed free from defects. Sold by authorized De Forest dealers only. Price, with 6 feet of cord, \$25.

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The original three-electrode vacuum tube that made present-day radio possible was a De Forest. Today, as in the past, De Forest tubes are unsurpassed for giving volume and beauty and clearness of tone reproduction. They are economical of current and have unusual long life. De Forest tubes can be used with all standard circuits. The DV-3 is for use with dry cells, the DV-2 with storage batteries. They are guaranteed against defects in material and workmanship. Sold only by authorized De Forest dealers. Price \$4.00

