

Improved Super-Heterodyne Description; Presidential Straw Vote Results; Helpful Hints for Radio Beginners; Advance Programs for Larger Stations

Radio Digest

EVERY WEEK

Illustrated PROGRAMS

TEN CENTS

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No. 1

TAX FREE MUSIC FOR ALL



Duncan Sisters, in Interview, Relate Early Experiences with Broadcasting

"Topsy and Eva" Stars Tell How They Felt When They Made Radio Debut in Ossining, N. Y.—Vivian Duncan Amazed at Radiocast's Progress Since

(Photographs on Back Page) THE first time before the microphone was hard work. I kept thinking I was making a phonograph record, and if I made the slightest mistake I would have to do the whole thing over again."

Such was Miss Vivian Duncan's impression when she made her debut at the "mike." And now, after four years, during which time both Miss Vivian and Miss Rosetta, co-stars in the musical comedy, "Topsy and Eva," have hardly missed a (Continued on page 6)

BROADCASTER MEET CAUSES LATEST MOVE

Radiocasters' Ass'n in Annual Meeting Backs New Tax Free Music Bureau

Discuss Giant Stations

N. A. B. Re-elects E. F. McDonald, Jr., President—Crosley to Go to Third Radio Conference

NEW YORK.—"Music for everybody without a tax for public performance" is the policy of the newly established Tax Free Music bureau, which has offices at 45 West 45th street, New York city. The bureau has the backing of the National Association of Broadcasters and the First National Pictures, Inc. The latter organization is comprised of 850 of the leading motion picture theaters in the United States.

The bureau is successor to the music department of the National Association of Broadcasters, which has operated during the past year to supply Radio stations with music which may be used in public performance without payment of a tax.

Will Not Fight American Society
The manager of the new bureau is Harry Sigmond, who explained to the broadcasters at their second annual convention, September 25, the purposes of the bureau.

"I am not conducting a fight against (Continued on page 2)

HEAR SPEECHES AT LEAGUE OF NATIONS

END OF SECRET DIPLOMACY AUTHORITIES BELIEVE

Geneva Radiocast Marks First Point in Allowing Public to Hear All of Negotiations

GENEVA, Switzerland.—A peculiar reticence throughout the European press has been noted by observant readers in mentioning in small space a broadcast which may well tend towards one of the greatest revolutions in diplomatic history yet witnessed.

This broadcast was the transmission of the speeches of the Premiers at the plenary session of the League of Nations in this city held the first week in September, and was arranged by the officials of the League in combination with those of the Paris station of Postes, Telegraphs and Telephones (the famous P.T.T.).

In spite of the slight notice given it, this event may one day be marked as an epoch in European annals, just as the first declaration of this "open-door" policy, as set forth by the late President Wilson, was received with such loud acclaim at the time of its inception.

Broadcast MacDonald's Opening Speech

On September 4, the opening speech of Premier MacDonald, of England, was transmitted by land wire, via the French circuit Paris-Annemasse, to the broad-

(Continued on page 5)



From left to right: Helen F. Snyder, one of the soloists of Station WEBB, Chicago; Miss Roberta Arnold in "The Tantrum," broadcast recently from WOR, Newark; Miss Estelita Chavez, who as "pupil" assists Prof. Oscar Galeno, Radio pictorial instructor in Spanish at Station KGO.

MAKING NOISE IN NEW SOUND PLAY



All the noise concerned in the fall of the Bastille was not made at the actual scene years ago. The photo shows the apparatus used to produce the noises to augment the unseen action in the new "sound play" production of the historic story.

P. & A. Photo

ISSUE TAX FREE MUSIC

(Continued from page 1)

anyone or anything," he said. "As far as I am concerned, the American Society of Composers, Authors and Publishers is out of the picture. It is true we may effect them or they may effect us, but what concerns me primarily is making use of the facilities of theaters and Radio stations for the popularizing of music. We feel we have a legitimate function to perform without concerning ourselves about the business principle of other organizations.

"If the American Society continues in the belief that theater and broadcasters will popularize their music and pay for the privilege of doing so, and we offer good music of all sorts without imposing a license fee, I think the American Society will lose while we gain, but whether they lose or not is their problem while ours is whether we gain or not.

Hopes Enlistment of 2,000 Theaters

"It is my hope to be able to announce 2,000 theaters throughout the country as co-operating. Publishers who are now compelled to spend great sums of money in bringing their songs before the public are already ready and willing to release their music through the Tax Free Music bureau."

The broadcasters expressed their approval of the expansion and reorganization of the music bureau which gives promise of much good entertainment for the Radio audience.

The broadcasters' association revised the method of assessment of its members, who have heretofore paid dues on the basis of wattage of their stations. Active members will pay annual dues of \$250; associate members will pay \$5 and co-operating members, including churches and educational institutions will be assessed a nominal fee of \$5.

McDonald Re-elected N.A.B. President

The election of officers again placed Eugene F. McDonald, Jr., president of the Zenith Radio corporation at the head of the National Association of Broadcasters. Mr. McDonald operates Station WJAZ, which is a portable transmitter which will be used by the Zenith corporation in a series of experiments made to determine the most suitable location for a new super station. Mr. McDonald operated Station WJAZ at the Edgewater Beach hotel in Chicago and after The Chicago Tribune took over the station, Mr. McDonald's organization continued operating the station until the Tribune's interests were transferred to Station WDPW on the Drake hotel, renamed WGN.

Frank W. Elliott, director of the Palmer School of Chiropractic's station WOC at Davenport, Iowa, was re-elected first vice-president, and John Shepard III of the Shepard Stores, Boston, owner of WNAC also retained office, remaining second vice-president. William H. Heinz, a newcomer in broadcasting and the association, but already known through Station WHO, Des Moines, Ia., was elected secretary, Powel Crosley, Jr., president of the Crosley Radio corporation, owner of Station WLW, was chosen treasurer.

