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Radio Digest

EVERY WEEK **Illustrated** TEN CENTS

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Vol. VIII | Copyright 1924 By Radio Digest Publishing Co. | SATURDAY, FEBRUARY 9, 1924 | No. 5

CLAIM R.C.A. MONOPOLY

Above is Dolores Cassinelli, the "Cameo Girl" of the screen; as Queen Isabella in "Columbus." She sang recently from WGR, Buffalo, winning a flood of applause. Below, Nancy Welford, of "Up She Goes, who pleased WDAR with her songs.

DEAF MAN PUTS ON PHONES AND HEARS

Affliction Is Overcome by Ether Waves After 26 Years

DAVENPORT, IA.—More evidence that Radio aids the deaf to hear was received recently by Station WOC, Palmer School of Chiropractice, of this city, which made known a newspaper report that Levi Bullard of Lexington, Mo., who had been deaf more than 26 years, had been enabled to enjoy a concert broadcast by the station here.

Bullard, while in a shop in Lexington, was induced to don a pair of earphones. Soon there came to his face first a look of consternation, then of amazement, then of pleasure and amusement. He shouted that he could hear. Bullard held onto the carphones until the end of the program and then announced that he was going to buy a Radio set at once.

GOVERNMENT SAYS FIRMS ACT ILLEGAL

Unfolds Patent Exchange

Big Five Combined and Conspired According to Sweeping Complaint of Federal Trade Commission

(*By L. M. Lamm, Special Correspondent*)

WASHINGTON, D. C.—Illegal monopoly not only in the manufacture and sale of Radio apparatus, but in Radio broadcasting and communication, both domestic and transoceanic, is the sweeping charge, long awaited and finally made by the Federal Trade Commission against the Radio Corporation of America and its parent companies, which are no other than the General Electric Company, Westinghouse Electric & Manufacturing Company, American Telephone & Telegraph Company (which controls the Western Electric Company), International Radio Telegraph Company, Wireless Specialty Apparatus Company and the United Fruit Company.

Firms Named Have "Combined and Conspired"

The charge was made in a complaint brought by the commission under its

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WBAP GOES 6,500 MILES TO SAMOA

Fort Worth Plant Is Heard for Second Time in Distant Islands

FORT WORTH.—Station WBAP, Star-Telegram, has been heard for the second time in Apia, Samoan islands, an airline distance of 6,500 miles, according to a government Radio message received from Quincy F. Roberts, American consul at Apia. Only one station in the United States has been heard at a greater distance, this was by especially arranged tests on special power.

The Radiogram from Roberts came by way of San Francisco and the Fort Douglas station of the army.

Interest in Radio is mounting rapidly in the south seas, according to Roberts. Several good receiving stations are in operation throughout the Samoan group.

Static conditions and a large volume of ship traffic are handicaps to fans there, which handicaps fail to dampen the enthusiasm of the fans.

Lela Johnstone, soprano of San Francisco Opera Company, who sings from KPO, Hale Brothers.

NEW REVENUE GRAB "MUSIC TRUST" AIM

PIN PAN ALLEY BUNCH TO SUE MANY STATIONS

Shall American Society of "Composers" Eke Income from Broadcasters? Case in Court Now

CHICAGO.—Another legal onslaught which observers believed would be the last in the desperate attempt of the American Society of Composers, Authors and Publishers to compel broadcasters in the United States especially to pay license fees for the use of copyright music and the like, was begun here recently when E. S. Hartman, general counsel for this district, of the orgauization, filed suit in federal court against the Chicago Board of Trade, owner and operator of Station WDAP, Drake hotel, charging infringement of the copyright law.

And that which caused the suit was the song, "Last Night on the Back Porch I Loved Her Best of All," published by the Skidmore Music company of New York city.

Both Sides Determined to Finish Fight

So determined apparently were both parties to the suit to fight to a finish that it appeared likely the issue would become national in aspect, involve decisions of the United States supreme court, enter perhaps the halls of Congress.

The planitiff in the suit asked monetary damages of not less than $250 for each alleged violation of the statute and an injunction against the further broadcasting of copyright music by the station. Papers in the suit were served to the assistant secretary of the Board of Trade.

Henry S. Robbins, attorney for the Board of Trade, has asked the organized broadcasters that a defense fund of $10,000 be raised at once to carry the case if ueed be to the highest court, and to Congress for remedial legislation.

But Two Questions Involved

"Every broadcaster in this country is affected, theoretically at least, by this suit," said Mr. Robbins, for the defense. "It is a national, a vital issue which must be determined.

"There are only two questions involved—Does the copyright law of 1909 include Radio broadcasting? Does Station WDAP or any other broadcast for profit?" The need for an immediate conference of broadcasters was emphasized by Robbins.

Radio Cuts Sale of Songs?

"The success of any broadcasting station," Hartman said, "is due to its music. The more a song, for instance, is broadcast, the less are its sales. Some of our members who are publishers complain that Radio has cut the sale of certain songs from 3,000,000 to 5,000,000 copies each to 500,000. That condition prevails also in the sale of phonograph records and player-piano rolls.

"Radio broadcasting, we are prepared to prove, is not philanthropic. It is one of the most intensive forms of advertising and as such produces profit. That was and is the aim of the Chicago Board of Trade and of all other broadcasters."

"'Most' of Broadcasters Licensed," Hartman

Hartman said that " 'most' of the broadcasters had signed contracts with the American Society of Composers, Authors and Publishers entitling them, for fees ranging upward from $250, to place copyright music and like productions on the air. Among the broadcasters who had thus become "good," Hartman included stations in St. Louis, Kansas City, Mo., Detroit, Minneapolis and Cleveland. He refused to name the stations specifically.

Hartman declared that the American Society of Composers, Authors and Publishers numbered more than 250 members. A printed list showed, after hasty scrutiny, only 18 names widely known as those of composers of music. Further examination failed to reveal the names of noted authors but showed a few notable lyricists.

Would Advertise A. S. C. A. P.

A blank contract or license to broadcast, issued by the society, read in part as follows: "This license is not transferable. The licensee agrees to make the following announcement upon the commencement of each program in which special numbers from the repertory of the society are broadcast—'by special arrangement with the American Society of Composers, Authors and Publishers.' If required by the society the licensee agrees to furnish it, upon forms to be supplied, a list of the musical numbers contined in the society's repertory used in each program."

WDT Paid License; Now off Air

The attorney for the society did not cite the report that Station WDT, Premier Piano corporation and Shipowners' Radio Service, New York city, had been compelled to quit broadcasting because of what were termed excessive license charges imposed by the society.

The consensus of broadcasters and of the Radio industry in general in relation to the contention of the American Society of Composers, Authors and Publishers that broadcasting injured the business of music publication, phonograph record manufacture and that of player piano rolls, was that the opposite was true. One of the most influential Radio business factors, who asked that his name be not made known, declared that the cry of "Radio hurts my business" was inspired by the "music trust." "And of course," he said, "the 'trust' doesn't realize that it was its demands for license fees that hurt the sheet music business. The broadcasters refused to be 'bled' by the 'trust.' They refused to broadcast 'trust' music; the result was that 'trust' music lost the advertising or 'sales plugging' given by Radio and the volume of sales dropped."

Record Makers Now Go On Air for Ad

Similar conditions obtained in the phonograph industry, he maintained. "Makers of phonographs are linked in a sense with the 'music trust'," he asserted, "in that they make records of 'trust' music. Radiophans, unacquainted with the phonograph records of 'trust' music, called for records they had heard by Radio. Of course that hurt the sale of the other kind of record. And that's why two of the largest phonograph companies, the Victor and the Columbia, have become allied with Radio broadcasting. The latter concern now rents Station WEAF, New York, at regular intervals to broadcast its latest records. Why? Good advertising, of course. The Victor is installing a station at its Camden, N. J., plant."

"Music Trust" Chain of Coins

The latest suit of the American Society of Composers, Authors and Publishers is a link in the chain it has forged to bind the broadcasters of the United States, it is said, to place on the air only that music or like creation which it controls. The chain

(Continued on page 8)

SANDWICHES GIVEN COLUMBUS STATION

Basketful Is Answer When Announcer Asks for Word from Fans

LONDON, O.—An announcer from a Columbus station recently told his listeners that the station once in a while wished to hear from all sections reached and mentioned that they had not heard from London for some time, and at the same time stated that several other places had been missed.

The next night, the announcer stated that the station still had received no word from London or vicinity and asked that someone send in word if the programs were being heard there.

The local Radiophans heard this. Thirty minutes later they were surprised to hear the announcer state that he had heard from London with a vengeance; that one London enthusiast had called the Deshler hotel, Columbus, by long distance telephone and ordered a basket of sandwiches sent to the broadcasting station. The announcer stated that the response was most gratifying and pleasing to the station.

Boom Daylight Broadcasts

MINNEAPOLIS.—Records now being compiled by the Twin City Radio central, WLAG, are believed to indicate that the practicability of daylight broadcasting is to be demonstrated shortly and that one of the big developments in the near future will be the increase of daytime programs.

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Looking Ahead

Super-Regeneration and the Super-Heterodyne Combined—How? Read the story next week how George Eltz, famous New York Radio engineer, has experimented to combine the benefits of both circuits without the disadvantages of either. The combination circuit is presented for further experimenting by Digest readers.

Wave Traps? See the Mystery Man's "Let Eat" Eliminator—He'll tell you about it next issue. The King of Miloplexes says—as usual—"It's a knockout."

A Neutrodyne with Still Less Tubes than that described herein, will be diagrammed next week. How many tubes? Three, with reflex stages.

Trouble Finding and Set Operation Isn't Difficult—It's just an idea most beginners develop. Read the continuation of this series next issue.

Dry Cells and Storage Batteries Are Usually Neglected—until finally the set goes on a strike and won't work. Then the set is dissected first. Batteries are examined last. Read M. W. Thompson's article next week.

More Details Regarding the Lighthouse Keepers' Set will also be a part of the February 16 edition.

Newsstands Don't Always Have One Left

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CALL R.C.A. MONOPOLY

(Continued from page 1)

organic act prohibiting unfair competition in trade.

In the language of the complaint, which is called a sweet morsel to every Radiophan and independent Radio manufacturer, "The respondents (firms named) have combined and conspired for the purpose and with the effect of restraining competition and creating a monopoly in the manufacture, purchase and sale in interstate commerce, of Radio devices and apparatus and other electrical devices and apparatus, and in domestic and transoceanic Radio communication and broadcasting."

How Radio Monopoly Grew

In explaining how the present alleged control of Radio had reached its powerful and what is called dangerous magnitude of today, the Federal Trade Commission recites that the firms named:

(1) Acquired collectively patents covering all devices used in all branches of Radio, pooled the rights to manufacture, use and sell Radio devices covered by these patents, and then allotted certain of the rights exclusively to certain of their firms.

(2) Granted to the Radio Corporation of America the exclusive rights to sell the devices controlled, and required the Radio Corporation to restrict its purchases to certain of the firms named.

(3) Restricted the competition of certain of the companies in the fields occupied by other companies in the agreement.

(4) Attempted to restrict the use of Radio apparatus manufactured and sold by themselves (the respondents).

(5) Acquired existing essential equipment for transoceanic communication and flatly refused to supply to others necessary equipment for such communication; also excluding others from the transoceanic field by preferential contracts.

Combine Sews Up Vacuum Tubes

From the series of contracts referred to in the trade commission's complaint, it appears that the Radio Corporation of America, long criticized by Radio Digest for its policies, has the right to use and sell under patents of the various firms in the combine which relate to the Radio art. It has also given the various respondents the right to manufacture under these patents.

Thus, by a series of manipulations which would reflect great credit on the brains of their makers were it not for the public menace they are believed to have become, there has been combined in the hands of the chosen few corporations not only the patents covering vital improvements in the vacuum tube, but also many other important Radio patents or inventions supplementary to this keystone device, the three element tube.

Guess Who Controls Radio Corporation?

The report of the Federal Trade Commission shows that the gross income of the Radio Corporation of America in 1922 was $14,830,856.76 and that its total capital stock on December 31, 1922, was $33,440,033.56. The total capital stock is made up of 3,955,974 shares of preferred and 5,734,000 shares of common, or a total of 9,689,974 shares of stock. Who owns this stock?

The table below showing the holdings in the R. C. A. of but several of the respondents named in the federal complaint should answer the question. The holdings reported are:

Respondent's Name	No. of Shares Preferred	No. of Shares Common
General Electric Company	620,800	1,876,000
Westinghouse Elec. & Mfg. Co.	1,000,000	1,000,000
Amer. Telep. & Teleg. Co.	400,000	None
United Fruit Company	200,000	160,000
Total	2,220,800	3,036,000
Grand total shares controlled by respondents		5,256,800

In other words, the four firms named in the table and also named by the Federal Trade Commission as parties to an illegal monopoly, hold more than 51 percent of both common and preferred individually and consequently, more than 51 percent of the total.

How R. C. A. Sold 5,509,487 Tubes

The report of the commission also finds that up until 1922 (when the Fleming Valve patent expired and allowed DeForest to make and sell his own invention, the three element tube), the Radio Corporation had an absolute monopoly in the manufacture of vacuum tubes.

It was therefore able to sell 5,509,487 such tubes during the first nine months of 1923. The DeForest company sold but 94,100 tubes during that period.

R. C. A. Has World in Hand

In the commercial Radio communication field, while the R. C. A. still has a little competition in ship-to-shore communication, it has a virtual monopoly in transoceanic service. The R. C. A. controls all the high power stations in this country except those owned by the United States government.

In addition agreements of an exclusive character have been entered into with the

(Continued on page 19)

"HELP!" CRIES FAN TO "PAPA" HOOVER

TEMPER SHATTERED BY DAMPHOOL SPARKS

"I've Helped Russia," He Writes, "And Now I want Relief Myself"

WASHINGTON.—Complaints relating to Radio interference are received daily by Secretary of Commerce Hoover, who has become a sort of "fosterfather" of the Art, now regulated under the 1912 law by his bureau of navigation. A recent and unique communication from a fan located on the Florida peninsula, where ship traffic is heard almost constantly, has caused amusement in high official circles.

The letter, which follows, voices a pathetic appeal from an apostle of Hooverism and demonstrates the need for definite regulatory laws:

"My dear Sir:

"Help! ! ! !

"When you called upon me to conserve, I conserved. When you asked me to sweeten my food with the milk of human kindness, I got indigestion using Florida cane syrup in my coffee. When you asked me to come across, I stepped on the gas. When you asked for help for the Near East, I went the limit. When you asked for help for Russia, I sent over a few safety razors and barber shears.

Now He Wants Relief

"I have been for you in your every endeavor. I have Hooverized until I didn't know 'hooves-who.'

"Now **I** want RELIEF.

"I have $700 invested in a Radio set. It functions perfectly but every program is deadened or the fine passages lost by the damnable interference.

"And this not for one night but every night for a year back, and from any time in the day until I quit in disgust.

"Night after night I try until my patience is exhausted to get decent reception and, may be for a minute, sometimes two minutes, a song or music comes in as clear as a bell, and then some deep throated spark begins to shatter the atmosphere. Then the amplifier takes it up and another station is lost. Some damphool is playing with the keys of his transmitter—or telling some buddy or some other rumrunner that he has a date when on shore with some calico.

Florida Worse Than Dante's Inferno

"There must be some relief. Were there periods of ten minutes even when one could listen in to lectures, songs or music without interference I would have no complaint. But it is incessant.

"Dante's Inferno can be no worse than the noises that come to us here in the peninsula of Florida. In relief work, in drives, in everything, you have accomplished the seemingly impossible—let us have relief."

Mr. Hoover's answer to the Florida fan has not been made known, but it is understood that he realizes keenly the need for more authority to regulate Radio, both ashore and afloat, even though the voluntary agreement laid down by past Radio conferences has greatly modified the interference.

Legislation defining his duties and setting forth rules and regulations as to amateur, commercial, private and other forms of Radio communication is urgently desired by the secretary, as well as additional appropriations and personnel for better and more frequent inspection of stations causing interference.

Wendell Hall Sings His "Blue" Songs for WEAF

NEW YORK.—"Blues," not of the sulphurous nor of the lugubrious kind, featured the recent programs of Station WEAF, American Telephone and Telegraph, this city. They were the sapphire songs of Wendell Hall who, through Station KYW, Westinghouse, Chicago, has won fame. While in this city Hall arranged with a leading phonograph company to make four "blue" records.

SHOWS RADIO VALUE IN RESCUING MINERS

HAZELTON, PA.—Opposition to the theory that Radio could be utilized in mine-rescue work was upset in a sense near here recently when John Fritz of Audenried, who had installed a set in an anthracite mine 200 feet from the surface, afterward reported that he had heard almost every broadcasting station ordinarily heard above ground.

BLIND YOUTH LEARNS MUSIC BY AIRWAVE

ELK CITY, KAS.—A blind boy musician of this town recently wrote to Station WEAF, New York City: "Radio helps me learn new pieces and keep pace with popular songs." The lad asked WEAF to help him find a job at the piano or drum in theater, cafe or dance hall. The station said it would forward such information to the lad.

FOLLIES QUEEN LOVES HER RADIO

Merry Ann Pennington, of Ziegfeld Follies fame, is ever happy with her Radio set, but here the camera man has caught her with a particularly pleased expression, and even if she has been "left out in the cold," as the furs seem to indicate, she evidently harbors no grudge against this old world of ours. Foto Topics Photo

BAND REHEARSES AT KHJ TO HONOR SOUSA

Famed Musician and His Men Also in Concert

LOS ANGELES.—That there is something new under the sun was revealed throughout a great part of Radioland recently, when Hiner's Los Angeles Band was presented in a Radio rehearsal over Station KHJ, the Los Angeles Times, as a tribute to Lieut. Com. John P. Sousa, and his band of 100 musicians, who were the guests of Los Angeles.

It was the desire of Dr. E. M. Hiner in presenting his concert four days earlier to inspire the listeners in of Radioland to a desire for "better" music.

Fifty musicians of the band produced beautiful music which, with the aid of the transmitter of KHJ, was able to fill the great auditorium of ether. Under the guidance of Dr. Hiner, the band was directed through two hours of difficult compositions, each of which was interspersed with one of Sousa's stirring marches.

Always keep the plate and grid leads far apart. If they must be run close, have them run at right angles to each other. This will reduce howling.

KANSAS CITY OPENS ITS PURSE STRINGS

CONTRIBUTE TO BUY SETS FOR CITY'S INVALIDS

Mayor Gives His Sanction and a Check—Merchants Join Movement

KANSAS CITY, MO.—Had Jean Wurmser, 16 years old, been able to get out and play like normal boys, Kansas City might never have opened its pocketbook to provide Radio sets for the several such invalid children here.

Jean has been an invalid since birth, paralyzed in both legs. He never told anyone except his mother about his desire for a set to lift the gloom that is necessarily the lot of one who must always remain within the confines of his home. Mrs. Wurmser had found such difficulty in keeping up the home and in supporting herself and two children that she could never quite set aside enough from her $12 a week to purchase even the simplest receiving set for Jean.

Money Saved for Set Needed for Coal

At one time this winter she did have four dollars put away toward the set, saving a nickel or dime at a time, but then it turned unusually cold and stayed cold so long she was forced to use the reserve to purchase coal.

The little mother was faithful—she didn't complain. It was just a chance bit of conversation that caused her to reveal to a friend that the severe weather had beat Jean out of the Radio set he had been looking forward to for so long.

But that was sufficient. The friend passed the word along and that same day a movement was organized to provide sets not only for the Wurmser boy, but for every other invalid in the city. Many merchants, catching the spirit of the movement, offered to accept contributions from the public which each day would be turned in to the fund headquarters.

Movement Takes City by Storm

Two days after the birth of the movement four crystal sets and an extra pair of phones had been contributed in addition to the pecuniary gifts.

Magnetically the spirit spread. Everyone seemed to be eager to assist in providing pleasure for the city's unfortunates. Certain Radio dealers agreed to furnish sets at cost, volunteers offered to install aerials and other outside wiring without remuneration and the contributions have shown no indication of ceasing to pour in.

Mayor W. W. Gordon has given the movement his indorsement and a check. Other city officials were among the first to contribute, children brought their pennies, business men usually made the offering one dollar. Kansas City, long noted for its generosity to the needy, again had responded to call.

SWEETER VOICES ARE BROADCAST RESULT

New Vocal Technique Developed Says Music Leader

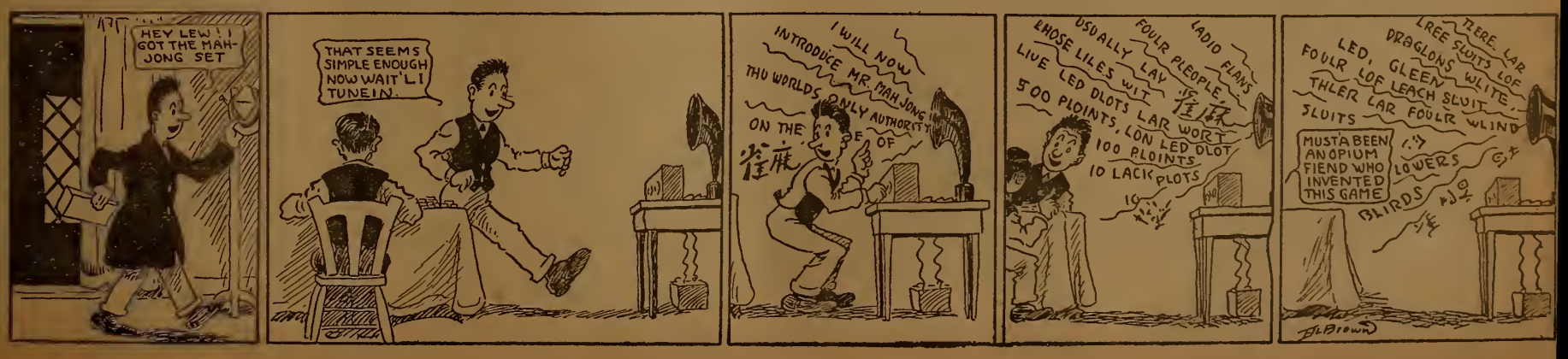
MINNEAPOLIS.—Radio is developing an entirely new type of vocal artists with voices surpassing in sweetness and technique those of concert and theatrical stage stars, it is declared by Miss Eleanor Poehler, music educational leader of the Northwest, one of the few women executive directors in complete charge of a large Radio broadcasting station.

Miss Poehler, as director of the Cutting and Washington Radio corporation's station, WLAG, popularly known as the Twin City (Minneapolis and St. Paul, Minn.) Radio central, has for some time been experimenting with these "Radio voices" and developing them.

"This extraordinary invention—Radio—is opening a field that is epochal for new artists and giving the public the benefit," said Miss Poehler.

Before taking charge of Station WLAG, Miss Poehler was prominent in western musical circles as a soprano soloist.

THE ANTENNA BROTHERS — Spir L. and Lew P. — A Broadcast from China



SUGGEST SPECIAL SERVICE FOR WEST

BROADCASTS AT LATER HOURS IS PLAN

Difference in Time Moves Station Officials to Consider Early Morning Programs

NEW YORK.—A suggestion that the National Association of Broadcasters arrange a schedule of its members for broadcasting late programs for the benefit of Pacific coast listeners, is being seriously considered and may be put in effect.

Inasmuch as there is a difference of three hours between Eastern standard and Pacific coast time, and two hours between Central standard and Pacific coast time, an eastern station signing off at 10:30 eastern time would be stopping its program at 7:30 on the Pacific coast, and a midwest station signing off at 10:30 central time would be stopping its program at 8:30 on the Pacific coast.

The N. A. B. stations are being asked if they believe that special early morning broadcasts for Pacific coast listeners would be a desirable project. If the suggestion is acted on it will mean putting on programs approximately between the hours of 1 and 3 o'clock in the morning.

N. A. B. Would Arrange Schedule

If such a plan is found desirable, the Association will arrange a schedule, so that each station which considers this service advisable, can go on the air one night a week, or if a sufficient number are favorable, perhaps once in two weeks.

An argument given in favor of the proposed plan is that Pacific coast listeners now have little reason to buy long distance sets, because all eastern stations have signed off before interference from their local stations has ceased. Another argument is that performers could extend their publicity to the Pacific.

Stations wishing to express themselves on the plan are requested to communicate with Paul B. Klugh, secretary of the National Association of Broadcasters, 1265 Broadway, New York.

CHARLES SCHWAB IS FAN TOO

Charles M. Schwab, steel master and shipbuilder, is just as human as the poorest of us when it comes to Radio. His spare moments are spent landing the distant stations and the magnate says he finds relaxation therein. He keeps a set (pictured above) on his desk to be sure it's handy when he wants to tune in. © U. & U.

Radio Sets in Denmark

WASHINGTON.—Denmark now has 3,109 private Radio receiving sets officially licensed. School pupils rank first with 473; commerce, shipping, and industry second with 448; office and store employees have 354; artisans 341; electrical contractors 334; laborers 324.

BROADCAST UPKEEP CONFRONTS CANADA

CONSIDER SUBSIDIZATION AS ONE ANSWER

Dominion Sees Need of Supplying Her Own Service for Listeners

OTTAWA.—To be or not to be subsidized is a question which is engaging the attention of broadcasters throughout Canada, and which may soon require from the Dominion Government a definite "Yes" or "No." There are over 100,000 listeners in Canada and broadcasting is the life of the Radio world. Again, it is of importance to Canadians that as much as possible of this should be of home origin.

Encouragement of some form to the broadcasters would be one means, but if this were carried out the Dominion Government might be open to the accusation of subsidizing instruments of propagation in its favor, such as newspapers which have installed broadcasters. It is now being done in Manitoba, where the Provincial Government is operating a broadcaster through the Telephone Commission's facilities. That installation is subsidized by the Dominion Government in this way: Half of every Radio license fee of $1 paid by citizens of that Province to the Dominion is turned over to the provincial government to aid in maintaining the broadcasting system.

Radio Circuits

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BOY SCOUTS BECOME BROADCASTERS

"This is Station WJZ, manned by the Boy Scouts of America," says Michael Salucka, age 13 (circle inset), as he helped other Boy Scouts recently to run the big eastern station as an aid to recruiting. "Mike" at the "Mike," you will note, wears a decoration for saving a woman's life. Below, left to right, are Michael Salucka, Robert De Groat, George Kutzelman, Harry Galland, Leon Moler and Herb Saranson. Photo Topics Photo

BOY SCOUT TUNES 32 IN 150 MINUTES

BROOKLYN.—Andrew S. Bostwick, Boy Scout of this city, recently reported he had tuned in Station 6AND, J. Kennedy, Hawaii, thus breaking, he said, his own record of receiving 32 amateur stations in the United States and Canada in two and one-half hours, a few nights ago. During three and one-half hours of the same night Bostwick said he copied 144 stations in code.

ETHER TRAFFIC COP STOPS WAVE JAMS

Radio traffic policeman O'Keefe of the Bureau of Standards, keeping tab on broadcasting and transmitting stations. This work supplements that of the Radio Inspection Service of the Department of Commerce. © U. & U.

Caribbean Cruisers to Ride Waves with Phones

Will Listen In to Home Station at Fort Worth

FORT WORTH, TEX.—One of the special amusement features of the Caribbean Cruise to be conducted by the Star-Telegram, March 20 to April 9, will be Radio programs on board the S. S. Cartago, of the United Fruit Company line, the ship on which the cruise will be made.

A special receiving set will be installed and passengers will listen in to programs from WBAP, the Star-Telegram here, and other stations in the United States. Special efforts will be made to insure clear reception of programs.

RADIO NAMES SONG; OTHER MEANS FAIL

PUBLISHERS IN NEW YORK RECEIVE 5,000 TITLES

Owners of Hit Offer Royalty to Winner After Tin Pan Alley Admits Defeat

NEW YORK.—For many months Charles Tobias and Louis Breau, publishers of songs, widely known as pioneers in broadcasting "hits," tried to find an appropriate title for a fox trot whose rhythm, they said, was novel. Finally, after every other means had failed, they appealed to the Radio audience of Station WHN, Loew's State theater, 45th and Broadway, and found not one but many suitable names.

The publishers who, during the last two and one-half years, have broadcast songs from Stations WJY, WJZ, WEAF, KYW, WOR, WHN, WDAP, WMAQ, WAAM and others, appealed at first to the professional lyricists of "Tin Pan Alley" where most of the popular ditties of the nation are conceived. But nothing suitable was found.

Radio Brings 5,000 Names

For two weeks or more the song lay in the publishers' office, a thing of regret and irritation. A few nights ago, the publishers fell upon what they at first thought was a "wild" idea—they determined to let the Radiophans, the listeners in, try to name the new melody.

The announcer for WHN, Nils T. Granlund, put the publishers' plight on the air. Shortly afterward more than 5,000 suggestions for names were received by mail, telegraph and telephone. Many fitting titles were among these, according to the publishers, but to give thousands of other listeners in opportunity to compete, the contest was continued three weeks. The name of the winner will appear on the title page of the song and he or she will be given opportunity to write the lyric under a royalty contract.

Away Up in Canada WTAS Wins Aid for Griffis Fund

CHICAGO.—Although Mr. M. Ercury wings his feet so fast 'way up North that during the winter he usually arrives near the bulb of the little glass tube which makes weather seem real, he didn't, a few days ago, drop so low as to prevent the warmth of the appeal for funds to release Griffis from a German prison to reach at least one Canadian.

It was Radio which defeated M. Ercury; Radio as broadcast from Station WTAS, Elgin, Ill. In a letter to those in charge of the fund in this city, C. L. Pickering of Cochrane, Ontario, said that WTAS's plea had induced him to send money to effect the freedom of Griffis, who had tried to kidnap Bergdoll, fugitive slacker. Station WJAZ, Edgewater Beach hotel, and several theaters here also broadcast appeals for Griffis.

The French deny that the pilotless airplane is an American invention, and furnish conclusive proof that in September of 1918 a pilotless plane was successfully controlled from the Eiffel Tower.

Yukon Miners Dance to Music from Portland

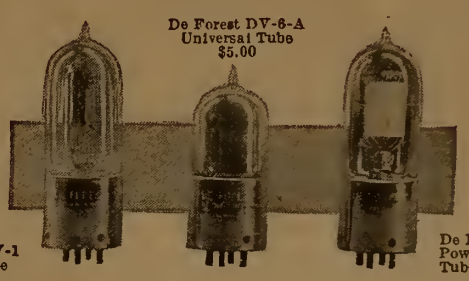
Best Orchestras of Continent Heard in North

DAWSON, YUKON.—Denizens of the Yukon are dancing this winter to music played by the best orchestras of the continent through the medium of the Radiophone. Now that the period of the shortest daylight is reached, Radiophans receive good results from their instruments.

Miners at Miller Creek and Keno Hill have experimented, and found they can tune in on Radio concerts for their dance music. Concerts broadcast from Calgary, Alberta, Portland, Ore., Los Angeles and San Francisco compete with music from distant Eastern cities these nights to beguile the unbroken twilight of the subarctic winter.

Greece to Have Radio

WASHINGTON.—Radio communication will be established throughout Greece by the British Marconi company under an agreement which has just been signed with the Greek department of communications, according to a report received by the United States department of commerce. Stations will be erected in the principal cities.



The More You Know About Radio The More You Rely on De Forest

Without Lee De Forest's discovery of the vacuum tube there would be no radio today. All radio broadcasting, all radio receiving by means of tube sets, rests on De Forest patents.

De Forest has been a pioneer in radio since 1900 and De Forest is a pioneer today. That is the reason for the great success of the De Forest Reflex Radiophone. That is the reason for the success of the new De Forest tubes—DV-1 Dry Cell Tube, DV-6-A Universal Tube, DV-2 Wet Cell Power Amplifier Tube.

If you want a radio receiving set with a range on indoor loop of from 1,500 to 3,000 miles, depending on atmospheric conditions; if you want simplicity of control, clear reception without distortion and without extraneous noise; if you want operation on either wet or dry cells—see the De Forest Reflex Radiophones at the De Forest agents today.

The D-7 A Reflex Radiophone is a three-tube set at $125.00; the D-10 Reflex Radiophone has a drawer in its cabinet for dry batteries and is a four-tube set at $150.00. No matter what you pay, you can't get greater radio satisfaction.

Whether you buy your set complete, or build your own from the laboratory-tested De Forest parts, you can rely on De Forest, the greatest name in Radio.

De Forest Radio Tel. & Tel. Co.
Dept. R. D. 6 Jersey City, N. J.

De Forest Portable Reflex Radiophone type D-10, which operates on wet or dry cells, has a reception range of from 1,500 to 3,000 miles on indoor loop; has drawer for all necessary A and B dry cells. Price $150.00, plus approximately 6% for transportation in territories west of Rocky Mountains.

DE FOREST

Radio Catalogs Free
Send a postcard for De Forest's Free Radio Catalog with full details and prices on sets, tubes, and parts.

De Forest products are sold only through exclusive agents direct to the public for your protection. The De Forest Company will be glad to hear from representative dealers in various communities who wish to become exclusive De Forest agents.

KANSAS OPENS FARM STUDY TO ALL FANS

STATE U COURSE BEGINS ON FEBRUARY 11

First School of Kind Offers Written Quiz—President Sees Radio as Necessity

MANHATTAN, KAS.—Kansas State Agricultural college of this city will join the ranks of the universities communicating college courses to a widely separated student body by Radio, when on February 11, a complete course in agriculture will be opened to everyone in the United States, it has been announced by President J. M. Jardine.

In order that the farm course may bring material results, President Jardine has asked Radiophans throughout the country to apply for enrollment in any or all of the courses on the extension Radio schedule. The most important agricultural subjects will be included, it was said.

At the completion of the course a written examination will be given all students. A passing grade will entitle the Radio student to a certificate of graduation from the first school of its kind.

School Will Influence Farm Life

The entire course will be broadcast on 286 meters from the university station, WTG.

"Radio's greatest contribution to the advancement of civilization may lie in the influence it will have upon the life and action of the farm population," President Jardine said in announcing his school's unique plan.

"The great new science is to become an imperative necessity of the economic, spiritual and intellectual life of the farm. It will mean the delivery of the farmer from the sense of isolation by keeping boys and girls on the farm and by making possible a system of agricultural education."

President Jardine has asked all Radiophans interested in the course to communicate with him before the "school of the air" is opened.

RADIO TELLS HER OF PERIL TO SON

Mother of Sailor on Ill-fated Tacoma Learns of Danger by Airwave

CEDAR RAPIDS, IOWA.—To be "listening in" on a set and suddenly hear that the ship on which your son was a sailor had been wrecked, was the experience of Mrs. John Patterson, 313 Twelfth avenue west, on a recent evening about 10:30 o'clock.

Mrs. Patterson had tuned in on Station WFFA, Dallas, Texas, when she heard the announcer tell that the old cruiser Tacoma, which had gone aground near Vera Cruz, Mexico, was battered to pieces and would soon go down.

Mrs. Patterson screamed when she heard the news, attracting the attention of her husband. She told him of the announcement when he rushed into the room and they worried and wondered what had been the fate of their son, Robert, 24 years old, who had been a water tender on the vessel. Neither had read of the mishap to the ship as announced in the newspapers until they heard of it through the Radio receiving set in their home.

Mr. Patterson was relieved next morning when at the office of a local newspaper, he learned that there were only four of the crew dead and his son was not among these. The rest of the crew had been saved in the face of a heavy storm by Mexican rebel boats.

WLAG Reception Good, Is MacMillan Message

Twin City Radio Central Wins Explorer's Praise

MINNEAPOLIS, MINN.—WLAG, Twin City Radio Central, Minneapolis and St. Paul, announces that it has recently joined the list of stations to receive the applause of Capt. Donald MacMillan's North Pole expedition.

Through Jack Barnsley, Prince Rupert, B. C., the station has received the following message from Capt. MacMillan:

"WLAG very good here occasionally. Please extend New Year's greetings to D. D. Davis of Washburn Crosby Flour Co."

The message was communicated to Mr. Barnsley by the Schooner Bowdoin at Refuge Harbor, Greenland, at 2:28 a. m. WLAG is about 2,800 miles from the position of the Bowdoin at latitude 78.30 N., long. 72.30.

A high power wireless station is about to be erected at Ruysselede, near Bruges, Belgium, and a workshop has already been established on the site. This station will be in operation within two years.

LISTENING IN FROM WAY UP NORTH

By Vera Brady Shipman

SLEIGHBELLS coming over the hills; prancing horses frisking with the cold; a long drive from town; the lookout light shows afar; it gets dark early in winter. Wonder how it would feel to get lost?

Come inside while they put up the team. The log fire welcomes. It's far below zero tonight. Wish KYW would put on the setting up exercises now instead of 7 in the morning. It's too cold then to enjoy it. Wish we could telegraph some of those Radio stations we hear so well, but central in our little town closes at 9 o'clock. That's what comes of preferring to live in the country. Serves me right, you say?

It's time to tune in. Sit down in the sleepy hollow chair, with your feet just comfortably up; get out your Radio Digest time-table and we're off.

WMAQ broadcasting the Chicago Theater revue from atop the theater. The announcer parodies the famous Rollo travel books of childhood. He is showing his little nephew, Rollo, around the broadcasting studio. He insists if he says a word out loud he will throw him off the Municipal Pier! The music is lovely, Jesse Crawford at the organ, the symphony directed by Finston and Roy Dietrich's perfect enunciation.

Just tuned in on WSAI, Cincinnati, hearing Israel Zangwill in a witty discourse on Judaism from the Gibson hotel banquet. He spoke of his "friend Galsworthy saying: 'You Americans are all right. You have so much thunder.'" Guess he's right after all! The orchestra from WFAA, Dallas, is playing, "I'm Here —You're There." Now, doesn't he know we know that?

WOS of Jefferson City has a new magnetic attachment on its piano which clarifies its music. A new fox trot, "Norma," dedicated to Norma Talmadge, is played by their Novelty Six, and the announcer is sure that Norma is listening in from Hollywood tonight.

A 300-piece orchestra from WOAW playing "My Sweetie Went Away;" but never mind, don't feel so bad, according to Vincent Lopez' orchestra from WEAF, New York City, "The Girl I Love Belongs to Somebody Else." The Bellevue Stratford orchestra of WFI, Philadelphia, is playing, "Last Night on the Back Porch," and a police report from Station WBAA, Harrisburg, Pa., state police department gives a weather and roads report for the Quaker state. WOI, Iowa State college at Ames, is putting on its own orchestra, and the Shrine band comes from WLW, Cincinnati. WMC, Memphis, has a midnight revue. Did you hear Joyce White of Al Jolson's show, dance on the table at KYW, midnight Wednesday?

WGY players are playing "The Truth;" KDKA sends out an urge to own your own home. WHAZ of Troy gives us a tenor "Goodbye," of Tosti. Kansas City Athletic association at WDAF, and then, too, on close meter on the tuner, Minneapolis Athletic association orchestra at WLAG. My how athletics do take to Radio.

"Sunshine of Mine" and "Marcheta" hand in hand.

WDAR's Dream Daddy, with a toot-toot of the train going to Dreamland, taking his regular load of youthful passengers. The Harmony club of Fort Worth giving its monthly program from WBAP, and a tenor there sings Massenet's "Elegy." WHAS, Louisville, is sending the Rigoletto quartette clear to Springfield, Massachusetts. Here's hoping, WHAS.

WSB triangle bells, signing off, ring cold across the snow.

Winter is King.

FADA

FADA "ONE SIXTY" NEUTRODYNE RADIO RECEIVER

Distance

The real thrill of radio is in listening to voice or music on the loud speaker from broadcasting stations located in cities a hundred or a thousand miles away.

To tune them in almost at will is a feature that has made hosts of enthusiastic friends for the FADA "One Sixty" radio receiver. Here is a four-tube Neutrodyne receiver combined with the craftsmanship and experience that have made the name FADA synonymous with quality in radio. It is a receiver that is the equal of any five-tube set of any type or make.

Selectivity, volume, distance and clarity are outstanding features of the FADA "One Sixty" radio receiver. Once the dial readings of any station are recorded, that same station can always be tuned in again by returning to the same settings—and almost always, with loudspeaker volume, no matter where the station may be located. Price, $120 at dealers. Extra for tubes, batteries and phones.

F. A. D. ANDREA, INC., 1581 Jerome Avenue, New York City

FADA Radio

WAVE TRAPS NOW ON THE MARKET

Manufacturers Meet Demand for Interference Eliminators with Two New Models

Tests Made on Two Types

Malone-Lemmon Control-O-Meter and Metro Wave Selector Explained for Benefit of Fans

IN AN effort to locate and test various standard wave traps, selectors or whatever name they might be known by, it was found that there were not as many on the market as might be anticipated. Undoubtedly in various cities there are numerous traps available at dealers which are only produced for local trade. The idea, however, was to describe a few that have a more national distribution. Evidently the demand has been great because manufacturers were not in a position to deliver instruments for testing purposes.

Two were available, but details of other instruments will follow later. The first one shown in the illustration is the "Control-O-Meter," a Malone-Lemmon product. The instrument is well made, having a sloping panel with two binding posts and one control dial.

A card accompanies each instrument on which is given the calibration for eliminating specific wave lengths. On the one tested this is given as follows:

Undesired Wave Length	Dial Setting
300 meters	22
350 meters	29
400 meters	38
450 meters	49
500 meters	65

The instructions on this card should be of interest.

1. Set the instrument in a convenient location alongside the receiving set. Avoid having the connecting wires too long.

2. Disconnect the antenna lead wire from the set and attach it to one binding post of the meter. Now connect the other post on the meter to the antenna binding post on the receiving set.

3. Each instrument is tested and calibrated before shipment, results being noted on the "Factory Record."

Malone-Lemmon "Control-O-Meter."

Setting of Instrument

The method of setting the instrument is as follows: Assume that WJZ (455 meters) is interfering with a concert from WEAF (492 meters). To eliminate WJZ, refer to calibration table on back of the instruction card and note that the wave length of 455 meters lies between 450 and 500. In column "Dial Setting" under "Factory Record" are the figures corresponding to 450. Slowly rotate dial between the figures coresponding to 450 and 500 until the point is noted at which interference diminishes. By advancing or retarding the dial a few degrees from this position a point will be found at which WJZ is completely eliminated.

4. It will be found that when the interfering station is once eliminated by a careful setting of the instruments, a further readjustment of the main receiver will not again bring back the interference.

5. The adjustment of the Control-O-Meter to completely eliminate interference is quite sharp, loud signals disappearing within a few degrees on the dial. In exceptional cases, supersensitive receiving sets located alongside of a powerful broadcasting station may require an additional instrument inserted in the ground lead.

The Wave Selector

Another instrument, shown in the second illustration, is the "Wave Selector" manufactured by the Metro Electrical Company. This instrument is enclosed in a very neat compact case with a hinged cover. Instructions are pasted in this cover and are as follows:

Metro "Wave-Selector."

1. Binding post marked "Acrial" should be connected directly to the aerial.

2. Binding post marked "Set" should be connected to receiving set where the acrial usually connects.

3. Before adjusting main receiving set, the dial on the selector should be set approximately at 90.

4. The main receiving set is now adjusted in the usual manner in order to bring in the desired station to the greatest signal strength, regardless of interference.

5. To eliminate the interfering station, the dial on the instrument should now be slowly turned either to the right or left until the undesired station is at its minimum strength.

6. If the undesired station is still present, it wil be necessary to again adjust the main receiving set, with a final very slight adjustment of the selector.

7. Remember that every adjustment of the selector affects the tuning of the main receiving set and every adjustment of the latter affects the tuning of the selector. It is only by the careful adjustments and re-adjustments of both in combination that the two circuits can be absolutely balanced and the undesired station entirely eliminated.

AH, WOE! ANOTHER ONE'S WED, GIRLS

Pheminine Phans Lose Second Idol at WGR, Buffalo

BUFFALO, N. Y.—Alas and alack! Here is more bad news for pheminine phans. After L. B. Weller got married and ceased forthwith to be chief announcer for WGR, the no less dulcet accents of Edward Stanko began to be heard from Maine to California as chief spokesman at the Buffalo station.

Some of those same pheminine phans who used to send Mr. Weller mash notes are beginning to get keyed up over Mr. Stanko's voice and now along comes the news that he too is married.

The ceremony took place in Buffalo recently before City Judge Harry B. Larson. Miss Fay Pepley of Hooversville, Pa., was the bride.

Bryan's Talk—"Is Bible True?"—Is Sent by WMC

MEMPHIS, TENN.—What were deemed forceful arguments against modernism in the church were presented here recently by William Jennings Bryan by means of Station WMC, Memphis Commercial Appeal.

The "Commoner's" address, delivered to a large audience in a church, was relayed to the newspaper's Radio plant, whence it was put on the air. The title of Bryan's lecture was "Is the Bible True?" The applause which his points evoked indicated that most of those who heard him still believed in the spiritual verities.

Radio is described by a native of Africa as a powerful machine that can speak without mouth and hear without ears.

Uninterrupted radio enjoyment for you is Federal's manufacturing policy

EVERY radio set and each of the 130 parts manufactured by the Federal Telephone and Telegraph Company carries a guarantee of absolute freedom from mechanical and electrical defects. This guarantee is made possible through the efforts and skill of 25 years' research by experts in the radio field.

When in the market for a radio set or parts it will pay you to investigate the unsurpassed services being rendered to millions of radio enthusiasts by Federal products.

Progressive dealers everywhere carry the Federal line and will be glad to tell you what the name Federal signifies on radio sets and parts.

Federal Telephone and Telegraph Company
BUFFALO, N. Y.

Boston New York Philadelphia Chicago Pittsburgh
San Francisco Bridgeburg, Canada London, England

NEW REVENUE GRAB "MUSIC TRUST" AIM

TIN PAN ALLEY BUNCH TO SUE MANY STATIONS

Shall American Society of "Composers" Eke Income from Broadcasters? Case in Court Now

(Continued from page 2)

is made of coins, according to recent data, which, in considerably less than a year, total more than $500,000.

Research conducted during the last few months by broadcasters individually and as a national organization shows that, in the instance of a popular Radiophan contest under the auspices of Stations KYW, WJAZ and WDAP, Chicago, during a period of less than 12 days, more than 13,170,500 men, women and children heard the terms of the competition, that more than 240,000 answers were received and that the greatest number of these preferred "jazz" or "popular" music, showing how large was the audience which the organized publishers might have reached.

Tests Show Radio Aids Music Sales

Further investigation revealed that the local and mail order sheet music sales of the Knight, Campbell company, Denver, Colo., were greatly increased by being broadcast by Station KFDL of that city. An "independent" sheet music publisher in New York City reported that Radio had raised the volume of his sales of one song to 25,000 in a short time. Another publisher in the same city, rather a partnership of publishers, told how, by means of Radio, Station WHN, they had received 5,000 suggestions as to a title for a song which "Tin Pan Alley," habitat of composers and authors, had failed to name appropriately. It became known that some of the music publishers paid as much as $10,000 a year for "plugging" the sales of one of their songs.

Hartman and Rosenthal Lie?

The question re-opened by the suit against the Board of Trade brought into conferences during 1922 and 1923, in Chicago and New York, representatives of the American Society of Composers, Authors and Publishers, and the broadcasters.

Delegates from the American Telephone and Telegraph company, Radio Corporation of America, General Electric, Westinghouse, and the United States department of commerce attended the meeting in New York City. The assembly in that city ended in a deadlock. One of the meetings ended in an agreement to file a test suit in the federal courts.