New Board of Directors

The new Board of Directors is composed of the following:

Richard Gimbel, Gimbel Bros., WIP, Philadelphia; G. Brown Hill, Doubleday-Hill, KQV, Pittsburgh; William S. Hedges, Chicago Daily News, WMAQ, Chicago; Alfred H. Grebe, A. H. Grebe, Inc., WAHG, Richmond Hill; Robert Shepard, Shepard Stores, WEAN, Providence; Harold Power, American Radio Research Corp., WJL, Medford Hillside; Earle C. Anthony, Earl C. Anthony, Inc., Los Angeles; Jack Lit, Lit Bros., WJAR, Philadelphia; L. G. Baldwin, Willard Storage Battery Co., WTAM, Cleveland; J. R. Knowland, Oakland Tribune, KLX, Oakland; James Cleary, Chicago Tribune, WGN, Chicago; W. Kidney, Federal Tel. Mfg. Corp., WGR, Buffalo; C. H. Henderson, Union Trust Co., WJAX, Cleveland; A. B. House, Majestic hotel, WFBH, New York.

In addition to approving the establishment of the Tax Free Music bureau, the broadcasters devoted considerable time to a discussion of procedure and policy at the Radio conference now being held by Secretary of Commerce Hoover. Mr. Crosley was elected to act as spokesman for the broadcasters' association at the conference.

Super-Power and Station Limitation

One of the proposals considered was limitation of the number of broadcasting stations because additional stations in many localities means splitting time on the same length shared by three or four stations. The limit, it was suggested, could be determined by having no more than two stations on the same wave

BRITAIN PRODUCES NEW "SOUND PLAY"

Amplify Story by Combinations of Sounds and Words at London Tryouts

LONDON.—Interesting experiments in combining speaking parts and characteristic noises and sounds into "sound plays" to be Radiocast are being conducted here.

For the past several months, two of England's most prominent theatrical men, Alfred Whitman and Jack Vincent, have been experimenting in the new medium and three unique adaptations have already been put on the air by the British Broadcasting company.

Because of the absence of gesture and motion the ordinary play is ineffective when Radiocast. Whitman and Vincent believe that were characteristic sounds taken into consideration in the preparation of the sketch this drawback will be overcome.

In the first trial of the new idea, "The Fall of the Bastille" was handled in a novel way. The historical side of the story is well known.

Whitman and Vincent believe that the new art will open almost illimitable possibilities in broadcasting plays.

length in any Radio district. The proposal was referred to Mr. Crosley who will first ascertain whether present Radio communication laws confer the necessary authority upon the secretary of commerce. If it is found that the secretary lacks the power, the proposal will be offered as suggested remedial legislation.

Super-power stations also drew the attention of the broadcasters. While all seemed agreed that some limit was at present advisable there was no unanimity of mind as to what the limit should be.

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Looking Ahead

"Secrets of Selectivity and Regeneration" are a group of associated facts which form the basis of successful selectivity in every receiving set. The articles on this topic, of which there will be four, have never been brought to the Radiophan's attention so authentically and well as they will be by William W. Harper. The series, announced to begin this issue, will begin next week.

You'll Build a Super-Het that Satisfies if you follow the series on the construction of an improved eight tube model beginning this issue under the signature of H. J. Marx. Part II appears next week.

How About Building Your Receiver in an End Table? Charles F. Smisor, who is writing "Console and Cabinet Making for Receiving Sets," will give complete directions next issue for the construction of an end table receiving set combination.

Variable Condensers May Not Mean Much to the Beginner, but Thomas W. Benson in his next "Helpful Hints" article explains them from "plate to plate." Read Mr. Benson's explanations and suggestions for a better appreciation of Radio.

Donald B. MacMillan, of WNP, Fiddlin' John Carson, of WSB, and many other prominent Radio figures will visit you with interviews and picture pages in Radio Digest soon. Among other popular features soon to appear will be one depicting in photographs the process of broadcasting and how the voice is carried from the studio to you.

Newsstands Don't Always Have One Left

WHEN YOU WANT

Radio Digest

YOU WANT IT!

BE SURE OF YOUR WEEKLY COPY BY SUBSCRIBING NOW

SEND IN THE BLANK TODAY

Publisher Radio Digest, 510 N. Dearborn St., Chicago, Illinois.

Please find enclosed check M. O. for Five Dollars (Six, Foreign) for One Year's Subscription to Radio Digest, Illustrated.

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City.....State



Of Course It's a CROSLLEY Radio.

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

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

BEFORE YOU BUY—COMPARE YOUR CHOICE WILL BE A CROSLLEY
For Sale by Good Dealers Everywhere

The Crosley Radio Corp.

POWEL CROSLLEY, JR., President
10492 Alfred St. Cincinnati, O.
Crosley Owns and Operates Broadcasting Station WLW

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

Crosley Trirdyn Regular, \$65.00
With Tubes and Crosley Phones, \$80.75



Crosley Regenerative Receivers are licensed under Armstrong U.S. Patent No. 1,113,149.

Prices West of the Rockies: Add 10 Per Cent

The kind of Letters Thordarson gets No. 1

E. B. Wilson, Pres., The American Bureau of Inspection and Tests, Inc. (M.A.M. SOC. C.E.)

Consulting and Supervising Engineers
Monadnock Block
Chicago

Thordarson Elec. Mfg. Co., Huron & Kingsbury Ave., Chicago, Ill.

Gentlemen: Perhaps it is not necessary to congratulate one when he makes good on an article he has sold, but after a number of sad experiences with various transformers, I cannot refrain from expressing my appreciation of the performance of three 3 1/2 to 1 ratio A. P. Thordarson Transformers which I have installed in a Cockaday Four Circuit UV-199 tube radio set.

Reproduction by the third step is as pure, as far as the ear can detect, as the second, and the volume from several out of town stations is sufficient to fill my living room through the head phones, without the use of a loud-speaker. The characteristic transformer howl positively cannot be produced—the tube filament can, of course, be overpowered, but it seems impossible to saturate the transformers to the point of paralysis.

Respectfully yours,
E. B. Wilson (signed)

EBW-EE

THORDARSON Super AMPLIFYING TRANSFORMERS

Standard on the majority of quality sets

Audio Frequency: 2-1, \$5; 3 1/2-1, \$4; 6-1, \$4.50. Power Amplifying, pair \$13.

Write for some real bulletins!

PRESIDENT COOLIDGE WINNER OF FIRST RADIO STRAW VOTE

Broadcast Poll Conducted by Radio Digest Shows LaFollette Second; Davis Third—35,074 Men and 22,174 Women Vote

Final tabulations of the world's first Radio straw vote, conducted by Radio Digest over seventeen class B broadcasting stations during the past two weeks, show that President Calvin Coolidge is the favorite with 36,752 votes, Robert M. LaFollette is second with 12,038 votes and John W. Davis is third with 8,450 votes. William Z. Foster polled but eight votes.

Not alone was the Radio Digest straw vote an innovation in its being the first to be taken by Radio, but it is believed also to be the first straw vote conducted so as to show how men and women, independently, would vote. In the majority of cases, the vote of the women, though smaller, was proportionate to the vote of the men. Votes were received from 35,074 men and 22,174 women, a total of 57,248.

Stations Co-operating in Vote
The seventeen large stations, covering every part of the country, that co-operated with Radio Digest in taking the straw poll of the invisible audience were: KGO, General Electric company at Oakland; WLW, Crosley Radio corporation at Cincinnati; KFKX, Westinghouse Electric and Manufacturing company at Hastings; WJAX, Union Trust company at Cleveland; WGR, Federal Telephone Manufacturing corporation at Buffalo; WHO, Banker's Life company at Des Moines; KFNF, Henry Field Seed company at Shenandoah; WMC, Memphis Commercial Appeal at Memphis; WOC, Palmer School of Chiropractic at Davenport; WOAW, Woodmen of the World at Omaha; WCAE, Kaufmann and Baer at Pittsburgh; WBAP, Fort Worth Star-Telegram at Fort Worth; WEAY, Iris Theater at Houston; WOAI, Dallas News and Journal at Dallas; CKAC, La Presse at Montreal; WFI, Strawbridge and

WJAX			
	Men	Women	Total
Coolidge	1,364	586	1,950
LaFollette	575	202	777
Davis	104	26	130
	2,043	814	2,857
WGR			
Coolidge	136	101	237
LaFollette	22	16	38
Davis	16	7	23
	174	124	298
WHO			
Coolidge	966	870	1,836
LaFollette	144	121	265
Davis	208	154	362
	1,318	1,145	2,463
KFNF			
Coolidge	97	34	131
LaFollette	32	17	49
Davis	32	23	55
	161	74	235
WMC			
Coolidge	408	176	584
LaFollette	34	17	51

"HIGHEST IN WORLD," CLAIMED BY FRANCE

PARIS.—The "highest Radio station in the world" is the claim France makes for the new station at the Observatory of the Pic du Midi, which will be ready for operation in October. The power of this station, perched some 8,700 feet above the sea level, will be only 500 watts. It will be used for relay work with another station at Bagnères-de-Bigorre, the administrative center of the observatory.