During one of the later conferences in Chicago Hartman, attorney for the organized publishers (and composers and authors), and J. C. M. Rosenthal, their general manager, were asked to withdraw because, it is alleged, of a deliberate misstatement.

Broadcasters Oppose Tactics of Society

A questionnaire under the auspices of the Drake hotel, Chicago, and Radio Digest showed that most if not all the broadcasters of the United States opposed the tactics of the society and favored the use of "independent" music. The National Association of Broadcasters, of which Paul Klugh was and is executive chairman, headquarters New York City, established a bureau for the cultivation of "independent" music. The Chicago Daily News, Station WMAQ, aided the association considerably in that respect.

Methods of the American Society of Composers, Authors and Publishers, as applied by some of its representatives, were condemned by broadcasters and thousands of listeners in.

Is Fight of Millions of Listeners In

The repeated declaration by members of the society's legal staff that Station WEAF, American Telephone and Telegraph company, New York City, had become a licensee was afterward proved a misstatement as was a similar assertion during the trial of the suit against Station WOR in Newark.

It is reported that some of the members of the American Society of Composers, Authors and Publishers on several occasions came over to the Drake station and attempted to get WDAP to broadcast their numbers by issuing a written "release." These members had no right to do this, it is obvious, considering the stand of the Society, and their attempts can only be credited, it is believed, to internal dissension or an organized effort to "frame" WDAP.

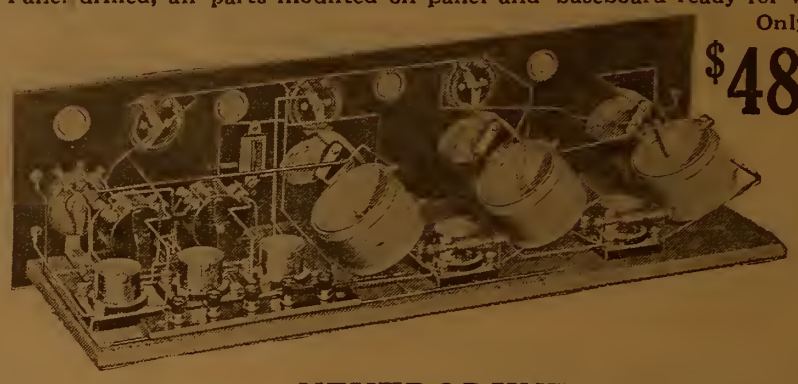
The fight of the National Association of Broadcasters, of its individual members, to retain the right to the freedom of the air, the right to place on it what they wish excepting that which conflicts with present Radio regulations, has become, it is said, the fight of millions of listeners in throughout the United States. On the outcome of the suit filed against the Chicago Board of Trade depends in a sense, it is predicted, the life of broadcasting in this country.

BEAUTIFUL MAHOGANY NEUTRODYNE

Brings in Everything

WHEN you get this magnificent looking set hooked up you will be able to hear all stations without interference. All the parts are standard the same as illustrated in the Radio Digest last week The panel is mahogany with beautiful Tate dials—a set fitted for the most exclusive home.

Panel drilled, all parts mounted on panel and baseboard ready for wiring



Only **$48.50**

FREE BLUE PRINT

It Works **NEUTRODYNE** *All Standard Parts*

3 Rheostats, 30 ohms	$2.00	5 Sockets	$5.00
1 Rheostat, 6 ohms	.90	2 Transformers	9.50
3 Air Core R. F. Transformers, mounted on condensers, and 2 balancing condensers	20.00	9 Readem Binding Posts	.85
		1 8x26 Mahogany Panel	3.64
1 Potentiometer, 600 ohms	1.85	4 Bezels	.80
3 Jacks	2.70	3 Dials	4.50
1 Condenser	.40	1 Baseboard	.50
1 Grid Leak	.65	24 ft. Square Brass Bus Wire	.60
		Total	$53.89

ONLY $45.50 With Blue Prints FREE

The above Neutrodyne Complete with all the following parts:

5 Genuine DX Tron Tubes	$25.00	1 45 Volt B Battery	$ 5.50
1 110 Ampere Storage Battery	18.00	2 22½ Volt B Battery	6.00
1 DeLuxe Homecharger	18.00		
1 Genuine Baldwin Headset	12.00		$86.00
1 Complete Aerial Equipment	1.50	1 Fultone Loud Speaker	9.50
		TOTAL	$95.50

The above parts and equipment complete would cost you $144.00!

Our Price $125.00

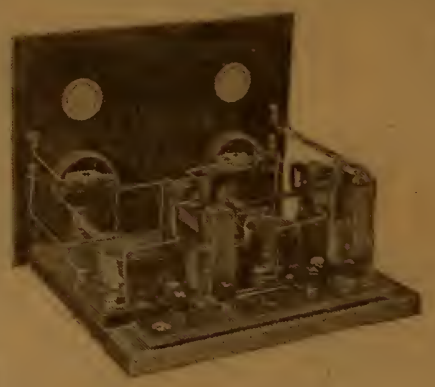
Special Offer

USING only the best materials in this wonder Neutrodyne set and appreciating its beauty we are willing for you to be the judge. You needn't send us any money, just pay the postman or expressman. If you don't say its the best appearing set you have ever seen and are not satisfied we will return your money within ten days on return of the set.

SEND NO MONEY

Just Pay the Postman

Complete Parts—MILOPLEX—2-Step Amplifier



Mounted on baseboard and panel

LIST—$21.06

Our Price Only

$16.50

1 Panel 7x9x3/16"	$1.26	2 Sockets	$2.00	1 Baseboard	$0.25
2 Webster's 4-1 Transformers	9.50	2 Double Circuit Jacks	1.80	1 Cabinet Mahogany Finish	3.50
2 30 Ohm Rheostats	2.00	1 Set Readem Engraved Binding Posts	.75		

The above mentioned parts will include any Ohm Rheostat and All-American Transformers if desired.

Complete Parts - MILOPLEX - Cabinet FREE

1 .0005 Variable Condenser, Vernier	$6.00	1 Socket Bakelite Base	$0.90
1 Estru Variometer	5.00	1 Bakelite Panel, 9x14x3/16	2.50
1 .00025 Variable Condenser	2.00	1 WD-12 Tube	6.50
1 Variable Grid Leak	.75	1 B Battery, large, 22½ volt	3.00
1 .00025 Mica Fixed Condenser	.40	3 Dry Cells	1.35
2 .002 Phone Condensers	.80	12 ft. sq. brass Bus wire	.30
3 3½-Inch Dials, each 75c	2.25	1 Set Readem Binding Posts	.75
1 Potentiometer, 1850 ohms	2.20		
1 Rheostat	1.00	TOTAL	$35.70

ONLY **$28.50**

Blue print FREE only with order for complete parts

WAVE TRAP

You can now enjoy the comfort of selecting any station that you desire by hooking up one of our METRO Wave Traps with your Set. Mounted in Mahogany Cabinet with the highest grade material. Regular List Price $7.50. Our Price

ONLY **$6.50**

We Are Responsible Folks, Money Promptly and Cheerfully Refunded If You Are Not Satisfied

All Orders Mailed Promptly. Parcel Post Prepaid on $5.00 or Over. No Stamps Accepted.

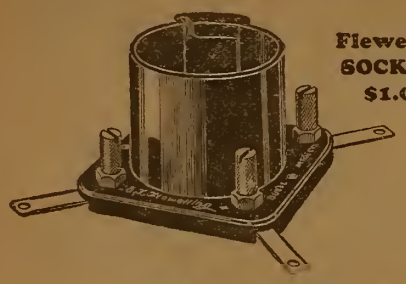
Everything in Radio Write Us

Quality Merchandise at Low Prices

Economical Radio House

4600 Lincoln Avenue, Chicago

We Personally Guarantee All Goods

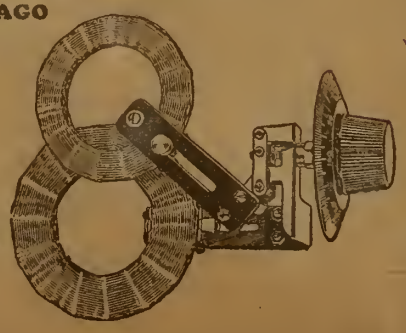


Flewelling SOCKETS $1.00

Genuine E. T. Flewelling PARTS

The names Dresden, Rembrandt and Sterling mean a lot when you are buying china, art and silver. But when Radio is considered, the name Flewelling is paramount. The careful buyer has learned that if it is a "genuine" Flewelling part it is right! E. T. Flewelling will not allow his name to be placed on a part that has not passed both laboratory and practical use tests. Genuine Flewelling parts are manufactured exclusively by

BUELL MANUFACTURING COMPANY
2977 Cottage Grove Ave.
CHICAGO



Flewelling TUNERS $8.00

How to Make a Lighthouse Keeper's Receiving Set

Part I—Portable Set Suitable for Everyday Use

By S. R. Winters

A PORTABLE Radio receiver, representing a cash investment of only $20, and so simple in structural details that a person with the slightest elemental knowledge of electricity can assemble the parts, has been designed by A. W. Tupper, assistant engineer of the Lighthouse Service, United States Department of Commerce. Furthermore, the set is compact, the cabinet, instruments, and dry-cell batteries weighing barely 15 pounds. A single vacuum tube is used, which, besides the headphones, is the only expensive unit used.

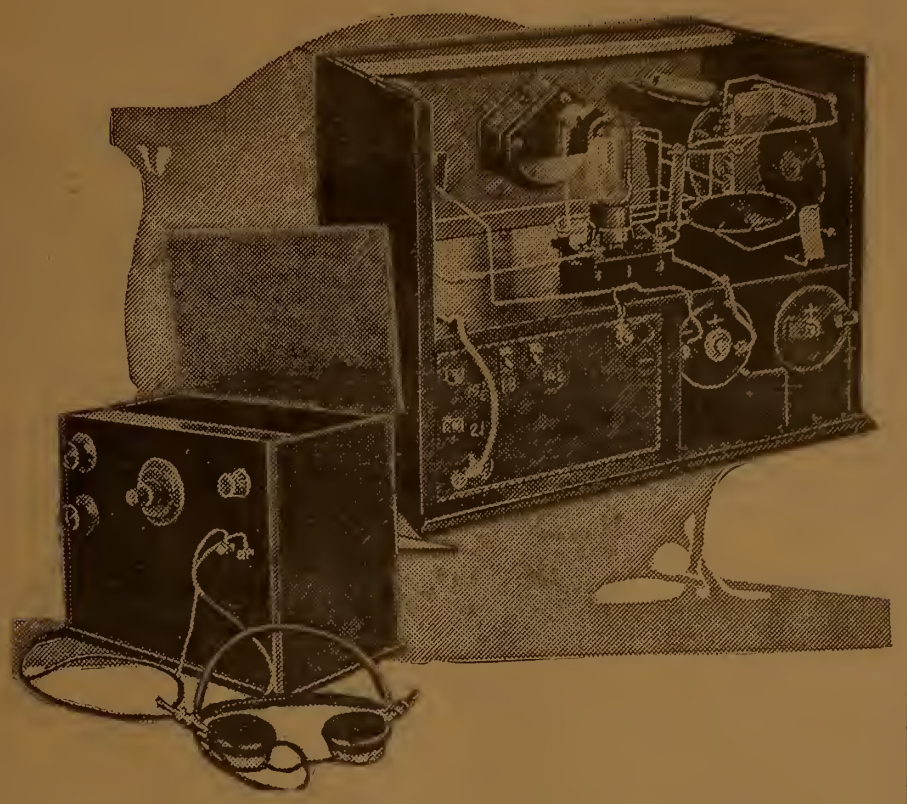
This receiving equipment was designed especially for keepers of lighthouses—those lonely guardians of property along our 44,000 miles of coast line. One of these lighthouses, for instance, is perched on a rock in the Pacific Ocean, miles from land. The installation of the receiving set about to be described on this rock, will dispel the isolation by bringing civilization—music, church services, financial reports, lectures, etc.,—into mid-ocean by the magic of the invisible electromagnetic waves.

Adapted for Universal Use

This compact Radio receiving set, perfected fortunately, is not limited in usefulness to the lighthouse. It is equally adapted to home, office or field, where inexpensiveness, simplicity, compactness, and long-distance reception are sought.

The opportunity for the farmer to display his mechanical skill in making and assembling the parts entering into the construction of the Radio telephone equipment is not to be discounted. The city dweller, too, who is swinging away from electric circuits involving cumbersome units and bulky storage batteries, will appreciate the possibility of building and assembling a set of such light weight that one person could easily carry cabinet, instruments, and batteries anywhere he might go.

The materials necessary for building this simple form of regenerative circuit have been so explicitly outlined by the Lighthouse Service that even the size and number of screws are specified. Fortunately, some of the materials are likely to be found around any home which houses a person with a mechanical turn. Moreover, the various parts indicated are not suggested for use on mere theory, but these sundry units have been tested for several months and their suitability established beyond a doubt.



The simplicity of the assembly of the instruments is not likely to be marred except in one possible instance, namely, the making of the proper connections of the two spider web variometers or coils. This obstacle may be avoided, however, by faithful adherence to the diagram or hook-up illustrating one part of this series of articles.

Materials Necessary

The materials required are the following: One 1½-volt vacuum tube for detecting the Radiophone signals, type WD-11 being used by the Lighthouse Service; one vacuum tube receptacle; one pair of headphones; one 22½-volt B battery; one dry-cell battery; one 23 or 43-plate variable condenser with vernier; one telephone condenser of .00025 mfd. capacity; one grid condenser of .0005 mfd. capacity; one grid leak; one piece of fiber or hard bristol board about 3/32 inch thick and 8 inches square; ¼ pound of number 24 gauge enameled magnet wire; 7 feet of tinned copper hook-up wire or heavy bell wire; one rheostat for controlling the filament of the vacuum tube; one piece ¼-inch diameter dowel stock, 5 inches long; one piece ¼-inch diameter dowel stock, 8¼ inches long; three or four pieces of tinfoil for covering back of panel; four binding posts; four machine screws No. 6, about ½ inch long, with nuts; one piece of brass, about 1/8 inch thick, ⅝ inch wide, and 6 inches long, for making end supports for coil shafts; three dozen copper or brass wire terminals; one dozen number 4 round-head brass wood screws, ⅝ inch long.

Materials for Cabinet

This homemade Radio receiving set involves the building of the cabinet as well as assembling of the instruments contained therein. Therefore, the materials for making the container are quite specific. Obtain a piece of dry close-grained wood, about ¼ inch thick, 13 inches long, and 10¾ inches wide, for the front or panel. Bakelite or other insulating material may be used if preferred. The remainder of the cabinet may be of any kind of wood, although the model receiving sets built by the Lighthouse Service is of white pine, ¾ inch thick.

The dimensions of the other pieces for the construction of the cabinet are as follows: Bottom and top, 14 inches by 8¾ inches; two ends, 8¼ by 10¾ inches; back, 13½ by 6 inches; hinged back or door to the compartment containing the batteries, 13½ by 4¾ inches; shelf, 7¾ by 12¾ inches. The other essentials for securing the cabinet in position include four pairs of small brass hinges and screws and some 1¼-inch wire brads; six brass screws, number 6, about ⅞ inch long, for securing the back in place; and soldering material.

Making the Cabinet

The construction of the box or cabinet involves the making of a groove, ¼ inch wide and ⅛ inch deep, in each side-piece near the front into which the front board or panel is slipped. Any kind of wood, about ⅜ or ½ inch thick, will do. The panel should, preferably, be a piece of close-grained wood ¼ inch thick.

(Continued on page 10)

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THE BRISTOL COMPANY, Waterbury, Conn.

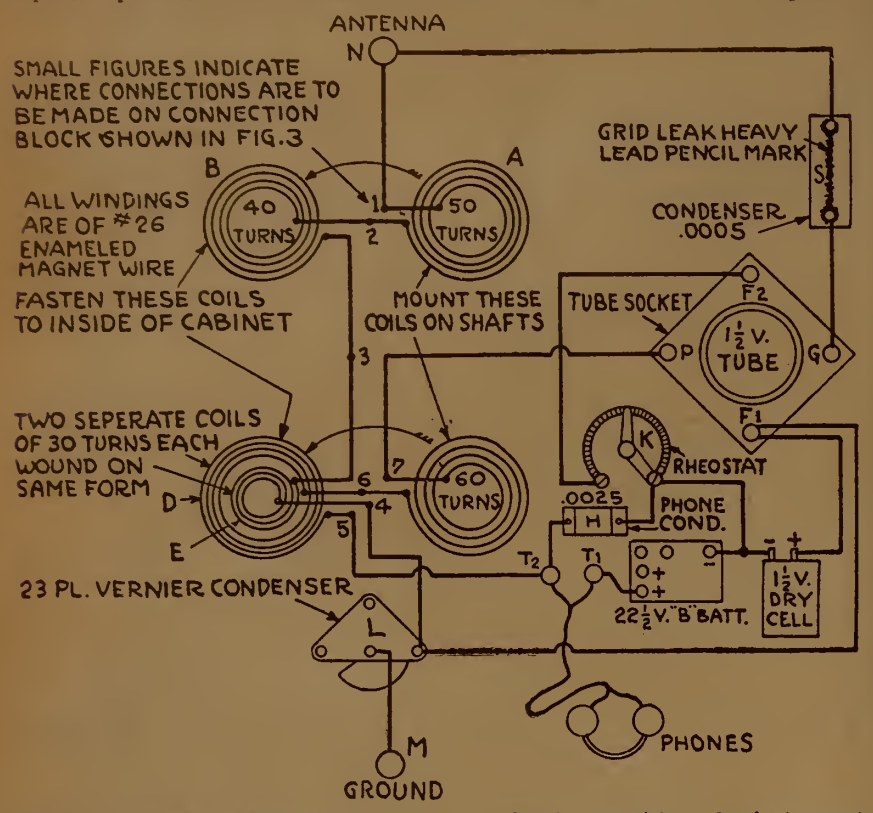
LIGHTHOUSE RECEIVER

(Continued from page 9)

The rheostat and condenser are put on the board, in order to be certain that the holes are in their true positions, after which the instruments are removed and the panel is put into an oven. Heat should be applied thoroughly as a means of expelling moisture, but caution should be exercised lest the panel be scorched. While the panel is still hot, a coating of thin shellac is applied on both sides, to the edges and in the holes. The panel is permitted to dry for 24 hours, after which two more coats of shellac are applied at intervals of 12 hours. Positive instructions are issued not to paint this panel with ordinary paint; a spirit stain or water-color stain being applied if color is desired.

Applying Tinfoil

Once the third coat of shellac is dry, the inside portion of the panel that is above the shelf is covered with tinfoil, which may be attached to the panel by means of shellac. While the latter is in a moist condition, any tinfoil that may be dangling through the holes of the panel is cut away, in order that no metal parts of the condenser, rheostat, binding posts, or any of the wiring or wire terminals, may come in contact with it. The panel is then placed in position, the instruments are properly fastened, the coil shafts are inserted with the coils mounted thereon, and the tube socket is secured to the shelf.



(TO BE CONTINUED.)

Open and Short Circuits

"Open" circuits (incomplete connections) may be due to broken wires, wrong connections, or poor contacts. "Short" circuits (where an undesired path for the current is provided in addition to the desired one) may be due to touching of bare connecting wires, wrong connections, touching condenser plates or some metallic object having fallen among the wiring.

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1 7x21x3/16 Drilled Formica panel
1 Howard rheostat
3 4-inch Radion dials
3 John Firth bakelite sockets
8 Binding posts
3 23 plate var. condensers
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2 R. F. amp. neutroformers
2 Grid neutralizing cond.
1 .00025 micon grid cond.
1 Marco variable grid leak
1 Baseboard for mounting
25 feet tinned copper bus bar wire and complete instructions for assembling and wiring.

3 Tube $28.60 **4 Tube $44.65** **5 Tube $46.25**

Complete parts for 3-tube set as follows

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OPERATING AND TROUBLE SHOOTING

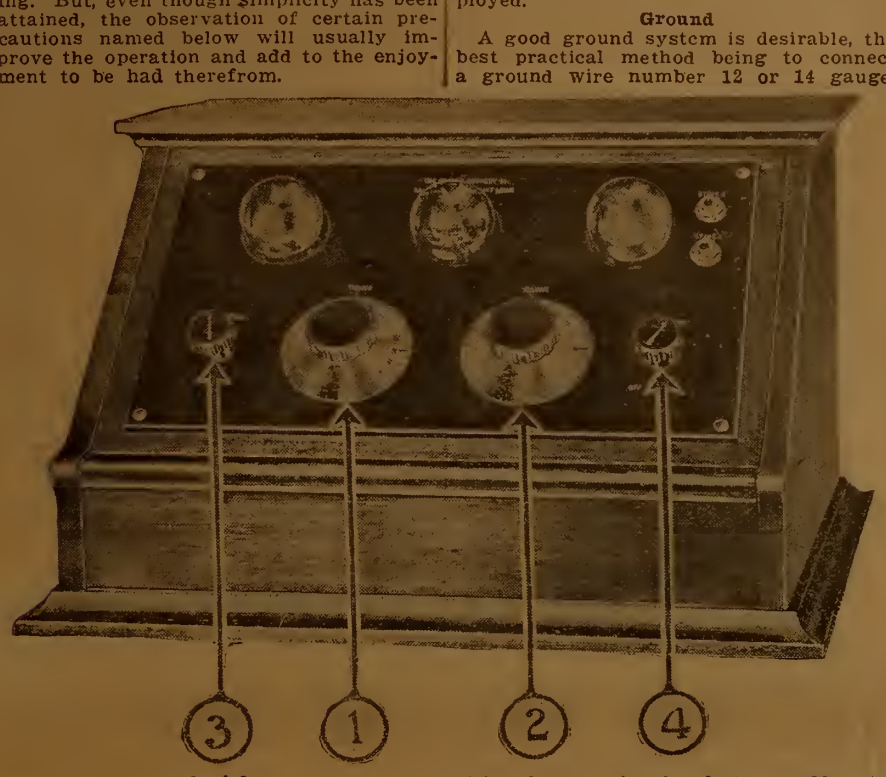
"OPERATING and Trouble Shooting" is a Radio Digest feature whose purpose is to study the late models of various standard receiving sets and to show the newly initiated broadcast listener, who has purchased such a set, how he can operate it to get the best there is in it and how he can overcome minor difficulties which may be causing some trouble. On pages 11, 12 and 13 this week the Kennedy V and the Garod RAF are described. Radiophans with other kinds of sets will also find these articles worth reading, particularly the notes on trouble finding.

For the Owner of a

The Royalty of Radio

KENNEDY Model V

THE new receiving unit Model V combines an unusual degree of selectivity and precision with simplicity in tuning. But, even though simplicity has been attained, the observation of certain precautions named below will usually improve the operation and add to the enjoyment to be had therefrom.



Aerial

Almost any type of aerial is suitable, although a properly constructed outside antenna is to be preferred.

In general, it may be said that the strength of the received signal increases with the height and length of the antenna. While this is quite desirable, yet where static and other disturbing conditions are present, these disturbances are also strengthened—sometimes to the point of being objectionable.

The simplest and most effective way to reduce such interference is to decrease both the length and the height of the antenna. This makes the set tune "sharper" although at the same time it reduces signal strength correspondingly.

It is therefore wise to choose a middle course. Best all-around results are usually obtained with an aerial consisting of a single bare copper wire, number 12 or 14, suspended at a height of 20 to 40 feet and from 100 to 200 feet long. Where greater signal strength is desired, lengthen or raise the aerial; where greater selectivity is desired, shorten or lower it, or use a wave trap.

In the absence of an outdoor aerial, any one of the interior types may be employed.

Ground

A good ground system is desirable, the best practical method being to connect a ground wire number 12 or 14 gauge, either bare or insulated, to a cold-water pipe. Connection should be made through a ground clamp firmly fastened to pipe and soldered to the ground wire.

While a good aerial and ground system is recommended, it is interesting to know that this receiving unit operates quite well without a ground connection of any kind. It operates without an antenna, provided the ground wire is attached to the antenna binding post. In other words, it will give quite fair results if the ground binding post is left disconnected and either the antenna or ground wire is connected to the antenna binding post.

Interference

While it has a high degree of selectivity, there are some instances where interference is so strong that it is practically impossible to eliminate it. In such cases, the following suggestions may be helpful:

Where code signals are the source of interference it will generally be found that these signals are being transmitted on special government wave lengths (within the authorized broadcast wave band) or else it may be that the signals are being transmitted above certain authorized wave lengths that could not ordinarily interfere with broadcast reception. This is almost certain to be the case if a slight movement of the tuning dial, either to the right or left, will lose or tune out the offending signal.

It is difficult to tune out a strong code signal, on any regularly authorized wave length, that is being transmitted at a distance of only two or three blocks from a receiver. Likewise, it is extremely difficult to tune out a powerful broadcasting station located within one or two miles of a receiver.

In quite a few cases where interference is present to an unusually marked degree, it is possible to eliminate it by using a small wave trap connected between the antenna and the antenna binding post on the receiver. Such a wave trap consists simply of a coil having a variable condenser connected across it. The aerial is connected to one terminal of this combination, and the other terminal is connected to the aerial binding post on the receiver.

One striking fact about the use of a wave trap with the Kennedy Model V is that the wave trap does not in any way affect the regular dial settings or tuning operations.

Special Caution

In a majority of cases where trouble is encountered in the operation of this receiver it is of external origin and can be traced either to the A batteries, B batteries, socket adapters or tubes. These will now be considered separately.

A Batteries

Since faulty A batteries form one of the most frequent sources of failure to operate, the following suggestions are of particular importance:

When dry cells are employed their life ranges from three to six weeks, depending on the number of tubes used and the amount of service to which the batteries are subjected each night. For this reason this type of A battery should be tested frequently. When it is found that best

(Continued on page 12)

HILCO VARIOCOUPLER
Type "E"
Contains primary and secondary winding of the HILCO Lattice Banked type, and is ideal for use in single, two and three circuits; close adjustments in wave lengths of 200 to 600 meters; very selective, sharp tuning and variable thru wide range. Price $7.00.

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Put a HILCO variocoupler or variometer in your set and note the difference! The dominant and exclusive features of HILCO inductance coils are—1st, lattice-bank type of winding, which suspends the wire in air with the successive turns crossing each other at right angles. (*This winding possesses much greater efficiency than honeycomb and duolateral windings, and should not be confused with them*), 2nd, The unique design of mounting the winding, with minimum amount of insulating or energy-absorbing material employed.

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More than 500,000 *in use Standard on the better sets*

ALL-AMERICAN
AMPLIFYING TRANSFORMERS

Largest Selling Transformers in the World

OPERATING AND TROUBLE SHOOTING

(Continued from page 11)

results are obtained only when the rheostat is turned completely to the right, it is necessary to renew the A batteries.

If a storage battery is used, see that it is always kept well charged and properly filled with distilled water. The battery solution should always be kept at a level ¼ inch above the battery plates.

The ideal location for the storage battery and storage-battery charger is in the basement. Both battery and charger should be placed on a shelf supported from the first floor joists at such a height that hydrometer readings can be taken and distilled water added easily.

B Batteries

B batteries are also a frequent source of trouble. This is indicated by severe crackling noises in the headphones, unsatisfactory amplification or the necessity of setting the volume dial abnormally high to produce oscillation (the hissing sound referred to under the paragraph devoted to tuning in distant stations).

Whenever these conditions appear, it is well to make a careful inspection of the B batteries and their connections, including a voltage test, which should be made with an accurate voltmeter across the battery terminals. Connecting the battery terminals with a wire to see if the battery "sparks" is very bad practice and quite injurious to the battery. If the voltmeter shows that the battery is much below the rated voltage, it is probably the cause of the trouble.

Be sure that both A and B battery leads are connected to the proper terminals, + or —, because if the leads of either are reversed, the set will function very poorly or not at all.

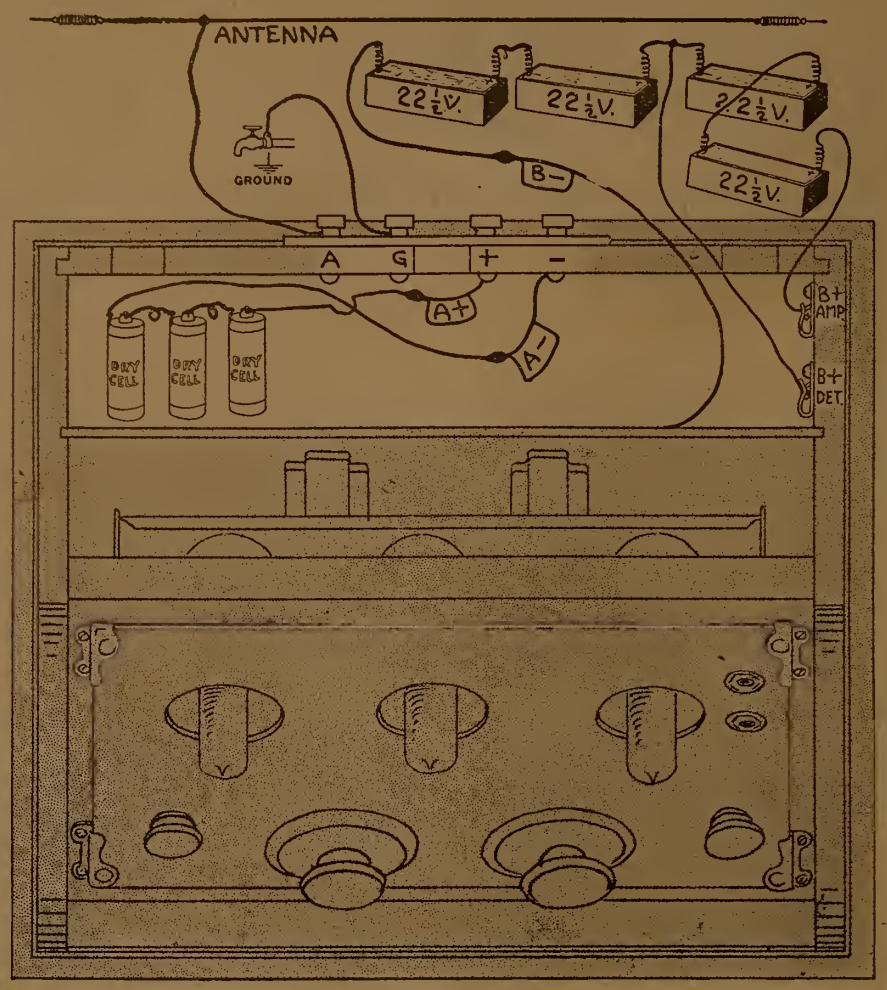
Socket Adapters

When UV-199 or C-299 tubes are used, the socket adapters may not make good contact to the tube prongs. See that the tube prongs are clean, and, if necessary, bend the adapter contact springs upward to make good contact.

Tubes

While all tubes are manufactured under strict supervision and inspection, it will be found that one of the three tubes used with the receivers is usually better as a detector than the remaining two.

For this reason it is always well to try each one of the three tubes, successively, as a detector and to choose for a detector that tube which functions more quietly and gives clearer reception in general.



Dry-battery tubes are designed primarily to avoid the use of a storage battery, which in some cases may be impractical. However, dry-battery tubes do not give quite so great volume.

Tuning

Tuning of the Model V is simple. The few operations required for nearby stations (within 25 miles) are: Plug in headphones on stage 1.

Turn tube control knob 4 clockwise until tubes light up. If you are using UV-199 or C-299 tubes, do not turn any farther than necessary to light tubes. If using WD-12 or C-12, turn knob until arrow points straight up. If using UV-201A or C-301A tubes, turn somewhat past this point. Set volume dial 2 at 30. Turn tuning dial 1 slowly until you hear voice or music. If signals are loud and distorted, turn volume dial 2 down. If clear, but not loud, turn volume dial up.

A small change of tube control knob 4 may now increase the volume or clear up the signal. Burn tubes no brighter than necessary for good reception. Plugging headphones in at stage 2 will, of course, give greater volume than when plugged in at stage 1.

For distant stations (over 25 miles), plug in headphones at stage 1. Set tuning dial 1 at 50. Turn tube control knob 4 to point previously found best for local reception. Turn volume dial 2 up until a hiss is heard in the phones. Leave volume dial at a point a few degrees above where the hissing occurs (usually about 40 to 45), and find the carrier wave whistle of a broadcasting station by turning the tuning dial 1 slowly in either direction. With the fine tuning knob 3, get as nearly as possible in the center of this whistle (where it dies out but will come back when fine tuning knob is turned in either direction). Reduce volume control 2 until signal is clear.

For best results it is desirable to work the volume and fine tuning controls together at this point, by turning one with each hand.

Plugging headphones in at stage 2 will, of course, give greater volume than when plugged in at stage 1, also in this case. Finally, it is often found that advancing volume dial 2 just a trifle will strengthen the signal somewhat—otherwise the volume dial is left alone.

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"B" BATTERIES — 22½ Variable. Reg. $1.75..$1.29; Reg. 2.65.. 1.99; Reg. 3.00.. 2.19. 45 Variable. Reg. $3.50..$2.99; Reg. 4.00.. 3.49; Reg. 5.50.. 5.49. — 2 FOR 1c MORE

PLUGS — Torpedo or Flat, easy adjustment for phone cords. High finish. Perfect contact. Reg. $1.25. 1 FOR 69c. — 2 For 70c

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TUBE PRDTECTORS — Impossible to blow your tubes if you attach these to end of socket for ¼ or 1 amp. tubes. 1 FOR 49c. — 2 For 50c

AERIAL WIRE — 7 Strand. Tinned copper wire gives excellent results on DX work. Reg. $1.00. 100 ft. 99c. — 200 For 1.00

KRDNE PHDNES — 2200 Dhms. Standard Make. Remarkable Clearness and volume. Can be used with horn. Reg. $6.50. 1 FOR $5.89. — 2Prs. For 5.90

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VARIABLE CONDENSERS — Moulded end plates, sturdy construction. Perfect alignment between plates. 11 Plate...$1.79; 23 Plate... 2.09; 43 Plate... 2.69. — 2 FOR 1c MORE

DIALS — DeForest Type. Remarkable value. Knurled knob with heavy brass bushing. ¼ and 3/16 shafts. 2 inch.....39c; 2½ inch.....44c; 3 inch.....54c; 4 inch.....74c. — 2 FOR 1c MORE

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1 7x24 panel
2 Workrite Neutrodons
5 Brunswick Sockets
2 Shacton Rheostats
2 Star Transformers
1 Single Closed Jack
1 Single Filament Jack
2 .006 Westinghouse Fixed
1 .00025 Mica with Grid Leak
3 Shacton Dials
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Look over this list of parts. Compare it with others. Then you will realize what a special price this is. $25.97

VERNIER CONTRDL — For any Dial. Makes a Vernier out of any make condenser. Very officlont. Reg. 75c. 1 FOR 49c — 2 For 50c

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VARIABLE GRID LEAK — Panel Type. Needed for proper results. No solder needed. 1 FDR 79c. — 2 For 80c

MOULDED VARIDMETER — A remarkable buy. Green silk wire, pig tail contacts. Can be split. Heavy windings. Reg. $6.00. 1 FDR $5.49. — 2 For 5.50

RHEOSTATS — Any Resistance. Fada Type with tapered knob and secure wire. 6 ohms.....49c; 30 ohms.....59c. — 2 FOR 1c MORE

VARIOCDUPLERS — 180 Degree Wound on Genuine Bakelite tubing with green silk wire. Reaches 600 meters. Reg. $5.00. 1 FDR $3.89. — 2 For 3.90

SDCKETS — Well made in detail. Extra heavy phosphor bronze contacts. Binding post nuts. Metal top....49c; All Meulded.59c; Wiping Contact ...69c — 2 FOR 1c MORE

Vernier Condenser with Dial — A beautiful moulded end instrument with tapered dial and knob. Precision made. Delicate adjustment. 11 Plate...$4.49; 23 Plate... 4.99; 43 Plate... 5.50 — 2 FOR 1c MORE

LITZ WIRE — Most Efficient. A double silk covered wire with 37 strands of No. 38 wire, each strand enameled. Wonderful for Coils, Loops, etc. 1 FT. FOR 4c. — 2 For 5c

GOLD BUS BAR — Most Efficient. Allows high frequency currents least resistance. Used in finest sets. Reg. 15c. 1 FDR 15c. — 2 For 16c

POTENTIOMETER — Complete with knob and dial. 200 or 400 ohms. The most remarkable buy you ever made. 1 FDR 69c — 2 For 70c

VERNIER RHEOSTATS — The famous TECD complete with bakelite dial. Needed for your detector tube. 1 FOR 89c — 2 For 90c

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OPERATING AND TROUBLE SHOOTING

For the Owner of a GAROD RAF Receiver

THE neutrodyne receiver is essentially different from the more familiar types and the procedure to be used in tuning is also different.

Tubes

This set is adjusted for three 201-A tubes and one type 200. These tubes should be used in the sockets as follows: Two 201-A's in both sockets next to the panel, and one in the rear left socket; the 200 in rear right socket.

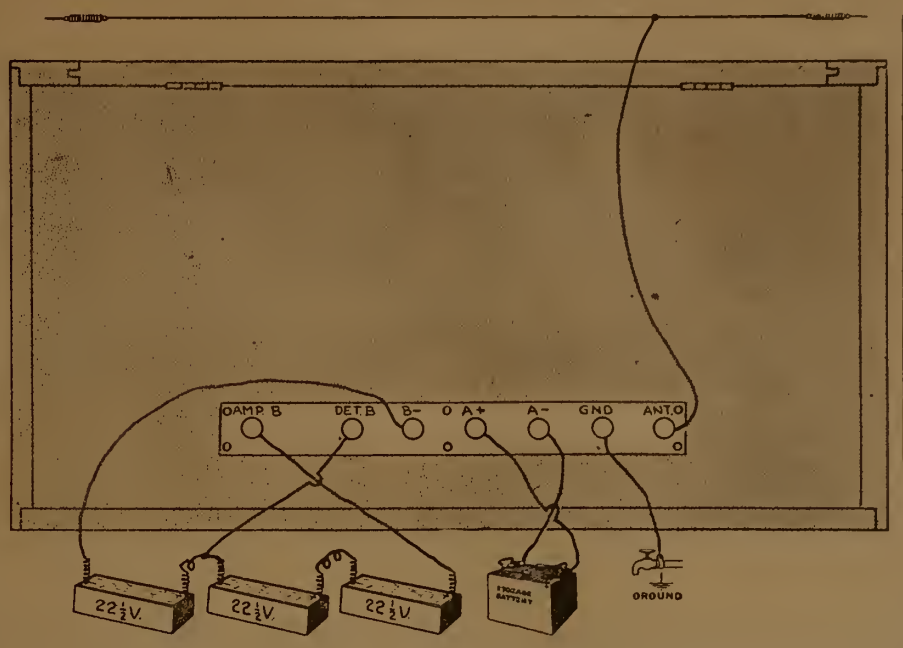
Better Connections

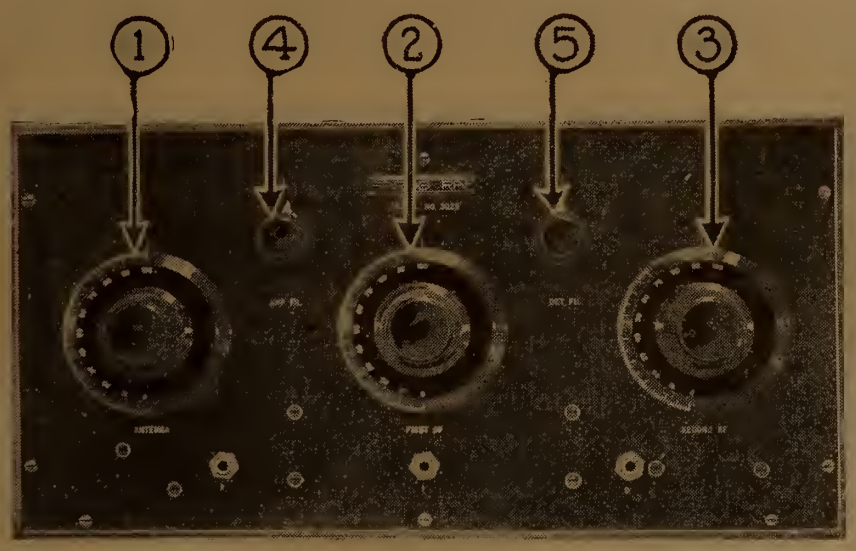
After inserting the tubes, the battery connections should be made as indicated by the markings on the panel. Ground and antenna connections should be made except when close to transmitting station. By plugging the phones in the detector jack the set is ready to tune.

Tuning

As this set does not squeal it is necessary to tune to the signal wave length rather than to the carrier wave. The two right-hand dials 2 and 3 control the wave length to which the set is tuned and these two dials tune together. For example, if it is found that one station tunes in at 45 on the second or middle dial 2, and 49 on the third or right-hand dial 3, it should be noted that there will always be a difference of four points between these two dials. Before endeavoring to tune in a distant station, this difference should be determined on a strong local signal. Dial 1 will be found to follow dials 2 and 3, but its tuning is affected by changes in the antenna.

After determining the difference between dials 2 and 3, it will be found a simple matter to tune in distant stations, by increasing or decreasing the adjustments of these two dials, one point at a time, and swinging antenna dial back and forth over about 10 points known to be near the correct adjustment. As soon as the station is picked up, it is a very simple matter to tune it in.





If a log is kept of the readings it will be found that the same station always comes in at the same setting, unless, of course, the transmitting wave length is changed.

After the tubes have been installed, it is advisable to try different B battery voltages and different adjustments of rheostats 4 and 5 to determine the values best suited to the tubes used.

Renewal of Tubes

If the directions for operating the set are carefully observed, the vacuum tubes will have exceptionally long life. When the filament of a tube does burn out, however, the tube should be replaced by a new one. Use same type when ordering spare tubes or replacements.

Renewal of B Batteries

After B batteries have been in service from 8 to 12 months they become exhausted so that the signals are weak and disagreeable noises are produced. This condition may be remedied by replacing the battery by a new one.

Possible Difficulties

Anything which tends to increase resistance or decrease insulation will cause poor operation. As the batteries grow old, they decrease in voltage and increase in resistance. As the tubes grow very old, the filaments become less effective. Each fault, however, suggests its own remedy.

1. Poor connections in antenna or ground wires or defective insulation of antenna.
2. Rheostats not properly adjusted.
3. Batteries exhausted (indicated by low filament brilliancy, weak signals and distortion).
4. Battery connections improperly made, poor or broken.
5. Tuning controls not in correct adjustment.
6. Poor or broken connections in telephone cord or plug.
7. Inoperative vacuum tubes.
8. Glass tube resistances (grid leaks) fallen out of their mountings.

How to Take Care of the Radio A Battery

See that the connections are clean and tight and scrape off the wire or terminal connections going out of the battery so that they are bright and will form a good contact.

See that there is no acid or water spilled upon the top of the battery which would cause voltage leakage between the cells. Keep the top of the battery dry.

Keep the plates covered with water at all times. The solution should come at least ¼ inch over the top of the plates. Use only distilled water.

Do not permit the battery to stand completely discharged for any length of time It should be recharged when hydrometer reading shows under 1,200. When fully charged hydrometer reading is between 1,280 and 1,300.

In using hydrometer, see that the float does not cling to the side of the glass tube. When taking reading also see that the rubber bulb is fully expanded and not indented, as otherwise suction would permit incorrect reading.

Remember that all new batteries are somewhat like a new automobile. They do not reach their full efficiency until they have been in service for a little while. A new battery will, therefore, not give as long service on a single charge as it will after it has been recharged a few times.

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RADIO IS ALLY OF TALKING RECORDS

FANS TO HEAR PRODUCTS BEFORE RELEASE

Makers of "Canned Music" Suddenly Discard Old Attitude of Rivalry

CAMDEN, N. J.—Talking machine factories and record manufacturers seem to have changed their tactics and are now taking Radio as a profitable ally instead of a feared rival. Such is the conclusion one reaches upon hearing the news that the Victor Talking Machine Company has installed a new broadcasting station here, WABU, which will soon give the invisible audience an opportunity of hearing records in the making.

That is, Radio fans will be permitted to hear original records before they are released. When famous vocalists or musicians are about to perform for the reproduction on master phonograph records in the studio, a microphone will be placed alongside the recording apparatus and as the artist renders his piece for record the fans will hear it over the air.

The Columbia Graphophone Co., in co-operation with the A. T. & T. Co., Station WEAF, is already broadcasting its latest record releases.

The system is likened to "first nights" at operas and theatrical productions, seats at which are always sold at a premium or distributed to the elite and members of the press. By means of Radio broadcasting fans will now be permitted to hear new records before they are put on the market. It is a unique feature, welcomed by all receiver owners who await the advent with pleasant anticipations.

Mme. X Gives Fans a Stiff Guessing Contest

4,700 Telegrams Flood WJAZ to Tell Who She Is

CHICAGO.—Nearly five thousand listeners in joyously tackled a mystery recently when a star from the Chicago Civic Opera company sang from WJAZ, the Zenith-Edgewater Beach hotel station, under the Radio name of "Madame X."

"Who is Madame X? Guess and send us a telegram," the announcer requested after the opera star had sung "Annie Laurie," "The Last Rose of Summer," and, finally, "Caro Nome." The flood of telegrams that followed nearly paralyzed the telegraph companies. A total of 4,700 telegrams had arrived up to the time the broadcasting station lost count. They came from north, south, west and east—as far away as Portland, Ore.

Forty-six percent of the guessers guessed right. The singer was Florence Macbeth.

AN EVENING AT HOME WITH THE LISTENER IN

(SEE INSTRUCTIONS FOR USE BELOW)

Station and City	Met.	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
CFCN, Calgary, Alta.	440	12:00- 1:00	Silent	11:00- 2:00	Silent	Silent	11:00- 1:00	Silent
CKAC, Montreal, Que.	430	Silent	6:00-10:30	Silent	6:00-10:30	Silent	6:00-10:30	3:30- 4:30
CYB, Mexico City, Mex.	425	Silent	8:00- 9:30	Silent	8:30-10:30	Silent	8:00- 9:30	Silent
CYL, Mexico City, Mex.	500	Silent	9:30-11:00	Silent	Silent	9:30-11:00	Silent	Silent
KDKA, E. Pittsburgh, Pa.	326	5:00- 9:00	5:00-11:30	5:00- 9:00	5:00-11:30	5:00- 9:00	5:00- 9:00	6:30- 7:30
KDZE, Seattle, Wash.	455	10:30-12:30	Silent	10:30-12:30	Silent	10:30-12:30	Silent	Silent
KFAE, Pullman, Wash.	330	9:30-11:00	Silent	9:30-11:00	Silent	9:30-11:00	Silent	Silent
KFAF, Denver, Colo.	360	9:00-10:00	9:00-10:00	Silent	8:30- 9:00	9:00-10:00	9:00-10:00	Silent
KFI, Los Angeles, Calif.	469	12:00- 1:00	8:45- 1:00	8:45- 2:00	8:45- 1:00	8:45- 2:00	8:45- 2:00	8:45- 1:00
KGO, Oakland, Calif.	312	Silent	8:00- 9:00	Silent	8:00- 9:00	Silent	8:00- 9:00	Silent
KGU, Honolulu, Hawaii	360	12:00- 1:30	12:00- 1:30	12:00- 1:30	12:00- 1:30	12:00- 1:30	12:00- 1:30	12:00- 1:30
KGW, Portland, Ore.	492	9:30-12:30	9:30- 1:00	9:30- 1:00	9:30- 1:00	9:30- 2:00	9:30- 1:00	8:00-10:00
KHJ, Los Angeles, Calif.	395	8:45- 2:00	8:45- 2:00	8:45- 2:00	8:45- 2:00	8:45- 2:00	8:45- 2:00	10:00-12:00
KLX, Oakland, Calif.	509	Silent	10:00-12:00	10:00-12:00	10:00-12:00	10:00-12:00	Silent	Silent
KPO, San Francisco, Calif.	423	10:00- 1:00	10:00- 1:00	10:00-12:00	10:00- 1:00	Silent	10:00- 2:00	10:30-12:00
KSD, St. Louis, Mo.	546	8:30- 1:00	8:00- 1:00	8:00- 1:00	8:00-10:30	Silent	7:15- 9:00	9:00-10:00
KYW, Chicago, Ill.	536	Silent	8:00- 9:30	8:00-12:30	8:00- 9:30	10:00-12:30	8:00- 9:30	6:30- 8:00
NAA, Radio, Va.	435	5:45- 7:20	6:05- 7:20	6:25- 7:40	5:45- 7:40	7:05- 7:40	Silent	Silent
PWX, Havana, Cuba	400	Silent	Silent	7:30-10:00	Silent	Silent	7:30-10:00	Silent
WBAP, Fort Worth, Texas	476	7:30-10:45	7:30-10:45	7:30-10:45	7:30-10:45	7:30-10:45	7:00- 7:30	5:00- 6:00
WBAV, Columbus, O.	390	8:00-10:00	Silent	Silent	Silent	8:00-10:00	Silent	4:00- 5:00
WBZ, Springfield, Mass.	337	6:00- 9:00	6:30- 9:00	5:00-11:00	6:30- 8:00	5:00-11:00	6:30- 8:00	5:45- 8:30
WCAE, Pittsburgh, Pa.	462	7:30- 8:30	7:30- 8:30	7:30- 8:30	7:30- 8:30	7:30- 8:30	7:30- 8:30	5:30- 6:30
WCAP, Washington, D. C.	469	Silent	6:30- 9:00	Silent	6:30- 9:00	Silent	6:30- 9:00	6:20- 9:00
WCBD, Zion, Ill.	345	8:00-10:00	Silent	Silent	Silent	8:00-10:00	Silent	2:30- 5:30
WCX, Detroit, Mich.	517	7:30- 9:00	7:30-11:00	7:30- 9:00	7:30- 9:00	7:30- 9:00	Silent	6:15- 7:15
WDAF, Kansas City, Mo.	411	8:00- 1:00	11:45- 1:00	8:00- 1:00	11:45- 1:00	8:00- 1:00	11:45- 1:00	Silent
WDAP, Chicago, Ill.	360	Silent	7:00- 1:00	7:00- 1:00	7:00- 1:00	7:00- 1:00	7:00- 1:00	9:15-11:15
WDAR, Philadelphia, Pa.	395	6:30- 9:55	6:30- 7:00	6:30-10:00	6:30- 7:00	6:30-12:00	6:30- 7:00	1:00- 3:00
WEAF, New York, N. Y.	492	6:30- 9:00	6:30- 9:00	6:30- 9:00	6:00-11:00	6:30- 9:00	6:30-11:00	6:20- 9:00
WFAA, Dallas, Tex.	476	8:30- 9:30	8:30-12:00	Silent	8:30- 9:30	8:30- 9:30	8:30-12:00	6:00-11:00
WFI, Philadelphia, Pa.	395	5:30- 6:00	5:30- 8:00	5:30- 6:30	5:30- 8:00	5:30- 6:30	5:30- 8:00	6:30- 7:30
WGI, Medford, Mass.	360	Silent	6:05- 7:30	6:30- 8:00	6:00- 7:30	6:30- 8:00	6:30- 8:00	7:30-10:00
WGR, Buffalo, N. Y.	319	5:30-11:00	5:30- 7:45	5:30-11:00	5:30- 7:45	5:30-11:00	5:30- 7:45	2:00- 4:00
WGY, Schenectady, N. Y.	380	6:45- 9:00	6:45- 9:00	Silent	6:45- 9:00	6:45-10:30	8:30- 9:30	6:30- 7:30
WHA, Madison, Wis.	360	7:30- 8:30	Silent	7:30- 8:30	Silent	7:30- 8:30	Silent	Silent
WHAS, Louisville, Ky.	400	Silent	7:30- 9:00	7:30- 9:00	7:30- 9:00	7:30- 9:00	7:30- 9:00	4:00- 5:00
WHAZ, Troy, N. Y.	380	8:00- 9:30	Silent	Silent	Silent	Silent	Silent	Silent
WHB, Kansas City, Mo.	411	7:00- 7:45	7:00-10:00	7:00- 7:45	7:00-10:00	7:00- 7:45	7:00- 7:45	8:00-10:00
WHK, Cleveland, O.	283	5:00- 5:30	5:00- 5:30	5:00- 5:30	5:00- 5:30	5:00-10:00	5:00- 5:30	7:00- 9:00
WHN, New York, N. Y.	360	6:30-11:00	8:30-11:00	6:30-11:00	8:30-11:00	8:30-11:00	6:30-11:00	8:30-11:00
WIP, Philadelphia, Pa.	509	5:00- 6:30	5:00-11:00	5:00- 6:30	5:00-10:00	5:00- 6:30	5:00-11:00	8:30-11:00
WJAR, Providence, R. I.	360	Silent	6:00- 7:00	6:00-11:00	Silent	6:00- 9:00	Silent	Silent
WJAX, Cleveland, O.	390	Silent	6:30- 8:30	Silent	7:00- 9:30	Silent	Silent	Silent
WJAZ, Chicago, Ill.	448	Silent	10:00- 2:00	10:00- 2:00	10:00- 2:00	10:00- 2:00	10:00- 2:00	6:00- 9:00
WJY, New York, N. Y.	405	Silent	6:30-10:30	Silent	6:30-10:30	6:30-10:30	Silent	5:00- 5:30
WJZ, New York, N. Y.	455	6:00-10:30	6:00-10:30	6:00-10:30	6:00-10:30	6:00-10:30	6:00-10:30	6:00- 9:30
WKAQ, San Juan, P. R.	360	Silent	7:00- 8:30	Silent	Silent	7:00- 8:30	Silent	Silent
WLAG, Minn.-St. Paul.	417	Silent	Silent	9:15-10:45	Silent	9:15-10:45	9:15-12:30	7:45- 9:15
WLW, Cincinnati, O.	309	10:00-12:00	10:00-12:00	8:00-10:00	10:00-12:00	Silent	Silent	Silent
WMAQ, Chicago, Ill.	448	Silent	7:00-10:00	7:00-10:00	7:00-10:00	7:00-10:00	7:00-10:00	Silent
WMC, Memphis, Tenn.	500	8:30- 9:30	8:30-12:00	Silent	8:30- 9:30	8:30-12:00	8:30- 9:30	Silent
WNAC, Boston, Mass.	278	5:00- 9:00	7:00- 9:00	5:00- 9:00	7:00- 9:00	5:00- 9:00	8:00- 9:00	6:30- 8:30
WOAI, San Antonio, Texas	385	Silent	9:30-10:30	Silent	7:30- 8:30	Silent	Silent	9:30-10:30
WOAW, Omaha, Neb.	526	6:00-11:00	6:00-11:00	Silent	6:00-11:00	6:30-11:00	6:00-11:00	9:00-11:00
WOC, Davenport, Ia.	484	8:00- 9:00	Silent	8:00-11:00	8:00- 9:00	8:00- 9:00	9:00-10:00	7:00-11:00
WOO, Philadelphia, Pa.	509	6:30-10:00	Silent	6:30-10:00	Silent	6:30-10:00	Silent	Silent
WOR, Newark, N. J.	405	5:15-10:00	5:15- 6:30	5:15-10:00	5:15- 6:30	5:15- 6:30	5:15-10:00	Silent
WOS, Jefferson City, Mo.	441	8:00- 9:30	Silent	8:00- 9:30	Silent	8:00- 9:30	Silent	7:30- 8:30
WRC, Washington, D. C.	469	7:00- 9:00	Silent	7:00- 9:00	Silent	7:00- 9:00	Silent	Silent
WRM, Urbana, Ill.	360	Silent	7:00- 9:30	Silent	8:30- 9:30	Silent	Silent	Silent
WSAI, Cincinnati, O.	309	Silent	8:00-10:00	Silent	8:00-10:00	Silent	10:00-12:00	Silent
WSB, Atlanta, Ga.	429	8:00-12:00	8:00-12:00	Silent	8:00-12:00	8:00-12:00	8:00-12:00	7:30- 9:15
WSY, Birmingham, Ala.	360	Silent	8:00- 9:00	Silent	Silent	8:00- 9:00	Silent	8:00- 9:00
WTAM, Cleveland, O.	390	Silent	Silent	7:00- 9:30	Silent	Silent	8:00-10:00	Silent
WWJ, Detroit, Mich.	517	7:30- 9:00	7:30- 9:00	7:30- 9:00	7:30-11:00	7:30- 9:00	Silent	4:00- 5:00

Instructions for Use.—All the hours above are given in Central Standard Time. If your city uses Eastern Time, add one hour to each of the periods stated; if your city uses Mountain Time, subtract one hour; if your city uses Pacific Time, subtract two hours. This table includes only the evening broadcasts, and on Sunday, the late afternoon program.

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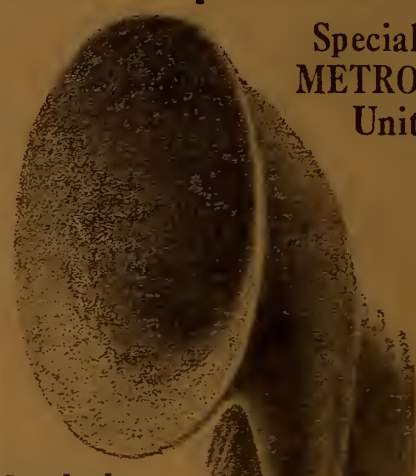

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FEATURES ON THE AIR THIS WEEK

Tuesday, February 5

CKAC, Montreal, Can. (Eastern, 425), 4:45 p. m., Musical teas; 7:00, Kiddies' stories in French and English; 7:30-8:30, Rex Battle and his Mt. Royal Hotel Concert Orchestra; 8:30, All French entertainment of music and vocal selections, Raoul Vonnat, director; 10:30-11:30, Joseph C. Smith and his Mt. Royal Hotel Dance Orchestra.

KDKA, E. Pittsburgh, Pa. (Eastern, 326), 12:10 p. m., Organ recital, Howard R. Webb; 6:15, Dinner concert, Grand Symphony Orchestra; 7:15, "A Little Journey in Cuba," Ward G. Foster; 7:45, Children's period; 8:15, "Frugality," Dr. John R. Ewers; 8:30, Railroad Session of the Midwinter Convention of the American Institute of Electrical Engineers: "Transportation and the Rural Situation," Ralph Rudd; "Credit Question in Transportation," F. H. Sisson; "The Place of Transportation in Civilization," E. G. Buckland; "Measures for Improving Transportation," A. J. County; 11:30, Special late evening concert.

KFI, Los Angeles, Calif. (Pacific, 469), 6:45-7:30 p. m., Vocal and instrumental concert; Bedtime etory; 10:00-11:00, Concert of vocal and instrumental numbers.

KFKX, Hastings, Neb. (Central, 341), Rebroadcasts program of KDKA.

KGW, Portland, Ore. (Pacific, 492), 3:30 p. m., Talk, Jeannette P. Cramer; 7:45, Talk for farmers, Oregon Agricultural College extension service.

KHJ, Los Angeles, Calif. (Pacific, 395), 12:30-1:15 p. m., Concert; 2:30-3:30, Matinee Musicale; 6:45-7:30, Children's program, Weekly visit of the "Sandman," and Queen "Titania"; Boofie Sabin, pianist, 8 years old, pupil of Edna Wright; Bedtime story by "Uncle John"; 8:00-10:00, Program, Wiley B. Allen Company; C. L. Stout, lecturer; 10:00-12:00, Art Hickman's Orchestra.

KPO, San Francisco, Calif. (Pacific, 423), 8:00-10:00 p. m., Grace Campagno, composer and pianist; 10:00-11:00, E. Max Bradfield's versatile band.

KSD, St. Louis, Mo. (Central, 546), 8:00 p. m., Special All Night program for Greatest Distance Test; Mrs. Kossuth Weber, soprano; Mrs. Paul Cayse, pianist; Ben M. Goodsell, violinist; Virginia Williams, pianist; Saturday Choral Club; Marion Niedringhouse, baritone; Mrs. Alden Kimball, pianist; Seth Abergh, pianist; Arne Arneson, violinist; Metropolitan Police Band, Henry J. Falkenhainer, director; Mack Linn, baritone; Anna Linn, accompanist; Fred Sonnen, harmonica soloist; Bell Telephone Orcheetra; Mrs. Frank Howard, mezzo-soprano; Mrs. J. H. Eggert, violinist; Mrs. Nellie MacKenzie, pianist; J. H. Eggert, cellist; J. C. Sartelle, whistler.

KYW, Chicago, Ill. (Central, 536), 11:35 a. m., Table talk, Mrs. Anna J. Peterson; 2:35 p. m., Studio program; 6:50, Children's bedtime story; 7:00-7:30, Dinner music, Clyde Doerr's Orchestra; Joska DeBabary's Orchestra; 8:01-8:25, American Farm Bureau Federation: "Agriculture Under Organization," G. E. Metzger; George Livingston, Director of Research, National Wheat Council; 8:30-9:30, Bush Conservatory of Music, Edith Kendall, violinist; Robert Sanders, pianist; Florence Newman, soprano; Bernard Schweitzer, tenor.

WBAP, Fort Worth, Texas (Central, 476), 7:30-8:30 p. m., Concert, Jack Clifford; 9:30-10:45, Concert, Dot Echols McCutchan and her orchestra.

WBZ, Springfield, Mass. (Eastern, 337), 7:00 p. m., "Massachusetts' Food Supply," Pres. Kenyon L. Butterfield; 7:30, Kiddies' Stories; "The Art of Investment," Donald McClench; 8:00, Piano recital, Edward Ballatine.

WCAP, Washington, D. C. (Eastern, 469), 7:30-10:00 p. m., Joint program with WEAF, concert of music and ehort talks.

WDAF, Kansas City, Mo. (Central, 411), 3:30-4:30 p. m., Musical Mathinee: Henry Mos'e Elite Society Orchestra; 6:00-7:00, School of the Air: Piano tuning-in number on the Duo-Art; Address, travelogue, E. O. Moffat; J. Frank Smith; "Fire Prevention," Frank Furgason; Children'e story and information period; Fritz Hanlein's Trianon Eneemble; 11:45-1:00 a. m., Nighthawk Frolic, The "Merry Old Chief," and the Coon-Sanders Novelty-Singing Orchestra.

WDAP, Chicago, Ill. (Central, 360), 10:00 p. m., Saxophone Band from Gibson School; Jack Chapman'e Orchestra.

WDAR, Philadelphia (Eastern, 395), 11:45 a. m., Daily Almanac; 12:02 p. m., Organ recital, Stanley Theater; dinner music, Arcadia Cafe Orchestra; 2:00, Arcadia Cafe Orchestra; piano solos, Edna Finestone; 7:30, Dream Daddy's hedtime etories; 7:50, Dramatic reviewe, Arnold Abbott.

WEAF, New York, N. Y. (Eastern, 492), 11:00 a. m., Adele Woodward on Motion Pictures; 11:10, Y. W. C. A. Talk; 11:20, Minnie Weil, planist; 11:40, Mrs. Eva Adams, Board of Educ.; 11:50, U. S. Dept. Agriculture; 4:00 p. m., Leroy Smith Dance Orchestra; 5:00, Hallie M. Hays, dram. sop.; 7:15, Columbia Phonograph Co.; 7:30, Thornton Fisher; 7:40, Mrs. Charlotte Lund and Val Peavey talk on Opera; 8:05, American Surety Co.; 8:15, Meeting of Amer. Institute Elec. Engineers—"National Aspects of Transportation"; 9:45, Joseph M. White, tenor; 10:00, Crescent Trio and Oscar Stalerg, comedian.

WFAA, Dallas, Texas (Central, 476), 12:30-1:00 p. m., Address, DeWitt McMurray; 8:30-9:30, Mozart Choral Club, Earle D. Behrends, director; 11:00-12:00, Edwin Lisman, bass.

WFI, Philadelphia (Eastern, 395), 1:00 p. m., Meyer Davis Bellevue Stratford Orchestra; 6:00, Bedtime stories; 6:30, Meyer Davis Bellevue Stratford Orchestra.

WGI, Medford Hillside, Mass. (Eastern, 360), 3:00 p. m., Amrad Women's Club program: Descriptive musicale, Chickering & Son's Company; 3:15, "Tuesday Tea Talk," David McGregor Cheney; 6:30, Meeting of the Big Brother Amrad Club; 7:00, Evening program: "Africa from Cape Town to the Congo," A. S. Flint; musicale.

WGR, Buffalo, N. Y. (Eastern, 319); 12:30-1:00 p. m., George Albert Bouchard, organist; 4:00, Tea time music, Martha Gomph, harpist; Katherine Stang, violinist; 6:30-7:30, Vincent Lopez Hotel Statler orchestra; 7:30, Digest of the day's news.

WGY, Schenectady, N. Y. (Eastern, 380); 2:00 p. m., "The Charm of Correct Speech," Mrs. Ella De Forrest; 6:30, Dinner music, Trio of Ten Eyck Hotel; 7:15-7:45, Arthur Murray, Dancing Lessons; 7:45-8:15, "Purpose of the National and State Forestry Association," Henry M. Sage; "Conservation by Legislation," Senator Ellenwood M. Rabenold; 8:15, Discussion of national aspect of transportation by leading railroad executives at the evening session of the American Institute of Electrical Engineers, midwinter convention, Philadelphia, Pa., Ralph Budd, president, Great Northern; C. H. Markham, president, Illinois Centrel; E. G. Buckland, vice-president, N. Y., N. H. & H.; Samuel Vauclain, president, Baldwin Locomotive Works.

WHA, Madison, Wis. (Central, 360), 8:00 p. m., Wisconsin Farm Bureau program, Address, Joeffery Morgan of Kentucky Farm Bureau and others.

WHAS, Louisville, Ky. (Central, 400), 4:00-5:00 p. m., Selections, Walnut Theater Orchestra; Strand Theater Orchestra; 7:30-9:00, Out of Town Student Night, Violet M. Code, director; Reading: An Interesting Historical Episode.

WHB, Kansas City, Mo. (Central, 411), 12:35-1:00 p. m., Popular music, Sweeney Radio Orchestra; 2:00-3:00, Ladies' Hour Program of Classical and Popular Musical selections, Sweeney Radio Orchestra; 7:00-7:30, "Better Homes and Buildings"; Mae Kahler's Quintet; "Relation of W. C. T. U. to Church and Other Organizations," Mrs. Fannie L. Taylor; 8:00-10:00, Sweeney Radio Orchestra; Madeline Farley, soprano; Kathryn Farley, accompanist; Leroy Hall, tenor; Mrs. James Cunningham, pianist; Horace Taylor, soloist; Marie Smith Cronin, contralto; Vocal duet, Kathryn Halpin and Nell Halpin; Helen Kathryn Squire, violinist.

WHN, New York, N. Y. (Eastern, 360), 3:45-4:45 p. m., Bob Schaefer and His Original Georgia Five; 9:30-10:00, Clifforest Society Orchestra; 10:15-10:30, Hon. Milton W. Sutton of Natl. Security League; 10:30-11:00, Shapiro Bernstein Music Co.

WIP, Philadelphia (Eastern, 509), 6:05 p. m., Dinner music, Dick Regan and his WIP Symphony Orchestra; 7:00, Uncle Wip's bedtime stories; 8:00, Concert, Bell Telephone Company.

WJAX, Cleveland, Ohio (Eastern, 390), 7:30, Bedtime story by E. C. Johnson; 7:45, Concert program arranged by the Cleveland News-Leader: Medley of popular melodies by Warmack's Singing Syncopaters; Piano solo, Bert Wilson; Chorus songs, the Mozart Club; Katherine S. Mitchell, soprano; Piano solos, Mabel Clark; Real jazz by Warmack's Singing Syncopaters.

WJAZ, Chicago, Ill. (Central, 447.7), 10:00 p. m. to 2:00 a. m., Madame Gerdes Testa, pianist, James Fiske, tenor; Sandy Mock, tenor; Oriolo Orchestra.

WJY, New York, N. Y. (Eastern, 405), 7:50 p. m., Fannie Voidore, soprano; C. Allen, accompanist 7:45, Etiquette talk, Doubleday Page Company, 7:50, Fannie Voidore, 8:15, At Home with J. Andrew White and his guest; 8:30, Clarence William' popular program, Blue Fine Orchestra, Dinner of the American Society of Mechanical Engineers, Speeches by Judge Gary, Gen. Guy E. Tripp, Dwight F Davis

WJZ, New York, N. Y. (Eastern, 455), 3:00 p. m., Afternoon Auditorium Concert, Wanamaker Auditorium; 4:00, Harper's Bazaar Fashions; 4:15, "French Lectures," Dr. Earle B. Babcock, 4:30, Viola Albrecht, soprano; 5:00, Carlyle Straub, poems; 7:30, Supper music, Paul Specht and his Alcazar Hotel Orchestra; 8:15, "Business Conditions," Dr. Warren F. Rickernell, a University of the Air tal; 8:30, Gotham National Bank Quartet; 8:45, "Postage Stamp Collecting," E. B. Power, 9:15, "Broadcasting Broadway," Bertha Brainard; 9:30, E. G. Woodroff, planist; 10:15, "Movie Review," Robert Sherwood, 10:30, Dance program, Hotel Astor Orchestra.

WLAG, Minneapolis-St. Paul, Minn. (Central, 417), 10:45-11:15 a. m., Household Hints, 11:30-12 m., Surprise program broadcast from the Twin City Automobile Show, 2:00-2:30 p. m., Woman's Club, talk for the League of Woman Voters, 2:40-4:00, Daylight concert; 4:00-4:30, WLAG Players, 5:30-6:00, Children's stories, Eula Colin and Jean Strachan of Macalester College, 6:00-6:15, Smoker, 6:15-7:00, George Osborn's Minneapolis Athletic Club Orchestra; 7:30-8:15, Farm Lectures, special program from the Twin City Automobile Show.

WLW, Cincinnati, Ohio (Central, 309), 4:00 p. m., Topics for Women; 10:00, Mrs. Max R. Miller, violinist; Mrs. Clarence Browning, accompanist; Harold Woodward, tenor; Allie Winans, accompanist; "Automobile Ethics and Traffic Regulations," Judge W. Meridith Yeatman; 10:45, George Webb and his Hawaiian Entertainers; 11:00, Dance program, The Merry Makers Dance Orchestra.

WMAQ, Chicago, Ill. (Central, 447.5), 2:35 p. m., Concert, Lyon & Healy; 4:20, Items of interest to women; 4:30, Pupils, Glenn Dillard Gunn School of Music; 5:00, Weekly child life talk for children; 7:00, Program, LaSalle Extension University; 9:15, Lyon & Healy program.

WMC, Memphis, Tenn. (Central, 500), 8:30 p. m., Program, Osceola, Ark., Hugh Sandidge, director; 11:00, Special Jazz Organ recital.

WOC, Davenport, Iowa (Central, 484), 12:00 m., Chimes; 3:30 p. m., Lecture, A. C. Hinrichs; 5:45, Chimes.

WOO, Philadelphia (Eastern, 509), 11:00 a. m., Organ recital, Mary E. Vogt; 12.00 m., Wanamaker's Crystal Tea Room Orchestra; 4:45 p. m., Orgen recital, Mary E. Vogt.

WOR, Newark, N. J. (Eastern, 405), 2:30-2:45 p. m., B. E. Wallace, soprano; 2:45-3:00, Estelle Furctenberg, violinist; 3:30-3:45, B. R. Wallace, soprano; 3:45-4:00, Estelle Furctenberg, violinist; 6:15-6:30, "Music While You Dine"—Halsey Miller and his orchestra; 6:30-7:00, Man in the Moon Stories for Children; 7:00-7:30, "Music While You Dine"—Halsey Miller and his orchestra.

WOS, Jefferson City, Mo. (Central, 440.9), 8:00 p. m., Agricultural address, Faculty member; 8:20, S. C. Stancil's Novelty Six Dance Orchestra.

WWJ, Detroit, Mich. (Eastern, 517), 9:45 a. m., "Ironing Day," Fred Shaw, pianist; 3:00 p. m., Detroit News Orchestra; 7:00, Detroit News Orchestra; Thaddeus Wronski, vocalist.

Headliners of the Week

YOU ALL will be interested in the outcome of KSD's Greatest Distance Test *Tuesday*, when they will give a special All Night Program. Perhaps some day a station will be astonished at hearing its own concert return after a trip around the world.

There is a question to bring up *Wednesday*, and that is "Who Is the Red-Head Girl who sings from WFAA and is her hair or temper red?" Let's try to answer the question next week. *Wednesday* afternoon, Montgomery McGovern of the Royal Geographic and Asiatic Society will speak from WHN, and at night Helen Fitzgerald, who has more or less covered our little globe, will tell over WJZ's microphone about her experiences in the forbidden parts of China and her capture by bandits.

Lovers of classic favorites will enjoy the program to be given *Thursday* at WLW by the Delta Omicron Sorority of the Cincinnati Conservatory of Music.

Three guesses as to what station will be the most popular *Friday* night after seeing the picture below. And, for variety the concertina will make their debut together at WOC.

Those interested in the drama should reserve their seats early for the Radario "Icebound" given by the WGY Players *Friday* evening. This play won the Pulitzer prize of 1923 and was written by Owen Davis. WGY also wishes to announce in the near future "Spring Cleaning," "Such a Little Queen," and "Tea for Three." All are popular and well-known plays which have appeared and are appearing on Broadway. WGY has done much to uplift Radio drama.

Saturday KSD will give a program in which anyone over fourteen years of age will be too decrepit to appear.

Lincoln's birthday comes during this month. One station at least has not forgotten it. KFAE will give a Lincoln program *Monday*. —THE PROGRAM LADY.

Above is Kathleen Duffy, soprano, and at the right, below, Beulah Rockwell, violinist, two of the very popular artists of KGW's Hoot Owl program.

All these pretty ladies are Hoot Owls. (Isn't it a shame to call such lovely birdies such a name?) They perform regularly at KGW. If you haven't, don't fail to tune in on Friday, February 8.

Helen Lewis, vaudeville singer, in the center, and Ruth Meade, pianist, above, are the other two members of the Hoot Owls. Their ensembles are knockouts, according to KGW listeners in.

Wednesday, February 6

CKAC, Montreal, Can. (Eastern, 425), 1:45-2:15 p. m., Rex Battle and his Mt. Royal Hotel Concert Orchestra; 4:30, Jos. C. Smith and his Mt. Royal Hotel Dance Orchestra.

KDKA, E. Pittsburgh, Pa. (Eastern, 326), 12.10 p. m., Concert, Daugherty's Orchestra; 6:30, Dinner concert, Pittsburgh Athletic Association Orchestra; 7:45, Children's period; 8:15, "Quaint Old Cities of France," Grayco D. Latus; 8:30, Irwin Male Quartet, E. M. Rainey, first tenor; W. A. Matthews, second tenor; C. E. Smith, first bass; R. Bouldin, second bass; Martha E. Rainey, reeder; Effie Davis, pianist.

KFAE, Pullman, Wash. (Pacific, 330), 7:30-8:30 p. m., "The Cost of Style," Edna Irene Avery; "Hot-Beds and Their Possibilities," Prof. C. L. Vincent; Music.

KFI, Los Angeles, Calif. (Pacific, 469), 6:45-7:30 p. m., Concert; Detective stories by Detective Nick Harris; 10:00-11:00, Concert by the Hollywoodland Community Orchestra.

KFKX, Hastings, Neb. (Central, 341), Rebroadcast program of KDKA.

KGW, Portland, Ore. (Pacific, 492), 3:30 p. m., Children's program, piano music, pupils of Ethel Hicks, 8:00, Orchestra; 9:00, Alexander Hamilton Business talk, Jane Albert; 10:00, Dance music, George Olsen's Metropolitan Orchestra; W. H. Holmsted, baritone.

KHJ, Los Angeles, Calif. (Pacific, 395), 12:30-1:15 p.

(Continued on page 16)

WGY DRAMA, KSD JUVENILE AND

Where to Hear Concerts

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.

Tuesday: CKAC, KDKA, KFI, KHJ, KPO, KSD, KYW, WBAP, WBZ, WCAP, WDAF, WDAP, WEAF, WFAA, WGI, WGY, WHB, WHN, WJAX, WJAZ, WJY, WJZ, WLAG, WLW, WMAQ, WMC, WOAW, WOR, WWJ.

Wednesday: KDKA, KFAE, KFI, KGW, KHJ, KPO, KSD, KYW, WBAP, WBZ, WDAF, WDAP, WEAF, WFAA, WGI, WHAS, WHN, WJAZ, WJZ, WLAG, WLW, WMAQ, WOC, WOR, WTAM, WWJ.

Thursday: KDKA, KFI, KHJ, KPO, KSD, KYW, WBAP, WBZ, WDAF, WDAP, WEAF, WFAA, WHAS, WHB, WHN, WJAX, WJAZ, WJY, WJZ, WLAG, WLW, WMAQ, WMC, WOAW, WOC, WWJ.

Friday: CKAC, KDKA, KFAE, KFI, KHJ, KGW, KYW, WBAP, WBZ, WDAF, WDAP, WEAF, WFAA, WGI, WGY, WHAS, WHB, WHN, WJAZ, WJY, WJZ, WLAG, WMAQ, WOC, WOR, WOS, WWJ.

Saturday: KDKA, KFI, KHJ, KPO, KSD, KYW, WBZ, WCAP, WDAF, WDAP, WEAF, WFAA, WGI, WHAS, WHB, WHK, WHN, WJAZ, WJZ, WLAG, WMC, WOC, WOR, WTAM.

Sunday: KPO, KYW, WBAP, WDAP, WEAF, WFAA, WGI, WHAS, WHK, WHN, WJAZ, WJZ, WLAG, WOC, WWJ.

Monday: KFAE, KPO, WBAP, WDAF, WEAF, WHAZ, WHN, WLAG, WLW, WM, WOC, WOR, WOS.

—THE PROGRAM LADY.

Herbert Mintz, above, composer and pianist of Station KYW's staff of able artists, has proved such a favorite with lady fans that we find ourselves compelled to publish his picture again. Tune in on Saturday, February 9, if you haven't heard him.

Wednesday, February 6

(Continued from page 15)

m., Program presented by Hollywood Harmony Hounds; 2:30-3:30, Matinee Musicale presented by Hollywood Harmony Hounds; 6:45-7:30, Children's program, Elma Smith, violinist, 9 years of age; Nathaniel Cohen, pianist, 12 years of age; Sol Cohen, violinist; 8:00-10:00, Santa Monica Municipal Band; Dr. B. J. Palmer of Radio "WOC," Davenport, Iowa; Lauraine Smith, soprano; Dr. Mars K. Baumgardt, lecturer; 10:00-12:00, Art Hickman's Orchestra.

KPD, San Francisco, Calif. (Pacific, 423), 8:00-9:00 p. m., Hazel Huff, dramatic soprano; "Sanger Night," P. J. Pierce; 9:00-10:00, Palace Hotel Dance Orchestra.

KSD, St. Louis, Mo. (Central, 546), 8:00 p. m., St. Louis Massenchor and St. Louis Symphony Orchestra; Siegfried Wagner, of Beyreuth, Germany, "Guest" conductor.

KYW, Chicago, Ill. (Central, 536), 11:35 a. m., Table talk, Mrs. Anna J. Peterson; 6:50 p. m., Children's bedtime story; 7:00-7:30, Dinner concert, Clyde Doerr's Orchestra; Joska DeBabary's Orchestra; 8:00-8:58, Sherwood Music School; 9:05, Reviews of the Latest Books, Llewellyn Jones; 10:00-2:00 a. m., Midnight revue.

WBAP, Fort Worth, Texas (Central, 476), 7:30-8:30 p. m., Concert, Mrs. Pearl C. Davis, soprano, and assisting pupils; 9:30-10:45, Concert, George Freeman's Sooner Serenaders.

WBZ, Springfield, Mass. (Eastern, 337), 6:00 p. m., Dinner concert; 7:30, Bedtime story for the Kiddies; Humorous program; Story for Grown-ups, Orison S. Marden; 11:00, Program of Chamber Music, WBZ Quintette; Alwin E. W. Bach, Baritone; Eleanor T. LaZazzera, accompanist.

WDAF, Kansas City, Mo. (Central, 411), 3:30-4:30 p. m., Johnnie Campbell's Kansas City Club Orchestra; 6:00-7:00, School of the Air; piano tuning-in number on the Duo-Art; Weekly Health Talk; Speaker from Swift & Co.; Children's story and information period; Fritz Hanlein's Trianon Ensemble; 8:00-9:15, Classical concert, Program, John Day dinner, Chamber of Commerce; 11:45-1:00 a. m., Nighthawk Frolic, The "Merry Old Chief" and the Coon-Sanders Novelty-Singiug Orchestra.

WDAP, Chicago, Ill. (Central, 360), 10:00 p. m., Ruby Vary Donaldson School; Jack Chapmau's Orcheatra.

WDAR, Philadelphia (Eastern, 395), 11:45 a. m., Daily Almanac; 12:02 p. m., Organ recital, Stanley Theater; dinner music, Arcadia Cafe Concert Orchestra; 2:00, Arcadia Cafe Orchestra; 5:15, Danco music, Pat-Kane, Ed Mack Orchestra; 7:30, Dream Daddy's bedtime stories; 7:45, Features from Stanley Theater; 8:30, Symphony from Stanley Theater Orchestra, Joseph Pasternack, director.

WEAF, New York, N. Y. (Eastern, 492), 11:00 a. m., Columbia Univ.; 11:10, Garden Magazine; 11:20, N. Y. Tuberculosis Society; 11:50, U. S. Dept. of Agriculture; 12:00, Chapel Serv., Columbia Univ.; 4:00 p. m., Jessie Hoaglund Mitchell, pianist; 4:30, Richard Powers, baritone; 4:50, Bernard Frank, harmonica; 5:05, John Martin and Helen Waldo, stories and songs; 7:00, United Synagogue of America; 7:30, Thornton Fisher; 7:40, Emma Gilbert, contralto; 8:10, American Agriculturist; 8:20, Amer. Boud & Mortgage Co.; 8:30, Philharmonic Concert from Carnegie Hall.

WFAA, Dallas, Texas (Central, 476), 12:30-1:00 p. m., Musical program, Red Head Girl.

WFI, Philadelphia (Eastern, 395), 1:00 p. m., Meyer Davis Bellevue Stratford Orchestra; 6:00, Bedtime stories; 6:30, Meyer Davis Bellevue Stratford Orchestra.

WGI, Medford Hillside, Mass. (Eastern, 360), 6:30 p. m., Meeting of the Big Brother Amrad Club; 6:50, Message to Camp Fire Girls, Charles W. Casson, "Big Smoke"; 7:20, "Science Up to Date," Scientific American; 7:30, Evening program: Program, Concert Company, F. Chester MaDan, director.

WGR, Buffalo, N. Y. (Eastern, 319), 12:30-1:00 p. m., George Albert Bouchard, organist; 4:00, Tea time music, Martha Gomph, harpist; Katherine Stang, violinist; 6:30 and 11:30, Vincent Lopez Hotel Statler Orchestra; 7:30, Digest of the day's news; 9:00, Concert, mixed program, H. C. Messersmith & Sons, Niagara Falls, N. Y.

WGY, Schenectady, N. Y. (Eastern, 380), 6:30 p. m., "Adventure Story," Youth's Companion.

WHA, Madison, Wis. (Central, 360), 8:00 p. m., Address on Alaska, Dean H. L. Russell, College of Agriculture.

WHAS, Louisville, Ky. (Central, 400), 4:00-5:00 p. m., Selections, Strand Theater Orchestra; Selections, Walnut Theater Orchestra; 7:30-9:00, Concert, auspices Annette Wearen Music Studio; Reading: An Interesting Historical Episode.

WHB, Kansas City, Mo. (Central, 411), 12:35-1:00 p. m., Sweeney Radio Orchestra; 2:00-3:00, Ladies' Hour program, Sweeney Radio Orchestra; James Sell, trombonist.

WHN, New York, N. Y. (Eastern, 360), 7:30-8:00 p. m., Jack Fox's Clover Gardens Orchestra; 8:30-8:45, Agnes Macpeake, soprano; 8:45-9:15, Dan Gregory and His Dancing Carnival Orchestra; 9:30-9:45, Dorothy Bromberg in songs; 9:45-10:15, Mansfield Society Orchestra; 11:00-11:30, M. Witmark Black and White Program; 11:45-12:00, Ethel Finie Lillian Goodner and Porter Grainger in popular songs.

WIP, Philadelphia (Eastern, 509), 6:05 p. m., Dinner music, Jordan-Lewis Dance Orchestra; 7:00, Uncle Wip's bedtime stories.

WJAZ, Chicago, Ill. (Central, 447.7), 10:00 p. m. to 2:00 a. m., Louis Vernia, pianist; M. J. Wigger, zither player; Joseph Olivado, violinist; Oriole Orchestra; 12:00 midnight, Weekly Boudoin program.

WJZ, New York, N. Y. (Eastern, 455), 3:00 p. m., French Lectures, Dr. Earl B. Babcock; 3:15, Harry Rocca, baritone; Anthony Gale, accompanist; Louis Levine, violinist; 3:30, Guy Hunter, blind entertainer; 3:45, Renato Caldora, baritone; 4:30, Tea concert, Hotel Commodore, Levitow, director; 7:00, "It Is a Crocodile," a Shadowland Story, Florence Smith Vincent; 7:30, Dance program, Irving Selzer and his Cafe Boulevard Orchestra; 7:45, "The Progress of the World," a Review of Reviews talk; 8:00, Dance program, Irving Selzer and his Cafe Boulevard Orchestra; 8:30, City Officials Series talk; 9:00, "China Today," Helen Fitzgerald, famous world traveler; 9:30, Jamaica Musical Society Choral Club Concert.

WLAG, Minneapolis-St. Paul, Minn. (Central, 417), 10:45-11:15 a. m., Household Hints; 11:35-12 m., Surprise program broadcast from the Twin City Automobile Show; 2:00-2:30 p. m., Woman's Club; "Twentieth Century Housekeeping," Bernice Bell; 2:40-4:00, Daylight concert; 4:00-4:30, Story reading, Mildred Simons; 5:30-6:00, Children's stories, Mrs. Robert Cargill; 6:00-6:30, "Mah Jongg" (Lesson II), Selma Janes; 7:30-8:15, Farm Lecture program broadcast specially from the Twin City Automobile Show; 9:15-9:30, Business message, "Conservation of Waste," George Nettleton; 9:30-10:45, Concert, Barrett's Band.

WLW, Cincinnati, Ohio (Central, 309), 4:00 p. m., Wurlitzer Concert Company, Mrs. William Dunning, William Afsprung; 8:00, First Presbyterian Orchestra, George R. Myers, director; Violin duet, Georgia Smysor, Loraino Fedkamp; Mrs. James Thompson, flutist; Emma Thompson, pianist; Arthur Graefenhan, saxophonist; Florence M. Jaynes, violinist; Coletta Holmig, vocalist.

WMAQ, Chicago, Ill. (Central, 447.5), 1:00 p. m., Speeches broadcast from Chicago Assn'n. of Commerce; 4:20, Items of Interest to Women; 4:30, Pupils of Cosmopolitan School of Music; Second Radio lesson in French, M. Howser; 7:00, Georgene Faulkner, Story Lady; 7:30, Weekly lecture from Northwestern University; 8:30, WMAQ Orchestra; 9:00, Talks, Chicago Charities; 9:15, Mrs. Jewel Martin Lovejoy, soprano; Arthur Schlaup, baritone; Mrs. Maurice Bach, pianist.

WOC, Davenport, Iowa (Central, 484), 12:00 m., Chimes; 3:30 p. m., "The Fluid Circulation of the Body," R. G. Maybach; 7:00, "Ornamental Planting on the Farm," Charles Lau; 8:00, Musical program, Erwin Swindell, director; Program, Zal Grotto Band, E. O. Baumgartnor, director.

WDO, Philadelphia (Eastern, 509), 11:00 a. m., Organ recital, Mary E. Vogt; 12:00 m., Wanamaker Crystal Tea Room Orchestra; 4:45 p. m., Organ recital, Mary E. Vogt; 7:45, Adelphia Hotel Orchestra; 8:30, Erno Rapeo and his orchestra from Fox Theater; 10:10, Dance music, Hotel Adelphia Orchestra.

WOR, Newark, N. J. (Eastern, 405), 2:30-2:45 p. m., Helen Felch Gregory, soprano; 2:45-3:00, Manhattan Serenaders; 3:15-3:30, Helen Felch Gregory; 3:30-3:45, Manhattan Serenaders; 3:45-4:15, Wm. Montgomery McGovern, Ph. D. (Oxon), Member of Royal Geographical and Asiatic Societies, speaking on "My Experiences in Lhara, Courtesy Newark Teachers Assn.; 6:15-6:30, "Music While You Dine," by George Koty, banjoist, and Phil Abrams of New York; 6:30-6:45, Mr. Soun; 6:45-7:00, "Music While You Dine"; 8:00-8:15, Frank Munn, tenor; 8:15-8:30, Bessie Silberfeld Pitzele, pianist; 8:30-8:45, Mrs. Ella Good; 9:15-9:30, Bessie Silberfeld Pitzele; 9:30-9:45, Frank Munn, tenor; 10:00-11:00, Dance music by the Jersey Collegians under direction of Julie Wintz.

WTAM, Cleveland, Ohio (Eastern, 390), 8:00 p. m., Orchestral numbers by the WTAM Orchestra; Vocal numbers, Evelyn Stedrist; Viola C. Heyward, accompanist; Violin solos, Ben Silverberg; Instrumental trio, Max Schmitt, cellist, Ben Silverberg, violinist, Miss Clara Sharp, pianist; Vocal solos, selected, Leonard Siegel, baritone; Gustave Johnson, tenor; Ernest J. Crebbins, baritone; Trumpet solos, A. R. Hruby; Vocal numbers, Anna Simmermather, contralto; Berenice Payne, soprano.

WWJ, Detroit, Mich. (Eastern, 517), 9:30 a. m., "Tonight's Dinner," Woman's Editor; 12:00 m., Jean Goldkette's Orchestra; 7:00, Detroit News Orchestra.

Thursday, February 7

KDKA, E. Pittsburgh, Pa. (Eastern, 326), 12:10 p. m., Organ recital, Howard R. Webb; 6:15, Dinner concert, Fort Pitt Hotel Orchestra; 7:30, Weekly Chat with the Farmers, Frank E. Mullen; 7:45, Children's period; 8:30, Concert, KDKA Little Symphony Orchestra; Gertrude Sykes King, soprano; Harve Lauderbaugh, bass; 11:30, Special Late Concert.

KFI, Los Angeles, Calif. (Pacific, 469), 6:45-7:30 p. m., Concert by Y. M. C. A., and bedtime story; 10:00-11:00, Concert, California School of Artistic Whistling, Agnes Woodward, director.

KFKX, Hastings, Neb. (Central, 341), Robroadcast program of KDKA.

KGW, Portland, Ore. (Pacific, 492), 3:30 p. m., Woman's story program, "The Midlander," Booth Tarkington; 8:00, One-act plays, Red Lantern Players; 10:00, Dance music, George Olsen's Metropolitan Orchestra of the Hotel Portland; Marie Chapman MacDonald, violinist.

KHJ, Los Angeles, Calif. (Pacific, 395), 10:00 a. m., Special program, Biner's Log Angeles Band; 12:30-1:15 p. m., Program through courtesy of Southern California Music Company; 2:30-3:30, Matinee Musicale, Southern California Music Company; 6:45-7:30, Children'a program presented by St. Mathias Choir; Bedtime story by "Uncle John"; 8:00-9:30, Maybelle Strock, soprano; Frances Marlon Rolston, composer; the Zoelinor Quartet; 9:30, Program presenting Sammy Kalinofsky and his hand Sinfonico.

KPO, San Francisco, Calif. (Pacific, 423), 8:00-9:00 p. m., Organ recital, Theodore J. Irwin; 9:00-10:00, Program, Jewish music, Cantor Ruchen Rinder; Short talk, Community Chest, William H. Crocker; 10:00-11:00, E. Max Bradfield's versatile hand.

KSD, St. Louis, Mo. (Central, 546), 8:00 p. m., Concert of the St. Louis Symphony Orchestra, Rudnlph Ganz, conductor; Ignaz Friedman, pianist.

KYW, Chicago, Ill. (Central, 536), 11:35 a. m., Table talk, Mrs. Anna J. Peterson; 2:35 p. m., Studio program; 6:50, Children's bedtiue story; 7:00-7:30, Dinner concert, Clyde Doorr's Orchestra; Joska DeBabary's Orchestra; 8:00-8:28, Twenty Minutes of Good Reading, Rev. C. J. Fernin; 8:30-9:00, Edison Symphony Orchestra; 9:15, "Twelve Minutes of Practical Meat Cooking," Mrs. Grace Viall Gray.

WBAP, Fort Worth, Texas (Central, 476), 7:30-8:30 p. m., Concert, group of Fort Worth artists; 9:30-10:45, Monthly concert, Fort Worth Euterpean Club.

WBZ, Springficid, Mass. (Eastern, 337), 7:30 p. m., Bedtime story for the Kiddies; Farmers' period; 8:00, Concert, Mrs. C. E. Gauthier, contralto; Elcanor T. LaZazzera, accompanist; Marion B. Tryon, pianist; 9:00, Bedtime story for the Grown-ups, Orison S. Marden.

WCAP, Washington, D. C. (Eastern, 469), 7:15-9:45 p. m., Orchestra; 10:00-12:00, Dance music, Meyer Davis' Le Paradis Band.

WDAF, Kansas City, Mo. (Central, 411), 3:30-4:30 p. m., Dr. Ambert Haley's Dance and Concert Orchestra; 6:00-7:00, School of the Air; Piano tuning-in on the Duo-Art; Address, Speaker from the William Jewell College; Children's story and information period; Fritz Hanlein's Trianon Ensemble; 11:45-1:00 a. m., Nighthawk Frolic, The "Merry Old Chief" and the Coon-Sanders Novelty-Singing Orchestra; Pipe organ recital, Norma Mannering.

WDAP, Chicago, Ill. (Central, 360), 10:00 p. m., Misses Veider and Anker, sopranos; Chicago Naval Band.

WDAR, Philadelphia (Eastern, 395), 11:15 a. m., Daily Almanac; 12:02 p. m., Organ recital, Stanley Theater; dinner music, Arcadia Cafe Concert Orchestra; 2:00, Arcadia Cafe Orchestra; 7:30, Dream Daddy's bedtime stories.

WEAF, New York, N. Y. (Eastern, 492), 11:50 a. m., U. S. Dept. Agriculture; 4:00 p. m., Hotel St. Georgs Orch.; 5:00, Mary Van Doren, soprano; 7:30, Thornton Fisher; 7:40, Phllip A. Braver, baritone; 8:10, Wirt Barnitz—"Holland Desert"; 8:20, Bank of America; 8:30, Hunter College Musical Program; 9:30, Columbia Phonograph Co.; 9:45, N. Y. Stock Exchange; 10:00, Raymond Freemantle, baritone; 10:30, Vee Lawnhurst, pianist; 11:00, Vincent Lopez Orchestra courtesy Gimbel Bros.