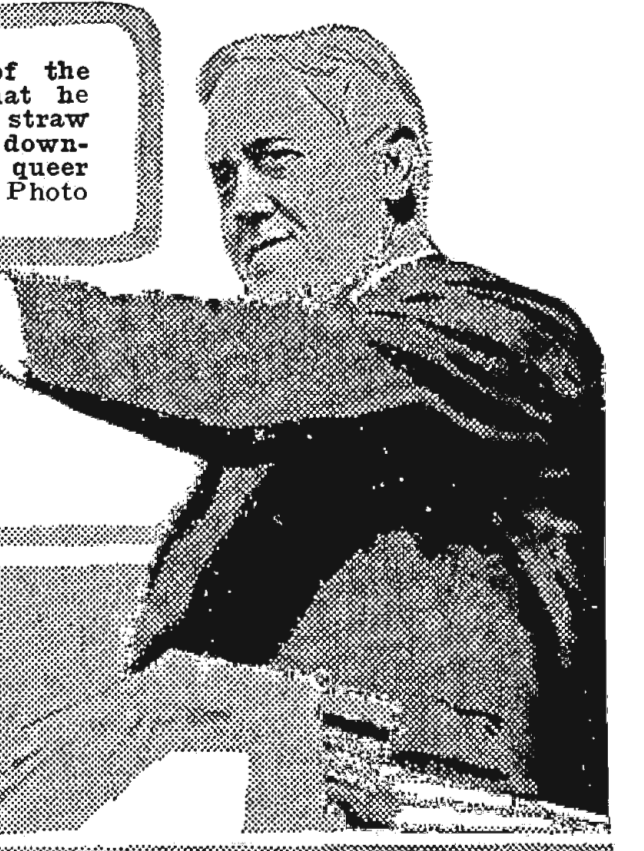
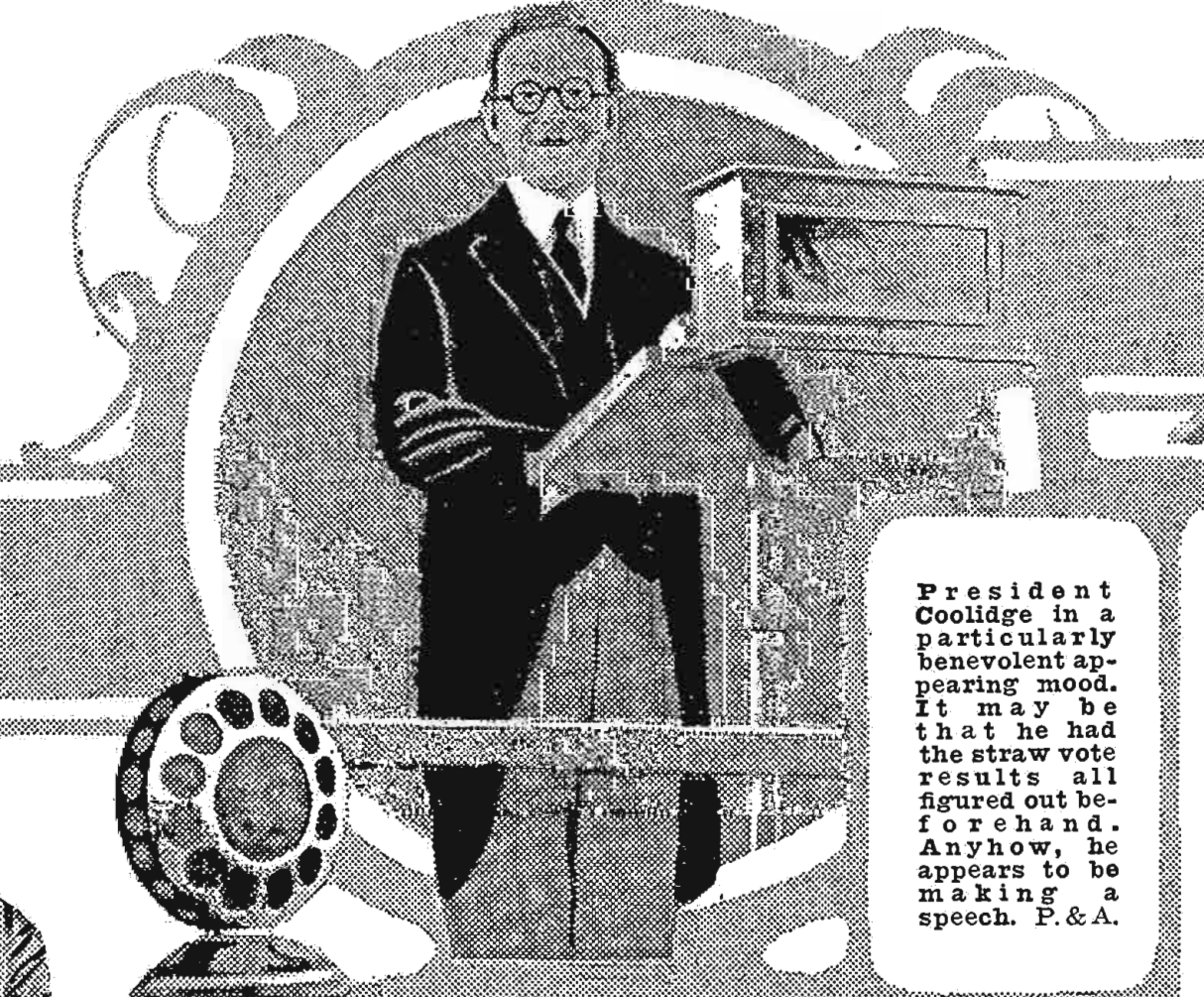
WEAY			
	Men	Women	Total
Coolidge	22	11	33
LaFollette	12	8	20
Davis	57	43	100
	91	62	153
WOAI			
Coolidge	121	37	158
LaFollette	12	11	23
Davis	128	40	168
	261	88	349

KSD TO BROADCAST SYMPHONY CONCERT

NOTED ORCHESTRA'S THIRD YEAR AT THIS STATION

Entire Series of Superb Winter Concerts Will Give Radiophans a Novel Treat

ST. LOUIS, MO.—Plans have been completed for broadcasting the concerts given by the St. Louis Symphony orchestra this season. This will be the third year KSD has sent out to music lovers throughout the United States the programs given by St. Louis' famous orchestra. Rudolph Ganz, the noted pianist, who is conductor of the orchestra, will direct all the concerts which are broadcast. Ganz is now abroad looking over the possibilities in the line of new music for the coming season, and will arrive in America next week, and begin rehearsals with the orchestra early in October.



John W. Davis, the kingpin of the Democrats. Despite the fact that he came in third in the Radio Digest straw vote he does not appear to be downhearted. This political game is queer business. P. & A. Photo

President Coolidge in a particularly benevolent appearing mood. It may be that he had the straw vote results all figured out beforehand. Anyhow, he appears to be making a speech. P. & A.

"Battling Bob" LaFollette telling them what he thinks of things in general in one of his high-powered speeches. According to the Radio Digest poll "Battling Bob" should draw a heavy vote. P. & A. Photo

The first concert to be broadcast will take place on Saturday night, Nov. 8, beginning at 8 o'clock.

It is announced that Michel Gusikoff, concert violinist, again will be concertmaster of the orchestra, and Max Steindel, solo 'cellist in the orchestra and a member of the famous musical family of Steindels, will again head the 'cello section.

Some of the works announced for the season, which are either new or long unfamiliar to orchestra audiences, are: The symphonic poem "Heidenleben," by Richard Strauss, for which the orchestra's personnel will be increased by some two score players: "London Symphony," by Dr. Vaughn Williams; "Symphony in E," by Hanson; dances from "Prince Igor," Borodine; "Fireworks," Stravinsky; "Entr' Acte from "Kovantchine," Moussorgsky; "Tombeau de Couperin," Ravel; "Victory Ball," Schelling; "Suite," Bach-Mahler; "Pacific 231," Honegger; "Three Old Dances," Respighi, and "Noveletta e Notturmo," Martucci.

There will be 15 concerts broadcast, taking place as follows: November 8, 15, 22 and 29; December 13, 27; January 10, 17, 24; February 7, 14, 21, 28; March 7 and 14.

Wile to Lecture on Politics from WRC

Political Authority Will Talk on International Problems

WASHINGTON.—Frederick William Wile, chief of the Wile News service and premier political reporter and broadcaster has returned to Station WRC at Washington, from where his searching reviews of world politics will be Radiocast.

Wile's keen insight into things political, his impartial consideration of political candidates coupled with his impartiality has won him a great host of listeners. Today he is rated as one of the world's foremost political authorities.

This is Mr. Wile's second year before the microphone. With the present political situation approaching its greatest pitch and undoubtedly holding position as the most absorbing topic of the day, it is felt that Mr. Wile's talks will excite a wide field of interest.