WFAA, Dallas, Texas (Central, 476), 12:30-1:00 p. m., "Health and Good Citizenship," Dr. J. J. Simmons; 8:30-9:30, Musical recital, Mrs. Selma Mandel, pianist; Theresa Kleinman, violhist.

WFI, Philadelohia (Eastern, 395), 1:00 p. m., Meyer Davis' Bellevue Stratford Orchestra; 3:00, Loretta Kerk, pianist; 6:00, Bedtime stories; 6:30, Meyer Davis' Bellevue Stratford Orchestra; 8:00, Boy Scouts Radio Corps; 10:10, Meyer Davis' Dance Orchestra.

WGI, Medford Hillside, Mass. (Eastern, 360), 6:30 p. m., Meeting of the Big Brother Amrad Club; 7:00, Evening program, Christian Endeavor program.

WGR, Buffalo, N. Y. (Eastern, 319), 12:30-1:00 p. m., Georgo Albert Bouchard, organist; 4:00, Tea time music, Martha Gomph, harpist; Katherine Stang, violinist; 6:30-7:30, Vincent Lopez Hotel Statler Orchestra; 7:30, digest of the day's news; Boy Scout Radiogram, Employment bulletin, story from "The American Boy" magazine.

WGY, Schenectady, N. Y. (Eastern, 380), 2:00 p. m., "The Work of the Women's Relief Corps," Cora Sisson; 6:30, Dinner music, Romano's Orchestra; 7:45, "A Few Moments with New Books," William Jacob; Earl Rice, pianist; "Woman in a Shoe Store," Bertha C. Rankin, reader; Edward A. Rice, violinist; Ernest Burleigh, cellist; Irene Nagle, soprano; Peter Schmidt, clarinetist; "My Ships," Bertha C. Rankin; Leo Kliwen, violinist.

WHA, Madison, Wis. (Central, 360), 8:00 p. m., Farmers' Week Banquet at Lathrop Hall. Toasts by Governor Blaine, John Kelly, L. E. Scott; Demonstration of Radio Receiving.

WHAS, Louisville, Ky. (Central, 400), 4:00-5:00 p. m., Selections, Walnut Theater Orchestra; Strand Theater Orchestra; 7:30-9:00, Concert, auspices of Arthur Findling; Four-minuts digest of International Sunday School lesson, Dr. W. T. Baker; Four-minute Radio Forum talk.

WHB, Kansas City, Mo. (Central, 411), 12:35-1:00 p. m., Popular musical program; 2:00-3:00, Ladies' hour program; Sweeney Radio Orchestra; Floyd Estep, saxophonist; 7:00-7:45, Program, Parent-Teachers' Association, Mrs. H. R. Graham, director; Mrs. Arnid L. Frank, violhist; Mildred 1. Spencer, soprano; "Child Hygiene," Mrs. William Ullman; 8:00-10:00, Regular Thursday Evening program, arranged by Charles Wessell: Sweeney Radio Orchestra; Charles J. Wessell, baritone; William Bice, tenor; "Better Homes and Buildings"; Carl Zimmerman, pianist; Quartette of Young men from Independence Avenue M. E. Church.

WHN, New York, N. Y. (Eastern, 360), 3:00-3:15 p. m., Sam Coslow, song writer and tenor; 4:00-5:00, Peck Inn Orchestra; 9:30-10:15, Lou Gold's Wigwam Club Orchestra; 10:45-11:30, Jerome H. Remick.

WIP, Philadelphia (Eastern, 509), 6:05 p. m., Dick Regan and his WIP Symphony Orchestra; 7:00, Uncle Wip's bedtime stories; 10:10, Charlie Kerr and his orchestra from St. James Hotel, and Ted Weems and his Record Making Orchestra from Cafe L'Aiglon.

WJAX, Cleveland, Ohio (Eastern, 390), 8:00 p. m., Concert, The Cleveland Musical Association, Wilson C. Smith, director; "Dance Tziganes," Arlene Gibbons, 16-year old violinist; "The Trout," "Rondo Brilliant," by Ruth Fox, 11-year old pianist: Harold L. Branch, baritone: "Nocturne," "Promenade, Harlequin and Columbine," "Hungarian Rhapsody," Louise Munsie, pianist; Vocal solos, selected; Dorris Stadden Kaser, contralto.

WJAZ, Chicago, Ill. (Central, 447.7), 10:00 p. m. to 2:00 a. m., Hazel Heavy, soprano; Mae Heavy, contralto; Tony Corcoran, barilone; Roxy Heavy, tenor; Oriole Orchestra.

WJY, New York, N. Y. (Eastern, 405), 7:30 p. m., "Golf," Innis Brown; 7:45, "The Yarnmaster's Story"; 8:00, Mayor Hylan's People concert, 9:15, Dept. of Street Cleaning Band.

WJZ, New York, N. Y. (Eastern, 455), 3:00 p. m., Afternoon Auditorium concert; 4:00, French lecture, Dr. Earle B. Babcock; 7:00, "Jack Rabbit Stories," David Cory; 7:45, The World's Work; 8:15, Evening organ recital on the Auditorium organ; 9:00, Paraguayian program; 10:00, "The Battle of Santiago," Lewis Hopkins Rogers; 10:30, Dance program, Hotel Commodore Orchestra, Bernhard Levitow, director.

WLAG, Minneapolis-St. Paul (Central, 417), 10:45-11:15 a. m., Household Hints; 11:35-12:00 m., Surprise Program from the Twin City Automobile Show; 2:00-2:30 p. m., Woman's Club Hour, Weekly dancing lesson, Tess Cooperman; 2:40-4:00, Concert, Mrs. George Palmer, soprano, and others; 4:00-4:30, Story reading, Mildred Simons; 5:30-6:00, Children's stories by Catherine Westerveld; 6:00-6:15, Weekly talk on dogs, Dr. J. S. Dick, Jr.; 6:15-7:00, George Osborn's Minneapolis Athletic Club Orchestra; 7:30-8:15, Farm Lectures, special program from the Twin City Automobile Show.

WLW, Cincinnati, Ohio (Central, 309), 4:00 p. m., Piano solos, Adelaide Apfel; 10:00, Cincinnati Conservatory of Music, String Quartette, Velone Ackers, soprano; Grace Woodruff, pianist; Virginia Merrin, mezzo-soprano; Mildred Benham, soprano; Katidine Tichnor, harpist; Elsie Artz, violinist; 11:00, Special popular program.

Friday, February 8

WMAQ, Chicago, Ill. (Central, 447.5), 4:20 p. m., Items of interest to women, 4:30, Illinois Federation of Women's Clubs; Boy Scouts Band Concert, Financial talk, Roy Munger; Talk, Rockwell R. Stephens, Auto Editor; Second of series of lessons in Golf, B. A. Andrews; Talk, Dr. R. A. Alleu of the Y. M. C. A.; Travelogue, Clara E. Laughlin; 8:30, WMAQ Orchestra; 9:00, Recreational talk, direction of The City Club of Chicago; 9:15, Program, Woodmen of the World.

WMC, Memphis, Tenn. (Central, 500), 8:30 p. m., "Drama as a Social Force in a Democracy," Louis K. Anspacher, American playwright, poet and lecturer.

WDC, Davenport, Iowa (Central, 484), 12:00 m., Chimes; 3:00 p. m., "Anatomy of the Lungs," Karl G. Stephan; 5:45, Chimes; 6:30, Sandman's visit; 8:00, P. S. C. Orchestra, Gerald M. Barrow, director, V. B. Rechte baritone.

WOD, Philadelphia (Eastern, 509), 11:00 a. m., Organ recital, Mary E. Vogt; 12:00 m., Wanamaker Crystal Tea Room Orchestra; 4:45 p. m., Organ recital, Mary E. Vogt.

WOR, Newark, N. J. (Eastern, 405), 2:30-2:45 p. m., Marguerite Zender, soprano, 2:45-3:00, Edward T. Hufuarl, tenor; 3:30-3:45, Marguerite Zender, 3:45-4:00, Edward T. Hufuarl; 6:15-6:30, Romance of Smetolling by Samuel Bernard; 6:30-7:30, "Music While You Dine," by Tom Cooper's Orchestra.

WWJ, Dstroit, Mich. (Eastern, 517), 9:30 a. m., "Tonight's dinner," Woman's Editor, 3:00 p. m. Detroit News Orchestra; 7:00, Detroit News Orchestra; Margery Whipple, pianist; Mrs. Earl Wood, pianist, Harry A. McDonald, baritone; 10:00, Dance music, Jean Goldkette's Orchestra.

CKAC, Montreal, Can. (Eastern, 425), 1:45-2:15 p. m., Rex Battle and his Mt. Royal Hotel Concert Orchestra; 4:30, Joseph G. Smith and his Mt. Royal Hotel Orchestra.

KDKA, E. Pittsburgh, Pa. (Eastern, 326), 12:10 p. m., Concert, Broudy's Orchestra; 6:15, Organ recital, Lucile Hale; 7:15, Radio Boy Scout Meeting; 7:45, Children's period; 8:15, "The Failure at Kadesh," Dr. R. L. Lanning; 8:30, Concert, students of Lyman Almy Perkins Studio.

KFAE, Pullman, Wash. (Pacific, 330), 7:30-8:30 p. m., "Metals and Crystals," Prof. Hugh M. Henton; "Soils," Prof. Vincent; "New Things to Read, Alice L. Webb; Music.

KFI, Los Angeles, Calif. (Pacific, 469), 6:45-7:30 p. m., Concert by the Wa-Wan juniors and bedtime story; 10:00-11:00, Vocal and Instrumental concert.

KFKX, Hastings, Neb. (Central, 341), Rebroadcasts program of KDKA.

KGW, Portland, Ore. (Pacific, 492), 3:30 p. m., Lec-

FAE LINCOLN NIGHTS THIS WEEK

At the right, Mabel Swint Ewer, one of the best trumpeters in the country, who will be heard from WFI, February 5.

Left, Rex Battle, leader of Mt. Royal Hotel concert orchestra, which broadcasts its popular music from CKAC, Montreal, Canada, every Monday, Tuesday, Wednesday and Saturday. In circle above, Mildred Simons, of WLAG. Thousands of Radiophans depend on her for their keenest thrill of the day, when she reads the fiction story during the afternoon program. She also reads the morning household hints.

Where to Hear Talks

TALKS, instructive, serious, humorous and even frivolous are broadcast daily and below are listed the stations to dial. Listen in Tuesday to the addresses of many of our railroad executives as broadcast by WGY, if you are interested in the great national issue, transportation. Do not miss the series of French lectures at WJZ.

Tuesday: KDKA, KGW, KYW, WBZ, WDAF, WEAF, WFAA, WGI, WHA, WHN, WJY, WJZ, WLAG, WMAQ, WOC.

Wednesday: KDKA, KFAE, KYW, WDAF, WEAF, WGI, WHA, WHN, WJZ, WLAG, WMAQ.

Thursday: KDKA, KYW, WDAF, WEAF, WFAA, WGI, WHA, WHN, WJZ, WLAG, WMAQ, WOAW, WOC.

Friday: KDKA, KFAE, KGW, KYW, WDAF, WEAF, WFAA, WGI, WGY, WHA, WHN, WJY, WJZ, WLAG, WOC.

Saturday: WDAF, WEAF, WFAA, WGI, WJZ, WLAG, WOC.

Monday: KFAE, WEAF, WHAZ, WLAG, WOC.

—The Program Lady.

ture, Margery Smith; 8:00, Accordion solos, John Sylvester; 8:15, Dance music, Georgo Oisen's Metropolitan orchestra; 9:00, University of Oregon extension lectures; 10:30, Hoot Owls with Pantages frolic.

KHJ, Los Angeles, Calif. (Pacific, 395). 12:30-1:15 p. m., Program, Lauralue Smith, soprano; Viola Scapini, violinist; 2:30-3:30, Matinee Musicale, Lauraine Smith, soprano; Viola Scapini, violinist; 6:30-7:00, Children's program, Richard Headrick, screen juvenile; Bedtime story by "Uncle John," 7:00-7:30, Organ recital from First M. E. Church, Artbur Blakeley, organist; 8:00-10:00 p. m., Program presented by the Timner String Conservatory of Music; 10:00-12:00, Art Hickman's Orchestra.

KYW, Chicago, Ill. (Central, 536), 11:35 a. m., Table talk, Mrs. Anna J. Peterson; 6:50 p. m., Children'a bedtime story; 7:00-7:30, Dinner concert, Clyde Doerr's Orchestra; Joska DeBabary's Orchestra; 10:00-2:00 a. m., Midnight Revue; Clyde Docrr's Orchestra; J. Remington Welch, organist.

WBAP, Fort Worth, Texas (Central, 476), 7:30-8:30 p. m., Concert, North Texas Agricultural and Mechanical College Band of Arlington; 9:30-10:45, Monthly program, College of Industrial Arts.

WBZ, Springfield, Mass. (Eastern, 337), 6:00 p. m., Dinner concert, WBZ Quintette; 7:00, "When the Load Came Off," Youth's Companion; 7:30, Bedtime story for kiddies; Current Book Review, R. A. MacDonald; Story for Grown-upa, Orison S. Marden; 11:00, Chamber music, WBZ Quintette; Mary Roberts Thans, soprano.

WDAF, Kansas City, Mo. (Central, 411), 3:30-4:30 p. m., Musical program, Leo R. Davis "Radio" Orchestra; 6:00-7:00, School of the Air: Address, Speaker from the Kansas City Club; Children'a story and information period; Fritz Haulein's Trianon Ensemble; 8:00-9:15, Novelty Night; Boy Scouts of America; 11:45-1:00 a. m., Nighthawk Frolic, Ths "Merry Old Chief" and the Coon-Sanders Novelty-Singing Orchestra.

WDAP, Chicago, Ill. (Central, 360), 10:00 p. m., Emily Agnes Dolan, soprano; Jack Chapman's Orchestra.

WDAR, Philadelphia (Eastern, 395), 11:45 p. m., Daily Almanac; 12:02 p. m., Organ recital, Stanley Theater; dinner music, Arcadia Cafe Concert Orchestra; 2:00, Arcadia Cafe Concert Orchestra; 7:30, Dream Daddy'a bedtime stories; 7:45, Book review by Robert Bruce; 8:00, Radario, Walter Greenough's WDAR Players; 10:10, Howard Lanin's Dance Orchestra; Musical comedy stars from Philadelphia's leading hteaters; special Morning Glory Club features.

WEAF, New York, N. Y. (Eastern, 492), 11:00 a. m., S. K. Ratcliffe, Town Hall; 11:50, U. S. Dept. Agriculture; 4:00 p. m., Frances Christmas, celio; 4:30, Edna Gormley, soprano; 4:45, Minnie Polia, pianist; 5:00, Children's Hour Stories; 7:30, Thornton Fisher; 7:50, Battery Talk; 8:00, Billy Jones and Ernest Hare; 8:30, News Review by Brooklyn Eagle; 9:00, Astor Coffee Dance Orchestra; 10:00, Mrs. Avilda Wilson and Frank Brantley; 10:30, Ethel B. McKay, soprano.

WFAA, Dallas, Texas (Central, 476), 12:30-1:00 p. m., "Failure at Kadesb," Dr. Robert S. Hyer; 8:30-9:30, Western Union Telegraph Company's Messenger Boys' Band, Prof. F. W. Barrows, director.

WFI, Philadelphia (Eastern, 395), 1:00 p. m., Meyer Davis Bellevue Stratford Orchestra; 3:00, WFI Male Quartet; 6:00, Bedtime stories; 6:30, Meyer Davis Bellevue Stratford Orchestra.

WGI, Medford Hillside, Mass. (Eastsrn, 360), 3:00 p. m., Amrad Women's Club program: Afternoon musicale, Brunswick Console; 3:30, Talk, Dorothy Dean, director Metropolitan Division Massachusetts Council of Girl Scouts; 6:30, Meeting of the Big Brother Amrad Club; 7:30, Evening program: Selected verse, Charles L. H. Wagner, Radio Poet; Red Cross Health Talk, Henry Copley Green; 8:15, Reading of Boy Scout Oath.

WGR, Buffalo, N. Y. (Eastern, 319), 12:30-1:00 p. m., George Albert Bouchard, organist; 4:00, Tea time music, Martha Gomph, harpist; Katherine Stang, violinist; 6:30 and 11:30, Vincent Lopez Hotel Statler Orchestra; 7:30, Digest of the day's news; 8:00, Brief concert program of the reunion of the 1910 class, University of Buffalo Law School; 9:00, Concert, exclusively religious music, direction of E. C. Clerk, Buffalo City Mission.

WGY, Sohsnectady, N. Y. (Eastern, 380), 2:00 p. m., "Short Cuts in Housekeeping," Modern Priscilla; 6:30, Children's period; 7:35, Health talk, N. Y. State Department of Health; 7:45, WGY Orchestra; "Scouting," C. A. Gammons; "The Boy Scout Oath"; 8:15, Radio drama: "Icehound," WGY Players; 10:30, WGY Orchestra; Ernest Burleigh, cellist; Mollie Stockard, soprano; Peter Schmidt, clarinetist; Leo Kliwen, violaist.

WHA, Madison, Wis. (Central, 360), 8:00 p. m., Addresses on Observations of a Year Ahroad, Miss A. L. Marlatt, Director of course in Home Economics, Dr. Caroline Hedges of Chicago.

WHAS, Louisville, Ky. (Central, 400), 4:00-5:00 p. m., Selections, Strand Theater Orchestra; Selections, Walnut Theater Orchestra; 7:30-9:00, Edith Baker's Orchestra; Edith Baker, saxophonist and director; Virginia Banker, pianist; Robert Seaton, saxophonist; Mary Louis Bachmann, violinist; Jimmy Horine, tuba player; Morris Bachman, drummer.

WHB, Kansas City, Mo. (Central, 411), 12:25-12:35 p. m., Music; 2:00-3:00, Ladies' Hour program: Sweeney Radio Orchestra; Thomas McCluskey, violinist; 7:00-8:00, Popular Music, Sweeney Radio Orchestra; "Better Homes."

WHK, Cleveland, Ohio (Eastern, 283), 9:00 p. m., Special dance program arranged by the Cleveland Radio Dealers' Association; Music by Tomson'a Novelty Dance Orchestra; Special vocal and instrumental numbers by popular entertainers.

WHN, New York, N. Y. (Eastern, 360), 4:30-5:00 p. m., "Snappy Trio"; 5:15-5:30, Jack Fox's Melody Belles Orchestra; 9:30-10:15, Melo Club Orchestra, David Reich, leader; 10:30-11:00, Fred Whitehouse Revue.

WIP, Philadelphia (Eastern, 509), 1:00 p. m., Gimbel's Tea Room Orchestra; 6:05, Jimmy Campbell and his Little Club Orchestra; 7:00, Uncle Wip's bedtime stories.

WJAZ, Chicago, Ill. (Csntral, 447.7), 10:00 p. m.-2:00 a. m., Program, Cable Piano Company; Oriole Orchestra.

WJY, New York, N. Y. (Eastern, 405), 7:30 p. m., "Income Taxes," Frank Shevitt; 7:45, Esther Klinefelter, soprano; C. Allen, accompanist; 8:00, The Houorable Julius Berg, "The Work of the New York Assembly"; 8:15, Esther Klinefelter; 8:30, Ashley Pettis, pianist; 10:15, Breau and Tohiss; 11:00, Harold K. Bernstein, violinist; Dr. Milton Soloman, pianist.

WJZ, New York, N. Y. (Eastern, 455), 12:15 p. m., Music from the Brick Presbyterian Church; 3:00, Organ recital, Leo Riggs; 5:00, "The Larger Aspect of World Affairs," International Interprster; 5:15, Jimmy Moore, popular songs; 7:00, "Bedtime stories," Thornton Burgess; 7:30, Burr McIntosh, the Cheerful Philosopher; 7:50, Vocal recital, Madame Soder-Hueck; 8:45, O. K. Davies of the National Foreign Trade Council; 9:00, Lucia Avella, violinist; Lucrezia Avella, pianist; 9:30, "Home Building," William H. Beers; 9:45, Jascha Gurewich, saxophonist; 10:30, Dance program, Paul Specht and his Alamac Hotel Orchestra.

WLAG, Minneapolis-St. Paul, Minn. (Central, 417), 10:45-11:15 a. m., Household Hints; 11:35-12:00 m., Surprise program broadcast from the Twin City Automobile Show; 2:00-2:30 p. m., Woman's Club Talk to be arranged by the Community Fund; 2:40-4:00, Daylight Concert; 4:00-4:30, Story reading, Mildred Simons; 5:30-6:00, Children's stories, Rubert Whitcomb; 6:00-6:30, Sport program; 7:30-8:15, Farm lectures broadcast from the Twin City Automobile Show; 9:15-9:30, Business message, "Romance of Business," H. H. Bigelow; 9:30-10:45, Concert, Capitol Quartet (Joseph Panushka, tenor; Leroy Butler, tenor; Rudolph Ogren, baritone; Roy Pickel, bass) and Miss L. Murray, harp.

WLW, Cincinnati, Ohio (Central, 309), 4:00 p. m., Half hour lecture recital.

WMAQ, Chicago, Ill. (Csntral, 447.5), 4:20 p. m., Items of interest to women; 4:30, Pupils of Bush Conservatory; 7:00, Weekly "Wide Awake Club," Mrs. F. M. Ford; 7:30, Music Memory Contest, Mrs. Marx E. Oherndorfer; 8:30, WMAQ Orchestra; 9:00, Program from banquet, American Telephone & Telegraph Co.

WMC, Memphis, Tenn. (Central, 500), 8:30 p. m., Program, Mrs. James A. Martin, Jr.; 11:00, Frollo, Clarksdale residents, Marjorie Lamkin, director.

WOC, Davenport, Iowa (Central, 484), 12:00 m., Chimes; 3:30 p. m., "The Manufacture of Diamonds," C. A. Russell; 5:45, Chimes; 6:30, Sandman'a visit; 7:20, Sunday School Lesson, Dr. Frank W. Court, pastor; 8:00, Musical program, Erwin Swindell, director; Program, Rock Island Railway Orchestra of Chicago, Frank J. Nevins, zither soloist; Gustav Klein, concertina soloist; Geneva Zimmer, soprano.

WOO, Philadelphia (Eastsrn, 509), 11:00 a. m., Organ recital, Mary E. Vogt; 12:00 m., Wanamaker Crystal Tea Room Orchestra; 4:45 p. m., Organ recital, Mary E. Vogt; 7:45, Adelphia Hotel Orchestra; 9:00, WOO Orchestra; 10:30, Hotel Adelphia Dance Orchestra.

WOR, Newark, N. J. (Eastern, 405), 2:30-3:00 p. m., Joint Recital by Carrol C. Clark, baritone and Olive Hopkins, soprano; 6:15-6:30, "Music While You Dine" —Fred Whitehouse Song Revue; 6:30-7:00, Man in the Moon Stories; 7:00-7:30, "Music While You Dine."

WOS, Jefferson City, Mo. (Central, 440.9), 10:15 a. m., Boy Scout program; 8:00 p. m., Miller Theater Orchestra, E. S. Emerson, director; 9:00, Program, Faculty and students of William Woods College.

WWJ, Detroit, Mich. (Eastern, 517), 9:30 a. m., "Tonight's dinner," Woman's Editor; 12:00 m., Danco music, Jean Goldkette's Orchestra; 3:00 p. m., Detroit News Orchestra; 7:00, Detroit News Orchestra; Anne Campbell, Detroit News poet; E. M. Murray, baritone; George W. Westcott, saw soloist.

Saturday, February 9

CKAC, Montreal, Can. (Eastern, 425), 7:00 p. m., Kiddies stories in French and English; 7:30, Rex Battle and His Mt. Royal Concert Orchestra; 8:30, Studio entertainment, Canadian Pacific Railway; 10:30, Joseph C. Smith and his Mt. Royal Hotel Dance Orchestra.

KDKA, E. Pittsburgh, Pa. (Eastern, 326), 1:30 p. m., Concert, Daugherty's Orchestra; 6:15, Concert, Westinghouse Band; 7:45, Children's period; 8:30, Concert Westinghouse Band, Virginia Kendrick, contralto; Thomas A. Sullivan, tenor.

KFI, Los Angsles, Calif. (Pacific, 469), 6:45-7:30 p. m., Bedtime story and concert; 8:00-9:00, Concert featuring dance numbers; 10:00-11:00, Vocal and instrumental concert.

KFKX, Hastings, Neb. (Central, 341), Rebroadcasts program of KDKA.

KGW, Portland, Ore. (Pacific, 492), 3:30 p. m., Children's program, story by Auut Nell; 10:00, George Olsen's Metropolitan Orchestra.

KHJ, Los Angeles, Calif. (Pacific, 395), 12:30-1:15 p. m., Program presenting Dick Kennedy, piano-accordeonist, pupil of Syl Prior; The Songsters, a group of ten High-School girls of Long Beach; 2:30-3:30, Matinee Musicale presenting Los Angeles Junior Symphony Orchestra, Leo Scheer, director; 6:45-7:30, Children's program, Helene Piric, screen juvenile; Alice Frazier, soprano; Ella Warringer Mills, accompanist; Bedtime story, "Uncle John"; 8:00-10:00, Program arranged by Isabelle Block, teacher of steel guitar; N. E. Brown, Electrical Engineer; 10:00-12:00, Art Hickman's Orchestra.

KPO, San Francisco, Calif. (Pacific, 423), 8:00-12:00 midnight, Art Weidner's Fairmont Hotel Dance Orchestra; KPO Trio.

KSD, St. Louis, Mo. (Central, 546), 3:00 p. m., Program, group of children under 14 years of age; 7:00, Orchestra concert, organ recital, vocal and instrumental specialties, from Missouri Theater.

KYW, Chicago, Ill. (Central, 536), 11:35 a. m., Table talk, Mrs. Anna J. Poterson; 6:50 p. m., Children's bedtime story; 7:00-7:30, Dinner concert; Clydo Doerr's Orchestra; Joska DeBabary's Orchestra; 8:00-8:58, Musical program: Helen Engelke, soprano; Elmer Pringle, tenor; Phillip Millcville, baritone; Sallie Meukes, accompanist; Herb Mintz, pianist; 10:00-12:00 midnight, Midnight Revue, KYW studio in the Congress Hotel.

WBAP, Fort Worth, Tsxas (Central, 476), 7:00-7:30 p. m., Review of the interdenominational Sunday School lesson and radio Bible Class, Mrs. W. F. Barnum.

WBZ, Springfield, Mass. (Eastern, 337), 7:00 p. m., Dinner concert, Hotel Kimball Trio; 7:30, Bedtime story for the Kiddies; "Bringing the World to America," "Our World" magazine; 8:00, William S. Tilton, baritone; Mrs. Ruby Tilton Kingsley, pianist.

WCAP, Washington, D. C. (Eastern, 469), 7:30-10:00 p. m., Joint program with WEAF, N. Y. C.; 10:00-12:00, Dance music.

WDAF, Kansas City, Mo. (Central, 411), 3:30-4:30 p. m., Musical matinee: The Riley-Ehrhart Orchestra; 6:00-7:00, School of the Air: Edgar A. Linton, writer-lecturer; Children's story and information period; Fritz Hanlein'a Trianon Ensemble; 11:45-1:00 a. m., Nightbawk Frolic: The "Merry Old Chief" and the Coon-Sandera Novelty Singing Orchestra.

WDAP, Chicago, Ill. (Central, 360), 10:00 p. m., Harmony Girls, Bob Brown, Jerry Sullivan, Perry Wellman, Jack Chapman's Orchestra.

WDAR, Philadelphia (Eastern, 395), 11:45 p. m., Daily Almanac; 12:02 p. m., Organ recital, Stanley Theater; diuner music, Arcadia Cafe Concert Orchestra; 2:00, Arcadia Cafe Concert Orchestra; 4:30, Robbie Lee and His Cotton Pickers; 7:30, Dream Daddy's bedtime atories.

WEAF, New York, N. Y. (Eastern, 492), 4:30 p. m., Annadale Hastings, soprano; 7:20, Herbert Ralph Ward, pianist and Florence E. Keffer, soprano; 7:50, Auction Bridge Talk; 8:00, American Chicle Trio and Quartette; 9:00, Sophie Irene Loeb; 9:10, Fellan Garzia, pianist; 9:40, Prof. Howard Driggs; 10:00, Freed-Eiseman Dance Program; 11:00, Vincent Lopez Orch, courtesy Glmbels.

WFAA, Dallas, Texas (Csntral, 476), 12:30-1:00 p. m., "The Labor Movement in England," George F. Thomas; 8:30-9:30, Leland Johnston, composer and performer of popular music; 11:00-12:00, Hawaiian Music, MacDowell Sisters.

WFI, Philadelphia (Eastern, 395), 1:00 p. m., Meyer Davis Bellevue Stratford Orchestra; 6:00, Bedtime stories; 6:30, Meyer Davis Bellevue Stratford Orchestra; 10:10, Meyer Davis Bellevue Stratford Dance Orchestra.

WGI, Medford Hillside, Mass. (Eastern, 360), 6:30 p. m., Meeting of the Big Brother Amrad Club; 7:30, Evening program: New England Business Problems, Arthur R. Curnick; Arthur Murray's course in Ball Room Dancing, lesson No. 10.

WGR, Buffalo, N. Y. (Eastsrn, 319), 12:30-1:00 p. m., George Albert Bouchard, organist; 6:30, Vincent Lopez Hotel Statler Orchestra; 7:30, Digest of the day's news.

WGY, Sohonectady, N. Y. (Eastern, 380), 9:30 p. m., Dance music, Jack Symond's Orchestra.

WHAS, Louisville, Ky. (Central, 400), 4:00-5:00 p. m., Walnut Theater Orchestra; Strand Theater Orchestra; 7:30-9:00, Concort, Sylvian Trio, Fannie Elizabeth Stoll, violinist; Myrl Chrisman, flutist; Evelyn Kaiser, pianist; Violet M. Code, soprano; Reading: An Interesting Historical Episode.

WHB, Kansas City, Mo. (Central, 411), 12:40-1:00 p. m., Dance program, Sweeney Radio Orchestra; 2:00-3:00, Ladies' Hour Concert, Sweeney Radio Orchestra; Roy Sanford, tenor.

WHN, New York, N. Y. (Eastern, 360), 2:15-2:45 p. m., Fred Whitehouse Revue; 4:30-4:45, Anne Fair in songs; 7:30-8:00, Clydo Moser and His Dancing Carnival Orchestra; 8:15-8:30, Jimmie Flynn, tenor; 8:30-8:45, Tom Bracken, baritone; 8:45-9:00, Selma Lange, popular songs; 9:00-9:15, Robert F. Campbell, baritone.

WIP, Philadelphia (Eastern, 509), 1:00 p. m., Karl Bonawitz, organist, Germantown Theater; 6:05, Dinner music, Dick Regan and his WIP Symphony Orchestra; 7:00, Uncle Wip's bedtime stories; 10:10, Dance music, Charlie Kerr and Orchestra from Hotel St. James, and Ted Weems from Cafe L'Aigion.

WJAZ, Chicago, Ill. (Central, 447.7), 10:00 p. m.-2:00 a. m., Florence K. White, soprano; Cambridge Sisters, vocal trio; Marion Leonard, violinist; Oriole Orchestra.

WJZ, New York, N. Y. (Eastern, 455), 3:00 p. m., Red and Gray Melody Boys; 3:30, Jean Welker, baritone; Augusta Murphy, accompanist; 4:00, Tea concert, Hotel Belmont Stringed Ensemble, Harry Lerner, leader; 5:00, Program, Famous Fair Orchestra; 7:00, "Uncle Wiggily Stories," Howard Garis; 7:30, Ronald Greene, bass; 7:45, "Public Health," Harper & Bros.; 8:00, Ronald Greene; 8:15, Maxmilian Rose, Russian violinist; 9:45, Dinner of the Rensselaer Alumni Association; Speeches, William Henry Finley, president Chicago & Northwestern; Dr. Michael Puplu, of Columbia University.

WLAG, Minnsapolis-St. Paul, Minn. (Central, 417), 10:45-11:15 a. m., Household hints; 11:35-12 m., Weekly meeting of the "Postcard Club," broadcast from the Twin City Automobile Show, 2:00-2:30 p. m., Woman's Club; 2:30-4:00, Daylight Concert, 4:00-4:45, Short story reading, Mildred Simons, 5:00-5:30, Weekly radio lecture, Ray H. Sweet, chief engineer WLAG; 5:30-6:00, Children's hour, Weekly meeting of the Children's Radio Health & Toothbrush Club of America, Dr. F. W. Pepper, presiding; 6:00-6:30, Sport talks; 7:30-8:15, Business lectures, "Mannheim, the Ruhr, Germany," Dr. Hans Holsworth; 9:15-10:15, Studio program, Jock McKenzie singing Harry Lauder songs; 10:15-12:30, Dance program, St. Paul Athletic Club Orchestra.

WMAQ, Chicago, Ill. (Csntral, 447.5), 7:45 p. m., Talk, Boy Scouts in Boy Scout Week; 8:00, Program, Logansport, Indiana-Pennsylvania R. R. Band; 9:00, Balahan & Katz Chicago Theater Revue.

WMC, Memphis, Tenn. (Central, 500), 8:30 p. m., Program, George Hughes, Harry Lauder of Memphis.

WOC, Davenport, Iowa (Central, 484), 12:00 m., Chimes; 3:30 p. m., "Preparation of Leather," C. C. Hall; 5:45, Chimes; 6:30, Sandman's visit; 7:00, "Our National Guard," Lieut. Ralph A. Lancaster; 9:00, P. S. C. Orchestra, Gerald M. Barrow, director; V. B. Rochte, baritone.

WOO, Philadelphia (Eastern, 509), 11:00 a. m., Organ recital, Mary E. Vogt; 12:00 m., Wanamaker Crystal Tea Room Orchestra; 4:45 p. m., Organ recital, Mary E. Vogt; band concert, J. W. C. I. Band.

WOR, Newark, N. J. (Eastern, 405), 2:30-2:45 p. m., Jean Kate Smith, pianist of N. Y.; 2:45-3:00, Christine Galloway, soprano; 3:30-3:45, Jean Kate Smith; 3:45-4:00, Christine Galloway; 6:15-7:00, "Music While You Dine," by Colonial Dance Orchestra of Brooklyn; 7:15-7:30, Fred J. Bendel; 8:00-9:45, Artists of the Wessell Studios under direction of Mme. Florence Wessell, coach and accompanist; Helen Oshea, coloratura soprano; Lorna Lea, contralto; Wm. Berkhelmer, tenor; Dorothy Hoyle, violinist; Mme. Wessell at the piano; 10:00-11:00, Wm. Barnes and His American Society Orchestra.

WTAM, Cleveland, Ohio (Eastern, 390), 8:15-9:00 p. m., Special program for Christian Endeavor Convention; Orchestra numbers, The Christian Eudeavor Orchestra, E. M. Burbank, director; Vocal numbers, The Sunrise Christian Endeavor Quartette and the Maxwell Negro Quartette; Five-minute talk by the Rev. Frank L. Erett; 9:00-11:00, Regular Saturday Evening Dance program by the WTAM Orchestra; Solo numbers by Julea Sigmund.

WWJ, Detroit, Mich. (Eastern, 517), 9:30 a. m., "Tonight's dinner," Woman's Editor; 3:00 p. m., Detroit News Orchestra; 7:30, Detroit News Orchestra.

Sunday, February 10

CKAC, Montrsal, Can. (Eastern, 425), 4:30 p. m., Organ, violin, cello, vocal selections.

KFI, Los Angeles, Calif. (Pacific, 469), 10:00-10:45 a. m., Service by L. A. Church Federation; 4:00-5:00 p. m., Vesper service by Church Federation Musicians; 6:45-7:30, Concert and bedtime story.

KPO, San Francisco, Calif. (Pacific, 423), 11:00-12:00 m., Radio church service, American Bible Society; Fitzgerald Memorial Church Choir.

KYW, Chicago, Ill. (Central, 536), 11:00 a. m., Central Church Service, Dr. F. F. Shannon, pastor; 6:30 p. m., Excerpts from the New Testament—an American Translation, Prof. E. J. Goodspeed, read by William Ziegler Nourse; 7:00, Chicago Sunday Evening Club, speaker, Robert E. Speer.

WBAP, Fort Worth, Texas (Central, 476), 11:00-12:15 p. m., Church services, First Christian Church, Rev. L. D. Anderson; 4:00-5:00, Organ concert; 5:00-6:00, Vesper concert; 11:00-12:00, Concert, Fred Calhoon's Orchestra.

WCAP, Washington, D. C. (Eastern, 469), 11:00 a. m., Religious service; 4:00 p. m., Service at Bethlehem Chapel, Episcopal Cathedral; 7:20-9:00, Joint program with WEAF; 9:00-10:00, Organ recital from Skinner Organ Company.

WDAP, Chicago, Ill. (Central, 360), 9:15 p. m., Drake Concert Ensemble and Soloists.

WDAR, Philadelphia (Eastern, 395), 2:00 p. m., Arcadia Cafe Concert Orchestra, Ferl Sarkozi, director.

WEAF, New York, N. Y. (Eastern, 492), 2:45 p. m., New York Federation of Churches Program; 3:45, Dr. S. Parkes Cadman; 7:30, Capitol Theater Symphony Orchestra and Roxie's "Gang"; 9:00, Skinner Organ Recital.

WFAA, Dallas, Texas (Csntral, 476), 6:00-7:00 p. m., Radio Bible Class, Dr. William M. Anderson, Jr.; 9:30-10:00, "Christianity, a World Religion," Dr. L. N. D. Wells; 10:00-11:00, Popular dance music, Jack Gardner's Orchestra.

WFI, Philadelphia (Eastern, 395), 4:00 p. m., Studio Church services; 7:30, Services, Arch Street Presbyterian Church.

WGI, Medford Hillsids, Mass. (Eastern, 360), 4:00 p. m., Twilight program: "Adventure Hour," Youth's Companion; Musicale, Harold Bratt, soloist; "World Unity," auspices of the Greater Boston Federation of Churches; Musicale, "The Berkley Comedians."

WGR, Buffalo, N. Y. (Eastern, 319), 3:00 p. m., Vesper service, the Rev. John M. Peck, St. Paul's Reformed Church, speaker; 4:00-5:00, Robert Munn, organist.

WGY, Schenectady, N. Y. (Eastern, 380), 11:00 a. m. Madison Aveuue Reformed Church, Richard Earle Locke, pastor; 3:30 p. m., WGY Symphony Orchestra; 7:45, Madison Avenue Reformed Church.

WHAS, Louisville, Ky. (Central, 400), 9:57 a. m., Organ music; 10:00, Church service, Broadway Baptist Church, Rev. Dr. Russell Johnson Pirkey, pastor; 4:00-5:00 p. m., Concert, Nazareth Junior College.

WHK, Cleveland, Ohio (Eastern, 283), 9:00 p. m., Concert program of favorite musical numbers by the WHK Trio; Ben Burtt, pianist, Ben Silverberg, violinist, and Max Schmitt, cellist and director; Vocal numbers, Fred. Van Luit, baritone.

WHN, New York, N. Y. (Eastern, 360), 3:00-4:30 p. m., Christian Endeavor program; 5:00-5:15, John D. Flynn, of the National Security League, in talk; 5:30-6:00, W. H. N. Radio Five.

WIP, Philadelphia (Eastern, 509), 4:00 p. m., Germantown Y. M. C. A. meeting; 8:00, Bed Stud aud His Orchestra; Karl Bonawitz, organist.

WJAZ, Chicago, Ill. (Central, 447.7), 6:00-9:00 p. m., Esther Gielo, soprano; Helen Leefelt, pianist; Lucius Kranz, violinist; Oriole Orchestra.

WLAG, Minneapolis-St. Paul, Minn. (Central, 417), 10:30 a. m.-12:00 m., Morning service, Westminster Presbyterian Church, Minneapolis; 3:45-4:45 p. m., Vesper service, House of Hope Church, St. Paul; 7:45-9:15, Evening service, Second Church of Christ, Scientist, Minneapolis; 9:30-10:45, Musical concert, Minneapolis Business Men's Association's Mandolin Orchestra.

(Continued on page 22)

WGY DRAMA, KSD JUVENILE AND KFAE LINCOLN NIGHTS THIS WEEK

Where to Hear Concerts

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.

Tuesday: CKAC, KDKA, KFI, KHJ, KPO, KSD, KYW, WBAP, WBZ, WCAP, WDAF, WDAP, WEAF, WFAA, WGI, WGY, WHB, WHN, WJAX, WJAZ, WJY, WJZ, WLAG, WLW, WMAQ, WMC, WOAW, WOR, WWJ.

Wednesday: KDKA, KFAE, KFI, KGW, KHJ, KPO, KSD, KYW, WBAP, WBZ, WDAF, WDAP, WEAF, WFAA, WGI, WHAS, WHN, WJAZ, WJZ, WLAG, WLW, WMAQ, WOC, WOR, WTAM, WWJ.

Thursday: KDKA, KFI, KHJ, KPO, KSD, KYW, WBAP, WBZ, WDAF, WDAP, WEAF, WFAA, WHAS, WHB, WHN, WJAX, WJAZ, WJY, WJZ, WLAG, WLW, WMAQ, WMC, WOAW, WOC, WWJ.

Friday: CKAC, KDKA, KFAE, KFI, KHJ, KGW, KYW, WBAP, WBZ, WDAF, WDAP, WEAF, WFAA, WGI, WGY, WHAS, WHB, WHN, WJAZ, WJY, WJZ, WLAG, WMAQ, WOC, WOR, WOS, WWJ.

Saturday: KDKA, KFI, KHJ, KPO, KSD, KYW, WBZ, WCAP, WDAF, WDAP, WEAF, WFAA, WGI, WHAS, WHB, WHK, WHN, WJAZ, WJZ, WLAG, WMC, WOC, WOR, WTAM.

Sunday: KPO, KYW, WBAP, WDAP, WEAF, WFAA, WGI, WHAS, WHK, WHN, WJAZ, WJZ, WLAG, WOC, WWJ.

Monday: KFAE, KPO, WBAP, WDAF, WEAF, WHAZ, WHN, WLAG, WLW, WM, WOC, WOR, WOS.

—THE PROGRAM LADY.

Herbert Mintz, above, composer and pianist of Station KYW's staff of able artists, has proved such a favorite with lady fans that we find ourselves compelled to publish his picture again. Tune in on Saturday, February 9, if you haven't heard him.

At the right, Mabel Swint Ewer, one of the best trumpeters in the country, who will be heard from WFI, February 5.

Left, Rex Battle, leader of Mt. Royal Hotel concert orchestra, which broadcasts its popular music from CKAC, Montreal, Canada, every Monday, Tuesday, Wednesday and Saturday. In circle above, Mildred Simons, of WLAG. Thousands of Radiophans depend on her for their keenest thrill of the day, when she reads the fiction story during the afternoon program. She also reads the morning household hints.

Where to Hear Talks

TALKS, instructive, serious, humorous and even frivolous are broadcast daily and below are listed the stations to dial. Listen in Tuesday to the addresses of many of our railroad executives as broadcast by WGY, if you are interested in the great national issue, transportation. Do not miss the series of French lectures at WJZ.

Tuesday: KDKA, KGW, KYW, WBZ, WDAF, WEAF, WFAA, WGI, WHA, WHN, WJY, WJZ, WLAG, WMAQ, WOC.

Wednesday: KDKA, KFAE, KYW, WDAF, WEAF, WGI, WHA, WHN, WJZ, WLAG, WMAQ.

Thursday: KDKA, KYW, WDAF, WEAF, WFAA, WGI, WHA, WHN, WJZ, WLAG, WMAQ, WOAW, WOC.

Friday: KDKA, KFAE, KGW, KYW, WDAF, WEAF, WFAA, WGI, WGY, WHA, WHN, WJY, WJZ, WLAG, WOC.

Saturday: WDAF, WEAF, WFAA, WGI, WJZ, WLAG, WOC.

Monday: KFAE, WEAF, WHAZ, WLAG, WOC.

—THE PROGRAM LADY.

Wednesday, February 6

(Continued from page 15)

m., Program presented by Hollywood Harmony Hounds; 2:30-3:30, Matinee Musicale presented by Hollywood Harmony Hounds; 6:45-7:30, Children's program, Elma Smith, violinist, 9 years of age, Nathaniel Cohen, pianist, 12 years of age; Sol Cohen, violinist; 8:00-10:00, Santa Monica Municipal Band, Dr. R. J. Palmer of Radio "WOC," Davenport, Iowa, Lauraine Smith, soprano; Dr. Mars F. Baumgardt, lecturer; 10:00-12:00, Art Hickman's Orchestra.

KPD, San Francisco, Calif. (Pacific, 423), 8:00-9:00 p. m., Hazel Huff, dramatic soprano, "Singer Night," P. J. Pierce; 9:00-10:00, Palace Hotel Dance Orchestra.

KSD, St. Louis, Mo. (Central, 546), 8:00 p. m., St. Louis Maennerchor and St. Louis Symphony Orchestra; Siegfried Wagner, of Bayreuth, Germany, "Guest" conductor.

KYW, Chicago, Ill. (Central, 536), 11:35 a. m., Table talk, Mrs. Anna J. Peterson; 6:50 p. m., Children's bedtime story; 7:00-7:30, Dinner concert, Clyde Doerr's Orchestra; Joska DeBabary's Orchestra, 8:00-8:58, Sherwood Music School; 9:05, Review of the Latest Books, Llewellyn Jones; 10:00-2:00 a. m., Midnight revue.

WBAP, Fort Worth, Texas (Central, 476), 7:30-8:30 p. m., Concert, Mrs. Pearl C. Davis, soprano, and assisting pupils; 9:30-10:45, Concert, George Freeman's Sooner Serenaders.

WBZ, Springfield, Mass. (Eastern, 337), 6:00 p. m., Dinner concert, 7:30, Bedtime story for the Kiddies; Humorous program, Story for Grown-Ups, Orison S. Marden; 11:00, Program of Chamber Music, WBZ Quintette; Alvin E. W. Bach, Baritone; Eleanor T. LaZazzera, accompanist.

WDAF, Kansas City, Mo. (Central, 411), 3:30-4:30 p. m., Johnnie Campbell's Kansas City Club Orchestra; 6:00-7:00, School of the Air; piano tuning-in number on the Duo-Art, Weekly Health Talk, Speaker from Swift & Co.; Children's story and information period; Fritz Hanlein's Trianon Ensemble, 8:00-8:15, Classical concert, Program, John Day dinner, Chamber of Commerce; 11:45-1:00 a. m., Nighthawk Frolic, The "Merry Old Chief" and the Coon-Sanders Novelty Singing Orchestra.

WDAP, Chicago, Ill. (Central, 360), 10:00 p. m., Ruby Mary Donaldson School; Jack Chapman's Orchestra.

WDAR, Philadelphia (Eastern, 395), 11:45 a. m., Daily Almanac, 12:02 p. m., Organ recital, Stanley Theater; dinner music, Arcadia Cafe Concert Orchestra; 2:00, Arcadia Cafe Orchestra; 5:15, Dance music, Pat Kane, Lal Mack Orchestra, 7:30, Dream Daddy's bedtime stories, 7:45, Features from Stanley Theater; 8:30, Symphony from Stanley Theater Orchestra, Joseph Pasternack, director.

WEAF, New York, N. Y. (Eastern, 492), 11:00 a. m., Columbia Univ., 11:10, Garden Magazine, 11:20, N. Y. Tuberculosis Society, 11:50, U. S. Dept. of Agriculture; 12:00, Chapel Serv., Columbia Univ.; 4:00 p. m., Jessie Hoaglund Mitchell, pianist; 4:30, Richard Powers, baritone; 4:50, Bernard Frank, harmonica; 5:05, John Martin and Helen Waldo, stories and songs; 7:00, United Synagogue of America, 7:30, Thornton Fisher; 7:10, Emma Gilbert, contralto; 8:10, American Agriculturist, 8:20, Amer. Bond & Mortgage Co.; 8:30, Philharmonic Concert from Carnegie Hall.

WFAA, Dallas, Texas (Central, 476), 12:30-1:00 p. m., Musical program, Red Head Girl.

WFI, Philadelphia (Eastern, 395), 1:00 p. m., Meyer Davis Bellevue Stratford Orchestra; 6:00, Bedtime stories; 6:30, Meyer Davis Bellevue Stratford Orchestra.

WGI, Medford Hillside, Mass. (Eastern, 360), 6:30 p. m., Meeting of the Big Brother Amrad Club; 6:50, Message to Camp Fire Girls, Charles W. Casson, "Big Smoke"; 7:20, "Science Up to Date," Scientific American; 7:30, Evening program; Program, Concert Company, F. Chester MaDan, director.

WGR, Buffalo, N. Y. (Eastern, 319), 12:30-1:00 p. m., George Albert Bouchard, organist; 4:00, Tea time music, Martha Gomph, harpist; Katherine Stang, violinist; 6:30 and 11:30, Vincent Lopez Hotel Statler Orchestra; 7:30, Digest of the day's news; 9:00, Concert, mixed program H. C. Messersmith & Sons, Niagara Falls, N. Y.

WGY, Schenectady, N. Y. (Eastern, 380), 6:30 p. m., "Adventure Story," Youth's Companion.

WHA, Madison, Wis. (Central, 360), 8:00 p. m., Address on Alaska, Dean H. L. Russell, College of Agriculture.

WHAS, Louisville, Ky. (Central, 400), 4:00-5:00 p. m., Selections, Strand Theater Orchestra, Selections, Walnut Theater Orchestra; 7:30-9:00, Concert, auspices Annette Wearen Music Studio; Reading: An Interesting Historical Episode.

WHB, Kansas City, Mo. (Central, 411), 12:35-1:00 p. m., Sweeney Radio Orchestra, 2:00-3:00, Ladies' Hour program, Sweeney Radio Orchestra; James Sell, trombonist.

WHN, New York, N. Y. (Eastern, 360), 7:30-8:00 p. m., Jack Fox's Clover Gardens Orchestra; 8:30-8:45, Agnes Macpeake, soprano; 8:45-9:15, Dan Gregory and His Dancing Carnival Orchestra; 9:30-9:45, Dorothy Bromberg in songs; 9:45-10:15, Mansfield Society Orchestra, 11:00-11:30, M. Witmark Black and White Program; 11:15-12:00, Ethel Finle Lillian Goodner and Porter Grainger in popular songs.

WIP, Philadelphia (Eastern, 509), 6:05 p. m., Dinner music, Jordan-Lewis Dance Orchestra; 7:00, Uncle Wip's bedtime stories.

WJAZ, Chicago, Ill. (Central, 447.7), 10:00 p. m. to 2:00 a. m., Louis Vernia, pianist; M. J. Wigger, zither player; Joseph Oliviado, violinist; Oriole Orchestra; 12:00 midnight, Weekly Houdoin program.

WJZ, New York, N. Y. (Eastern, 455), 3:00 p. m., French Lectures, Dr. Earl B. Babcock; 3:15, Harry Rowe, baritone; Anthony Gale, accompanist; Louis Levine, violinist; 3:30, Guy Hunter, blind entertainer; 3:45, Renato Caldora, baritone; 4:30, Tea concert, Hotel Commodore, Lossitow, director; 7:00, "It is a Crocodile," a Shadowland Story, Florence Smith Vincent; 7:30, Dance program, Irving Selzer and his Cafe Boulevard Orchestra; 7:45, "The Progress of the World," a Review of Reviews talk; 8:00, Dance program, Irving Selzer and his Cafe Boulevard Orchestra; 8:30, City Officials Series talk; 9:00, "China Today," Helen Fitzgerald, famous world traveler; 9:30, Jamaica Musical Society Choral Club Concert.

WLAG, Minneapolis-St. Paul, Minn. (Central, 417), 10:45-11:15 a. m., Household Hints; 11:35-12 m., Surprise program broadcast from the Twin City Automobile Show; 2:00-2:30 p. m., Woman's Club; "Twentieth Century Housekeeping," Bernice Bell; 2:40-4:00, Daylight concert; 4:00-4:30, Story reading, Mildred Simons; 5:30-6:00, Children's stories, Mrs. Robert Cargill; 6:00-6:30, "Mah Jongg" (Lesson 11), Selma James; 7:30-8:15, Farm Lecture program broadcast specially from the Twin City Automobile Show; 9:15-9:30, Business message, "Conservation of Waste," George Nettleton; 9:30-10:15, Concert, Barrett's Band.

WLW, Cincinnati, Ohio (Central, 309), 1:00 p. m., Wurlitzer Concert Company, Mrs. William Donnlag, William Afsprung; 8:00, First Presbyterian Orchestra, George R. Myers, director; Violin duet, Georgia Smysor, Loraine Feltkamp; Mrs. James Thompson, flutist; Emma Thompson, pianist; Arthur Graefenhan, saxophonist; Florence M. Jaynes, violinist; Coletta Helmig, vocalist.

WMAQ, Chicago, Ill. (Central, 447.5), 1:00 p. m., Speeches broadcast from Chicago Assn. of Commerce; 4:20, Items of Interest to Women; 4:30, Pupils of Cosmopolitan School of Music; Second Radio lesson in French, M. Houvsne; 7:00, Georgene Faulkner, Story Lady; 7:30, Weekly lecture from Northwestern University; 8:30, WMAQ Orchestra; 9:00, Talks, Chicago Churches; 9:15, Mrs. Jewel Martin Lovejoy, soprano; Arthur Schlamp, baritone; Mrs. Maurice Bach, pianist.

WOC, Davenport, Iowa (Central, 484), 12:00 m., Chimes; 3:30 p. m., "The Fluid Circulation of the Body," R. G. Mayhath; 7:00, "Ornamental Planting on the Farm," Charles Lau, 8:00, Musical program, Erwin Swindell, director, Program, Zal Grotto Band, E. O. Baumgartner, director.

WOO, Philadelphia (Eastern, 509), 11:00 a. m., Organ recital, Mary E. Vogt; 12:00 m., Wanamaker Crystal Tea Room Orchestra; 4:45 p. m., Organ recital, Mary E. Vogt; 7:45, Adelphia Hotel Orchestra; 8:30, Erno Rapee and his orchestra from Fox Theater; 10:10, Dance music, Hotel Adelphia Orchestra.

WOR, Newark, N. J. (Eastern, 405), 2:30-2:45 p. m., Helen Felch Gregory, soprano; 2:45-3:00, Manhattan Serenaders; 3:15-3:30, Helen Felch Gregory; 3:30-3:45, Manhattan Serenaders; 3:45-4:15, Wm. Montgomery McGovern, Ph. D. (OxOn), Member of Royal Geographical and Asiatic Societies, speaking on "My Experiences in Lhasa," Courtesy Newark Teachers Assn.; 6:15-6:30, "Music While You Dine," by George Koty, banjoist, and Phil Abrams of New York; 6:30-6:45, Mr. Sonu; 6:45-7:00, "Music While You Dine"; 8:00-8:15, Frank Munn, tenor; 8:15-8:30, Bessie Silberfeld Pitzele, pianist; 8:30-8:45, Mrs. Ella Good; 9:15-9:30, Bessie Silberfeld Pitzele; 9:30-9:45, Frank Munn, tenor; 10:00-11:00, Dance music by the Jersey Collegians under direction of Julie Wintz.

WTAM, Cleveland, Ohio (Eastern, 390), 8:00 p. m., Orchestral numbers by the WTAM Orchestra; Vocal numbers, Evelyn Steirist; Viola C. Heyward, accompanist; Violin solos, Ben Silverberg; Instrumental trio, Max Schmitt, cellist, Ben Silverberg, violinist, Miss Clara Sharp, pianist; Vocal solos, selected, Leonard Slegel, baritone; Gustave Johnson, tenor; Ernest J. Crebbins, baritone; Trumpet solos, A. H. Hruby; Vocal numbers, Anna Stimmermather, contralto; Berenice Payne, soprano.

WWJ, Detroit, Mich. (Eastern, 517), 9:30 a. m., "Tonight's Dinner," Woman's Editor; 12:00 m., Jean Goldkette's Orchestra; 7:00, Detroit News Orchestra.

Thursday, February 7

KDKA, E. Pittsburgh, Pa. (Eastern, 326), 12:10 p. m., Organ recital, Howard R. Webb, 6:15, Dinner concert, Fort Pitt Hotel Orchestra; 7:30, Weekly Chat with the Farmers, Frank E. Mullen; 7:45, Children's period, 8:30, Concert, KDKA Little Symphony Orchestra, Gertrude Sykes King, soprano; Harve Lauderbaugh, bass; 11:30, Special Late Concert.

KFI, Los Angeles, Calif. (Pacific, 469), 6:45-7:30 p. m., Concert by Y. M. C. A., and bedtime story; 10:00-11:00, Concert, California School of Artistic Whistling, Agnes Woodward, director.

KFKX, Hastings, Neb. (Central, 341), Rebroadcast program of KDKA.

KGW, Portland, Ore. (Pacific, 492), 3:30 p. m., Woman's story program, "The Midlander," Booth Tarkington; 8:00, One-act plays, Red Lantern Players; 10:00, Dance music, George Olsen's Metropolitan Orchestra of the Hotel Portland; Marie Chapman MacDonald, violinist.

KHJ, Los Angeles, Calif. (Pacific, 395), 10:00 a. m., Special program, Hiner's Los Angeles Band; 12:30-1:15 p. m., Program through courtesy of Southern California Music Company; 2:30-3:30, Matinee Musicale, Southern California Music Company; 6:15-7:30, Children's program presented by St. Mathias Choir, Bedtime story by "Uncle John"; 8:00-9:30, Maybelle Strock, soprano; Frances Marion Ralston, composer, the Zoellner Quartet; 9:30, Program presenting Sammy Kalinofsky and his band Sinfonico.

KPO, San Francisco, Calif. (Pacific, 423), 8:00-9:00 p. m., Organ recital, Theodore J. Irwin; 9:00-10:00, Program, Jewish music, Cantor Rueben Rinder; Short talk, Community Chest, William H. Crocker; 10:00-11:00, E. Max Bradfield's versatile band.

KSD, St. Louis, Mo. (Central, 546), 8:00 p. m., Concert of the St. Louis Symphony Orchestra, Rudolph Ganz, conductor; Ignaz Friedman, pianist.

KYW, Chicago, Ill. (Central, 536), 11:35 a. m., Table talk, Mrs. Anna J. Peterson; 2:35 p. m., Studio program; 6:50, Children's bedtime story; 7:00-7:30, Dinner concert, Clyde Doerr's Orchestra; Joska DeBabary's Orchestra; 8:00-8:28, Twenty Minutes of Good Reading, Rev. C. J. Perrin; 8:30-9:00, Edison Symphony Orchestra; 9:15, "Twelve Minutes of Practical Meat Cooking," Mrs. Grove Viall Gray.

WBAP, Fort Worth, Texas (Central, 476), 7:30-8:30 p. m., Concert, group of Fort Worth artists; 9:30-10:45, Monthly concert, Fort Worth Euterpean Club.

WBZ, Springfield, Mass. (Eastern, 337), 7:30 p. m., Bedtime story for the Kiddies; Farmers' period; 8:00, Concert, Mrs. C. E. Gauthier, contralto; Eleanor T. LaZazzera, accompanist; Marion B. Tryon, pianist; 9:00, Bedtime story for the Grown-ups, Orison S. Marden.

WCAP, Washington, D. C. (Eastern, 469), 7:15-9:45 p. m., Orchestra; 10:00-12:00, Dance music, Meyer Davis' Le Paradis Band.

WDAF, Kansas City, Mo. (Central, 411), 3:30-4:30 p. m., Dr. Ambert Haley's Dance and Concert Orchestra; 6:00-7:00, School of the Air; Piano tuning-in on the Duo-Art; Address, Speaker from the William Jewell College; Children's story and information period; Fritz Hanlein's Trianon Ensemble; 11:45-1:00 a. m., Nighthawk Frolic, The "Merry Old Chief" and the Coon-Sanders Novelty Singing Orchestra; Pipe organ recital, Norma Mannering.

WDAP, Chicago, Ill. (Central, 360), 10:00 p. m., Misses Vehler and Ankey, sopranos; Chicago Naval Band.

WDAR, Philadelphia (Eastern, 395), 11:45 a. m., Daily Almanac; 12:02 p. m., Organ recital, Stanley Theater; dinner music, Arcadia Cafe Concert Orchestra; 2:00, Arcadia Cafe Orchestra; 7:30, Dream Daddy's bedtime stories.

WEAF, New York, N. Y. (Eastern, 492), 11:50 a. m., U. S. Dept. Agriculture; 4:00 p. m., Hotel St. George Orch.; 5:00, Mary Van Doren, soprano; 7:30, Thornton Fisher; 7:40, Philip A. Braver, baritone; 8:10, Wirt Barnitz—"Holland Desert"; 8:20, Bank of America; 8:30, Hunter College Musical Program; 9:30, Columbia Phonograph Co.; 9:45, N. Y. Stock Exchange; 10:00, Raymond Freemantle, baritone; 10:30, Vee Lawnhurst, pianist; 11:00, Vincent Lopez Orchestra courtesy Gimbel Bros.

WFAA, Dallas, Texas (Central, 476), 12:30-1:00 p. m., "Health and Good Citizenship," Dr. J. J. Simmons, 8:30-9:30, Musical recital, Mrs. Selma Mandel, pianist; Theresa Kleinman, violinist.

WFI, Philadelphia (Eastern, 395), 1:00 p. m., Meyer Davis' Bellevue Stratford Orchestra; 3:00, Loretta Kerk, pianist; 6:00, Bedtime stories; 6:30, Meyer Davis' Bellevue Stratford Orchestra; 8:00, Boy Scouts Radio Corps; 10:10, Meyer Davis' Dance Orchestra.

WGI, Medford Hillside, Mass. (Eastern, 360), 6:30 p. m., Meeting of the Big Brother Amrad Club; 7:00, Evening program, Christian Endeavor program.

WGR, Buffalo, N. Y. (Eastern, 319), 12:30-1:00 p. m., George Albert Bouchard, organist; 4:00, Tea time music, Martha Gomph, harpist; Katherine Stang, violinist; 6:30-7:30, Vincent Lopez Hotel Statler Orchestra; 7:30, digest of the day's news; Boy Scout Radiogram, Employment bulletin, story from "The American Boy" magazine.

WGY, Schenectady, N. Y. (Eastern, 380), 2:00 p. m., "The Work of the Women's Relief Corps," Cora Sisson; 6:30, Dinner music, Romano's Orchestra; 7:45, "A Few Moments with New Books," William Jacob; Emil Rice, pianist; "Woman in a Shoe Store," Bertha C. Rankin, reader; Edward A. Rice, violinist; Ernest Burleigh, cellist; Irene Nagle, soprano; Peter Schmidt, clarinetist, "My Ships," Bertha C. Rankin; Leo Kliwen, violinist.

WHA, Madison, Wis. (Central, 360), 8:00 p. m., Farmers' Week Banquet at Lathrop Hall. Toasts by Governor Blaine, John Kelly, L. E. Scott; Demonstration of Radio Receiving.

WHAS, Louisville, Ky. (Central, 400), 4:00-5:00 p. m., Selections, Walnut Theater Orchestra; Strand Theater Orchestra; 7:30-9:00, Concert, auspices of Arthur Findling; Four-minute digest of International Sunday School lesson, Dr. W. T. Baker; Four-minute Radio Forum talk.

WHB, Kansas City, Mo. (Central, 411), 12:35-1:00 p. m., Popular musical program; 2:00-3:00, Ladies' hour program; Sweeney Radio Orchestra; Floyd Esten, saxophonist; 7:00-7:45, Program, Parent-Teachers' Association, Mrs. H. R. Graham, director; Mrs. Arvid L. Frank, violinist; Mildred I. Spencer, soprano; "Child Hygiene," Mrs. William Ullman; 8:00-10:00, Regular Thursday Evening program, arranged by Charles Wessell; Sweeney Radio Orchestra; Charles J. Wessell, baritone; William Hire, tenor; "Better Homes and Buildings"; Carl Zimmerman, pianist; Quartette of Young men from Independence Avenue M. E. Church.

WHN, New York, N. Y. (Eastern, 360), 3:00-3:15 p. m., Sam Coslow, song writer and tenor; 4:00-5:00, Peek Inn Orchestra; 9:30-10:15, Lou Gold's Wigwam Club Orchestra; 10:45-11:30, Jerome H. Remick.

WIP, Philadelphia (Eastern, 509), 6:05 p. m., Dick Regan and his WIP Symphony Orchestra; 7:00, Uncle Wip's bedtime stories; 10:10, Charlie Kerr and his orchestra from St. James Hotel, and Ted Weems and his Record Making Orchestra from Cafe L'Aiglon.

WJAX, Cleveland, Ohio (Eastern, 390), 8:00 p. m., Concert, The Cleveland Musical Association, Wilson C. Smith, director; "Dance Tziganes," Arlene Gibbons, 10-year old violinist; "The Trout," "Rondo Brilliant," by Ruth Fox, 11-year old pianist; Harold L. Branch, baritone; "Nocturne," "Promenade, Harlequin and Columbine," "Hungarian Rhapsody," Louise Minnie, pianist; Vocal solos, selected; Dorris Stadden Kaser, contralto.

WJAZ, Chicago, Ill. (Central, 447.7), 10:00 p. m. to 2:00 a. m., Hazel Heavy, soprano; Mae Heavy, contralto; Tony Corcoran, baritone; Roxy Heavy, tenor; Oriole Orchestra.

WJY, New York, N. Y. (Eastern, 405), 7:30 p. m., "Golf," Innis Brown; 7:45, "The Yardmaster's Story"; 8:00, Mayor Hylan's People concert; 9:15, Dept. of Street Cleaning Band.

WJZ, New York, N. Y. (Eastern, 455), 3:00 p. m., Afternoon Auditorium concert; 4:00, French lecture, Dr. Earle B. Babcock; 7:00, "Jack Rabbit Stories," David Cory; 7:45, The World's Work; 8:15, Evening organ recital on the Auditorium organ; 9:00, Paraguayian program; 10:00, "The Battle of Santiago," Lewis Hopkins Rogers; 10:30, Dance program, Hotel Commodore Orchestra, Bernhard Levitow, director.

WLAG, Minneapolis-St. Paul (Central, 417), 10:45-11:15 a. m., Household Hints; 11:35-12:00 m., Surprise Program from the Twin City Automobile Show; 2:00-2:30 p. m., Woman's Club Hour, Weekly dancing lesson, Tess Cooperman; 2:40-4:00, Concert, Mrs. George Palmer, soprano, and others; 4:00-4:30, Story reading, Mildred Simons; 5:30-6:00, Children's stories by Catherine Westerveld; 6:00-6:15, Weekly talk on dogs, Dr. J. S. Dick, Jr.; 6:15-7:00, George Osborn's Minneapolis Athletic Club Orchestra; 7:30-8:15, Farm Lectures, special program from the Twin City Automobile Show.

WLW, Cincinnati, Ohio (Central, 309), 4:00 p. m., Piano solos, Adelaide Apfel; 10:00, Cincinnati Conservatory of Music, String Quartette, Velone Aekers, soprano; Grace Woodruff, pianist; Virginia Merrin, mezzo-soprano; Mildred Benham, soprano; Kathline Tichnor, harpist; Elsie Artz, violinist; 11:00, Special popular program.

Friday, February 8

WMAQ, Chicago, Ill. (Central, 447.5), 4:20 p. m., Items of interest to women; 4:30, Illinois Federation of Women's Clubs; Boy Scouts Band Concert; Financial talk, Roy Munger; Talk, Rockwell R. Stephens, Auto Editor; Second of series of lessons in Golf, B. A. Andrews; Talk, Dr. R. A. Allen of the Y. M. C. A.; Travelogue, Clara E. Laughlin; 8:30, WMAQ Orchestra; 9:00, Recreational talk, direction of The City Club of Chicago; 9:15, Program, Woodmen of the World.

WMC, Memphis, Tenn. (Central, 500), 8:30 p. m., "Drama as a Social Force in a Democracy," Louis K. Anspacher, American playwright, poet and lecturer.

WOC, Davenport, Iowa (Central, 484), 12:00 m., Chimes; 3:30 p. m., "Anatomy of the Lungs," Karl G. Stephan; 5:45, Chimes; 6:30, Sandman's visit; 8:00, P. S. C. Orchestra, Gerald M. Barrow, director; V. B. Rochte, baritone.

WOO, Philadelphia (Eastern, 509), 11:00 a. m., Organ recital, Mary E. Vogt; 12:00 m., Wanamaker Crystal Tea Room Orchestra; 4:45 p. m., Organ recital, Mary E. Vogt.

WOR, Newark, N. J. (Eastern, 405), 2:30-2:45 p. m., Marguerite Zender, soprano; 2:45-3:00, Edward T. Hufuarl, tenor; 3:30-3:45, Marguerite Zender, 3:45-4:00, Edward T. Hufuarl; 6:15-6:30, Romance of time tolling by Samuel Bernard; 6:30-7:30, "Music While You Dine," by Tom Cooper's Orchestra.

WWJ, Detroit, Mich. (Eastern, 517), 9:30 a. m., "Tonight's dinner," Woman's Editor; 3:00 p. m., Detroit News Orchestra; 7:00, Detroit News Orchestra; Margery Whipple, pianist; Mrs. Earl Wood, pianist; Harry A. McDonald, baritone; 10:00, Dance music, Jean Goldkette's Orchestra.

CKAC, Montreal, Can. (Eastern, 425), 1:45-2:15 p. m., Rex Battle and his Mt. Royal Hotel Concert Orchestra; 4:30, Joseph G. Smith and his Mt. Royal Hotel Orchestra.

KDKA, E. Pittsburgh, Pa. (Eastern, 326), 12:10 p. m., Concert, Broudy's Orchestra; 6:15, Organ recital, Lucile Hale; 7:15, Radio Boy Scout Meeting; 7:45, Children's period; 8:15, "The Failure at Kadesh," Dr. R. L. Lanning; 8:30, Concert, students of Lyman Almy Perkins Studio.

KFAE, Pullman, Wash. (Pacific, 330), 7:30-8:30 p. m., "Metals and Crystals," Prof. Hugh M. Henton; "Soils," Prof. Vincent; "New Things to Read," Alice L. Webb; Music.

KFI, Los Angeles, Calif. (Pacific, 469), 6:45-7:30 p. m., Concert by the Wa-Wan juniors and bedtime story; 10:00-11:00, Vocal and instrumental concert.

KFKX, Hastings, Neb. (Central, 341), Rebroadcasts program of KDKA.

KGW, Portland, Ore. (Pacific, 492), 3:30 p. m., Lecture, Margery Smith; 8:00, Accordion solos, John Sylvester; 8:15, Dance music, George Olsen's Metropolitan orchestra; 9:00, University of Oregon extension lectures; 10:30, Hoot Owls with Pantages frolic.

KHJ, Los Angeles, Calif. (Pacific, 395), 12:30-1:15 p. m., Program, Lauraine Smith, soprano; Viola Scaplul, violinist; 2:30-3:30, Matinee Musicale, Lauraine Smith, soprano; Viola Scaplul, violinist; 6:30-7:00, Children's program, Richard Headrick, screen juvenile; Bedtime story by "Uncle John," 7:00-7:30, Organ recital from First M. E. Church, Arthur Blakeley, organist; 8:00-10:00 p. m., Program presented by the Tinner String Conservatory of Music; 10:00-12:00, Art Hickman's Orchestra.

KYW, Chicago, Ill. (Central, 536), 11:35 a. m., Table talk, Mrs. Anna J. Peterson; 6:50 p. m., Children's bedtime story; 7:00-7:30, Dinner concert, Clyde Doerr's Orchestra; Joska DeBabary's Orchestra; 10:00-2:00 a. m., Midnight Revue; Clyde Doerr's Orchestra; J. Remington Welch, organist.

WBAP, Fort Worth, Texas (Central, 476), 7:30-8:30 p. m., Concert, North Texas Agricultural and Mechanical College Band of Arlington; 9:30-10:45, Monthly program, College of Industrial Arts.

WBZ, Springfield, Mass. (Eastern, 337), 6:00 p. m., Dinner concert, WBZ Quintette; 7:00, "When the Land Came Off," Youth's Companion; 7:30, Bedtime story for kiddies; Current Book Review, R. A. MacDonald; Story for Grown-ups, Orison S. Marden; 11:00, Chamber music, WBZ Quintette; Mary Roberts Thans, soprano.

WDAF, Kansas City, Mo. (Central, 411), 3:30-4:30 p. m., Musical program, Leo R. Davis "Radio" Orchestra; 6:00-7:00, School of the Air; Address, Speaker from the Kansas City Club; Children's story and information period; Fritz Hanlein's Trianon Ensemble; 8:00-9:15, Novelty Night; Boy Scouts of America; 11:45-1:00 a. m., Nighthawk Frolic, The "Merry Old Chief" and the Coon-Sanders Novelty-Singing Orchestra.

WDAP, Chicago, Ill. (Central, 360), 10:00 p. m., Emily Agnes Dohin, soprano; Jack Chapman's Orchestra.

WDAR, Philadelphia (Eastern, 395), 11:45 p. m., Daily Almanac; 12:02 p. m., Organ recital, Stanley Theater; dinner music, Arcadia Cafe Concert Orchestra; 2:00, Arcadia Cafe Concert Orchestra; 7:30, Dream Daddy's bedtime stories; 7:45, Book review by Robert Bruce; 8:00, Radario, Walter Greenough's WDAR Players; 10:10, Howard Lanin's Dance Orchestra; Musical comedy stars from Philadelphia's leading theaters; special Morning Glory Club features.

WEAF, New York, N. Y. (Eastern, 492), 11:00 a. m., S. K. Ratcliffe, Town Hall; 11:50, U. S. Dept. Agriculture; 4:00 p. m., Frances Christmas, cello; 4:30, Edna Gormley, soprano; 4:45, Minnie Polta, pianist; 5:00, Children's Hour Stories; 7:30, Thornton Fisher; 7:50, Battery Talk; 8:00, Billy Jones and Ernest Hare; 8:30, News Review by Brooklyn Eagle; 9:00, Astor Coffee Dance Orchestra; 10:00, Mrs. Avilda Wilson and Frank Brantley; 10:30, Ethel B. McKay, soprano.

WFAA, Dallas, Texas (Central, 476), 12:30-1:00 p. m., "Failure at Kadesh," Dr. Robert S. Hyer; 8:30-9:30, Western Union Telegraph Company's Messenger Boys' Band, Prof. F. W. Barrows, director.

WFI, Philadelphia (Eastern, 395), 1:00 p. m., Meyer Davis Bellevue Stratford Orchestra; 3:00, WFI Male Quartet; 6:00, Bedtime stories; 6:30, Meyer Davis Bellevue Stratford Orchestra.

WGI, Medford Hillside, Mass. (Eastern, 360), 3:00 p. m., Amrad Women's Club program; Afternoon musicale, Brunswick Console; 3:30, Talk, Dorothy Dean, director Metropolitan Division Massachusetts Council of Girl Scouts; 6:30, Meeting of the Big Brother Amrad Club; 7:30, Evening program: Selected verse, Charles L. H. Wagner, Radio Poet, Red Cross Health Talk, Henry Copley Green; 8:15, Reading of Boy Scout Oath.

WGR, Buffalo, N. Y. (Eastern, 319), 12:30-1:00 p. m., George Albert Bouchard, organist; 4:00, Tea time music, Martha Gomph, harpist; Katherine Stang, violinist; 6:30 and 11:30, Vincent Lopez Hotel Statler Orchestra; 7:30, Digest of the day's news; 8:00, Brief concert program of the reunion of the 1910 class, University of Buffalo Law School; 9:00, Concert, exclusively religious music, direction of E. C. Clerk, Buffalo City Mission.

WGY, Schenectady, N. Y. (Eastern, 380), 2:00 p. m., "Short Cuts in Housekeeping," Modern Priscilla; 6:30, Children's period; 7:35, Health talk, N. Y. State Department of Health; 7:45, WGY Orchestra; "Scouting," C. A. Gammons; "The Boy Scout Oath"; 8:15, Radio drama: "Icebound," WGY Players; 10:30, WGY Orchestra; Ernest Burleigh, cellist; Mollie Stockard, soprano; Peter Schmidt, clarinetist; Leo Kliwen, violinist.

WHA, Madison, Wis. (Central, 360), 8:00 p. m., Addresses on Observations of a Year Abroad, Miss A. L. Marlatt, Director of course in Home Economics, Dr. Caroline Hedges of Chicago.

WHAS, Louisville, Ky. (Central, 400), 4:00-5:00 p. m., Selections, Strand Theater Orchestra, Selections, Walnut Theater Orchestra; 7:30-9:00, Edith Baker's Orchestra; Edith Baker, saxophonist and director; Virginia Banker, pianist; Robert Seaton, saxophonist; Mary Louis Bachmann, violinist; Jimmy Horine, tube player; Morris Bachman, drummer.

WHB, Kansas City, Mo. (Central, 411), 12:25-12:35 p. m., Music; 2:00-3:00, Ladies' Hour program; Sweeney Radio Orchestra; Thomas McCluskey, violinist; 7:00-8:00, Popular Music, Sweeney Radio Orchestra; "Better Homes."

WHK, Cleveland, Ohio (Eastern, 283), 9:00 p. m., Special dance program arranged by the Cleveland Radio Dealers' Association; Music by Tomson's Novelty Dance Orchestra; Special vocal and instrumental numbers by popular entertainers.

WHN, New York, N. Y. (Eastern, 360), 4:30-5:00 p. m., "Snappy Trio"; 5:15-5:30, Jack Fox's Melody Belles Orchestra; 9:30-10:15, Melo Club Orchestra, David Reich, leader; 10:30-11:00, Fred Whitehouse Revue.

WIP, Philadelphia (Eastern, 509), 1:00 p. m., Gimbel's Tea Room Orchestra; 6:05, Jimmy Campbell and his Little Club Orchestra; 7:00, Uncle Wip's bedtime stories.

WJAZ, Chicago, Ill. (Central, 447.7), 10:00 p. m.-2:00 a. m., Program, Cable Piano Company; Oriole Orchestra.

WJY, New York, N. Y. (Eastern, 405), 7:30 p. m., "Income Taxes," Frank Shevitt; 7:45, Esther Klinefelter, soprano; C. Allen, accompanist; 8:00, The Honorable Julius Berg, "The Work of the New York Assembly"; 8:15, Esther Klinefelter; 8:30, Ashley Pettis, pianist; 10:15, Breau and Tobias; 11:00, Harold K. Bernstein, violinist; Dr. Milton Soloman, pianist.

WJZ, New York, N. Y. (Eastern, 455), 12:15 p. m., Music from the Brick Presbyterian Church; 3:00, Organ recital, Leo Riggs; 5:00, "The Larger Aspect of World Affairs," International Interpreter; 5:15, Jimmy Moore, popular songs; 7:00, "Bedtime stories," Thornton Burgess; 7:30, Burr McIntosh, the Cheerful Philosopher; 7:50, Vocal recital, Madame Soder-Hueck; 8:15, O. K. Davies of the National Foreign Trade Council; 9:00, Licia Avella, violinist; Lucrezia Avella, pianist; 9:30, "Home Building," William H. Byers; 9:45, Jascha Gurevich, saxophonist; 10:30, Dance program, Paul Specht and his Alamac Hotel Orchestra.

WLAD, Minneapolis-St. Paul, Minn. (Central, 417), 10:45-11:15 a. m., Household Hints; 11:35-12:00 m., Surprise program broadcast from the Twin City Automobile Show; 2:00-2:30 p. m., Woman's Club Talk to be arranged by the Community Fund; 2:40-4:00, Daylight Concert; 4:00-4:30, Story reading, Mildred Simons; 5:30-6:00, Children's stories, Rubert Whitcomb; 6:00-6:30, Sport program; 7:30-8:15, Farm lectures broadcast from the Twin City Automobile Show; 9:15-9:30, Business message, "Romance of Business," H. D. Bigelow; 9:30-10:45, Concert, Capitol Quartet (Joseph Panushka, tenor; Leroy Butler, tenor; Rudolph Ogren, baritone; Roy Pickel, bass) and Miss L. Murray, harp.

WLW, Cincinnati, Ohio (Central, 309), 4:00 p. m., Half hour lecture recital.

WMAQ, Chicago, Ill. (Central, 447.5), 4:20 p. m., Items of interest to women; 4:30, Pupils of Bush Conservatory; 7:00, Weekly "Wide Awake Club," Mrs. F. M. Ford; 7:30, Music Memory Contest, Mrs. Marx E. Oberndorfer; 8:30, WMAQ Orchestra; 9:00, Program from banquet, American Telephone & Telegraph Co.

WMC, Memphis, Tenn. (Central, 500), 8:30 p. m., Program, Mrs. James A. Martin, Jr.; 11:00, Frolic, Clarksdale residents, Marjorie Lamkin, director.

WOC, Davenport, Iowa (Central, 484), 12:00 m., Chimes; 3:30 p. m., "The Manufacture of Diamonds," C. A. Russell; 5:45, Chimes; 6:30, Sandman's visit; 7:20, Sunday School Lesson, Dr. Frank W. Court, pastor; 8:00, Musical program, Erwin Swindell, director; Program, Rock Island Railway Orchestra of Chicago, Frank J. Nevins, zither soloist; Gustav Klein, concertina soloist; Geneva Zimmer, soprano.

WOO, Philadelphia (Eastern, 509), 11:00 a. m., Organ recital, Mary E. Vogt; 12:00 m., Wanamaker Crystal Tea Room Orchestra; 4:45 p. m., Organ recital, Mary E. Vogt; 7:45, Adelphia Hotel Orchestra; 9:00, WOO Orchestra; 10:30, Hotel Adelphia Dance Orchestra.

WOR, Newark, N. J. (Eastern, 405), 2:30-3:00 p. m., Joint Recital by Carrol C. Clark, baritone and Olive Hopkins, soprano; 6:15-6:30, "Music While You Dine"—Fred Whitehouse Song Revue; 6:30-7:00, Man in the Moon Stories; 7:00-7:30, "Music While You Dine."

WOS, Jefferson City, Mo. (Central, 440.9), 10:15 a. m., Boy Scout program, 8:00 p. m., Miller Theater Orchestra, E. S. Emerson, director; 9:00, Program, Faculty and students of William Woods College.

WWJ, Detroit, Mich. (Eastern, 517), 9:30 a. m., "Tonight's dinner," Woman's Editor; 12:00 m., Dance music, Jean Goldkette's Orchestra; 3:00 p. m., Detroit News Orchestra; 7:00, Detroit News Orchestra; Anne Campbell, Detroit News poet; E. M. Murray, baritone; George W. Westcott, saw soloist.

DANCING AND DRAMATICS

WHEN and what to dial to dance:

Tuesday: CKAC, KPO, WDAP, WHN, WJAZ, WJZ, WLW, WOR.

Wednesday: KGW, KPO, KSD, WBAP, WDAP, WHN, WJAZ, WJZ, WOR, WOS, WWJ.

Thursday: KFI, KGW, KPO, WCAP, WDAP, WEAF, WHN, WJAX, WJAZ, WJZ, WOR, WWJ.

Friday: KGW, WDAP, WEAF, WHK, WHN, WJZ, WWJ.

Saturday: CKAC, KFI, KPO, KGW, WCAP, WDAP, WEAF, WGY, WHN, WJAZ, WJZ, WLAG, WOR, WTAM, WWJ.

Monday: KPO.

Drama Notes

Tuesday: WLAG Players.

Thursday: KGW, One-Act Plays, Red Lantern Players.

Friday: WDAR, Walter Greenough's WDAR Players; WGY, "Icebound," WGY Players.

—THE PROGRAM LADY.

Saturday, February 9

CKAC, Montreal, Can. (Eastern, 425), 7:00 p. m., Kiddies stories in French and English; 7:30, Rex Battle and His Mt. Royal Concert Orchestra; 8:30, Studio entertainment, Canadian Pacific Railway; 10:30, Joseph C. Smith and his Mt. Royal Hotel Dance Orchestra.

KDKA, E. Pittsburgh, Pa. (Eastern, 326), 1:30 p. m., Concert, Daugherty's Orchestra, 6:15, Concert, Westinghouse Band; 7:45, Children's period, 8:30, Concert Westinghouse Band, Virginia Kendrick, contralto; Thomas A. Sullivan, tenor.

KFI, Los Angeles, Calif. (Pacific, 469), 6:45-7:30 p. m., Bedtime story and concert, 8:00-9:00, Concert featuring dance numbers; 10:00-11:00, Vocal and instrumental concert.

KFKX, Hastings, Neb. (Central, 341), Rebroadcasts program of KDKA.

KGW, Portland, Ore. (Pacific, 492), 3:30 p. m., Children's program, story by Aunt Nell, 10:00, George Olsen's Metropolitan Orchestra.

KHJ, Los Angeles, Calif. (Pacific, 395), 12:30-1:15 p. m., Program presenting Dick Kennedy, piano-accordionist, pupil of Syl Prior; The Songsters, a group [illegible] Matinee Musicale presenting Los Angeles Junior Symphony Orchestra, Leo Scheer, director, 6:15-7:30, Children's program, Helene Pirie, screen juvenile; Alice Frazin, soprano; Ella Warringer Mills, accompanist, Bedtime story, "Uncle John"; 8:00-10:00, Program arranged by Isabelle Block, teacher of steel guitar; N. E. Rusen, Electrical Engineer; 10:00-12:00, Art Hickman's Orchestra.

KPO, San Francisco, Calif. (Pacific, 423), 8:00-12:00 midnight, Art Weidner's Fairmont Hotel Dance Orchestra; KPO Trio.

KSD, St. Louis, Mo. (Central, 546), 3:00 p. m., Program, group of children under 14 years of age, 7:00, Orchestra concert, organ recital, vocal and instrumental specialties, from Missouri Theater.

KYW, Chicago, Ill. (Central, 536), 11:35 a. m., Table talk, Mrs. Anna J. Peterson; 6:50 p. m., Children's bedtime story; 7:00-7:30, Dinner concert; Clyde Doerr's Orchestra; Joska DeBabary's Orchestra; 8:00-8:58, Musical program; Helen Engelke, soprano; Elmer Pringle, tenor; Phillip Millette, baritone, Sallie Menkes, accompanist; Herb Mintz, pianist; 10:00-12:00 midnight, Midnight Revue, KYW studio in the Congress Hotel.

WBAP, Fort Worth, Texas (Central, 476), 7:00-7:30 p. m., Review of the Interdenominational Sunday School lesson and radio Bible Class, Mrs. W. F. Barnum.

WBZ, Springfield, Mass. (Eastern, 337), 7:00 p. m., Dinner concert, Hotel Kimball Trio; 7:30, Bedtime story for the Kiddies; "Bringing the World to America," "Our World" magazine; 8:00, William S. Tilton, baritone; Mrs. Ruby Tilton Kingsley, pianist.

WCAP, Washington, D. C. (Eastern, 469), 7:30-10:00 p. m., Joint program with WEAF, N. Y. C.; 10:00-12:00, Dance music.

WDAF, Kansas City, Mo. (Central, 411), 3:30-4:30 p. m., Musical matinee, The Riley-Ehrhart Orchestra; 6:00-7:00, School of the Air; Edgar A. [illegible], writer-lecturer; Children's story and information period; Fritz Hanlein's Trianon Ensemble, 11:45-1:00 a. m., Nighthawk Frolic, The "Merry Old Chief" and the Coon-Sanders Novelty Singing Orchestra.

WDAP, Chicago, Ill. (Central, 360), 10:00 p. m., Harmony Girls, Bob Brown, Jerry Sullivan, Perry Wellman, Jack Chapman's Orchestra.

WDAR, Philadelphia (Eastern, 395), 11:45 a. m., Daily Almanac; 12:02 p. m., Organ recital, Stanley Theater; dinner music, Arcadia Cafe Concert Orchestra; 2:00, Arcadia Cafe Concert Orchestra, 4:30, Bobbie Lee and His Cotton Pickers; 7:30, Dream Daddy's bedtime stories.

WEAF, New York, N. Y. (Eastern, 492), 4:30 p. m., Annadale Hastings, soprano; 7:20, Herbert Ralph Ward, pianist and Florence E. Keffer, soprano; 7:50, Auction Bridge Talk; 8:00, American Criterion Trio and Quartette; 9:00, Sophie Irene Loeb; 9:10, Felian Garzia, pianist; 9:40, Prof. Howard Driggs; 10:00, Fred Eiseman Dance Program; 11:00, Vincent Lopez Orch. courtesy Gimbels.

WFAA, Dallas, Texas (Central, 476), 12:30-1:00 p. m., "The Labor Movement in England," George F. Thomas; 8:30-9:30, Leland Johnston, composer and performer of popular music; 11:00-12:00, Hawaiian Music, MacDonald Sisters.

WFI, Philadelphia (Eastern, 395), 1:00 p. m., Meyer Davis Bellevue Stratford Orchestra; 6:00, Bedtime stories; 6:30, Meyer Davis Bellevue Stratford Orchestra; 10:10, Meyer Davis Bellevue Stratford Dance Orchestra.

WGI, Medford Hillside, Mass. (Eastern, 360), 6:30 p. m., Meeting of the Big Brother Amrad Club; 7:30, Evening program: New England Business Problems, Arthur R. Curnick; Arthur Murray's course in Ball Room Dancing, lesson No. 10.

WGR, Buffalo, N. Y. (Eastern, 319), 12:30-1:00 p. m., George Albert Bouchard, organist; 6:30, Vincent Lopez Hotel Statler Orchestra; 7:30, Digest of the day's news.

WGY, Schenectady, N. Y. (Eastern, 380), 9:30 p. m., Dance music, Jack Symond's Orchestra.

WHAS, Louisville, Ky. (Central, 400), 4:00-5:00 p. m., Walnut Theater Orchestra; Strand Theater Orchestra; 7:30-9:00, Concert, Sristian Trio, Fannie Elizabeth Stoll, violinist; Myrl Chrisman, flutist; Evelyn Kaiser, pianist; Violet M. Coie, soprano; Reading: An Interesting Historical Episode.

WHB, Kansas City, Mo. (Central, 411), 12:10-1:00 p. m., Dance program, Sweeney Radio Orchestra, 2:00-3:00, Ladies' Hour Concert, Sweeney Radio Orchestra; Roy Sanford, tenor.

WHN, New York, N. Y. (Eastern, 360), 2:15-2:45 p. m., Fred Whitehouse Revue, 4:30-4:45, Anne Fair in songs; 7:30-8:00, Clyde Moser and His Dancing Carnival Orchestra, 8:15-8:30, Jimmie Flynn, tenor, 8:30-8:45, Tom Bracken, baritone; 8:45-9:00, Selma Lange, popular songs; 9:00-9:15, Hubert F. Campbell, baritone.

WIP, Philadelphia (Eastern, 509), 1:00 p. m., Karl Bonawitz, organist, Germantown Theater; 6:05, Dinner music, Dick Regan and his WIP Symphony Orchestra; 7:00, Uncle Wip's bedtime stories; 11:10, Dance music, Charlie Kerr and Orchestra from Hotel St. James, and Ted Weems from Cafe L'Aiglon.

WJAZ, Chicago, Ill. (Central, 447.7), 10:00 p. m.-2:00 a. m., Florence K. White, soprano; Cambridge Sisters, vocal trio; Marion Leonard, cellist; Oriole Orchestra.

WJZ, New York, N. Y. (Eastern, 455), 3:00 p. m., Red and Gray Melody Boys; 3:30, Jean Welker, baritone, Augusta Murphy, accompanist; 4:00, Tea concert, Hotel Belmont Stringed Ensemble, Harry Lerner, leader; 5:00, Program, Famous Pain Orchestra; 7:00, "Uncle Wiggily Stories," Howard Garis; 7:30, Ronald Greene, bass; 7:45, "Public Health," Harper & Bros.; 8:00, Ronald Greene; 8:15, Maximilian Rose, Russian violinist; 9:45, Dinner of the Rensselaer Alumni Association; Speeches, William Henry Finley, president Chicago & Northwestern; Dr. Michael Pupin, of Columbia University.

WLAD, Minneapolis-St. Paul, Minn. (Central, 417), 10:45-11:15 a. m., Household hints; 11:35-12 m., Weekly meeting of the "Posh-and Club," broadcast from the Twin City Automobile Show; 2:00-2:30 p. m., Woman's Club; 2:40-4:00, Daylight Concert; 4:00-4:30, Short story reading, Mildred Simons, 5:00-5:30, Weekly radio lecture, Ray H. Street, chief engineer WLAG; 5:30-6:00, Children's hour, Weekly meeting of the Children's Radio Health & Toothbrush Club of America, Dr. F. W. Pepper, presiding, 6:00-6:30, Sport talk; 7:30-8:15, Business lectures, "Manufacturing the Ruhr, Germany," Dr. Hans Holzwarth; 9:15-10:15, Studio program, Jock McKenzie singing Harry Lauder songs; 10:15-12:30, Dance program, St. Paul Athletic Club Orchestra.

WMAQ, Chicago, Ill. (Central, 447.5), 7:45 p. m., Talk, Boy Scouts in Boy Scout Week, 8:00, Program, Logansport, Indiana-Pennsylvania R. R. Band; 9:00, Balaban & Katz Chicago Theater Revue.

WMC, Memphis, Tenn. (Central, 500), 8:30 p. m., Program, George Hughes, Harry Lauder of Memphis.

WOC, Davenport, Iowa (Central, 484), 12:00 m., Chimes, 3:30 p. m., "Preparation of Leather," C. C. Hall. [illegible] Guard," Lieut. Ralph A. [illegible]; 9:00, P. S. C. Orchestra, Gerald M. Barrow, director; V. B. Rochte, baritone.

WOO, Philadelphia (Eastern, 509), 11:00 a. m., Organ recital, Mary E. Vogt; 12:00 m., Wanamaker Crystal Tea Room Orchestra, 4:45 p. m., Organ recital, Mary E. Vogt; band concert, J. W. C. I. Band.

WOR, Newark, N. J. (Eastern, 405), 2:30-2:45 p. m., Jean Kate Smith, pianist of N. Y.; 2:45-3:00, Christine Galloway, soprano, 3:30-3:45, Jean Kate Smith, 3:45-4:00, Christine Galloway, 6:15-7:00, "Music While You Dine," by Colonial Dance Orchestra of Brooklyn; 7:15-7:45, Fred J. Bendel; 8:00-9:15, Artists of the Wessell Studios under direction of Mme. Florence Wessell, coach and accompanist, Helen Dalton, coloratura soprano, Lorna Lea, contralto; Wm. Brethelmer, tenor, Dorothy Doyle, violinist, Mme. Wessell at the piano; 10:00-11:00, Wm. Barnes and His American Society Orchestra.