The first of his series of talks was given on Tuesday, September 30 at 9 p. m. They will continue at the same day and time throughout the winter.

Clothier at Philadelphia; WGY, General Electric company at Schenectady.

Vote by Stations and Summary
The tabulations below indicate the result of the straw vote at the various co-operating stations, the straggling voters who failed to indicate which station they heard asking for ballots, and the summary:

KGO			
	Men	Women	Total
Coolidge	5,887	5,521	11,408
LaFollette	3,401	1,976	5,377
Davis	722	301	1,023
Foster	4	0	4
	10,014	7,798	17,812
WLW			
Coolidge	1,267	698	1,965
LaFollette	321	230	551
Davis	354	243	597
	1,942	1,171	3,113
KFKX			
Coolidge	4,355	1,902	6,257
LaFollette	1,897	953	2,850
Davis	1,187	621	1,808
	7,439	3,476	10,915

Davis	606	222	828
	1,048	415	1,463
WOC			
Coolidge	737	610	1,347
LaFollette	164	58	222
Davis	77	22	99
	978	690	1,668
WOAW			
Coolidge	544	402	947
LaFollette	155	113	268
Davis	122	103	225
	821	619	1,440
WCAE			
Coolidge	358	188	546
LaFollette	277	202	479
Davis	55	11	66
	690	401	1,091
WBAP			
Coolidge	745	510	1,255
LaFollette	155	99	254
Davis	1,066	778	1,844
	1,966	1,387	3,353

CKAC			
	Men	Women	Total
Coolidge	164	66	230
LaFollette	24	17	41
Davis	16	4	20
	204	87	291
WEI			
Coolidge	156	104	260
LaFollette	6	4	10
Davis	18	12	30
	180	120	300
WGY			
Coolidge	4,059	2,420	6,479
LaFollette	317	175	492
Davis	368	258	626
Foster	4	0	4
	4,748	2,853	7,601

Not Listed According to Stations
Coolidge

Summary			
	Men	Women	Total
Coolidge	21,964	14,788	36,752
LaFollette	7,699	4,339	12,038
Davis	5,403	3,047	8,450
Foster	8	0	8
	35,074	22,174	57,248

Improvements to Be Made In Chinese Communication

SAN FRANCISCO, Calif. — Announcement of extensive improvements in order to handle the commercial Radio telegraph business with China, and which include the construction of new high power units at Bolinas and the opening of a new headquarters at 28 Geary street, San Francisco, has just been made by the Radio Corporation of America through its Pacific coast division manager, Arthur A. Isbell.

Why it is Better

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

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

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

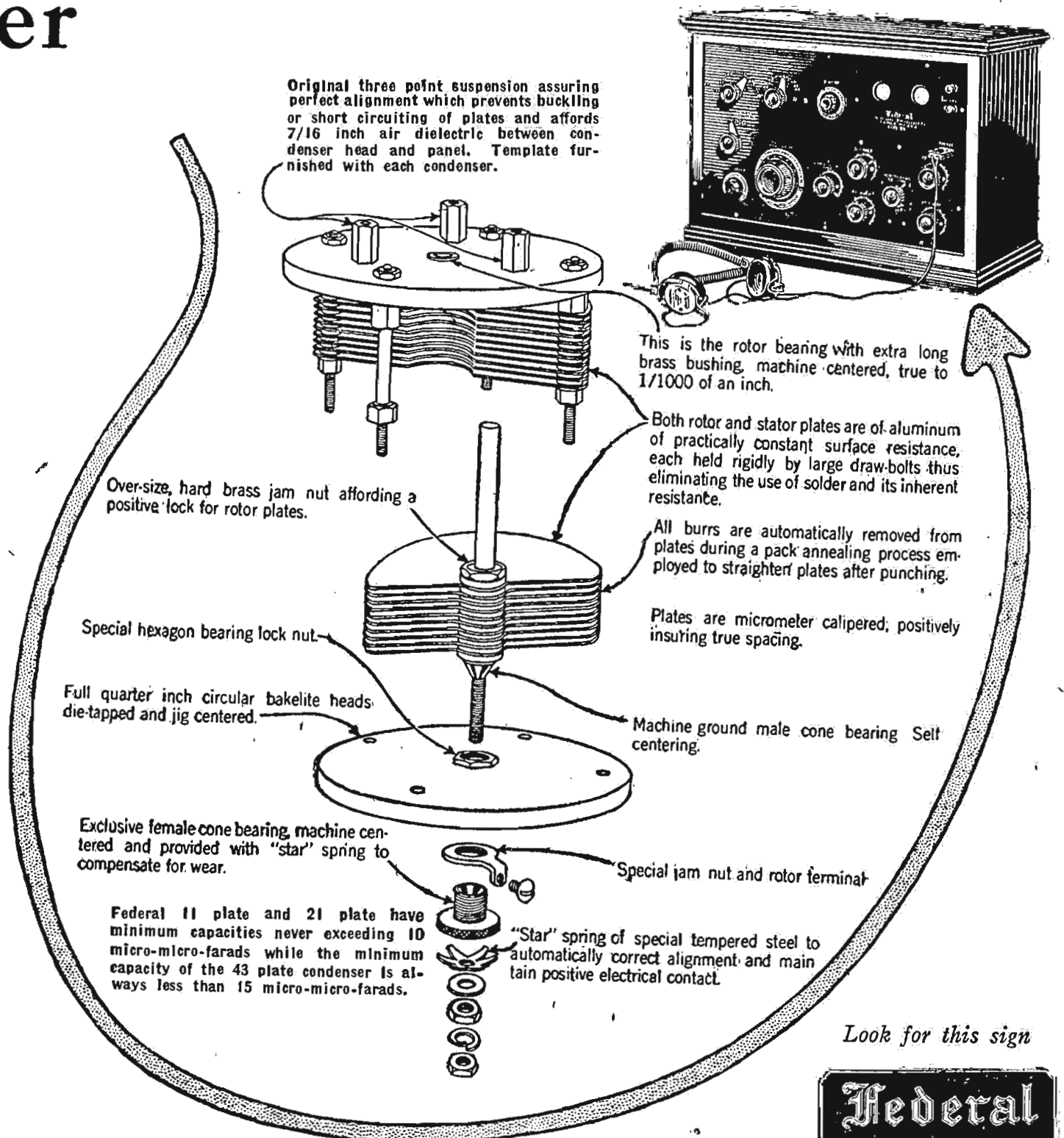
FEDERAL TELEPHONE MANUFACTURING CORPORATION
BUFFALO, N. Y.