WTAM, Cleveland, Ohio (Eastern, 390), 8:15-9:00 p. m., Special program for Christian Endeavor Convention; Orchestra numbers, The Christian Endeavor Orchestra, E. M. Rinhank, director; Vocal numbers, The Sunrise Christian Endeavor Quartette and the Maxwell Negro Quartette, Five-minute talk by the Rev. Frank L. Evett; 9:00-11:00, Regular Saturday Evening Dance program by the WTAM Orchestra; Solo numbers by Jules Sigmund.

WWJ, Detroit, Mich. (Eastern, 517), 9:30 a. m., "Tonight's dinner," Woman's Editor; 3:00 p. m., Detroit News Orchestra; 7:30, Detroit News Orchestra.

Sunday, February 10

CKAC, Montreal, Can. (Eastern, 425), 4:30 p. m., Organ, violin, cello, vocal selections.

KFI, Los Angeles, Calif. (Pacific, 469), 10:00-10:45 a. m., Service by L. A. Church Federation 4:00-5:00 p. m., Vesper service by Church Federation Musicians; 6:45-7:30, Concert and bedtime story.

KPO, San Francisco, Calif. (Pacific, 423), 11:00-12:00 m., Radio church service, American Bible Society; Fitzgerald Memorial Church Choir.

KYW, Chicago, Ill. (Central, 536), 11:00 a. m., Central Church Service, Dr. F. F. Shannon, pastor; 3:30 p. m., Excerpts from the New Testament, an American Translation, Prof. E. J. Goodspeed, read by William Ziegler Nourse; 7:00, Chicago Sunday Evening Club, speaker, Robert E. Speer.

WBAP, Fort Worth, Texas (Central, 476), 11:00-12:15 p. m., Church services, First Christian Church, Rev. L. D. Anderson, 1:00-3:00, Organ concert; 5:00-6:00, Vesper concert, 11:00-12:00, Concert, Fred Cahoon's Orchestra.

WCAP, Washington, D. C. (Eastern, 469), 11:00 a. m., Religious service, 4:00 p. m., Service at Bethlehem Chapel, Episcopal Cathedral; 7:20-9:00, Joint program with WEAF; 9:00-10:00, Organ recital from Skinner Organ Company.

WDAP, Chicago, Ill. (Central, 360), 9:15 p. m., Drake Concert Ensemble and Soloists.

WDAR, Philadelphia (Eastern, 395), 2:00 p. m., Arcadia Cafe Concert Orchestra, Fed Sarkozi, director.

WEAF, New York, N. Y. (Eastern, 492), 2:45 p. m., New York Federation of Churches Program, 3:45, Dr. S. Parkes Cadman; 7:30, Capitol Theater Symphony Orchestra and Roxie's "Gang"; 9:00, Skinner Organ Recital.

WFAA, Dallas, Texas (Central, 476), 6:00-7:00 p. m., Radio Bible Class, Dr. William M. Anderson, Jr.; 9:30-10:00, "Christianity, a World Religion," Dr. L. N. D. Wells, 10:00-11:00, Popular dance music, Jack Gardner's Orchestra.

WFI, Philadelphia (Eastern, 395), 4:00 p. m., Studio church services; 7:40, Services, Arch Street Presbyterian Church.

WGI, Medford Hillside, Mass. (Eastern, 360), 4:00 p. m., Twilight program: "Adventure Hour," Youth's Companion; Musicale, Harold [illegible], soloist, "World Unity," auspices of the Greater Boston Federation of Churches Musicale, "The Berkley Comedians."

WGR, Buffalo, N. Y. (Eastern, 319), 3:00 p. m., Vesper service, the Rev. John M. Peck, St. Paul's Reformed Church, speaker; 4:00-5:00, Robert Munn, organist.

WGY, Schenectady, N. Y. (Eastern, 380), 11:00 a. m., Madison Avenue Reformed Church, Richard Earle Locke, pastor, 3:30 p. m., WGY Symphony Orchestra, 7:15, Madison Avenue Reformed Church.

WHAS, Louisville, Ky. (Central, 400), 9:57 a. m., Organ music, 10:00, Church service, Broadway Baptist Church, Rev. Dr. Russell Johnson Pirkey, pastor, 4:00-5:00 p. m., Concert Nazareth Junior College.

WHK, Cleveland, Ohio (Eastern, 283), 9:00 p. m., Concert program of favorite musical numbers by the WHK Trio; [illegible], pianist, Ben Silverberg, violinist, and Max Schmitt, cellist and director; Vocal numbers, Fred Van Lutt, baritone.

WHN, New York, N. Y. (Eastern, 360), 3:00-4:30 p. m., Christian Endeavor program, 5:00-5:15, John D. Flynn, of the National Security League, in talk; 5:30-6:00 [illegible].

WIP, Philadelphia (Eastern, 509), 4:00 p. m., Germantown Y. M. C. A. meeting, 8:00, Red Star and His Orchestra, Karl Bonawitz, organist.

WJAZ, Chicago, Ill. (Central, 447.7), 6:00-8:00 p. m., Esther Klein, soprano; Helen Leefelt, pianist; Louisa Kiang, violinist; Oriole Orchestra.

WLAG, Minneapolis-St. Paul, Minn. (Central, 417), 10:30 a. m.-12:00 m., Morning service, Westminster Presbyterian Church, Minneapolis; 3:15-4:45 p. m., Vesper service, House of Hope Church, St. Paul; 7:45-9:15, Evening service, Second Church of Christ, Scientist, Minneapolis, 9:30-10:45, Musical concert, Minneapolis Business Men's Association's Mandolin Orchestra.

(Continued on page 22)

WFAA, Dallas, Texas (Central, 476), 12:30-1:00 p. m., "Failure at Kadesh," Dr. Robert S. Hyer; 8:30-9:30, Western Union Telegraph Company's Measenger Boys' Band, Prof. F. W. Barrows, director.

WFI, Philadelphia (Eastern, 395), 1:00 p. m., Meyer Davis Bellevue Stratford Orchestra; 3:00, WFI Male Quartet; 6:00, Badtime stories; 6:30, Meyer Davis Bellevue Stratford Orchestra.

WGI, Medford Hillside, Mass. (Eastern, 360), 3:00 p. m., Amrad Women's Club program; Afternoon musicale, Brunswick Console; 3:30, Talk, Dorothy Dean, director Metropolitan Division Massachusetts Council of Girl Scouts; 6:30, Meeting of the Big Brother Amrad Club; 7:30, Evening program: Selected verse, Charles L. H. Wagner, Radio Poet; Red Cross Health Talk, Henry Copley Green; 8:15, Reading of Boy Scout Oath.

WGR, Buffalo, N. Y. (Eastern, 319), 12:30-1:00 p. m., George Albert Bouchard, organist; 4:00, Tea time music, Martha Gomph, harpist; Katherine Stang, violinist; 6:30 and 11:30, Vincent Lopez Hotel Statler Orchestra; 7:30, Digest of the day's news; 8:00, Brief concert program of the reunion of the 1910 class, University of Buffalo Law School; 9:00, Concert, exclusively religious music, direction of E. C. Clerk, Buffalo City Mission.

WGY, Schanectady, N. Y. (Eastern, 380), 2:00 p. m., "Short Cuts in Housekeeping," Modern Priscilla; 6:30, Children's period; 7:35, Health talk, N. Y. State Department of Health; 7:45, WGY Orchestra; "Scoutjug," C. A. Gammons; "The Boy Scout Oath"; 8:15,

WOO, Philadelphia (Eastern, 509), 11:00 a. m., Organ recital, Mary E. Vogt; 12:00 m., Wanamaker Crystal Tea Room Orchestra; 4:45 p. m., Organ recital, Mary E. Vogt; 7:45, Adelphia Hotel Orchestra; 9:00, WOO Orchestra; 10:30, Hotel Adelphia Dance Orchestra.

WOR, Newark, N. J. (Eastern, 405), 2:30-3:00 p. m., Joint Recital by Carrol C. Clark, baritone and Olive Hopkins, soprano; 6:15-6:30, "Music While You Dine" —Fred Whitehouse Song Revue; 6:30-7:00, Man in the Moon Stories; 7:00-7:30, "Music While You Dine."

WOS, Jefferson City, Mo. (Central, 440.9), 10:15 a. m., Boy Scout program; 8:00 p. m., Müller Theater Orchestra, E. S. Emerson, director; 9:00, Program, Faculty and students of William Woods College.

WWJ, Detroit, Mich. (Eastern, 517), 9:30 a. m., "Tonight'a dinner," Woman's Editor; 12:00 m., Dance music, Jean Goldkette's Orchestra; 3:00 p. m., Detroit News Orchestra; 7:00, Detroit News Orchestra; Anne Campbell, Detroit News poet; E. M. Murray, baritone; Gaorge W. Westcott, saw soloist.

Saturday, February 9

CKAC, Montreal, Can. (Eastern, 425), 7:00 p. m., Kiddies atories in French and English; 7:30, Rex Battle and His Mt. Royal Concert Orchestra; 8:30, Studio Fred Whitehouse Revue; 4:30-4:45, Anne Fair in songs; 7:30-8:00, Clyde Moser and His Dancing Carnival Orchestra; 8:15-8:30, Jimmie Flynn, tenor; 8:30-8:45, Tom Brackeu, baritone; 8:45-9:00, Selma Lange, popular songs; 9:00-9:15, Robert F. Campbell, baritone.

WIP, Philadelphia (Eastern, 509), 1:00 p. m., Karl Bonawitz, organist, Germantown Theater; 6:05, Dinner music, Dick Regan and his WIP Symphony Orchestra; 7:00, Uncle Wip's bedtime atories; 10:10, Dance music, Charlie Kerr and Orchestra from Hotel St. James, and Ted Weems from Cafe L'Aiglon.

WJAZ, Chicago, Ill. (Central, 447.7), 10:00 p. m.-2:00 a. m., Florence K. White, soprano; Cambridge Sisters, vocal trio; Marion Leonard, violinist; Oriole Orchestra.

WJZ, New York, N. Y. (Eastern, 455), 3:00 p. m., Red and Gray Melody Boys; 3:30, Jean Welker, baritone; Augusta Murphy, accompanist; 4:00, Tea concert. Hotel Belmont Stringed Ensemble, Harry Lerner, leader; 5:00, Program, Famous Fain Orchestra; 7:00, "Uncle Wiggily Stories," Howard Garis; 7:30, Ronald Greene, bass; 7:45, "Public Health," Harper & Bros.; 8:00, Ronald Greene; 8:15, Maxmillan Rose, Russian violinist; 9:45, Dinner of the Rensselaer Alumni Association; Speeches, William Henry Finley, president Chicago & Northwestern; Dr. Michael Pupin, of Columbia University.

WLAG, Minnaapolis-St. Paul, Minn. (Central, 417), 10:45-11:15 a. m., Household hints; 11:35-12 m., Weekly maeting of the "Postcard Club," broadcast

7:45, Madison Avenue Reformed Church.

WHAS, Louisville, Ky. (Central, 400), 9:57 a. m., Organ music; 10:00, Church service, Broadway Baptist Church, Rev. Dr. Russell Johnson Pirkey, pastor; 4:00-5:00 p. m., Concert, Nazareth Junior College.

WHK, Cleveland, Ohio (Eastern, 283), 9:00 p. m., Concert program of favorite musical numbers by the WHK Trio; Ben Burtt, pianist, Ben Silverberg, violinist, and Max Schmitt, cellist and director; Vocal numbers, Fred. Van Luit, baritone.

WHN, New York, N. Y. (Eastarn, 360), 3:00-4:30 p. m., Christian Endeavor program; 5:00-5:15, John D. Flynn, of the National Security League, in talk; 5:30-6.00, W. H. N. Radio Five.

WIP, Philadelphia (Eastern, 509), 4:00 p. m., Germantown Y. M. C. A. meeting; 8:00, Bed Stad and His Orchestra; Karl Bonawitz, organist.

WJAZ, Chicago, Ill. (Central, 447.7), 6:00-9:00 p. m., Esther Gielo, soprano; Helen Leefelt, pianist; Lucius Kranz, violinist; Oriole Orchestra.

WLAG, Minneapolis-St. Paul, Minn. (Central, 417), 10:30 a. m.-12:00 m., Morning service, Westminster Presbyterian Church, Minneapolis; 3:45-4:45 p. m., Vesper service, House of Hope Church, St. Paul; 7:45-9:15, Evening service, Second Church of Christ, Scientist, Minneapolis; 9:30-10:45, Musical concert, Minneapolis Business Men's Association's Mandolin Orchestra.

(Continued on page 22)

Radiophone Broadcasting Stations

Corrected Every Week—Part I

AA3, Denver, Colo. 440 meters. Fitzsimmons Gen. Hospital. (Educational Dept. U. S. Army). Fri, 8-9 pm, music, entertainment. Mountain.
AQS, Canton, O. 425 meters. Hdqtrs. 135th Field Artillery O. N. G.
AS6, San Antonio, Tex. 360 meters. U. S. Army, Ft Sam Houston. Mon, Thurs, irregular.
AVT, St. Paul, Minn. 400 meters. 6th Inf. Minn. Nat'l. Guard, St. Paul Armory. Irregular schedule. Central.
AW3, Dayton, O. McCook Field, U. S. Army. Experimental work only.
BEI, Tacoma, Wash. 400 meters. 50 watts. Camp Lewis, U. S. Army, Third Signal Corp. Discontinued indefinitely.
CFAC, Calgary, Alta., Can. 420 meters. 500 watts. Calgary Herald. Daily ex Sun, 1 pm, 3:30-4:30, 7:45-8:45; Fri, 11 pm, music, entertainment, news, market, weather. Dance orchestra Sun, 9 pm; Military Band. Mountain.
CFCA, Toronto, Ont., Can. 400 meters. Toronto Star. Daily ex Sun, 12 m, weather, news, stock; 5:30-6 pm, news; 8-9 pm, music. Sun, 7 pm, church services. Eastern.
CFCF, Montreal, P. Q., Can. 440 meters. Marconi Wireless Telg. Co. Daily 1-1:30 pm. Monday, Wed, Fri, 7:30-9 pm, music, entertainment, reports, Eastern.
CFCH, Iroquois Falls, Ont., Can. 400 meters. Abitibi Power & Paper Co., Ltd. Daily, 9 pm, reports, music, entertainment. Experimental station. Eastern.
CFCJ, Quebec, Que., Can. 410 meters. La Cie de L'Ereuemeut.
CFCK, Edmonton, Alta., Can. 410 meters. Radio Supply Co. Daily ex Sun, 8-8:45 pm, music. Sun, 3:30-4:30 pm. Concert. Mountain.
CFCL, Victoria, B. C., Can. 400 meters. 500 watts. Centennial Methodist Church. Slogan, "Where Religion Cheers." Tues, Fri, 8:30-10:30 pm, concerts, lectures. Sun, 11 am, 7:30 pm, church services. Pacific.
CFCN, Calgary, Alta., Can. 440 meters. 500 watts. W. W. Grant Radio Ltd. Slogan, "Voice of the Prairies." Mon, 11 pm, music. Wed, 10-1 am, dance music. Sat, 10-12 pm, dance music. Test program, Sat, after midnight. Mountain.
CFCD, 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 pm, sacred music. Eastern.
CFCQ, Vancouver, B. C., Can. 450 meters. Radio Specialties, Ltd. Mon, Thurs, 7:40-8 pm. Music, Tues, Fri, 7:40-8 pm, chilldreu's evening. Wed, 4-5 pm. Sat, 7:30-9:30 pm, classical music. Pacific.
CFCR, Sudbury, Out., Can. 410 meters, 200 watts. Laurentida Air Service, Ltd.
CFCW, London, Ont., Can. 420 meters. 100 watts. The Radio Shop. Tests only. Eastern.
CFDC, Nanaimo, B. C., Can. 430 meters. 50 watts. Sparks Co.
CFQC, Sask., Sask., Can. 400 meters. 50 watts. The Electric Shop, Ltd. Slogan, "The Hub City of the West Where No. 1 Northern Hard Wheat Grows." Daily ex Sun, 1-1:30 pm, markets, reports, music. Mon, Tues, Thurs, Fri, 7:30-9 pm, news, reports, markets, entertainmeut. Sun, 9-9:45 pm, church services. Mountain.
CFRC, Kingston, Ont., Can. 450 meters. Queen's University.
CFUC, Montreal, P. Q., Can. 400 meters. Univ. of Montreal.
CHAC, Halifax, N. S., Can. 400 meters. 20 watts. Radio Engineers.
CHBC, Calgary, Alta., Can. 410 meters. The Alberta Pub. Co. Daily ex. Sat. 8:45-9:45 pm., news, stock quotations, music. Mountain.
CHCD, Quebec, Que., Can. 410 meters. Canadian Wireless and Electric Co. Mon, 7:30-9 pm; Wed, 8-9; Sat, 8-10, music. Eastern.
CHCE, Victoria, B. C., Can. 310 and 400 meters. Western Canada Radio Suppl. Ltd. Slogan: "The Voice of tbe Island." Daily ex Sun, 7-8 pm, music, stock reports, entertainment. Suu, 9-10 pm, music, entertainment. Pacific.
CHCL, Vancouver, B. C., Can 440 meters. 2000 watts. Tbe Vancouver Merchants Exchange, Ltd.
CHYC, Montreal, Que., Can. 410 meters. 2,000 watts. Northern Elec. Co. No regular schedule.
CJCA, Edmonton, Alta., Can. 450 meters. 500 watts. Edmonton Journal, Ltd. Slogan, "The Sunniest Spot in Sunny Alberta." Club, "Igloo Hut." Daily ex Sun, 12:30 pm, weather, markets, 7:30-8 pm, Children's half hour. 8:30-9:30 pm, concert, reports. Thurs, 11:15 pm, Igloo Hut meetings. Mountain.
CJCD, Toronto, Ont., Canada. 410 meters. T. Eaton Co. Daily ex Sat. Sun, 4-4:30 pm, music. Eastern.
CJCE, Vancouver, B. C., Can. 420 meters. Sprott-Shaw Radio Co. Daily ex Sun, 12:30-1:30 pm. 3:30-5 8-10, music, news. Pacific.
CJCI, St. John, N. B., Can. 400 meters. Maritime Radio Corp., Ltd. Mon, Wed, Fri, 7:30-9 pm, music. Sat. 9-11 pm, music. Eastern.
CJCM, Mont Joli, P. Q., Can. 400 meters. 100 watts. Dr. J. L. P. Landry. Daily ex Sun, 5-6 pm, 8-9, 11-12:30 midnight. Eastern.
CJCN, Toronto, Ont., Can. 410 meters. Simons, Agnew & Co. Signale.
CJCX, Olds, Alta., Can. 400 meters. 200 watts. Percival W. Shackleton. Slogan, "Echo from the Rockies." Daily ex Sun, 6:45-7:45 pm, music, news, time, entertainment. Mountain.
CJGC, London, Ont., Can. 430 meters. London Free Press. Daily ex Sun. 9:30-10 am, 12-1 pm, 9:30-6, news, market and weather, 8-9, music, entertainment. Eastern.
CJSC, Toronto, Ont., Can. 430 meters. The Evening Telegram.
CKAC, Montreal, Que., Can. 425 meters. 1,200 watts. La Presse. Daily ex Sat, Sun, 4 pm, music; 4:30, weatber, markets, stocks. Tuee, Tburs, Sat, 7 pm, children's hour; 7:30, concert; 10:30, specials. Sun, 4:30 pm, eacred concert. Eastern.
CKCD, Vancouver, B. C., Can. 410 meters. Vancouver Daily Province. Daily ex Sun, 8:30-9:30 pm, music, news, entertainment. Pacific.
CKCE, Toronto, Ont., Can. 450 meters. 750 watts. Can. Ind. Telephone Co. Occaeional programs.
CKCK, Regina, Sask., Can. 420 meters. 500 watts. Leader Pub. Co. "The Queen City of the West." Daily ex Sat, Sun, 9:54, time; 10-10:30 am, 1:15-2 pm, 7:30-8:15. Tues, 7:30-9 pm, music, entertainment, news, market, weather. Sat, silent night. Sun, 9, service. Mountain.
CKOC, Hamilton, Ont., Can. 410 meters. 20 watts. Wentworth Radio Supply Co., Ltd. Slogan, "In the Garden of Canada." Mon, Wed, Fri, 8-9 pm, music, entertainment. Sun, 7-8 pm, church services. Eastern.
CKY, Winnipeg, Man., Can. 450 meters. 2,000 watts. Manitoba Tel. System. Daily ex Sun, 12:30-1:30 pm. lectures, etc. Sun, 7 pm, church services; 9, sacred concert. Central.
CYB, Mexico City, Mex. 425 meters. 500 watts. El Buen, Tono. Tues, Sat, 7:30-9 pm. Thurs, 8-10 pm, concert. Mexican time.
CYL, Mexico City, Mex. 500 meters. 500 watts. Tues, Fri, 9-10:30 pm. Mexican.
KDKA, E. Pittsburgh, Pa. 326 meters. 1,000 watts. Westinghouse Elec. & Mfg. Co. Daily ex Sun, 9:45-10 am. 12-1 pm, market reports, music; 6-10 pm, news, features, markets, concert; 9:55-10, time. Sun, 10-45 am, church eervice; 2:30 pm, Bible story; 2 pm, concert; 4:45 pm, 7:30, church eervice. Eastern.
KDPM, Cleveland, O. 270 meters. Westinghouse Elec. & Mfg. Co.
KDPT, San Diego, Calif. 244 meters. 500 watts. Southern Elec. Co. Daily ex Sun, 1:30-2:30 pm, 6:00-6:45, Wed, 8:00-10:00 pm. Sun, 10:00-11:30 am. Pacific.
KDYL, Salt Lake City, Utah. 360 meters. 100 watts. Newhouse Hotel. Daily ex Sun, 6:30-8 pm, news, music, entertainment. Mountaiu.
KDYM, San Diego, Calif. 280 meters. 100 watts. Savoy Theater. Mon, Wed, Fri, 8-10 pm, music, entertainment. Pacific.
KDYQ, Portland, Ore. 360 meters. 100 watts. Oregon Institute of Technology. Slogan, "The Radio School." Educational programe.
KDYW, Phoenix, Ariz. 360 meters. 20 watts. Smith Hughes & Co. Temporarily discontinued.
KDYX, Honolulu, T. H., Hawaii. 360 meters. 100 watts. Honolulu Star-Bulletin Co., Ltd. Daily ex Sun, 12:15-1:15 pm, reports; 6:30-7:30 pm, entertainment, music, talks. Mon, Wed, Sat, 9:15-10:15 pm, dance music. Sun, 11 am-12:15 pm, church services. 120th Meridian.
KDZB, Bakersfield, Calif. 240 meters. 100 watts. Frauk Siefert. Daily ex Sun, 8-9 pm, reports, music. Sun, sacred program, Irregular. Pacific.
KDZE, Seattle, Wash. 455 meters. 500 watts. The Rhodes Co. Mon, Wed, Fri, 8:30-10:30 pm, music; Fri, 12:30-1:30 pm, meeting; Sat, 2-3 pm, music. Pacific.
KDZF, Los Angeles, Calif. 278 meters. 500 watts. Automobile Club of Southeru California. Not operating now.
KDZI, Wenatchee, Wash. 360 meters. 50 watts. Elec. Supply Co. Temporarily discontinued.
KDZQ, Denver, Colo. 360 meters. Nicholas Academy of Dancing.
KDZR, Bellingham, Wash. 261 meters. 50 watts. The Bellingham Pub. Co. Daily and Thurs, 7-8 pm. Pacific.
KFAD, Phoenix, Arlz. 360 meters. 100 watts. McArthur, Brothers. Daily ex Sun, 7:30-8:30 pm, news, weather, stock reports, muelc. Mouutain.
KFAE, Pullman, Wash. 330 meters, 500 watts. State College of Washington. Mon, Wed, Fri, 7:30-9 pm, lectures, music, readings. Pacific.
KFAF, Denver, Colo. 360 meters. 500 watts. Western Radio Corp. Slogan, "Volce from the Rockies—Out Where the West Ie." Mon, Tues, Fri, Sat, 8-9 pm; Thurs, 7:30-8, music, reports, news. Wed, silent. Mountain.
KFAJ, Boulder, Colo. 360 meters. 100 watts. Univ. of Colo. Tues, Thurs, Sat, 9 pm, time, music, addresses by faculty. Sat, 2:30-5 pm, football. Mountain.
KFAN, Moscow, Ida. 360 meters. 50 watts. The Electric Shop.
KFAR, Hollywood, Calif. 280 meters. 200 watts. Studio Lighting Service Co.
KFAU, Boise, Ida. 270 meters. 150 watts. Boiee H. S. Daily ex Sun, 4-4:30 pm, markets, weather, news. Wed, Fri, 8-9 pm, concert. Mountain.
KFAV, Venice, Calif. 258 meters. 5 watts. Abbot-Kinney Co. Mon, Tues, Wed, Fri, 8:30-9:30 pm, music. Pacific.
KFAW, Santa Ana, Calif. 261 meters. 10 watts. Radio Den. Daily ex Sun, 4:30-5 pm, news, reports, music. Mon, Thurs, 6:30-7:30 pm, concert. Pacific.
KFAY, Medford, Ore. 283 meters. 50 watts. W. J. Virgin. Temporarily discontinued.
KFBB, Havre, Mont. 360 meters. 50 watts. F. A. Buttrey Co. Daily ex Sun, 12:30 pm, agriograms, weather, news. Tues, Fri, 8-9:30 pm, music. Mountain.
KFBC, San Diego, Calif. 278 meters. 20 watts. W. K. Azbill. Thurs, Sun, 8-9 pm, Bible lesson, sermon. Pacific.
KFBE, San Luis Obispo, Calif. 360 meters. 50 mi. R. H. Horn. Temporarily discontinued.
KFBG, Tacoma, Wash. 360 meters. 50 watts. First Presbyterian Church. Sun, 11 am-12:15 pm, 7:30-9. Pacific.
KFBK, Sacramento, Calif. 283 meters. 100 watts. Kimball-Upson Co. Slogan, "Heart of California." Daily ex. Sun, 6-6:45 pm, concert, news, codes. Wed. 8-9:30 pm, concert. Pacific.
KFBL, Everett, Wash. 224 meters. 10 watts. Lesse Bros. Daily ex Sun. 7:15-8:15 pm. Sun, 2-3 pm. Pacific.
KFBS, Trinidad, Colo. 360 meters. 15 watts. Chronicle News & Gas & Elec. Supply Co.
KFBU, Laramie, Wyo. 283 meters. 50 watts. Bishop N. S. Thomas.
KFCB, Phoenix, Ariz. 278 meters. 78 watts. Nielson Radio Supply Co. Daily, 7-7:30 pm, bedtime stories. Mountain.
KFCD, Salem, Ore. 360 meters. 5 watts. Salem Elec. Co. Tues, Wed, Fri, 7-8 pm. Pacific.
KFCF, Walla Walla, Wash. 360 meters. 50 Watts, Frank A. Moore.
KFCH, Billings, Mont. 360 meters. 10 watts. Electric Service Station, Inc. Wed, Fri, Sun, 7:30-9 pm, music. Mountain.
KFCK, Colorado Springs, Colo. 258 meters. 10 watts. Colorado Springs Radio Co. Club, "Lion Tamers." Daily ex Sun, 12-1 pm, 5:15-6:15, music. Special concerts, 10-11 pm. Sun, 11-12:15 pm, 7:30-9:30, church. Mountain.
KFCM, Richmond, Calif. 244 meters. 100 watts. Richmond Radio Shop. Slogan, "Out Where the West Ends." Daily ex Sun, 1-2 pm, music. Tues, Fri, 8-9 pm, music. Pacific.
KFCP, Ogden, Utah. 360 meters. 25 watts. Ralph W. Flygare.
KFCV, Houston, Tex. 360 meters. 10 watts. Fred Mahaffey, Jr. Daily ex Sun, 7:30-8 pm, markets, entertainment. Sun, 2-3 pm, entertainment. Central.
KFCY, Le Mars, Ia. 252 meters. 50 watts. Western Uulon Collcge, Wed; 10-11 pm, music, educational. Central.
KFCZ, Omaha, Neb. 258 meters. 100 watts. Central H. S., Mon, Tues, Wed, Thurs, Fri, 3-4 pm. Mon, Tues, Thurs, 7-8 pm. Central.
KFDA, Baker, Ore. 360 meters. 5 watts. Adler's Music Store. Daily ex Sun, 5-6 pm, 7:30-8, music. Sun, 6-8 pm. Pacific.
KFDD, Boise, Idaho. 252 meters. 10 watts. St. Michael's Cathedral. Sun, 11:15-12:30 pm, 8-9:15 church services. Mountain.
KFDH, Tucson, Ariz. 360 meters. 50 watts. Univ. of Ariz. Irregular schedule.
KFDJ, Corvallis, Ore. 360 meters. 50 watts. Oregon Agri. College. Mon, 8-9 pm, Thurs, 8-9 pm. Pacific.
KFDD, Bozeman, Mont. 248 meters. 40 watts. H. Everett Cutting. Mon, Wed, Sat, 8-9 pm. Mountain.
KFDR, York, Neb. 360 meters. 10 watts. Bullock's. Slogan, "The Little Station with the Big Kick." Club, "Radio Bats." Daily, 4-4:30 pm, children's hour; Wed, 8:30-10 pm, music; Sun, special afternoon program. Central.
KFDS, San Francisco, Calif. 360 meters. John D. McKee.
KFDU, Lincoln, Neb. 240 meters. 20 watts. Neb. Radio Elec. Co.
KFDV, Fayetteville, Ark. 360 meters. 200 watts. Gilbrech & Stinson. Slogan, "Southern Gateway to the Ozarke." No regular schedule. Central.
KFDX, Shreveport, La. 360 meters. 100 watts. First Baptist Church.
KFDY, Brookings, S. D. 360 meters. 50 watts S. D. State College of Agri. & Mech. Arts. Mon, Sat, 8:30 pm, music. Tues, Thurs, 11 am, music lectures, news. Central.
KFDZ, Minneapolis, Minu. 231 meters. 5 watts. Harry O. Iverson.
KFEC, Portland, Ore. 360 meters. 50 watts. Meier & Frank Co. Inc. Daily ex Sun, 12 m, weatber, 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.
KFEL, Denver, Colo. 360 meters. 50 watts. Winner Radio Corp. Daily ex Sun, 9 am, 10, 11, 11:45, stock reports; 2-4 pm, muelc. Mon, Fri, 9-10 pm, concerts. Sun, 9-10 am, church services. Mountain.
KFEQ, Oak, Neb. 360 meters. 100 watts. J. L. Scroggin. No regular schedule.
KFER, Fort Dodge, Ia. 231 meters. 20 watts. Auto Electric Service Co.
KFEV, Casper, Wyo. 263 meters. 100 watts. Felix Thompson Radio Elec. Shop. Slogan, "You Tell 'Em." Weather reports and special warnings. Mountain.
KFEX, Minneapolis, Minn. 261 meters. 100 watts. Augsburg Seminary. Tues evening, music. Central.
KFEY, Kellogg, Ida. 360 meters. 10 watts. Bunker Hill & Sullivan Mining Co. Slogan, "Voice of the Coeur D'Alene." Mon, Wed, Sat, Sun, 7:30-8:30 pm, Pacific.
KFEZ, St. Louis, Mo. 360 meters. 100 watts. American Society of Mech. Engrs. Wed, 8:30-9:30, Engineering program. Central.
KFFB, Boise, Ida. 273 meters. 10 watts. Jenkins Furn. Co. (Owyhee Hotel). Tues, Thurs, Sat, 8-10 pm, concert. Mountain.
KFFE, Pendleton, Ore. 360 meters. 10 watts. Eastern Ore. Radio Co. Daily ex Suu, 8:30-9:30 pm, music. Pacific.
KFFO, Hillsboro, Ore. 229 meters. Dr. E. H. Smith. Daily, 6-7 pm, muelc, sports, news. Fri, 9-10 pm, Chamber of Commerce Community Program. Pacific.
KFFQ, Colorado Springs, Colo. 360 meters. 100 watts. The Markshaffel Motor Co. Weather, CBrD-T1BRem. road reports, time. Mou, Fri, 8-9:30 pm, special program. Tues, 4-5 pm. Mountain.
KFFR, Sparks, Nev. 226 meters. 100 watts. Jim Kirk. Thurs, 7-8 pm, "Sagebrush Canaries." Pacific.
KFFV, Lamoni, Iowa. 360 meters. 100 watts. Graceland College. Thurs, 7-8 pm, muslc. Sun, 6:30 pm, church service. Central.
KFFX, Omaha, Nebr. 278 meters. 100 watts. The McGraw Co. Daily, 2:30-3:30 pm. Central.
KFFY, Alexandria, La. 360 meters. Pincus & Murphy, Inc.
KFFZ, Dallas, Tex. 360 meters. Al. G. Barnes Amusement Co. (Portable Set). Moving soon to Los Angeles.
KFGC, Baton Rouge, La. 254 meters. 100 watts. Louisiana State University. Fri, 8-9 pm. Central.
KFGD, Chickasha, Okla. 248 meters. 200 watts. Okla. College for Women, Chickasha Radio & Elec. Co. Slogan, "Queen of the Washita." Tues, Thurs, 7:30 pm, music, lectures, etc. Wed, 10 am, chapel Sat, services from college. Central.
KFGH, Stanford Univ., Calif. 222 and 286 meters. 500 watts. Leland Stanford Junior University. No regular schedule.
KFGJ, St. Louis, Mo. 266 meters. 250 watts. National Guards Missouri 138th Inf. Mon, 7:30-10:30 pm, Fri, 10:30 pm-1 am, Sun, 2-4 pm. Central.
KFGL, Arlington, Ore. 234 meters. 5 watts. Arlington Garage.
KFGQ, Boone, Ia. 226 meters. 10 watts. Crary Hardware Co.
KFGV, Utica, Nebr. 224 meters. 10 watts. Hildbreder Radio Supply Co. No regular schedule.
KFGX, Orange, Tex. 250 meters. 500 watts. First Presbyterian Church. Sun, 11 am, 7:30 pm, church services. Central.
KFGZ, Berrien Springs, Mich. 268 meters. 500 watts. Emanuel Missionary College. Temporarily discontinued.
KFHA, Gunnison, Colo. 252 meters. 50 watts. Western State College of Colorado. "Where the Sun Shines Every Day." Daily ex Sun, 8:30 am, weather, markets. Tues, Fri, 7:30 pm, eutertainment. Mountain.
KFHB, Hood River, Ore. 280 meters. 5 watts. Rialto Theatre. Daily ex Mon, 6:20-6:35 pm, sports, news. Sun, 1-1:45 pm, music. Special programs 11 pm, Pacific.
KFHD, St. Joseph, Mo. 226 meters. 125 watts. Utz Elcetric Co. Daily ex Sun, 5:30-6 pm; Tues, Thurs, Sat. 8-9:30 pm, concert. Central.
KFHF, Shreveport, La. 266 meters. 150 watts. Central Christian Church.
KFHH, Neah Bay, Wash. 261 meters. 50 watts. Ambrose A. McCue. Tues, Thurs, 9-10 pm; Sat, 9-11 pm, dance. Pacific.
KFHJ, Santa Barbara, Calif. 360 meters. 100 watts. Fallon & Co. Wed, Thurs, Fri, Sat, 6-6:45 pm; Wed, Fri, 9-10 pm; Sun, 10 am, church services. Pacific.
KFHR, Seattle, Wash. 283 meters. 50 watts. Star Elec. & Radio Co.
KFHS, Lihue, Hawaii. 275 meters. 30 watts. Clifford J. Dow.
KFHX, Hutchinson, Kans. 229 meters. 200 watts. Robert Nelsou.
KFI, Los Angeles, Calif. 469 meters. 500 watts. Earle C. Anthony, Inc. Daily ex Sun, 5-6 pm, 6:45-7:30 pm, 8-11 pm, Wed, Fri, Sat, 8-12 pm. Sun, 10-10:45 am, 4-5 pm, 6:45-7:30, 8-11. Pacific.
KFIB, St. Louie, Mo. 244 meters. 10 watts. Franklin W. Jenkens.
KFID, Iola, Kaus. 246 meters. 20 watts. Ross Arbucklee Garage. Daily, 5:15-5:45 pm. Tues, 9-10 pm. Central.
KFIF, Portland, Ore. 360 meters. 200 watts. Benson Tech Student Body.
KFIK, Gladbrook, Iowa. 234 meters 20 watts. Gladbrook Elec. Co.
KFIL, Louisburg, Kans. 234 meters. 30 watts. Windisch Elec. Farm Equip. Co. Wed., Sat., 8-10:30 pm. Sun., 11-12 m, church servicee. Central.
KFIO, Spokane, Wash. 252 meters. 50 watts. North Central High School.
KFIQ, Yakima, Wash. 242 meters. 50 watts. Yakima Valley Broadcasting Assn. Slogan, "The Station That Will Make 224 Famous. Mon, Wed, Fri, 7:30-8:30 pm, concert. Sat, 7:30-8 pm, S. S. lesson. Sun, 4-5 pm, music. Pacific.
KFIU, Juneau, Alaska. 226 meters. 10 watts. Alaska Elec. Light & Power Co. Mon, Wed, Fri, 7:30-9 pm. Pacific.
KFIX, Independence, Mo. 240 meters. 250 watts. Reorganized Church of Jesus Christ of Latter Day Saints.
KFIY, Seattle, Wash. 231 meters. Brott Laboratorles.
KFIZ, Fond du Lac, Wis. 273 meters. Daily Commonwealth and Oscar H. Huelsman.
KFJB, Marshalltown, Iowa. 248 meters. 10 watts. Marshall Elect. Co. Tues, Fri, 8:30 pm. Central.
KFJC, Seattle, Wash. 270 meters. 100 watts. Post Intelligencer. Slogan, "Hello Folks." Daily ex Sat. 3:30-4:30 pm, music; 8:30-10 programs, dance music. Tues, Thurs, 7-7:30 pm, code. Sat, 8:30-12 m, dance. Pacific.
KFJD, Greeley, Colo. 236 meters. 50 watts. Weld County Printing & Pub. Co. Temporarily discontinued.
KFJF, Oklahoma City, Okla. 252 meters. 40 watts. National Radio Mfg. Co. Slogan, "Radio Headquarters." Daily ex Sun, 3 pm, concert; 6:30, police, announcements. Tues, Fri, 8:30 pm, concert. Sun 3 pm, concert. Central.
KFJI, Astoria, Ore. 252 metere. 10 watts. E. E. Marsh and Liberty Theater. Daily ex Sun, 7-8 pm. Sun, 9:30-10:30 pm. Pacific.
KFJK, Bristow, Okla. 233 meters. 100 watts. Delano Radio & Elec. Co. Daily ex Sun, 3-4 pm, music. Thurs, 8-9:30 pm, music. Sun, 7:30 pm, church services. Central.
KFJL, Ottumwa, Ia. 242 meters. 10 watts. Hardsoog Mfg. Co. Club, "Boiled Bugs." Mon, Wed, Fri, 7:30-8:30 pm. Central.
KFJM, Grand Forks, N. D. 280 meters. 100 watts. University of North Dakota.
KFJR, Stevenville, Mont. 258 meters. 6 watts. Ashley C. Dixon & Son. Slogan, "The Bitter Root Valley Broadcasting Station." Fri, Sun, 8-9 pm, music, readings. Mountain.
KFJV, Dexter, Ia. 224 meters. 10 watts. Thomas H. Warren. Daily ex Sun 9:15 am, 10:25, 1:45 pm, weather, markets. Tues, Fri, 8:30 entertainment. Central.
KFJW, Towanda, Kans. 226 meters. 10 watts. La Grande Radio Co. Mon, Wed, Thurs, 7-8 pm Tues, 8:45-11:45 pm, concert. Fri, 8:45-11:45 pm, orchestra. Central.
KFJX, Cedar Falls, Iowa. 229 meters. 50 watts. Iowa State Teachers College. Educational programs.
KFJY, Fort Dodge, Iowa. 246 meters. 50 watts. Tunwall Radio Co. Slogan, "Ft. Dodge, Iowa, Where Corn Is King." Daily ex Sun, 8 am, 8:30, 9:30, 10:30, 11:30, 12:20 pm, weather, markets. Sun, 11-12:20 pm, church services. Special evening programs. Central.
KFJZ, Fort Worth, Texas. 254 meters. 20 watts. Texas National Guard, 112th Cavalry. Wed, 8:30-9:30 pm. Sat, 8:30-10 pm, program. Central.
KFKA, Greeley, Colo. 248 meters. 50 watts. Colorado State Teachers College.
KFKB, Milford, Kans. 286 meters. 500 watts. Brinkley-Jones Hospital Assn. Slogan, "Watch Out, Here Comes Brinkley." Daily ex Sun, 10-12 midnight, music, lectures. Central.
KFKH, Lakeside, Colo. 226 meters. 10 watts. Denver Park Amusement Co. Closed for winter.
KFKQ, Conway, Ark. 224 meters. 100 watts. Conway Radio Lab. Daily ex Sun, 12 m, weather, market reports. Tues, Fri, 8 pm, muelc. Sunday evening, church services. Central.
KFKV, Butte, Mont. 283 meters. 50 watts. F. F. Gray. Tues, Thurs, 8-10 pm. Pacific.
KFKX, Hastings, Neb. 286 meters. 500 watts. Westinghouse Elec. & Mfg. Co.
KFKZ, Colorado Springs, Colo. 234 meters. 52 watts. Nassour Bros. Radio Co. Daily ex Sun, 12-1 pm. 5-6, matinee musicale. Mountain.
KFLA, Butte, Mont. 288 meters. 5 watts Abner R. Wilson.
KFLB, Menominee, Mich. 248 meters. 20 watts. Signal Elec. Mfg. Co.
KFLD, Franklinton, La. 234 meters. 20 watts. Paul E. Greenlaw
KFLE, Denver, Colo. 268 meters. 25 watts. National Educational Service. Daily, 7-7:30 pm. Broadcasts for schools on request. Mountain.
KFLH, Salt Lake City, Utah. 261 meters. 50 watts. Erickson Radio Co., Inc.
KFLP, Cedar Rapids, Iowa. 240 meters. 20 watts. Everett M. Foster
KFLQ, Little Rock, Ark. 261 meters. 20 watts. Bizzell Radio Shop. Mon, 8-9 pm, music. Tues, Thurs, 8-9:30 pm, revival services. Sun, 11:00-12:00 m., 8-9:30 pm., church services. Central.
KFLR, Albuquerque, N. M. 254 meters. 100 watts. University of New Mexico. Fri, 8 pm, educational program. Mountain.
KFLU, San Benito, Texas. 236 meters. 20 watts. Rio Grande Radio Supply House.
KFLV, Rockford, Ill. 229 meters. 10 watts. Rev. A T. Frykman.
KFLW, Missoula, Mont. 234 meters. 10 watts. Missoula Elec. Supply Co.
KFLX, Galveston, Tex. 240 meters. 10 watts. George R. Clough.
KFLY, Fargo, N. D. 231 meters. 20 watts. Fargo, Radio Supply Co.
KFLZ, Atlantic, Ia. 273 meters. 10 watts. Atlantic Automobile Co.
KFMQ, Fayetteville, Ark. 263 meters. 100 watts. U. of Arkansas.
KFMR, Sioux City, Ia. 261 meters. 10 watts. Morningside College.
KFMS, Duluth, Minn. 275 meters. 100 watts. Frelmuth Dept. Store.
KFMT, Minneapolis, Minn. 231 meters. 5 watts. Dr. George W. Young.
KFMU, San Marcos, Tex. 240 meters. 20 watts. Stevens Bros.
KFMW, Houghton, Mich. 266 meters. 50 watts. M. G. Sateren.
KFMX, Northfield, Minn. 283 meters. 500 watts. Carleton College.
KFMY, Long Beach, Calif. 229 meters 20 watts. Boy Scouts of America. Long Beach District Council.
KFMZ, Roswell, N. M. 25 meters. 500 watts. Roswell Broadcasting Club.
KFNC, Los Angeles, Calif. 278 meters. 500 watts. Echo Park Evangelistic Ass'n, Inc.
KFNG, Coldwater, Miss. 254 meters. 10 watts. Wooten's Radio Shop.
KFNH, Springfield, Mo. 236 meters. 20 watts. State Teachers' College.
KFNJ, Warrensburg, Mo. 234 meters. 50 watts. Warrensburg Elec. Shop.
KGB, Tacoma, Wash. 252 meters. 50 watts. Tacoma Daily Ledger "This Is KGB in Tacoma, Washington, the Lumber Capital of America" Mon, Wed, Fri, 7-9 pm. Pacific.
KGG, Portland, Ore. 360 meters. 50 watts Hawk & Watson Radio Service. Slogan "The Rose City." Daily ex Sun, 5:30-6 pm, music entertainment 7-8 pm, reports. Sat, 8-8:30 pm, answers to Radio questions. Sun. Wed, 9-10 pm, music. Pacific

(NOTE—The second part of the station data list will appear next week.)

CHALLENGE!

ONE DOLLAR will be paid to the first Radiophan submitting the most errors in any 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. Turn in corrections for as many stations as you can find—if you can find errors! Use separate sheet of paper for each station submitted and place name and address on each sheet.

That's just how sure Radio Digest is that this Radiophone station directory is correct! To make the challenge fair for everyone, broadcasting stations and their employees are barred from this offer. Why? Because the broadcasters 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 oked 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 four parts, serially continuously; the first three parts are station data listings, arranged alphabetically; the fourth 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, estimated sure range (by Radio Digest) in miles, owner's name, slogan used, if any, name of listener in "club." schedule of operating hours, and kind of time used.

Four successive issues of Radio Digest will give one the most complete and accurate list of broadcasting stations obtainable. This service is original with this publication, and has been maintained from the start.

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King Miloplex Turns Out New Trick Circuit

Part XIX—Modified Wizard Miloplex Described

By the Mystery Man

The wind is blowing,
And it is snowing,
And I am going
HoEm.

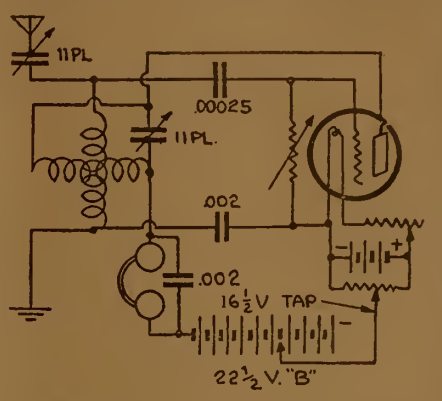
WHICH is proof positive that all you have to do in order to write heart-rendering poetry is try and sell it. But, really, truly, the above windlet came drifting in as I was trudging home after cussing and discussing the printer because he didn't show some speed in getting the photo out for you, "My Gang"; you, now over 5,000 strong who wrote Maggie. Yes, and you fellows who sent her candy n'everything. Make him work, keep his nose to the grindstone; rope and hogtie him. Yes, all of them kind wurds and more, too, that's what you fellers wrote her.

Ever since the Wizard Miloplex came out in your magazine, I have been a strong advocate of the circuit. I originally built it as a one tube set and the results were better than I had hoped. I rebuilt it as a three tube circuit a couple of weeks ago after having heard over fifty staions on the one tube. My list then contained at least three in California, some 1,900 miles from here. Since the three tube set has been working I have raised my list to over eighty stations and am still gathering them in at the rate of four to six a night. Last silent night I was quite successful and up to midnight, when I "signed off," heard 35 stations, eastward to the Atlantic coast, westward to Denver, and from Texas to Ontario and Saskatchewan, Canada. My set is run on WD-11 tubes and is exactly like the original hook-up, except that I put a 1,000-ohm phone coil in series with the primary of the first transformer. It wouldn't oscillate correctly until I did. The wave length range of the stations received was from 254 to 545 meters. Could a neutrodyne beat it?

Yours very truly,
Henry F. Dever, Wilmette, Ill.

'Course, as Maggie says, "It was awfully sweet of you," but man, oh, man, I said just fix it so I could still eat—not a banquet. Let's eat is my motto; then I'm sure, unless there's some company or a dude at the table whose chest measure is the same as mine but with a longer reach. . . Well, it's all there; why pass it and waste so much time? But, anyway, you fellows fixed it—I'll say you did! Can I stay home—can I eat? I'll say I can; listen, the very day your post cards reached the 3,000 mark she let a chicken wink at a pan of hot water and we had chicken soup—and it was fine. Then I brought home a chicken that I was going to teach how to wink, and Maggie nearly made soup of her (you know what I mean). Oh, well, it's all according to where you get your chicken. Certainly! Don't you 'spose I now know that the guy who wrote "Fine feathers make fine birds" never was a cook. He got all of his training listening or peeking at a lace counter.

I've noticed a slight change, though, in Maggie since she received, or got—no, it's received—all those cards, a sort of motherly tenderness, not quite so much rolling-pin attitude. Why, only yesterday at dinner—well, call it supper—anyway as we were eating at six bells, she said: "Don't you wish for another cup of coffee," and I told her I wouldn't. Maybe I missed her, because she backfired by saying, "Pardon me, do you wish for another cup of coffee?" Well, I never knew you had to wish for it, so thought best to save my dome by playing telephone girl and not answering. Yes, I got by, but had to turn on the radiator to take the chill off the room. Really and truly, the more I think about it, the blacker seems the sky. Well, I'd rather



be right than president and she's both, so I guess this is going to be a bad year in our family—especially when you live in a stingy neighborhood and no cellars.

WhichIs Best Miloplex Circuit?

And now that you know just how things are at home, please permit me for the first time to step out of the "Mystery Man" character for a moment to answer a most insistent question—sort of from-the-ridiculous-to-the-sublime change.

Hundreds of letters have come to me asking which of my three circuits is the best for the average fan to build who cares nothing about experimenting and who wants to be cock-sure that the circuit will stack up as "A number 1," not a trick circuit exactly but one that is stable and has enough refinements in it to make it well worth while building for keeps.

Friends, listen! If I was going to build one just to please everyone, I'd build two—one of them a three-tube regenerative, the other a four-tube power amplifier Radio frequency set—which means I would add one more real circuit to my original three. But you insist on only one, so suppose we run the first diagram today, showing my pet of the three-tube regenerative circuits for everyman's use. Then, next week, two stages of audio amplification; then rest a while, and if enough of you want a real "Hc" four-tube circuit that has a power amplifier idea in it, I will see that you get it. But build this one anyway; it will well be worth your time and make a lot of sets sit up and take notice. What is it? Nothing more or less than the "Wizard"—yes, the one some of you passed up—the real Wizard Miloplex with one or two slight modifications.

The Wizard Miloplex Modified

Same old split variometer—and you know now, I don't like moulded ones—same old socket, rheostat, potentiometer and everything. But, it's got more kick than—well, build it you fellows who passed it up because it was too easy. Refining some of the "old ham" timers very often gives you a surprise on volume and DX.

I've made a very important B battery change, also a doubly important variable condenser change, and if you will cut your five-ton aerial down to a single wire around 100 feet long, I am quite certain you will be surprised.

Note particularly that the variable condenser in the antenna is an 11-plate affair, though you may in a pinch use a 21-plate but no larger. While the 11-plate is better, again watch very carefully and note that the connection from the center post of the potentiometer goes to the 16-volt + tap on your B battery; the 22½-volt + connection on your B battery goes to phones, and be certain to try first one, then the other of your phone cord terminals on this + 22½-volt tap. Considerably greater signal strength will result from the proper terminal and besides, you will also avoid the possibility of slowly demagnetizing your phones. Be certain to connect the rotating plates of antenna condenser to antenna side, and make your lead from grid condenser short, yes, very, very short. Don't make square

(Continued on page 22)

QUIZ R.C.A. MONOPOLY

(Continued from page 2)

following countries, or with concerns in control of the situation in those countries: Norway, France, Germany, Poland, Sweden, Netherlands, South America, Japan and China.

Arrangements have also been "perfected" by the R. C. A. with the land telegraph companies (Western Union and Postal Telegraph) whereby messages will be received at their offices.

How R. C. A. Was Born and Nursed Along

A summary of the contracts between the respondents as recited in the Federal complaint is (1) the organization of the Radio Corporation of America in 1919, under the supervision of the General Electric Company which company received large holdings in the stock of the R. C. A. for capital supplied and for its service in connection with the acquisition of the American Marconi Company.

(2) An agreement entered into between these companies granted to the Radio Corporation an exclusive license to use and sell apparatus under patents of the General Electric Company until 1945; and the Radio Corporation grants to the General Electric Company the exclusive right to sell through the Radio Corporation of America only, the corporation agreeing to purchase from the General Electric Company all Radio devices which the General Electric Company could supply. (Later this arrangement was extended to include the Westinghouse Electric & Manufacturing Company, the business of the Radio Corporation being apportioned between the General Electric Company and the Westinghouse company; 60 percent going to the General Electric and 40 percent to the Westinghouse company.)

(3) Meanwhile, in July, 1920, the General Electric Company and the American Telephone & Telegraph Company made an arrangement for mutual licensing on Radio patents owned by each. This provided for certain traffic regulations. The terms of this agreement were then extended to the Radio Corporation of America and the Western Electric Company, and thereafter to the Westinghouse company.

How United Fruit Was Invited In

The Radio Corporation in March, 1921, made an agreement with the United Fruit Company (which operated a number of commercial Radio stations in Central and South America), by which licenses under the Radio patents of the Radio Corporation and of the United Fruit Company (and its subsidiary, The Wireless Specialty Apparatus Company of Boston) were exchanged and arrangements made for the exchange of traffic facilities. The definition of the respective fields of the Radio Corporation and the United Fruit Company was adopted and provisions of the agreements between the R. C. A., the General Electric, American Telephone & Telegraph and the Western Electric companies were also extended to the United Fruit Company.

VOLTRON TUBES

LEADERS IN TUBE ECONOMY

Voltrons set a mark of highest quality in tube manufacture. Only the most skilled workers were employed, the most scrupulous tests resorted to. Yet Voltrons sold for considerably less than other tubes. They led in price reduction. They will continue to lead in quality and economy.

All Tubes One Price

Type	Volts	B Battery Amp	B Battery Voltages
O. H. 12	1½	.25	15 to 90
O. H. 501-A		.25	15 to 90

$5

Either from your dealer or sent direct C. O. D.
Begin saving NOW—order TODAY!

O. HERSCHKOWITZ, 92 Branford Place, Newark, N. J.
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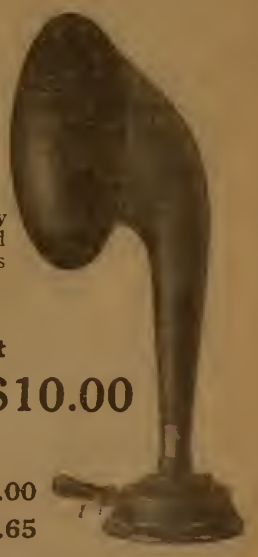
Highest quality Loud Speaker made. CAST ALUMINUM vibrationless horn, extra large and sensitive unit. Adjustment lever tones down local stations and strengthens weak signals from distant stations just like focusing a camera.

Acousticola



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Published by the Radio Digest Publishing Company, Inc.
123 West Madison Street
Telephone: State 4843, 4844, 4845
Chicago, Illinois

E. C. RAYNER, Publisher
Chas. F. Smisor, Editor Evans E. Plummer, Managing Editor
H. J. Marx, Technical Editor M. W. Thompson, Associate Editor

Eastern Representative, Jacob Miller, Times Bldg., Times Square, New York; Telephone Bryant 4909

Member of the Audit Bureau of Circulations
58
PUBLISHED WEEKLY

SUBSCRIPTION RATES
Yearly in U. S. and Possessions and Canada, $5.00.
Foreign postage, $1.00 additional. Single copies, 10 cents.

Vol. VIII Chicago, Saturday, February 9, 1924 No. 5

Powerful Set Wanted

Simple Hook-Ups Desired but Are Not Heart of Set

EVEN the mightiest of the mighty is threatened by newcomers in Radio. Revolutions iu this science are occurring so fast that the bystander can do nothiugn but give way and have patienee for the fiual outcome. There is no use iu taking part, no advantage in deciding ou a certaiu receiving set for one's own amusement. For tomorrow that set may be overthrown by another, simpler and better. Such are the uncertainties of a revolutionizing science.

That Radio is in a state of turmoil, of constant chauge and uncertainty, has uever been so attested as it is now. Today a "super set" is hailed as the latest achievemeut. Tomorrow it may be out of date.

The simple hook-up will come, but only through those necessary parts which cannot be made by persons that can just solder a wire.

Operations Must Be Learned

No Definite Instructions Can Be Given

NO definite laws regarding Radio communication can be laid down by the scientist and authority, as a great many fans have learned by experience. There are too many factors, of which little is known, involved in the operation of this newest science. The questions of static, fading of signals and interference, each of these a problem in itself, are always present to handicap the authority wheu he attempts to set down certain rules and laws for the fan to follow.

There is nothing definite for the fan to go by in Radio commuuication at the present time. Tho only way he can tell is by installing a receiver and experimenting with his anteuna and ground system uutil he achieves perfect reception. It is entirely useless for hiu to write to au expert hundreds of miles away and ask him how far a certain type of receiving set will reach when installed. The expert eannot tell him. He may advise how to install the set properly to get the best results possible under the local conditious, but that is as much as he can do. The rest is up to the elements.

Amplification and Interference

Necessary Things for the Future of Radio

WHEN the telephone and telegraph first came into use their advent was hailed as "annihilating space." Yet we realize that we never knew the meaning of the term until Radio broadcasting began. Radio has proved the real space-annihilator.

Radio telephone conversations have beeu held between New York, Paris and Honolulu. News of the greatest disaster of modern times, the Japanese earthquake, came to the rest of the world by Radio.

In 1897 Marconi made the statement that dispatches by voice could be sent 20 miles and said he was speaking within practical limits. The distance depends upon the amount of exciting energy and the dimensions of the conductors from which the waves proceed.

But amplification has upset all his calculations. The range of modern Radio communication is the result of amplifying or multiplying millions of times the electrical energy at the broadcasting statiou and again at the receiving station when it is changed back to sound energy.

In all probability, the biggest development in Radio in the immediate future will be among the farmers and those living in small villages and towns. Putting these families in touch with what Radio has to offer will enrich and expand rural life to a greater degree than even the automobile or the telephone.

Every family in the land contains potential Radiophans, and two factors especially point to the possibility of a Radio development which may eventually mean a set per family in the United States. One is the fact that amateurs need not buy expensive sets, but by a little ingenuity can build their own sets. They get good results, save money, and have a lot more fun building their own than in buying them. Their chief need is caution to buy only reliable apparatus. The transformer is the heart of the set, and this must be of reliable manufacture. We have interference to contend with at present, but progress is being made in this direction and soon this will not retard development.

RADIO INDI-GEST

Our Own Idiotorial

NOW WE want an inning. We demand an inning. We must have one so we will take one. All our contemporary column conductors take an inning now and then, so, "Why not I with thine?" Let's consider. Up to the time of going to press, 1,793,485.026 cartoonists have abundantly filled the daily press of this country with cartoon strips featuring two jokes.

It wouldn't be so bad if they'd vary it just a little bit and hop on a couple more of the old standbys, but why in the name of Marconi must these strip artists continue their incessant repetition? But WE will have revenge! We shall BAR the two offendiug, malodorous so-called jokes. They shall not pass!

Hear ye, hear ye, ye aspiring literati who contribute to our column—the story relating to the man with the ear muffs being taken for a Radiophan by a child and the pun coupling up the opening of a window and cold air with a Radiophau haviug received a South American republic, are hereby irrevocably barred from appearing in our column. We DARE you to send us anything based on similar premises. INDI.

When We Had the "Willies"

When Willie was a little boy,
He had such fiendish ways.
If we had company at our house,
'Twas one of his off days.

He'd be so good and play so nice,
When we were all alone,
But just when folks were sittin' 'round,
That boy we could disown.

Time went on and it came to pass,
Another "Willie" came to us.
Who rau absolutely true to form,
With howl and wail and fuss.

When all alone we'd tune in fine,
And get all stations clear,
But when strange folk would call at night,
There wasn't one we'd hear.

So both we called by that same name,
A contrary pair were they,
But now a good set we have got,
And son's outgrown his way.

H. K. C.

Static Aid from Switzerland

Dear Indi: All this hokum pokum about wave traps hasn't even a butter knife's edge on my Shure Shot Static Trap. For the benefit of humanity I will disclose the details of my brain child to the world through your valued medium. Photograph is given herewith. The cheese not only attracts the static, but has been known to set up its own atmosphere, thus preventing the external atmospherics from atmosphering.

BLOCK OF LIMBURGER CHEESE TO ATTRACT STATIC. MOUSE TRAP TO FOIL STATIC.

Then as a side issue, the holes often intrigue the static noises into the puzzling myriad of their complexities, thus losing them forever. The mouse trap, when the cheese fails, pins the sky crackles to the base, at the same time it opens the antenna circuit wide, iu fact too wide for any self-respecting static to jump. Your welcome. V. L. J.

Whereto? Galena, Illinois?

Dear Indi: Noting the unceasing inquiry as to my whereabouts and the untiring demand for my souper touch to valuable kinks, I feel duty hound to send in another, so here goes. The subject of my lecture this evening will be, "How to Make Your Crystal Set Cover Any Distance You Desire."

Lecture.—Hop a train and take your set there.

CAPACITY JACK.

P.S. Am sending you hunk of coal which at present market prices is worth well over $001.00. Handle it carefully so as not to get dirty. C. J.

Here's One 3,000 Years Old

Dear Indi: Howzis?

King Tut had a Radio set,
It cost him fifty annas
But all the music he could get
Was "Yes We Have No Oranges."

PHIL A. MINT.

But Did He Get Cuba?

Dear Indi: A fellow in our town (the usual way to start) was robbed the other night as he sat at "Old Faithful," his Radio set. The newspaper reporter found that the following conversation had taken place:

Burglar: "Stick 'em up! No fooling, now, or—"

Radiophan (frantically): "Sh-h-h-h! I've just tuned in Havana, I think. Take anything you want, but SHUT UP!"

MAMA HAYMES.

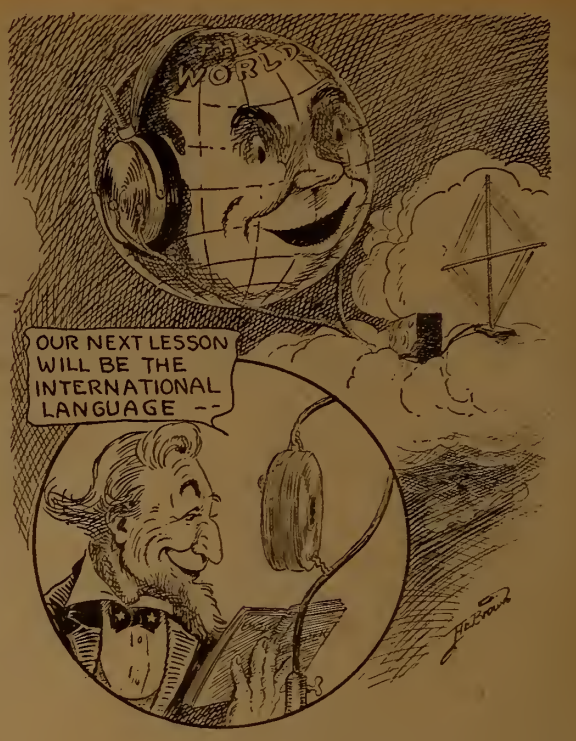
But They Were Martyrs to Science, C. M.

Dear Indi: When the Sheuandoah lost her nose thousands of Radio sets lost their "innards." When the great ZR1 sent its Radio SOS, broadcasting ceased without warning, except at ten-minute intervals when announcements were made concerning the big dirigible's position. Hundreds of thousands of sets were being used. One man I know went to sleep with the headphones on depending on the announcements to awaken him.

BUT

think of the thousands of poor, innocent Radio sets that were tuned in during one of the silent intervals. Many a silent set was placed on the operating table that night and dissected mercilessly to locate an absent trouble.

C. M. P.



Condensed

By DIELECTRIC

Since the special attempt was made to reach across the Atlantic via Radiophony by England and the United States, a greatly increased interest has been manifest on the part of British listeners in to distant reception. They are equipped with several relay stations the business of which is to rebroadcast programs from other countries for the benefit of local fans. Many of our stations are heard with considerable regularity over there and by a large part of the Radio audience, due to this means. Why could not a similar stunt be put on for American listeners at some specified time, just to let them hear what is going on over there?

In conversation with a nurse recently I was informed that her observations of patients having access to a Radio receiver convinced her of its efficacy in relieving sufferers, particularly in cases of mental distress. In this instance a receiving set had been given the hospital where she is employed. Take, for example, the Arnold home for aged men in Detroit, Mich., where the installation of a receiver has brought new life to men whose outlook must be dreary at best. Is there any reason why those who through affliction must spend a part, or all, of their time in an institution would not appreciate hearing all the things that only Radio can bring? What are you doing in your community?

No matter to what political party you vow allegiance, Republican or Democratic, the proceediugs of a national conveution. May be we won't waut to again, but this is to see how few men can pick the candidate you and I shall vote for. Of course, if the newspapers give you all you care to know of what takes place among the hundreds of delegates chosen (osteusibly) to represent you, perhaps the news of both parties contemplating broadcastiug their big meetings will not make your dials more allnring. It is very likely, however, that immense audiences of listeners in will be all set to catch every sound coming from the "mike" set up in Public Hall, Cleveland, and from Madison Square Garden, New York City. Lots of us never heard a political convention. May be we won't want to again, but this is something entirely new iu Radio.

"It's the same old thing no matter what station you tune to, songs, jazz and crop reports!" Is it? I will readily admit that some of the popular songs have become less popular, due to unch repetition: jazz—well, you read the verdict rendered by the listening Radio public; as for the crop reports, they are given but seldom through the day and then not from all broadcasting stations. Was the battle in the air between the ZR-1 and the elements, so dramatically described through WOR, another of those commonplace features? To anyone listening to the announcer asking his unseen auditors for information about the huge airship and, later, giving location and proffers of aid to those on the dirigible, certainly thrills were not lacking. It is the unexpected which makes Radio reception so fascinating a thing.

If you have not too receutly joined the clan of Radiophans it will be easy for you to recall the time when colleges had not realized the contribution they might make to educational advance in broadcasting lectures given by members of the faculty. Now, this Radio specialty has found a place in the regular programs of many studios and transmitting apparatus has been installed in a number of the colleges of the country. I know of one instance where the rapid strides in mastering correct use of English, by the aid of a professor's broadcasted lectures, enabled one listener to advance more quickly than would otherwise have been the case. An effort is now being made to have the authorities include the study of Radio in the scientific curriculum of the University of Pennsylvania. It would seem entirely logical to have all educational institutions including scientific courses of study about Radio as a subject.

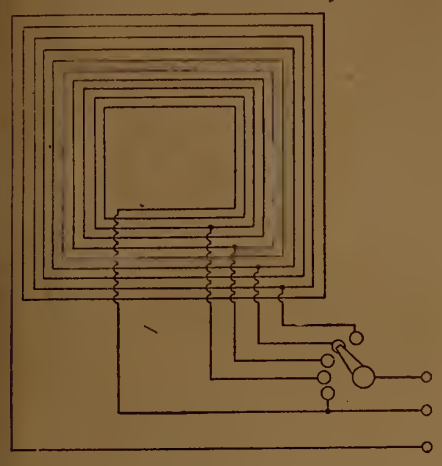
How and Why of Super-Heterodyne Receiver

Chapter IV—Loop Aerial and Circuit

By H. J. Marx

WITH the completion of the super-audible transformers and the oscillator, the fan is prepared to start work on the assembly of his set.

Many are no doubt wondering why there are three input terminals on all the cir-



cuit diagrams and how the connections are to be made. With super-heterodyne circuits, owing to their ability to pick up weak signals, it has not been necessary to use an outdoor antenna. The loop aerial is amply efficient and by its directional effect makes the best type of energy collector.

Loop Aerial Details

In the illustration is shown the connection details of a loop aerial. This loop consists of 10 turns of wire, stranded preferred, wound in the form of a single-layer inductance, on a framework 2 feet square. The turns should be spaced ½ inch apart. The two outer ends are connected to the two lower terminals, as shown in the diagram. This shunts the .0005-mfd. variable condenser in the input circuit across the loop for tuning. The tapped switch is connected to the top or grid terminal of the circuit. This tapped connection is made at every second turn and permits a variation of the actual energy thrown on the grid.

This variation of energy thrown on the grid is of decided importance in improving the efficiency of reception.

Outdoor Antenna

For cases where the use of outside acrials are desired, the usual method of connecting the tapped secondary of an air core neutrodyne transformer is recommended. This method is shown in the

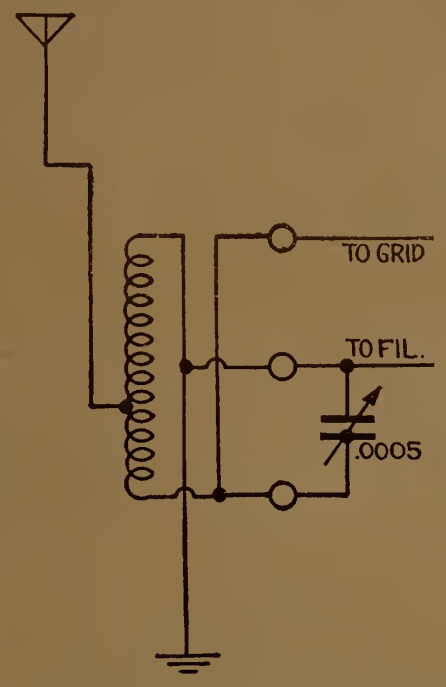
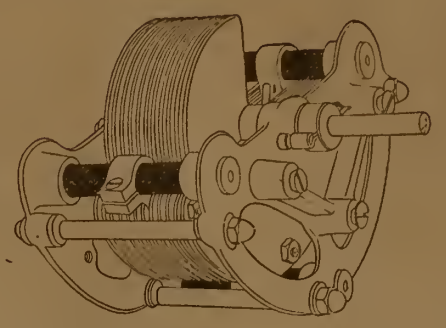


illustration. It is a decided improvement over an aperiodic primary and also avoids the addition of another control if a variocoupler were used.

Condenser Efficiency

The problem of condenser efficiency is of prime importance. All condensers should



be of the highest quality obtainable, with low leakage losses and also low resistance value. Naturally the minimum capacity should be as low in value as possible. Two condensers of this type are shown in the illustration. These are by no means the only ones available; a number of others are about to be placed on the market. The two illustrated, however, show to best advantage the type of construction which is characteristic of high efficiency design.

Seven-Tube Circuit

The large illustration shows a seven-tube super-heterodyne circuit using two stages of neutralized Radio frequency,

(Continued on page 26)

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Equipped with ammeter and rheostat to control charging rate. Long leads permit plugging in practically anywhere.
Made of best materials; well finished; mounted on substantial base; weighs 60 pounds.
Regularly equipped with 110 v., 60 cycle A. C. Motor; 6-10 volt Generator.
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Ask us why a good motor generator set is the only real way to charge and keep your batteries in condition and how it will save you money, time and trouble.

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Moulded of brown bakelite; Binding Post Connections.
D99 Standard Type for 201A, 301A, W.D.12.....39c
D100 For U.V.199, U.V.299, Socket 39c
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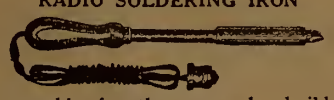
RADIO SOLDERING IRON



Indispensable for the man who builds his own sets.
D109 .....$2.50
D133—Soldering Paste, tube..... .25

COCKADAY CIRCUIT COMPLETE

Consisting of

1 Cockaday coil and 7 pigtail connections
2 .0005 Variable Condenaers
1 Socket
1 Panel 7x12
2 Dials, 3 in.
1 Grid Leak and Condenser
1 Rheostat
1 Switch Lever
1 Base Board
12 Ft. Bus Bar
7 Switch Points
7 Marked Binding Posts
1 Jack

Wiring Diagram and Instructions

D-178—Our Price $9.95

MISCELLANEOUS

D163 Spaghetti Tubing, per yd.....$0.09
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D165 Ground Clamps ..... .17
D166 Black Rubber Binding Posts..... .05
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D168 No. 18 Annunciator Wire, half pound coil. .39
D169 6 ft. Phone Cord with Tips..... .79
D170 20 ft. Extension Cord with Tips..... 1.95
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D172 Tubular Porcelain Lead-in Insulators, 6-in. .10
D173 Reinartz Coil 1.45
D174 Cockaday Coil 2.42
D175 2 in. Dial and Knob..... .25
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Highest grade of material used, tapered knob.
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D57 Wood Cabinet; panel size 7"x10", Ea.$2.50
D58 Wood Cabinet; panel size 7"x12".... 2.75
D59 Wood Cabinet; panel size 7"x14".... 3.00
D60 Wood Cabinet; panel size 7"x18".... 3.50
D61 Wood Cabinet; panel size 7"x21".... 3.75
D62 Wood Cabinet; panel size 7"x24".... 4.00
Baseboards (Mahogany Stained) for use with above cabinets
7x10.....25c 7x14.....35c 7x21.....45c
7x12.....30c 7x18.....40c 7x24.....50c

PLATE CIRCUIT "B" BATTERIES

The highest grade of battery made at prices lower than they ever were sold before.
D80—22½ Volt Small.....$1.15
D81—22½ Volt Medium. 1.45
D82—22½ Volt Large.... 1.95
D83—45 Volt Medium..... 1.95
D84—45 Volt Large..... 2.50
D85—45 Volt Extra Large..... 3.50
D86—360 Hour 1½ Volt Twin Double Duty "A" Battery ..... .75

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Tuesday, November 27, during the test period between 9 and 9:30 P. M., Rev. E. A. Cole in the residence of J. A. McIver, of Roodhouse, Ill., while operating a set made of materials and in accordance with the hookup furnished by the ELGIN RADIO SUPPLY CO., tuned in 2-LO, London, England, using receivers and but one tube. Later another tube was lighted and the loud speaker used, so that four people could hear the program and concluding announcement. The numbers, time, and the order in which they were played were

Officially Confirmed

by the St. Louis Post Dispatch in conjunction with the National Association of Broadcasters, who had charge of the tests. (See page 34, St. Louis Post Dispatch, Dec. 2, 1923.) This same hookup has been advertised extensively as the one which brings in stations 2000 miles overland on a loud speaker and one tube; and this has been demonstrated so often as to need no repetition.

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207 Chicago St. ELGIN, ILL.

ADVANCE PROGRAMS

(Continued from page 17)

WLW, Cincinnati, Ohio (Central, 309), 9:30 a. m., Sunday School Editorial Staff of Sunday School Publications of the Methodist Book Concern; 11:00, Services, Church of the Covenant, Dr. Frank Stevenson, minister; 7:45, Service, Church of the Covenant, Dr. Frank Stevenson, minister.

WOC, Davenport, Iowa (Central, 484), 7:00 p. m., Organ recital, Erwin Swindell; 8:00, Church services; 9:00, Musical program, Erwin Swindell, director.

WOS, Jefferson City, Mo. (Central, 440.9), 7:30 p. m., Religious service, First Presbyterian Church, Rev. W. [illegible] Adams, pastor.

WWJ, Detroit, Mich. (Eastern, 517), 7:30 p. m., Service, St Paul's Episcopal Cathedral; 2:00, Detroit News Orchestra.

Monday, February 11

CKAC, Montreal, Can. (Eastern, 425), 1:45 p. m., Rex Battle and his Mt. Royal Hotel Concert Orchestra; 4:45, Joseph C. Smith and his Mt. Royal Dance Orchestra.

KFAE, Pullman, Wash. (Pacific, 330), 7:30-8:30 p. m., Lincoln's Birthday program: Women's Glee Club of State College; "Eloquence of Lincoln," Prof. Maynard Lee Boggs; "Lincoln," reading, Ida Louise Anderson; "The Gettysburg Address," reading, Nettie Glover; "Wheat," Dr. E. F. Gaines.

KFI, Los Angeles, Calif. (Pacific, 469), 5:15-5:45 p. m., Examiner News Bulletins; 8:00-9:00, Evening Herald concert; 9:00-10:00, Examiner concert; 10.00-11:00, Ambassador-Lyman's Cocoanut Grove Orchestra.

KPO, San Francisco, Calif. (Pacific, 423), 5:30 p. m., Children's half-hour, stories for children, "Big Brother of KPO," taken from the Book of Knowledge; 8:00-9:00, Organ recital, Theodore J. Irwin; 9:00-10:00, Program, San Francisco Conservatory of Music; 10:00-11:00, Max Bradfield's versatile band.

WBAP, Fort Worth, Texas (Central, 476), 7:30-8:30 p. m., Concert, Guy Pituer, pianist; Brooks Morris, violinist; 9:30-10:45, Concert, artists of the Texas Woman's College, R. C. Forman, director.

WDAR, Philadelphia (Eastern, 395), 11:45 a. m., Daily Almanac; 12:02 p. m., Organ recital, Stanley Theater; dinner music, Arcadia Cafe Orchestra; 2:00, Arcadia Cafe Orchestra; 7:30, Dream Daddy with Boys and Girls; 7:50, Moving Picture review, by James A. Nassau; 8:00, Talk, Samuel Lecair; 10:10, Howard Lanin's Dance Orchestra.

WEAF, New York, N. Y. (Eastern, 492), 4:00 p. m., Kittie Storms; 4:30, Gertrude Bonime, pianist; 5:00, Mother's Program; 7:00, Boy Scout Talk; 7:15, Dr. Edgar Mayer; 7:30, Thornton Fisher; 7:40, Ruth Chase, lyric soprano; 7:50, Peoples Trust Co.; 8:00, Hoxie N. Fairchild; 8:20, Ruth Chase; 8:40, Mears & Co., Talk on "Watches"; 9:00, Vladimir Dubinsky, cellist; Nikolai Onlukanoff, baritone; Ariel Rubstein, pianist; Nicholas Nichotaieff, pianist; Samuel Stilman, violinist; Boris Kreinine, violinst.

WFI, Philadelphia (Eastern, 895), 1:00 p. m., Meyer Davis Bellevue Stratford Orchestra; 3:00, Loretta Kerk, pianist; 6:00, Bedtime stories; 6:30, Meyer Davis Bellevue Stratford Orchestra.

WGR, Buffalo, N. Y. (Eastern, 319), 12:30-1:00 p. m., George Albert Bouchard, organist; 4:00, Tea time music, Martha Gomph, harpist; Katherine Stang, violinist; 6:30-7:30, Vincent Lopez Hotel Statler Orchestra; 7:30, Digest of the day's news; 9:00, Concert, Kellogg Products, Inc., direction of E. H. Roth.

WGY, Schenectady, N. Y. (Eastern, 380), 2:00 p. m., "The Story of St. Valentine," Mrs. Katherine V. Steers; 7:45, "Electricity and Paper Making," R. R. Rogers; WGY Orchestra; "Husking Bee," Alma Terpening, reader; Edward A. Rice, violinist.

WHAS, Louisville, Ky. (Central, 400), 4:00-5:00 p. m., Strand Theater Orchestra; Walnut Theater Orchestra.

WHAZ, Troy, N. Y. (Eastern, 380), 9:00 p. m., Scotch concert, Troy Burns Club; Address, representative of New York State Conservation Commission; Midnight program, popular music, Campus Serenaders, Rensselaer Polytechnic Institute Students' Glee Club.

WHN, New York, N. Y. (Eastern, 360), 4:30-4:45 p. m., Dorothy Bromberg in songs; 7:30-8:00, Lannin's Roseland Dance Orchestra; 8:30-8:45, Dorothy Wallace Fortingall, saxophone and vocal solos; 9:00-9:15, Sam Coslow, tenor; 9:15-9:45, "Broadway Melodies"; 10:00-10:15, Alfred Dulin, pianist; 10:15-10:45, Chic Winter's Empire State Theatre.

WIP, Philadelphia (Eastern, 509), 1:00 p. m., Gimbel Brothers Tea Room Orchestra; 6:05, Ches West's Orchestra; 7:00, Uncle Wip's bedtime stories.

WLAG, Minneapolis-St. Paul, Minn. (Central, 417), 10:45-11:15 a. m., Household Hints; 11:35-12:00 m., "Just Among Ourselves"; 2:00-2:30 p. m., Woman's Club, Lessons in Practical Sewing, Mme. Myrtle Saperston; 2:40-1:00, Daylight concert; 4:00-1:30, Story reading, Mildred Simous; 5:30-6:00, Children's stories, Tess Cooperman; 6:00-6:15, "Spreading the News," D. D. Meredith, United Press; 6:15-7:00, George Osborn's Minneapolis Athletic Club Orchestra; 7:30-8:15, Farm Lectures.

WLW, Cincinnati, Ohio (Central, 309), 8:00 p. m., Concert, arranged by Minnie Tracey, artist pupils of her vocal class; Celeste Bradley, violinist; Rose Bradley and Sam Morganstern, accompanist; Catherine Wise, Mary Steele, Margaret M. Fisher, Alfred Yungkiud, Mary M. Earle, Jean Wines, Ida Blackman; 9:00, Crosley Theatrical review; Roger Hill Dance Orchestra.

WMC, Memphis, Tenn. (Central, 500), 8:30 p. m., Gayoso Hotel Orchestra, Prof. Gasper Pappalardo, director.

WOC, Davenport, Iowa (Central, 484), 7:00 p. m., Lecture; 8:00, Musical program, Erwin Swindell, director.

WOO, Philadelphia (Eastern, 509), 11:00 a. m., Organ recital, Mary E. Vogt; 12:00 m, Wanamaker Crystal Tea Room Orchestra; 4:45 p. m., Organ recital, Mary E. Vogt; 7:45, Adelphia Hotel Orchestra; 8:30, Erno Rapee and his Orchestra; 10:10, Hotel Adelphia Dance Orchestra.

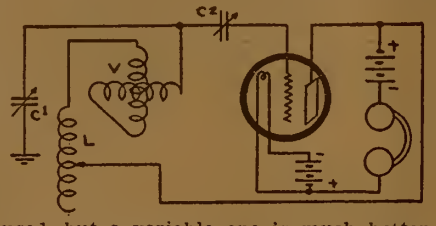
WOR, Newark, N. J. (Eastern, 405), 6:15-7:30 p. m., Harry Cox and His Hotel Robert Treat Orchestra; 8:00-8:15, Mr. Wm. McCosker, "Current Motion Pictures"; 8:15-8:30, Arthur Gordon Huson; 8:30-8:45, Mr. Jolly Bill Steinke; 8:45-9:00, Arthur Gordon Huson; 9:45-10:00, Alice Duell Stenck—talk; 10:00-11:00, War Veterans' Band.

WOS, Jefferson City, Mo. (Central, 440.9), 8:00 p. m., Band concert, Radio Famous Missouri State Prison Band, Virgil W. Combs, bandmaster; Piano solos, "King of the Ivories."

WWJ, Detroit, Mich. (Eastern, 517), 3:00 p. m., Detroit News Orchestra; 7:00, Detroit News Orchestra.

Phantom Circuit

The hook-up shown has proved very satisfactory. It gives louder signals on CW and phone transmission than by using the regular antenna and coupler. In the illustration C^1 is a variable condenser of .001 mfd. and C^2 is a .0005 variable condenser. A fixed grid condenser can be



used, but a variable one is much better. The coil L is about 54 turns of Number 22 wire, tapped in nine places, or every six turns. The tuning is done with the switch and C^1, while C^2 controls the oscillations. If an amplifier is connected, it is applied as usual, that is, the primary of the transformer in the place of the phones.—Elwyn C. Woodworth, Rochester, New York.

KING MILOPLEX

(Continued from page 17)

turns in your wiring. The shortest distance between two points is a straight line. Run your wiring as short as possible—never mind how it looks. This animal you are building is for listening, not looking, and it's worth two tricks if you use a panel mount socket so your variablo grid leak can be close at hand and close to the socket also.

Operation of Wizard

In operating, turn on filament rheostat just to the ragged edge of the hiss point, then throw the dial out the window—well, all right, keep it if you will promise not to go beyond that very slight hiss point.

Never mind whether you think the condenser across the rotor is working or not. May be I know or I wouldn't use it, and no—it doesn't tune your plate.

Use an open work closely coupled variometer; yes, about 60 turns on both rotor and stator; get a soldering iron that works and sweat the joints. If you don't know how to sweat a joint when soldering, then have nerve enough to ask a tinsmith. He knows.

That's about all, except if you use dry cell tubes the potentiometer should have at least 1,600 ohms resistance, and your plate B voltage as marked on the tube carton. If storage 6-volt battery, then a potentiometer of around 200 ohms will do. Let's eat.

(TO BE CONTINUED.)

Ground Connections

What is the best ground connection? Using tubes, the ground is perhaps more important than the aerial. Many sets will operate on ground alone. Custom has seemed to center on the water pipe as the best ground, although this is not always true. It ought to be the cold water pipe, and there must be a ground clamp, with the wire soldered to clamp. The larger the ground wire the better. Copper braid or ribbon is better than wire. The ground wire should be supported on insulators until it reaches the pipe. The actual ground is where the pipe enters the earth, not where the wire touches the pipe.

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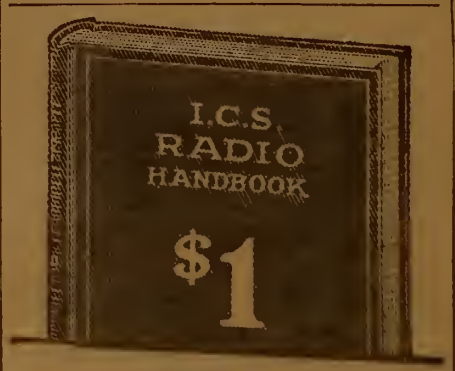

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Simple Explanation of Radio for Everybody

Chapter X—Part II—Loud Speakers

By M. W. Thompson

THE following article is the twentieth of a serles for Radio beginners, written by Marvin W. Thompson, well known in air-phone circles for his understandable style of approaching his subject. The remaining chapters will be:

Chapter XI—Dry Cells and Storage Batteries.
Chapter XII—Radio Frequency Amplification.

THE perfect diaphragm, or one that would be sufficiently good for most of us, would have an intensity curve like that shown in Figure 78. For notes below 50, the efficiency would be gradually rising and it would reach maximum on notes around 100. The intensity line would be flat to notes around 5,900, after which it would drop to zero at 6,000. True, some of the higher harmonics of the upper fundamentals would be lost, but reproduction would be most satisfactory. Unfortunately, due to the increasingly di-

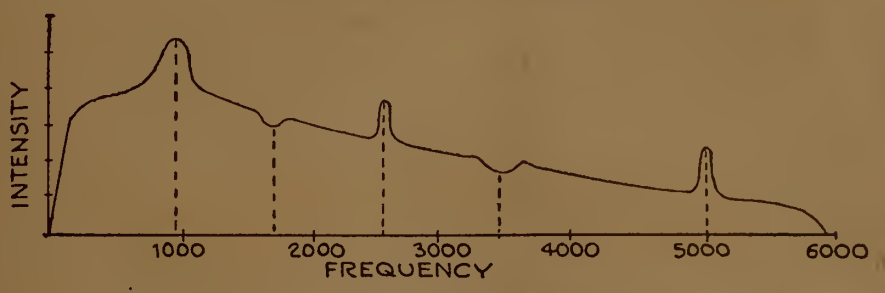

Figure 79—The diaphragm response is usually as shown here, the natural period being at 990 cycles.

vided response on higher notes, the curve for even the best present-day loud speakers looks much like Figure 79. The peak at about 990 is due to the natural frequency of the diaphragm; those at 2,500 and 5,000 are due to certain harmonics at which the diaphragm vibrates well. The intensity, for the reasons given above, falls off and there is a pleasure-wrecking weakness of the high notes and a flat shrillness to them due to the elimination of their harmonics. The elimination of the diaphragm with the necessary substitution of some other means of setting the air in vibration is essential.

The small chamber behind the diaphragm receives but little consideration in most loud speakers, although it can play quite an important part in the faithfulness of the reproduction. It is, as a rule, air-tight, and the air within it must expand and contract with the diaphragm. This air has a natural resonant point. Both of these factors react on the diaphragm, adding more bumps to the reproduction curve, which mean distortion.

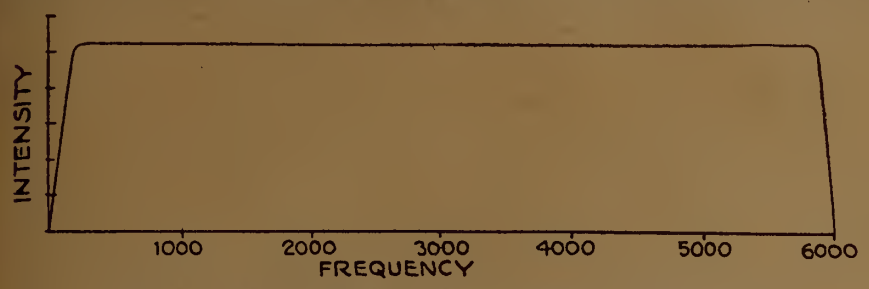

Figure 78—The efficiency curve of a perfect loud speaker would show equal response at all frequencies.

The Horn Part

This brings us to the horn. Contrary to the general impression, the amplifying action on sound waves is not due to the horn vibrating and acting as a sounding board. The effect of the horn is to reinforce the vibrations which enter it due to the resonance properties of the body of air inclosed by it. The quantity and quality of this resonance depends mainly upon the volume of the inclosed air and somewhat upon its shape. Consideration of the speakers on the market gives one some idea of the divergence of opinion on the subject. The aim is to produce a horn that, while it is not resonant to any of the frequencies found in the musical scale, is not completely dead and lifeless.

Unusually rigid material, such as stone or thick metal or compositions made of wood fiber, gives the best results. If the walls of the horn are smooth and rigid, they produce no appreciable effect upon the tone. If, on the other hand, they are rough or flexible (resonant), they may absorb or rapidly dissipate the energy of of the air vibrations at certain frequencies and thus, by subtraction of certain harmonic overtones, have a marked influence upon tone quality. This would inject depressions or valleys into our curve of Figure 79 and make it appear as in Figure 80. A resonant point on the 1,750 notes will give the depression noted at that point and also a marked weakening on the first multiple, or 3,500.

Shape of the Horn

The shape of the horn also affects that which comes out. Every curve and corner, twist and surface on the inner side changes the direction of the outpouring waves. The flare of the horn has a great influence upon the response; widening the

(Continued on page 26)

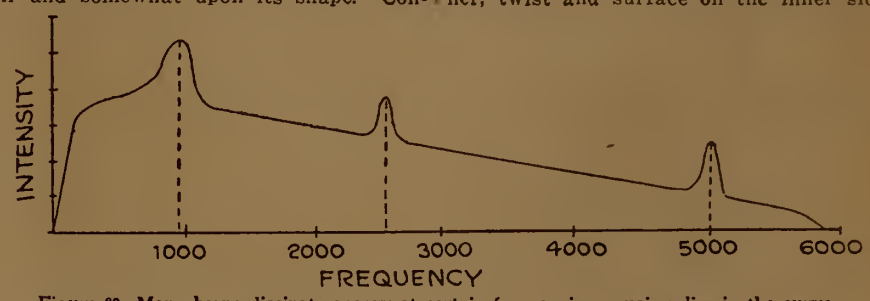

Figure 80—Many horns dissipate energy at certain frequencies, causing dips in the curve.

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The Interference Problem in Radio

By E. F. McDonald, Jr., President of the National Association of Broadcasters

IN ANALYZING the Radio interference situation at the present time, it should always be remembered that while broadcasting is of paramount importance to millions of people throughout the country, there are other phases of the Radio industry which must be considered and upon which depend much of the commerce of the world. Trans-Atlantic and ship-to-shore Radio traffic are of vital importance.

The work of the serious Radio experimenter is also of the highest value in furthering the advancement of the Radio art. In order that the broadcast listener may get the most out of his receiver, a thorough knowledge of the causes of the interference which he occasionally experiences, together with the various means available for their reduction or elimination is essential.

Two Most Frequent Causes of Trouble

There are, of course, various types of interference occasioned by different causes. The two most annoying at the present time are telegraph code interferences from ship and shore stations working on low wave lengths of around 450 meters, and the re-radiation of receivers of improper design or improperly operated by unskilled users. It is to the interest of all participating in the Radio industry to assist in correcting these conditions as well as the other causes of interference.

The National Association of Broadcasters have conferred with Secretary of Commerce Herbert Hoover on the subject of ship interference, and through his efforts and co-operation are arranging for international regulations providing for the carrying on of ship-to-shore traffic on wave lengths outside the broadcasting band. This article, therefore, deals only with the interference created by re-radiation from Radio receivers.

Legislation Cannot End Bad Conditions

It is a popular fallacy that all that is necessary to put a stop to any undesirable condition is the passing of legislation. Unfortunately this idea has occasionally taken root and grown into something that constitutes a real menace at the heart of our American civilization. There is nothing more detrimental to the morale of a nation than the adoption of legislation which is obviously impossible of enforcement and which, through the ease with which it may be ignored, teaches wholesale disrespect not only for the law but the authorities that make laws.

We have, at the present time, no better example of an "iron-clad" law which, so far at least, has been impossible to enforce, and which has possibly worked a greater evil than that which it was designed to eliminate—than the prohibition amendment.

Patriotism Only Successful Force in War

During the war the navy department undertook through its intelligence service to prohibit the use of transmitting and receiving apparatus throughout the country. The prohibition on transmitting was comparatively easy to enforce, but, notwithstanding every effort to eliminate reception, in the final analysis it came down simply and squarely to reliance on the loyalty and patriotism of the individuals which go to make up our great nation.

Obviously the individuals who really desired to use Radio for ulterior purposes had no such sense of loyalty, and as a consequence, to a great extent, all that was accomplished was the prohibition of the use of receivers in the hands of those who would not use them in any case to the disadvantage of the country, whereas it was practically impossible to stop the use of such apparatus in the hands of those intent on serving their own ends.

Adopted Legislation Could Not Be Enforced

For these reasons, the adoption of legislation prohibiting the use of receivers which feed back energy into the antenna is obviously absurd. The adoption of an act of this kind would be comparatively easy, but the enforcement would require a greater force of officers and special agents than we have at the present time attempting to enforce prohibition. Certainly our government cannot afford such an expenditure even if it were possible to completely eliminate re-radiation by such means.