Boston New York Philadelphia Pittsburgh Chicago
San Francisco Bridgeburg, Canada



Federal

Standard RADIO Products



Look for this sign



SUPER-HILCO-DYNE KIT

\$30⁰⁰

The Key to Distance

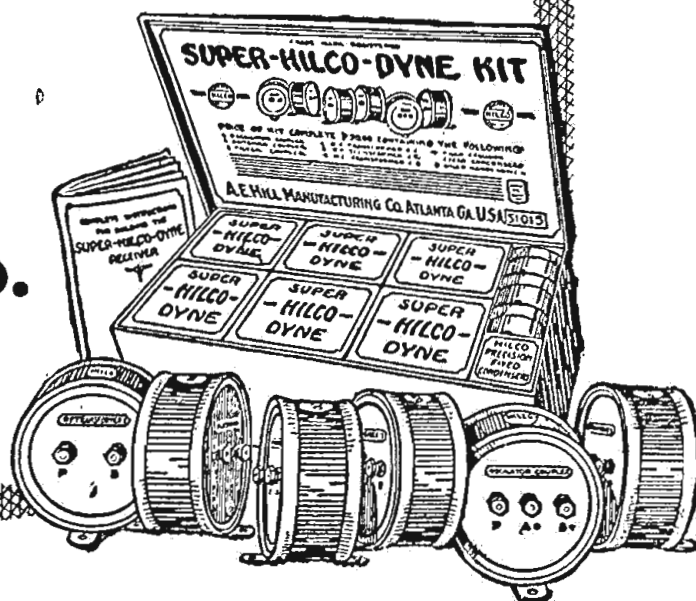
Any tube receiver will bring in out of town stations on a "silent" night—distant reception contains a thrill only when done through the transmission of nearby locals. The super-heterodyne, by its principle of operation, gives one the ability to do this, but—that principle implies low-loss apparatus, critical in design and made under exacting inspection.

The use of a Super-Hilco-Dyne Kit is the key to that distance which every builder of a Super-heterodyne is after. Its oscillator and antenna couplers assure clean cut separation of radio-casters in adjacent wave bands—its filter coupler completes the weeding out process on those stations within but a few meters of each other.

Get a Super-Hilco-Dyne Kit Now—Not Later

*Coast to Coast Reception
Only Two Tuning Dials
Stations can be Logged*

A. E. Hill Mfg. Co.
Atlanta, Ga.



- 1 Hilco Oscillator Coupler
- 1 Hilco Antenna Coupler
- 1 Hilco Filter Coupler
- 3 Hilco Intermediate Frequency Transformers
- 5 Hilco Precision Fixed Condensers
- 3 Hilco Handykans
- 1 Instruction booklet
- Complete explanation, BLUE PRINTS and instructions for assembling a SEVEN TUBE SET

HOOVER ADVOCATES RADIO LINK COUNTRY

SECRETARY GIVES ADVICE TO ALL BROADCASTERS

Now Public Utility Closely Connected to Lives of Every Citizen, Having Great Possibilities

WASHINGTON, D. C. — Secretary of Commerce Hoover, in addressing the opening session of the Third Radio conference on October 7, advocated regularly organized Radio interconnection on a national basis, with nationally organized and directed programs for some part of the day in supplement to local material.



Herbert Hoover

"Experimental broadcasting upon a national scale during the past year has brought us to the stage where we know it can be done," said the secretary. Discussing this matter of broadcasting programs further, Mr. Hoover said:

"The local material available for the local program is, in my view, not enough to maintain assured interest and therefore the industry, or to adequately fulfill the broadcasting missions. So far as the art has developed, I think we all agree that for regularity of reception we can depend only upon the local broadcasting stations. My proposition is that the local stations must be able to deliver every important national event with regularity. To this it must add its matters of local interest."

Wants National Interconnection

The secretary gave it as his opinion that "it is our duty to consider the possibilities and potentialities of interconnection as a regular daily routine of the nation. Unless it be systematically organized we cannot expect its continuation. I realize that this matter, except insofar as it may be fostered and encouraged, does not lie in the government. "It would be unfortunate if its control should come under the arbitrary power of any person or group of persons. It is inconceivable that such a situation could be allowed to exist."

Mr. Hoover also said that "Radio has passed from the field of an adventure to that of a public utility, nor among the utilities is there one whose activities may yet come more closely to the life of each and every one of our citizens, nor which holds out greater possibilities of future influence, nor which is of more potential public concern."

Hoover Quotes Statistics

The attention of the conference was called to the fact that there are now 530 broadcasting stations in operation, making Radio available in every home in the country. The sales of Radio apparatus, Mr. Hoover said, have increased from \$1,000,000 a year to \$1,000,000 a day. He estimated that there are now over 200,000 men employed in the industry and that the Radio audience probably exceeds 20,000,000.

"Radio activities," said the secretary, "so long as they remained within the legislative restrictions which hold for the government the fundamental ether are largely free. The industry's future conduct with a single view to public interest, a voluntary imposition of its own rules and a high sense of service, would go far to make legislative intervention necessary."

Taking up the question of paying for broadcasting and advertising the secretary said, "The quickest way to kill broadcasting would be to use it for direct advertising."