It should be remembered that, in the first place, the locating of the offending receivers which feed back into antennæ would be comparatively difficult, and even were they located, it would be a simple matter for the user of a set of this kind to disconnect the tickler coil, or whatever means was used to feed back the energy, while the inspector was present, and attach it the moment he left. The enforcement of any such act would also be rendered extremely difficult because of the statutes prohibiting the entrance of private dwellings without proper search warrants.

The Solution to the Problem

Granting that the feed back from receiving sets is harmful and that preventive legislation, if not impossible, at least is impractical, what is to be done?

Obviously the solution to the problem is constructive action on the part of the Radio manufacturer. At the present time the laboratories of eight of the largest manufacturers of receiving apparatus are at work night and day on the production of a simple device to be connected ahead of receivers feeding back, which will not allow the passing of this energy out to the antenna. Such a device, when developed and perfected, will be put on the market by the manufacturers, according to an agreement among them, at practically actual cost, so that the users of all types of sets will have the benefit of the device without undue expense.

It is not fair or reasonable to expect the users of feed back receivers to junk and throw away apparatus representing the investment of many hundreds of thousands of dollars, when by the addition of some simple device the re-radiation can be entirely removed and reception improved.

The public will not be hard to persuade to use a device which will cost little and which will not only through reciprocity eventually eliminate all feed back howls,

(Continued on page 30)

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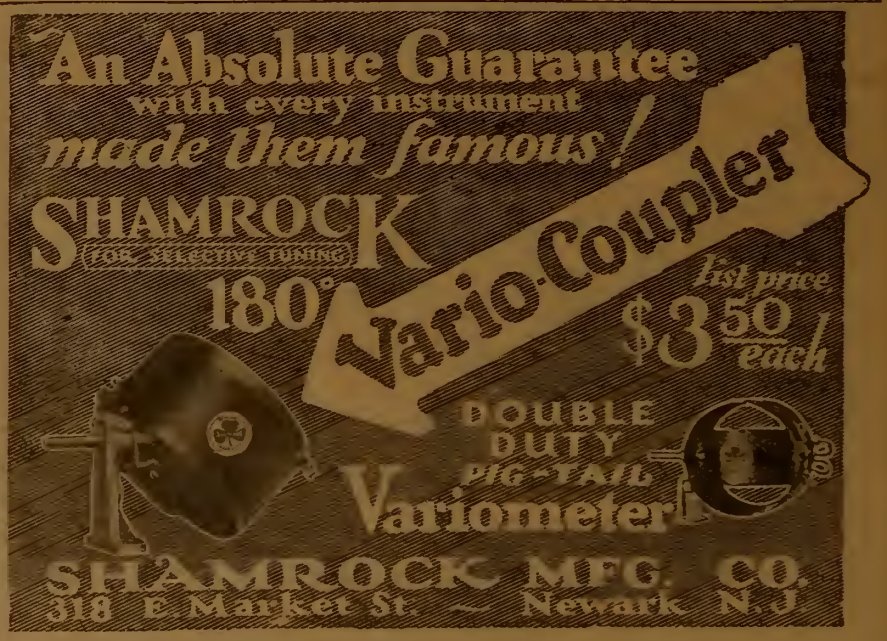

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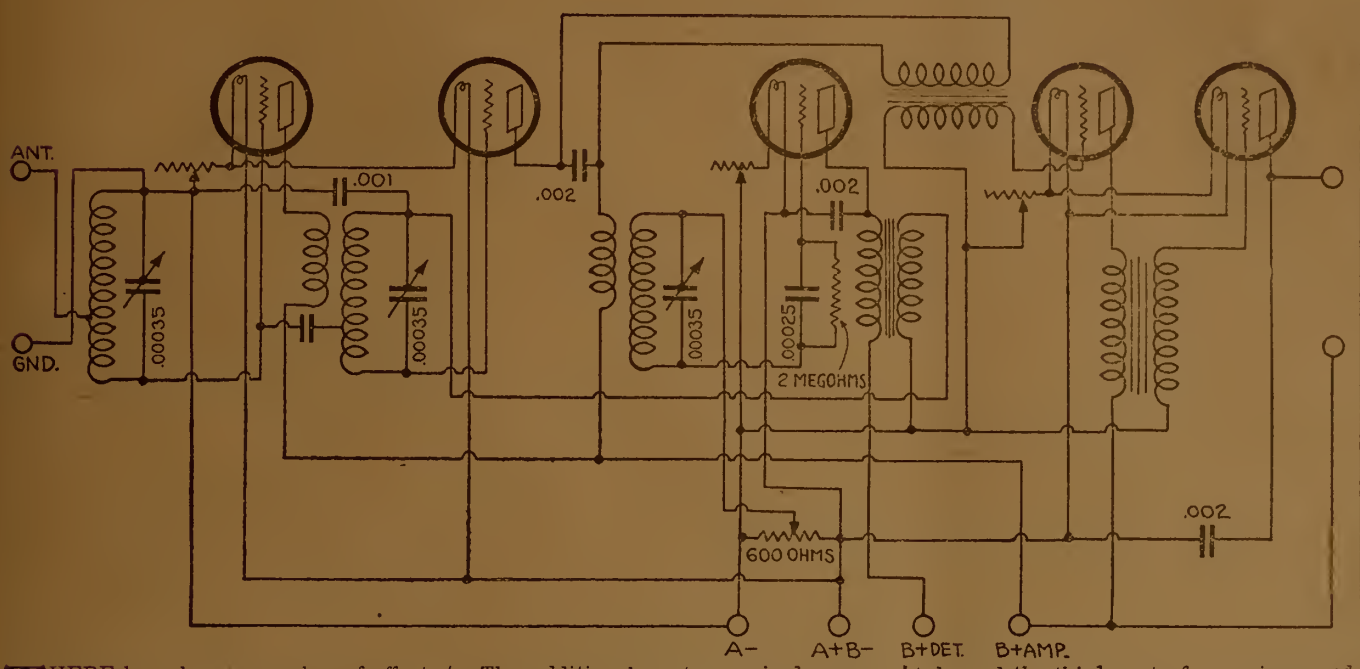
Reflexing Four-Tube Neutrodyne Receiver

Inserting a Crystal in the Popular Circuit

By H. J. Marx



THERE have been a number of efforts to discredit the possibility of using the reflex type of circuit in conjunction with the neutrodyne principle. No real reason exists, however, why the neutrodyne circuit should not be reflexed, and this without loss of efficiency but retaining the gain accruing from the elimination of one tube.

More Volume

A number of fans have stated that they would like a little more volume from their five-tube neutrodynes. This article is primarily intended to detail the changes necessary for reflexing one stage of the audio frequency and then using the fifth tube for an additional stage of audio frequency amplification.

The additional parts required are one audio frequency transformer and a few by-pass condensers. Jacks can be added if desired.

Naturally, if only one stage is reflected, the fan will have no trouble in construction and operation. It is only when two stages are reflexed that we meet the more serious problems of tube efficiency, proper by-pass condenser values, interference in leads, oscillation control of the tubes, and the ratios of the transformers. Few fans have had trouble with single-tube reflex circuits; it's the multi-tube reflexes that cause the gray hairs.

Making Change on Five-Tube Set

In making the change on a five-tube set, the lead between the plate of the second tube and the third neutroformer is opened and the primary of the extra audio transformer is connected in series, with a .002 condenser across it. The secondary of this transformer is connected to the grid and filament of the fourth tube. The secondary of the audio transformer, after the detector tube, is connected in series with the grid return of the secondary of the second neutroformer. A by-pass condenser is then added from the neutroformer filament terminal to the negative battery lead. This then completes the alterations for reflexing one stage.

Four Tube Set

For those fans who want a four-tube set the last tube can be eliminated. This gives a very efficient receiver that measures up well with any five-tube neutrodyne.

Heavy Wire Used

In circuits where a single turn of wire constitutes the primary inductance, heavy wire should be used, preferably number 12 or 14. A strip of copper ribbon, ¼ inch wide and properly insulated from the secondary, will serve very well.

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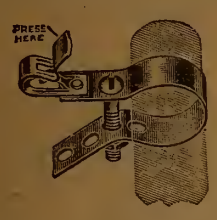

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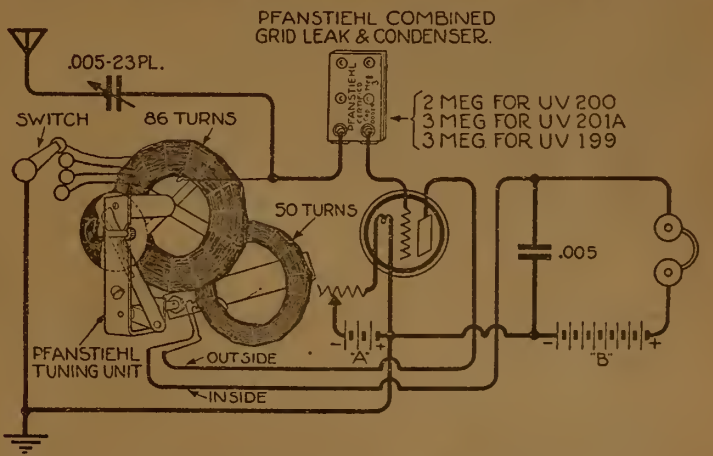

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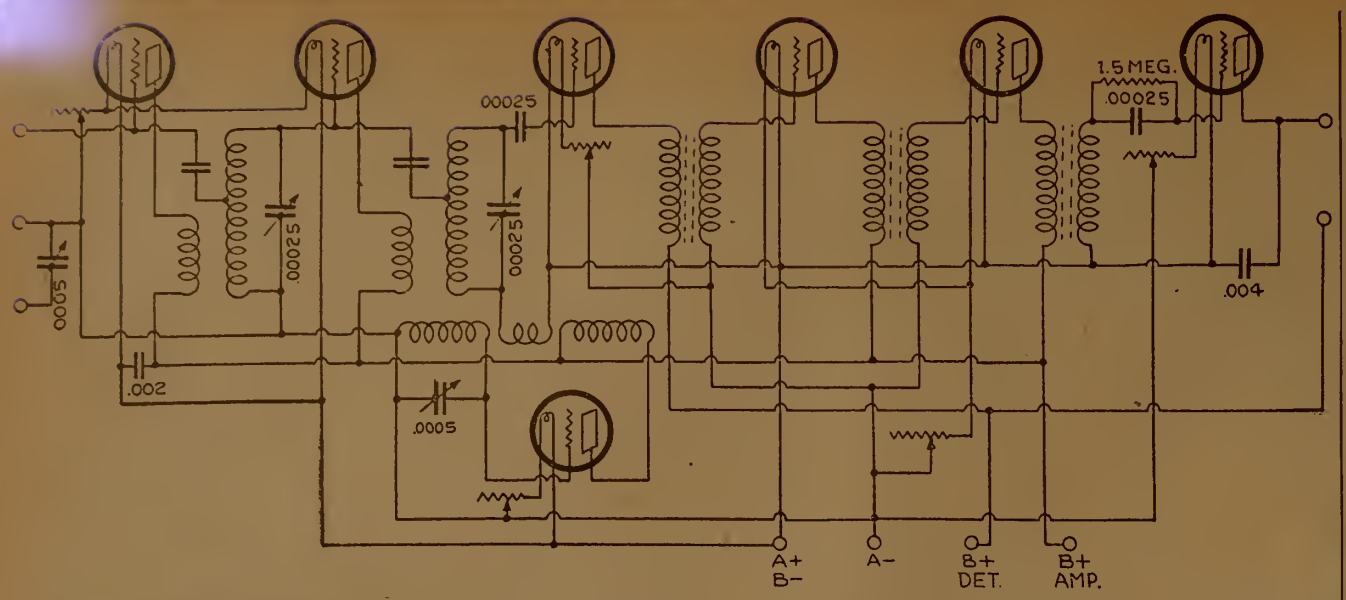
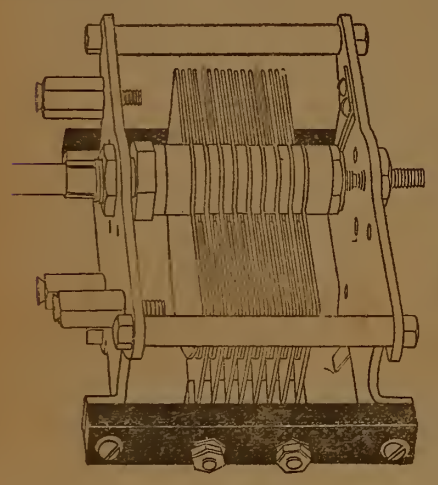


SUPER-HETERODYNE

(Continued from page 21)

two stages of super-audible amplification, two detectors and the usual oscillator.

The oscillator should be shielded from all the remaining parts of the circuit. The grid and plate leads should avoid all proximity and parallel runs to any other leads in the circuit. Shielding should be of brass or aluminum plates. The super-audible amplifying stages should likewise be well shielded from each other and the remainder of the circuit. Their grid and plate leads need careful attention to avoid losses and uncontrollable oscillation of the tubes.



If a lead must run in some direction where interference is obvious, cover the lead with spaghetti and slip some copper or brass tubing over it, then ground this tube. Be careful that the tubing does not touch the lead, however.

Shielding reduces the volume but eliminates interference and improves the clarity of reception. When properly applied, it eliminates all capacity effects. The slight loss in volume can be restored by the addition of audio frequency amplification if necessary.

An ideal panel size for a set of this description would be about 12 by 30 inches. The cabinet should be about 12 inches deep. The cabinet and panel can be entirely lined with metal shielding. Metal partitions can then be used to further subdivide the interior for the various stages.

Condensers should be set back about 2 inches from the panel, and shaft extensions added.

Consistent coast-to-coast reception can be expected from a properly designed, well constructed and efficiently operated super-heterodyne receiver. But the fan may rest assured that he has a big job on his hands when he starts one.

(THE END.)

Efficient Variocoupler

A good variocoupler should not have a big surplus of wire. It should be constructed to efficiently receive a limited band of wave lengths, such as 200 to 600 meters.

It is not advisable to have one instrument cover a broad range such as from 200 to 3,000 meters, for in such a tuner losses occur, due to "dead" ends.

A variocoupler, in order to cover the broadcasting stations' wave lengths, should have about 80 turns of number 24 wire on a primary, or stator, 3½ inches in diameter. The rotor should have about 40 turns of number 26 wire.

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4.75	45 V. med. B Batteries, highest quality.	2.00
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RADIO FOR EVERYBODY

(Continued from page 23)

mouth increases the amplification in a general way; the bell flare makes the natural periods less sharp, but heaps up the efficiency on the low notes near the fundamental, diminishing that for the higher notes.

The loud speaker, it will be seen, is a very difficult unit to design and construct, and it is to be hoped that very soon someone will bring one out that gets away from both diaphragm and horn.

(TO BE CONTINUED.)

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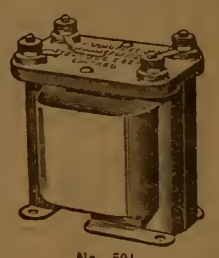

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Furnishes efficient coupling. No sliding contacts. Bakelite shells. High induction, low distributed capacity.

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Decremeter type, 11, 23 and 43 plate with and without 3 plate vernier. Arranged for panel mounting.

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Modified Form of a Green Regenerative Circuit

Part II—Accessories, Assembly and Operation

By Myron P. Green

THERE are a few ideas that will, perhaps, be worth while to you when constructing the Green circuit. While some of these instructions are old to many of you it is well to be sure before you go ahead.

Primarily, I suggest the use of bakelite or any similar insulating material, as it possesses more tensile strength and is less likely to chip. Follow the old, and still best, plan of making a template before you start, drawing the panel plan on a sheet of ordinary paper slightly longer and wider than the panel. Paste it over the panel where it overlaps, center everything just as you wish the finished panel to appear and then drill all holes.

Mounting of Instruments

After removing the template, you are ready to mount your instruments. Care should be taken that the shaft of each part has ample room to turn in its hole and yet fit snugly. This is important for if the shafts do not abut on a straight line, the dials will not fit properly and will turn on an angle. After each part has been properly mounted you are ready to begin wiring, preferably with number 18 copper wire covered with a good grade of spaghetti. This wire is easy to handle, is easily bent and serves the purpose fully as well as busbar. The efficiency of the set does not depend on how prettily each wire is bent to make sharp corners. To my way of thinking it is an unnecessary procedure. Before each wire goes into place, attach small copper lugs to each binding post and terminal of each instrument unless they are equipped with proper conections.

Scrape the ends of each wire and also each lug, to remove any accumulation of dust or grease. Use very little flux and very little solder. Hold the iron on the terminal until the solder begins to flow and form in a little pool. If these directions are followed you will have an absolutely perfect connection.

Accessories to Be Used

It is not necessary to use a grid leak with this circuit if you use a UV-200 tube, but it is essential that the grid condenser be of .0005-mfd. capacity. When using the UV-199 tube I recommend a variable grid leak, as very often each tube even of the same make requires a different resistance.

An excellent socket for all standard bases is the one having a porcelain housing with metal top.

A good variocoupler is one that is made of fiberlike material with a wooden rotor. I have discarded all moulded tubes constructed of bakelite or rubber as I believe them responsible for a good deal of body capacity and possessing far too much rebound.

The same holds good of the variometers. They can be of the wooden variety as long as they are well made and wound to receive reception on high wave lengths.

As this circuit is very selective and critical it is a good idea to equip each variometer with a vernier type dial. It will be a 50 percent help in tuning.

It is not necessary to use a phone jack in this set. The writer has used the small phone-tip jacks with better success. They eliminate the phone plug entirely.

The variable condenser occupies an important place in this circuit and should be chosen with care—a good strong type, with bakelite insulation, having the extra vernier plate. This extra plate is absolutely essential. It helps wonderfully on DX work.

If the UV-200 tube is used, the best rheostat is the one using carbon discs as a means of resistance. Control of the filament is one of the greatest helps in tuning in distant stations. Here is where this type of rheostat performs best, as an infinitesimal turn of the knob may regulate the filament resistance and place it in perfect accord with some far distant station.

Cabinet for the Set

This set can be housed conveniently in a 7 by 18-inch cabinet, although I have used 7 by 24-inch largely when making these sets, as I believe plenty of space is far better than congestion of parts and wires.

If a grain is desired on the panel, a fine grade of sandpaper or emery cloth number 00 may be used to rub down with. Rub only in one direction, preferably from left to right the long way. After the panel has been rubbed well and no bright spots show, dust with a soft cloth, wash off with a little 3-in-1 oil. This oil should be rubbed into the panel hard and consistently until you get that dull grained finish so much desired.

If you use a shelf attached to your panel, place it low enough down on the panel so that when you slide the outfit into the cabinet, this shelf just engages the floor of the cabinet. Screw the shelf down to the floor of the cabinet using two long screws, one at each end. This eliminates the use of four or more screws on the face of your panel.

Operation

The important part in tuning this set is the manipulation of the two variometers. The adjustment should be by micrometer in its entirety. One calibration means much on each dial, and it is well to remember that the more care that is taken in tuning, the more satisfaction will be obtained in the results.

It isn't good policy to jump at the set haphazard, for it will not respond to indifferent treatment. It can, however, be depended upon to produce excellent results, if the operator remembers to coax instead of command. Too much is expected of Radio sets by an unthinking public, and if you would only pause to consider upon how many different things depends the quality of reception you get, it would be much better for all concerned. The weather, largely, has much to do with the working of any and every set, whether crystal or super-heterodyne; the condition of your antenna, your insulation, your ground, and a dozen other factors that many times are not taken into consideration.

However, there is really no limit to what may be achieved with a Radio set properly made, dielectrically perfect, in conjunction with ideal Radio weather.

This circuit has proved itself under ideal and adverse conditions and I see no reason why you shouldn't be pleased with it.

(THE END.)

RECEIVED 2LO, LONDON

Dear Sirs:

I wish to thank you for publishing the two variometer hook-ups in the December 1st issue. I am using the hook-up as published with the addition of a 7-plate variable condenser in the aerial, and a 23-plate in the ground. In exactly two weeks I have heard 71 stations, and 2LO, London, on the morning of December 25th at 2:45 a. m., broadcasting from Westminister Abbey. I have written to them to verify this.

I get Los Angeles regularly and Ft. Worth, Tex., comes in as loud and clear as the local station on a crystal set. I can tune out powerful local station WTAM and tune in Ft. Worth, Tex., Chicago, Ill., Kansas City, Mo., etc. I can tune from 180 meters to 600 meters. Everyone who has heard this set in operation says it is the best he ever saw. I am using one WD-12 tube. This set acts like a super. I can use it without a ground or without an aerial, but am using ground.

What I want to know is how do you account for the unusual performance of this set and how could I add one stage of Radio frequency? Would it improve it much, or not?

I get a copy of your wonderful paper every week. Am enclosing a list of stations I heard in exactly two weeks' time. You may publish this if you wish and tell others of this good hook-up performance.

E. H. Richards, Cleveland, Ohio.

Editor's Note.—The Green circuit is the one mentioned.

Range of Reception

The range of transmitting and receiving Radio messages depends upon the nature of the territory lying between the transmitting and the receiving stations, the greatest range for a given power being obtained over water. Any metal, particularly iron or steel, lying between the stations, will cause loss of signal strength. Such metal may either be in the form of artificial structures such as building frameworks or tin roofs, or may be in the form of ore deposits. Some regions of the country are noted for their poor location for Radio reception. In many places it is possible to receive effectively from all directions but one, and it is usually found that in this direction a metallic structure or metal deposit is responsible for the lack of reception.

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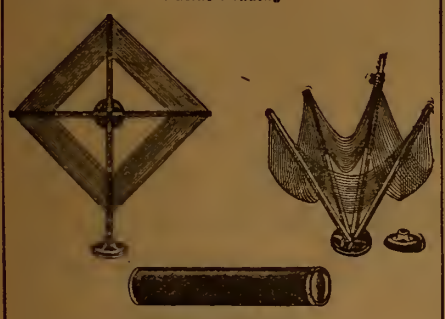

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Weagant Receiver Hook-Up

Simple Regenerative Fool-Proof Set

THE FOLLOWING is neither an excerpt from the Arabian Nights nor the brilliant discovery of a new-fangled receiver that will bring in signals when none exist. On the contrary it is the account of a simple regenerative set that is almost fool-proof, and which has given uniformly excellent results on arc, spark, phone and amateur waves since it was first published in 1918.

Figure 1.

Five years ago, when E. E. Bucher published his book on "Vacuum Tubes in Wireless Communication," he described a circuit devised by Roy A. Weagant, then chief engineer of the Marconi Wireless Telegraph company, which on account of its extreme simplicity was particularly recommended.

Rumor had it that Mr. Weagant had evolved the circuit as a means of circumnavigating the famous Armstrong patent. But while he legally failed to do so, he nevertheless gave to the Radio world a substitute that for simplicity, universality and performance can hardly be "beat."

A glance at Figure 1 will acquaint the Radio enthusiast with the circuit. A little energy will suffice to provide the broadcast or amateur listener with a set of which he can justly be proud.

Parts of the Circuit

Getting down to a description of the parts of the circuit, the primary circuit, composed of L_1 and C_1, is the same as any standard regenerative set. It consists of a 50-turn coil in series with a .001-mfd. variable condenser. The secondary circuit is the typical inductance with capacity in parallel. The inductance value is a 50-turn coil and the condenser in shunt is of the order of .0005 mfd. The tertiary, or tickler circuit as it is commonly known, consists of an inductance of 50 or 75 turns with a .0005 condenser in series, the whole placed in parallel with the plate and filament circuits. Any Armstrong circuit, by the addition of a variable condenser, may be revamped into a Weagant without the slightest hesitation on the score of efficiency.

On account of the great variation in phone wave lengths, the desire of many fans for the arc and spark wave lengths, together with the experimenters who desire going down to 100 meters, a honeycomb coil mounting with three plugs is recommended to give the greatest versatility to this receiver.

Inductance Values

As a rule in the Weagant circuit the inductance value of L_3 is a trifle greater than that of L_2. For example, if the secondary coil is of 50 turns, then best

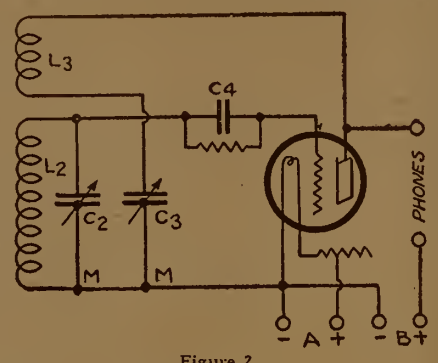

Figure 2.

results will probably be found with a tickler coil of about 75 turns, although many sets have given excellent results with a coil the same size as that of the secondary. The reason, apparently, is on account of the series capacity in the tickler circuit contrasted with the parallel capacity in the secondary.

For broadcast waves the reader should use a 50-turn coil for the primary, a 50-turn for the secondary and either a 50 or a 75-turn for the tickler. Experience has taught a great number of the fraternity that Giblin-Remler coils are best

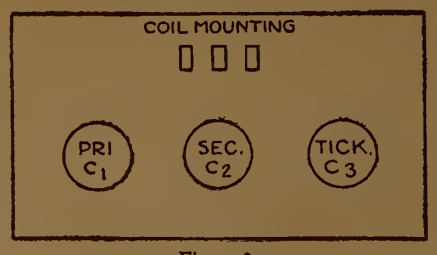

Figure 3.

suited. For 100-meter work it is necessary to wind single layer coils of the dimensions given later in this article.

Hook-Up

After hooking up your apparatus, as shown in Figure 2, if the set fails to oscillate, reverse the two leads going to the back of the coil mounting on the tickler side so as to reverse the polarity of the winding. Sometimes, with a given value of tickler inductance a set will oscillate on high waves when the tickler is in one direction, and will oscillate on short waves when it is in the opposite direction. It will take only a moment to find the proper direction of winding. Also make sure that the series capacity C_3 is not shorted. This will discharge your B batteries as this circuit is in parallel from the plate to the filament.

Tuning

Tuning is accomplished by means of the secondary and tickler condensers, the primary, secondary and tickler inductances being set in one position. In the ordinary regenerative sets, regeneration is obtained by altering the inductive relationship of the coils, whereas in the Weagant circuit regeneration is brought about by changing the capacities of the secondary and tickler circuits, a method that is smoother and less troublesome. The tickler coil can as a rule be left close coupled to the secondary and all oscillation and regeneration changes affected by means of the series condenser C_3.

(Continued on page 30)

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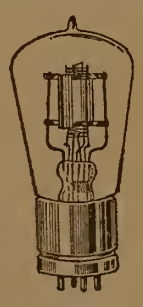

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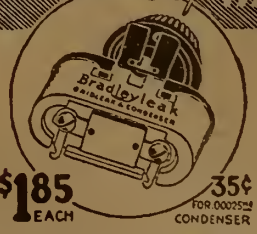

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Single Circuit Tuner Changed to Reflex

Make Use of Old Set to Construct Reflex

In attempting to try the reflex circuits, the amateur hesitates about tearing down his present tuner. If he has a single circuit tuner, as shown in the diagram, he can convert it into a reflex circuit at very little expense and at the same time retain his set in its present form by simply throwing one switch and changing the grid leak.

The change from single circuit regenerative to reflex is made by throwing the D.P.D.T. switch to the right, as shown in the diagram, and by removing the grid leak cartridge and in its place inserting a cartridge which connects the secondary of the audio frequency transformer across the grid condenser. This special cartridge may be made from a small fiber rod the same size as the variable grid leak with brass ends; the secondary wires being soldered to these ends. Do not use a D.P.D.T. switch in the grid circuit as the capacity and leak will be spoiled and will not be under good control.

The filament adjustment is very critical, hence a vernier rheostat should be used. The capacity of the fixed condensers is not critical with the exception of the grid condenser which should be .00025 mfd. Mica condensers should be used. The variometers have 38 and 36 turns each on their stators and rotors respectively. Twelve extra turns are on the stator of the second or plate variometer for inductive regeneration. The tube is a WD-11 with plate voltage of from 45 to 90. High voltage is required for loud signals. A galena detector gives loudest signals but is slightly unstable.

The reflexed signals are much louder than is possible to obtain by inductive feedback, and the tone is purer. When the contact on the crystal detector is lifted from the crystal the set will either break into violent oscillations or the signal will become very faint. However, stations can be tuned in very sharply and the signal strength will be about as loud as when inductive feedback is used, by having the cat whisker raised from the crystal and tuning the plate circuit to bring it in resonance with the aerial or grid circuit, thus getting capacity feedback.

Regeneration with reflexing was tried but did not increase the signal strength and made the set much harder to tune, hence a double-throw switch was used as shown. With some tubes it will be found that the grid leak and the secondary of the audio frequency transformer can be left in the grid circuit permanently, but for best reflexing and inductive feedback they should be changed as mentioned.—Wm. S. Schmidt, Johnstown, Pa.

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.

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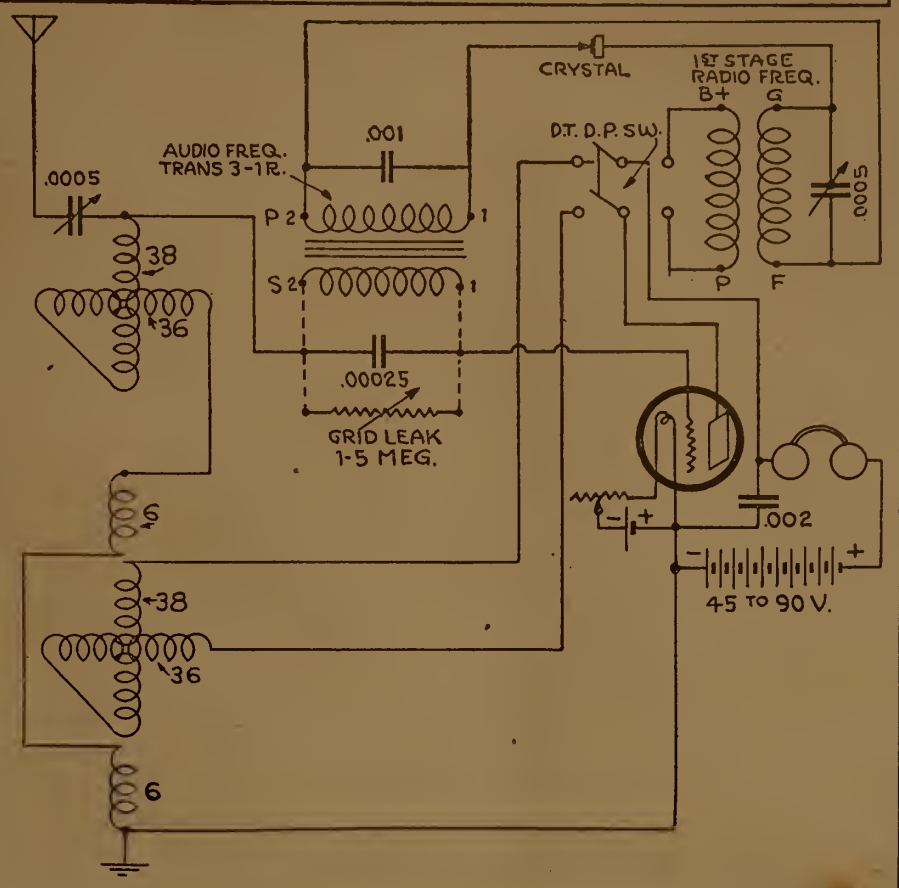

A counterpoise should always be lower than the aerial.

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A Radio battery is operated at extremely low discharge rates, one, two or three amperes. It is not advisable to allow the battery to become more than three-quarters discharged, for this increases the formation of lead sulphate which is difficult to remove by recharging. Testing with the hydrometer is very easy and probably the best method. The solution is drawn up in the hydrometer by means of a bulb and the specific gravity of the electrolyte may then be read by means of a graduated scale on the small float inside. The various stages of charge and discharge are seen at a glance.

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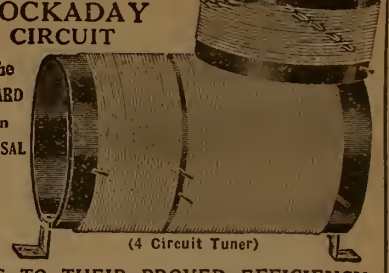

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WEAGANT RECEIVER

(Continued from page 28)

For long waves, take the coils you have been accustomed to using and you will find they work as well as on your old set.

For short waves, 100 to 250 meters, the author uses a 35-turn coil: a secondary of 17 turns of number 22 d.c.c., wound on a 2½-inch coil fitted with honeycomb plug and a tickler of 25 turns wound on a 2½-inch tube (same size of wire). The tickler is placed inside the secondary, and its relationship fixed and forgotten. The same precaution of getting the proper polarity on the tickler coil should be observed. A honeycomb plug with about 6 inches of wire can connect from the tickler coil inside the secondary to the tickler receptacle on the coil mounting. The panel layout is shown in Figure 3.

In shifting from 100 meters to higher waves, simply pull out your two home-made coils and plug in the larger-sized coils.

As to the types of tubes, with the Navy VT-1 and 2, or almost any oxide coated filament tube, the grid leak will not be extraordinarily critical, and the set will oscillate with almost any B battery potential, giving good signals; with the gas content tube, such as the UV-200, the grid leak is a bit more critical and should be of a variable type. The UV-200, on account of its great sensitivity, gives the most volume on phone wave lengths, while for continuous wave work the Navy tubes (J's) are fine.

Unlike the Reinartz (a single circuit Weagant, after all) the Weagant is not an excessive radiator. The coupling between the primary and secondary prevents this to a marked degree. Selectivity gained with a Weagant receiver cannot be approached by any other receiver, even the three-circuit Armstrong, so far as the writer has been able to ascertain.

Another advantage of the Weagant over the Armstrong is the fact that the telephone cords (in the case of a single tube set) are not directly in the oscillating circuit and therefore will not be productive of body capacity.

It would be well for the Radio enthusiast, regardless of the type of circuit which he intends using, to arrange all his variable connections on the condensers so there will be no potential in the circuit. This also obviates body capacity. In Figure 1 the condensers show a marking [illegible] for movable plate which should go [illegible] potential part, while the marking [illegible] should go to part of high potential.

Summing up the Weagant, the outstanding advantages it possesses are: selectivity, universality, simplicity of control and lack of body capacity. Despite the abundance of trick circuits with which the Radio fraternity has been deluged in the past two years, it is refreshing to contemplate the Weagant as peer of them all, despite its five year age. Broadcast listeners and amateur operators, who have used the Weagant after trying all others, are in accord with the opinion ventured above.

Review of Books

222 Radio Circuit Diagrams. A complete and up-to-date collection of modern receiving and transmitting hook-ups. The book includes 284 diagrams and illustrations. Price, $1.00.

Within the Atom. By John Mills. May be read by the Radiophan with interest for it deals with that infinite particle as associated with electrons, and all chemical and all electrical phenomena. Price, $2.00.

How to Retail Radio. A new book telling of tested plans and methods and policies for the dealer in Radio. Financing, location, store equipment and arrangement. Price, $2.00.

An Introduction to Radio. A real book for the amateur. This treatise comes in two volumes. 96 pages in each volume, fully illustrated, with flexible leather covers. Price two volumes, $1.

Experimental Wireless Stations. By P. E. Edelman. Simple directions are given in this book for making Radio equipment for the transmission of messages over long distances. Price, $3.00.

Vacuum Tube Receivers. By O. F. Heslar. A book that tells how to make a simple set. How to make the cabinet. It includes a 27 by 36-inch layout blueprint. Price, 75 cents.

The Armstrong Super-Regenerative Circuit. By George J. Eltz, Jr., E. E. This is a De Luxe edition of this famous circuit. Profusely illustrated and fully explained. Fifty-two pages. Price, $1.00.

Elements of Radio Communication. By Ellery W. Stone. A splendid, well connected, complete, accurate and up-to-date discussion of every phase of Radio telegraphy and Radiotelephony. Written in simple language. The subject is presented from the physical rather than from the mathematical standpoint, avoiding the use of higher mathematics. Price, $2.50.

The book department of the Radio Digest is prepared to send you any of the books on Radio published whether listed in our Book Review or not. Let us know what book you want, send us your check and we will see that the book is mailed to you. Postage stamps in payment for books not accepted. Send money order or check. Radio Book Department, Radio Digest, 123 W. Madison St., Chicago, Ill.

RADIO INTERFERENCE

(Continued from page 24)

but will also improve reception and increase the selectivity of a receiver with which it is used.

Sees Opportunity for "One-Way" Valve

It is often said that one of the most interesting phases of Radio to the novice is its possibility of original experiment. Many of the more important developments in the Radio field have been made by novices. From this standpoint, then, the development of a "one-way" valve to prevent radiation from receivers certainly offers wonderful possibilities.

With the general public interested in the development of a universal attachment of this kind, as well as with the well-equipped laboratories of the larger manufacturers of Radio apparatus earnestly working on the problem, it is safe to predict that not much time will elapse before there is available a universal radiation preventer adaptable to all types of receivers and which will not only end the present annoyance but, through uniform retail price and its advantages from the selectivity standpoint, will be desirable for general public use. Let's have no more unenforceable legislation!

Don't be disappointed if an occasional storm interferes with your summer Radio evening. There are many fine concerts coming. You can't expect to find a pearl in every oyster, nor to receive a record breaking concert every night.

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FROM MANUFACTURER STRAIGHT TO DEALERS ONLY
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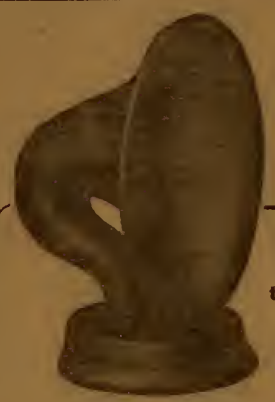

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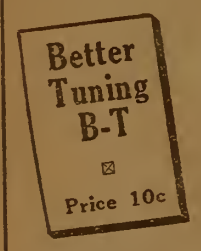

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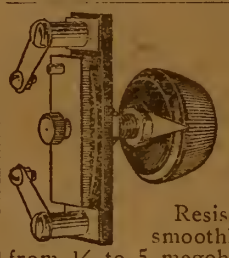

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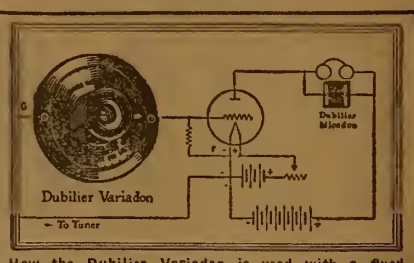

How the Dubilier Variadon is used with a fixed grid-leak to control the capacity of a grid-circuit.

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It is difficult to control the resistance of a grid-circuit with the average variable grid-leak, but certain and easy to control the capacity with a fixed grid-leak and a Dubilier Variadon, the new compact variable mica condenser.
Volume and selectivity are thus increased.
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There is no switch on the market to equal the Carter Jack Switch.
Positive—Reliable—Convenient.
Made from best materials by skilled workmen.
Write for catalog of other well liked Carter Radio Products.
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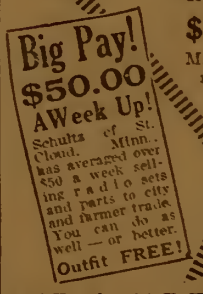
Standard, well advertised merchandise—the kind everybody knows and wants. Make handsome profits representing us. $5 a day easy in spare time. $10 to $20 a day made by many. Buy parts wholesale, sell them at retail. Assemble sets and sell at big profits—or sell our complete sets. Flanagin of Keokuk, Iowa, picked off



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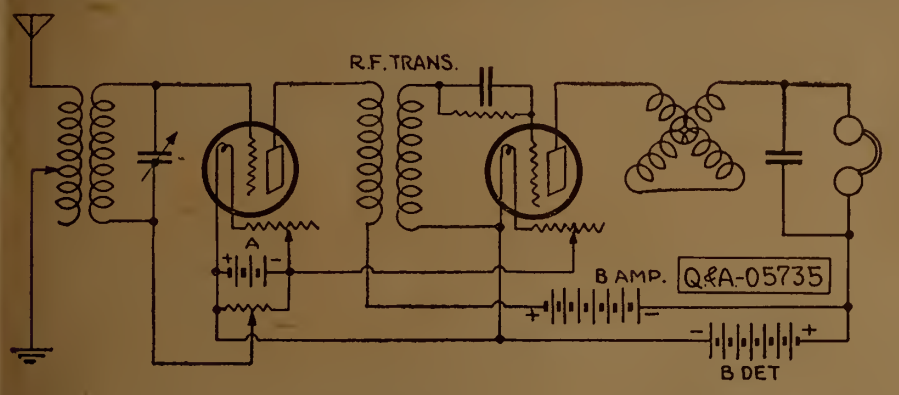
Questions and Answers

Radio Frequency

(05735) WPM, Cleveland, Ohio.

I wish to thank you for your answer to my letter Number 05539 in regard to adding Radio frequency amplification to my set. I followed your advice and consulted the diagrams referred to, but it seems I can't figure out a way to hook it in, so again I must appeal to you for assistance.

If it isn't too much to ask I would like to know if you can furnish me with a diagram employing one stage of Radio frequency in conjunction with my set, diagram of which I am enclosing with this letter.



A.—We are giving a diagram showing method of conneeting Radio frequeney amplification to your eircuit and trust it will solve your diffieulties.

Fading Signals

(06259) EC, Buffalo, N. Y.

We have a set on the Neutrodyne plan. Now we find it very difficult to reaeh eastern cities, as New York, Boston, etc., and when we get in tune with them the tuning will be fine at first; then the sound will vanish and return, vanish and return, so we only get half of what we want to hear. Could you suggest what might be the trouble? We got our set in May, 1923. There are two large B batteries and a 6-volt Westinghouse A battery; the tubes light up nicely, but we are disappointed that the sound waves are so variable.

A.—While the details offered are insufficient to determine aeeurately the source of limitations eneountered in operation of your Neutrodyne circuit, your description of action points quite definitely to "fading," a natural phenomenon, as responsible for variable signals. The eause, being outside of your receiver, is Impossible to combat. It is at this time little understood, and more or less prevalent at all times.

Miloplex

(06226) FJC, New York City, N. Y.

Send me a hook-up of the famous Miloplex using five UV-199 tubes, two audio transformers, two Radio transformers, two neutralizers, homemade, one loud speaker, etc.

Would you advise me to use three spider web coils or split variometer? If so, how?

I have tried all of your Miloplex hook-ups and I find one to be as good as the other.

A.—We are not at this time prepared or disposed to advise the addition of Radio frequency amplification to the Miloplex circuit. We do not lose sight of the fact that this type of amplification is by no means as simple as audio frequeney circuits, and it is our purpose to prove the plan effective before offering it to the average novice. However, from the experimenter's viewpoint we may say that the method is the standard connection which can, generally speaking, be applied to any circuit.

The split variometer is mueh to be preferred to any other type of inductance.

Miloplex

(06108) REC, Kansas City, Mo.

I am very much interested in your Miloplex hook-up. I would like to know if it is possible to use a variocoupler instead of the variometer, and what the results would be and if it would be as efficient as the variometer hook-up.

A.—The variometer of specifications for the Miloplex circuit is preferable to a variocoupler, and will give much better results.

GOOD Radio Tubes CHEAP; American Radio Tube Works, Blum Street, Newark, N. J.

BROADCAST ANNOUNCERS AND OPERATORS EARN BIG MONEY. We will prepare you for a wonderful position in new field; unusual opportunities for ambitious young men. Catalog free. Dodge's Morse and Radio Institute, Valparaiso, Indiana. Established fifty years.

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Sell what the public wants—long distance radio receiving sets. Two sales weekly pays $120 profit. No big investment, no canvassing. Sharpe of Colorado made $955 in one month. Representatives wanted at once. This plan is sweeping the country—write today before your county is gone.

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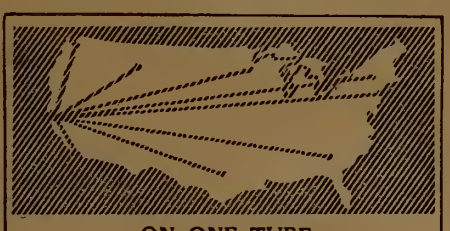

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Broadcasting from Atlantic Coast, Mexico, Hawaii, Canada and Cuba heard in California by users of CROSS COUNTRY CIRCUIT. Range due to simplicity of set and only one tuning control. Easily and cheaply built by any novice. Dry cell tubes may be used. All instructions, blueprint panel layout, assembly photo, etc. Postpaid. 25c. Stamps accepted.

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Greatest Radio "B" battery on market. Full number voltage taps; QUALITY GUARANTEED; LOWEST PRICES; brings in concerts LOUDER AND STRONGER; will work on any tube or loud speaker. Order by number TODAY with check, money order or pay postman C. O. D.

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Functions with any conductor.
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The Recognized Standard Crystal Rectifier Used All Over the World
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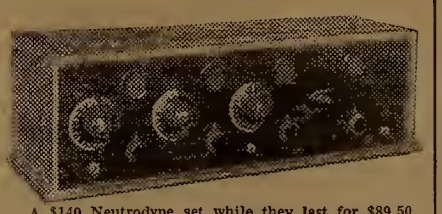

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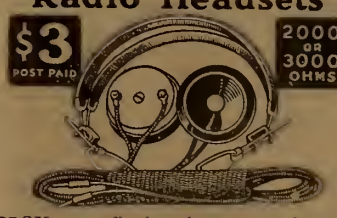
TONE TESTED
Radio Headsets



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SOLID MAHOGANY

14x7x7	$2.50	ANY Length
21x7x7	3.50	Height
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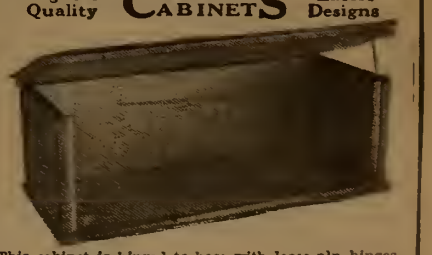
Highest Quality **CORBETT CABINETS** Latest Designs



This cabinet is hinged to base with loose pin hinges, permitting entire clearance or removal for convenience. Top and base shaped, later being raised to allow clearance for wiring and screws underneath. Panels to be fastened to base, and no sub-base required.

Panel	Depth	Price	Panel	Depth	Price
6x10½"	7"	$2.60	7x18"	8"	$3.80
6x21"	7"	3.85	7x21"	8"	4.35
7x10"	8"	3.15	7x24"	8"	4.90
7x12"	8"	3.30	7x26"	8"	5.10
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Radio Illustrate

"Hypo," the famous dog that belongs to Billy Ellerman, manager of the Edgewater Beach Hotel, Chicago, skating rink, has turned out to be a Radio bug. Billy says he thinks "Hypo" has located his former master, as he registers particular delight when he hears a certain voice. Photo shows "Hypo" listening in. © U. & U

Tin cans, a bourbon hottle, fork and miscellaneous junk found use in this "prize" set exhibited in a Radio show prize contest at the Sydney (Australia) Town Hall. It worked, regardless of its materials.

Radio as a pain-killer is being tried by a Chicago dentist. He has installed an elaborate receiving outfit in his office and puts the headset on his patients while he works on them.

Wide World Photo

A peep at the "Pony Ballet" of André Chariot's "English Revue of 1924," rehearsing to Radio music at Selwyn theater, New York. At the receiver are standing E. F. McDonald, Jr., (left) and "Sport" Herman (right).

Pictorial Press Photo