Suggests Mutual Program Body

"The reader of the newspaper," said Secretary Hoover, "has an option as to whether he will read an ad or not, but if a speech by the President is to be used as the meat in a sandwich of two patent medicine advertisements, there will be no Radio left. To what extent it may be employed for what we now call indirect advertising only experience with the reactions of the listeners can tell. I do not believe that there is any practical method of payment from the receivers."

"I wish to suggest for consideration the possibility of mutual organization by broadcasters of a service for themselves similar to that which the newspapers have for their use in the press associations, which would furnish programs of national events and arrange for their transmission and distribution on some source of a financial basis just as the press associations gather and distribute news among their members."

GENERAL OF THE ARMIES RETIRES



Countless Radiophans heard the broadcast of the addresses at the retirement dinner recently accorded General of the armies John J. Pershing at the Hotel Astor, New York. In his speech General Pershing stressed the need of preparedness. Left and right, respectively, of the general are former Ambassador to Germany James W. Gerard and Mrs. George S. Owens, president of the government club. K. & H. Photo

INNING FOR FANS AT RADIO CONFAB

Suggestions of Atlanta Men Are Adopted by Government for Third Annual Meeting

ATLANTA. — At the third national Radio conference now sitting in Washington three ideas submitted by Atlanta are helping to iron out the difficulties confronting Radiocasting.

The first is that the American Radio public have a voice at the conference through a representative speaking solely from the standpoint of the listener in.

The second is that Radiocasting stations be given a more adequate representation.

The third is that the department of commerce conduct a survey of all stations concerning their hours of operation, type of service, past record and future plans with the view of solving the troublesome question of new wave allocations.

These three suggestions, adopted officially by the government, were submitted jointly by Major Walter Van Nostrand, United States Supervisor of Radio and Lambda Kay, director of Station WSB at Atlanta.

Scientific fact and mechanics will be placed in the background now. All new problems will center around helping the Radiophan. The human element will be paramount.

And benefits accruing to the American Radio public conference promise to be equally decisive, if not so fundamental, as the improvements realized from the meeting in 1923.

END OF SECRET PACTS?

(Continued from page 1) casting station of the P.T.T., from whence it was broadcast over Europe.

It was not until the day before that it became definitely known to the press that such a step was contemplated, according to advices from the various correspondents, and even at that time it was considered doubtful as to whether the plan would actually be carried through.

The cause for this uncertainty seems to have been, from statements made by those present, in the strong objection of some of the news agencies to transmitting the speeches if they were also to be broadcast; as Senator de Juvenel, who first made the announcement, simply let the matter rest.

French Cabinet Hears Every Word

The loud speakers and voice amplifiers, which had been used in conjunction with the microphones in the hall to carry the speakers' voices clearly throughout the assembly, were left in running order, however, and the day after the first speeches had been made a typewritten statement was posted on the board in the convention hall that the French cabinet, listening in Paris, had heard plainly every word of them, in addition to the applause and other noises.

The experiment is an interesting one, and if not too strongly opposed by both politics and press may gain great headway. In America Radio is considered to have entered politics to stay. What its influence will be in bringing the average

man closer to his problems of government is as yet a doubtful question and one which will take years to answer.

20,000 PEOPLE JAM WORLD'S RADIO FAIR

GEO. HAY PRESENTED WITH RADIO DIGEST CUP

Arrangements Completed for Annual Radio Fairs in New York and Chicago Until 1934

NEW YORK.—Crowds so dense that the police and fire departments ordered the doors closed marked the opening night of the first annual Radio world's fair here recently in Madison Square Garden and the Sixty-ninth Regiment armory. Men, women and children stood three deep in the rain for more than an hour clamoring for admittance.

The estimated daily attendance was 20,000.

Among the features of the exposition was the presentation, by E. C. Rayner, publisher of Radio Digest, of the gold cup, in the form of a standard microphone, to George Dewey Hay of Station WLS, Sears-Roebuck Agricultural Foundation, Chicago, who won the recent Radio Digest contest as the world's most popular announcer.

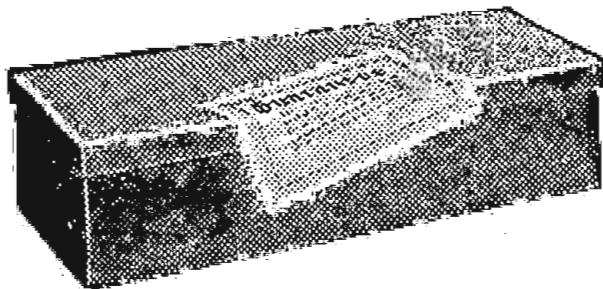
MacMillan Speaks

An address was broadcast by Captain Donald H. MacMillan, chief of the group of scientists of the schooner Bowdoin who recently returned from the far north after 15 months' research on the effect of the Aurora Borealis and other phenomena on Radio.

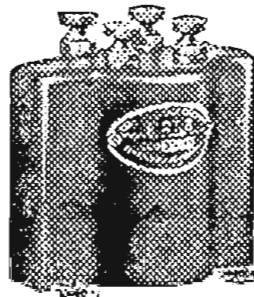
New inventions, miniature models and amateur sets were viewed by hundreds of thousands. Beautiful cabinets and innovations in the construction of headsets and loud speakers interested the throngs.

Arrangements were completed for annual Radio world's fairs in New York City and Chicago until 1934.

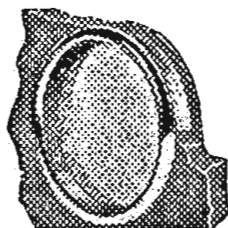
Latest Radio Science by the Box— Builds Best Circuit Best



With marked improvement in ease of control, Erla Selectoformer assures maximum range and volume. Cost and complication are reduced. \$5 each



Distortionless amplification of 3 stages, exclusive in Erla Audio Transformers, indicates their vast superiority. Price \$5.00



Millions of Erla Bezels are in use, enhancing beauty and utility in any set. 1" and 1 1/2" diameter for 1/2" and 3/4" panels. Nickel, black and gold. Price 20c—30c

Actual construction of Erla Duo-Reflex Circuits now is vested with advantages paralleled only by the matchless reception that is assured.

So much more powerful, tube for tube, these extra-efficient circuits now, too, are easiest to build.

Under warranty, factory sealed, the Erla blue-and-white protective carton brings every last thing needed for success. From synchronizing reflex and audio transformers, tested capacity condensers, balanced crystals, clear through to the drilled and lettered panel, stenciled baseboard and full size blueprint, nothing is lacking for correct, confident, precision assembly by any amateur.

Typifying the perfect simplicity to be expected, are Erla ingenious solderless connectors, which banish soldering; so that the only needed tools are screw-driver and pliers.

The completed receiver is bound to represent in their most intensive, accumulated form, all those superiorities of tone quality, selectivity, range, volume and ease of control, which make Erla units preferred in any set. Ask your dealer about Erla knock-down receivers, factory sealed in the blue-and-white carton, fully warranted. Or write direct, supplying your dealer's name.

Electrical Research Laboratories Dept. A, 2500 Cottage Grove Avenue, CHICAGO



Duncan Sisters, in Interview, Relate Early Experiences with Broadcasting

Continued from page 1)
week before the unseen audience they have expressed a few opinions and ideas about the musical comedy star and his or her relation to Radiocasting.

"It seems almost inconceivable," said Miss Vivian, "that such great changes and improvements in Radio came about in only four years.

"I remember the first time Rosetta and I sang into a microphone. It was in Ossining, New York. We were playing in 'Tip Top' at the time. The room from which the broadcasting was done was a fearfully and wonderfully made maze of switches, wires and electrical apparatus. In place of the modern microphone there was a mouthpiece that looked as though it had been taken from a telephone.

"1-2-3-4, 1-2-3-4, Testing"

"The announcer stepped in front of it and began like this, '1-2-3-4, 1-2-3-4, Ossining testing, Ossining testing, 1-2-3-4, 1-2-3-4, Ossining testing, and so on and on. After he had done this for a long while he told us the instruments were all adjusted. Then he started to announce us and the numbers we would sing.

"He began, 'The Duncan sisters, the Duncan sisters, the Duncan sisters will now sing. The Duncan sisters will now sing. The Duncan sisters will now sing.

The Duncan sisters will now sing; and he kept that up until he was sure everybody had heard it, I guess.

Use Telephone Transmitter

"So we began to sing. I have forgotten what it was but I know we both felt rather scared. As the song went on we gained confidence and began to use the gestures we used on the stage. More trouble. We both felt foolish, gesturing to a microphone. It was only after we had done it a few times that we realized that no one could see it anyhow and it did help the song. Still, it took a long time to forget we were not singing into a recording phonograph and would not have to sing the song all over again if we made any mistakes.

"It's all funny now, but it seemed pretty serious business at the time."

Letters Ask More Songs

As Radiocasting grew, the Misses Duncan sang more and more frequently. Letters flowed in asking for more. Finally, finding it an impossibility to get back and forth from the theater to the station, a studio was built solely for them. The entertainment is wired to the station where it is put on the air.

Despite much argument pro and con as to how Radiocasting effects the sale of popular songs, the Misses Duncan be-

lieve that it does the best thing possible: makes popular those songs which have merit and puts those that have none into the discard.

"The singing we do for the Radio now," continued Miss Vivian, "has become sort of a ritual. We intend to keep it up as long as we are in any place where there is a broadcast station."

Both Miss Vivian and Miss Rosetta believe that the idea that a star must be paid for his or her performance is rather absurd.

"With hundreds of letters coming in from Radiophans every day it seems to me that a person who will not take a little of his time to answer with a few songs, or whatever has been asked, without being paid so much money would be acting in a rather small way.

Radio Creates Happiness

"Not only that. An actor or actress must have a wide acquaintance. The Radio helps to build one. Even though people have never seen you they feel that they do through hearing your voice frequently. I presume there are many remarkable stories about hidden talent being brought to light by the microphone.

"The stories of men in prison, invalids who are shut in day after day, soldiers in the government hospitals and others too numerous to mention make you realize the happiness Radio has wrought.

"Yes, we intend keeping right on doing what we can to make things a little better and brighter. The field for the musical star in front of the microphone is a great one."

WEAO Opens Contest for Radiocast Slogan

Will Use Motto to Broadcast All Grid Games

COLUMBUS.—The football announcer at Station WEAO, the Ohio State university, wants a slogan.

And the slogan is to be used during all football announcing during the grid season. So in an effort to get the best one possible a contest has been announced by the school and a prize of two tickets to the Ohio-Chicago game, or to the Ohio-Michigan game, will be given for the best slogan submitted.

The rules are these: The slogan must be of four words and each word must start with a call letter in the regular order of WEAO. All slogans must be mailed to the institution so they will reach there by October 18, when the contest closes. Mail them to the Football Motto Contest Editor, Ohio State university, Columbus, Ohio. The contest is open to the public.



WATCH YOUR BATTERIES

¶A very exhaustive survey made by a large manufacturer of receiving sets showed that over 60% of all radio trouble is traceable to run-down or poor batteries. Without a testing instrument the best you can do is guess with regard to the condition of your batteries. This is a costly, uncertain, unsatisfactory and altogether unwise proceeding when you can know—be positive—and solve much of your trouble by investing in a comparatively inexpensive testing instrument.



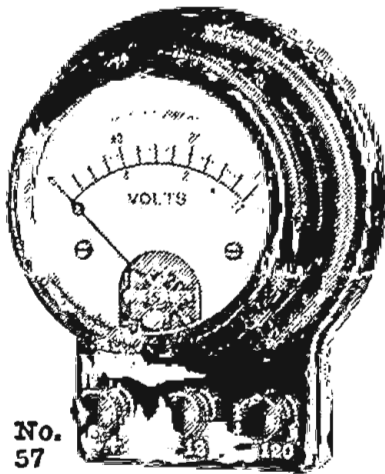
\$2.75

No. 84 "B" Battery Voltmeter

"ACTUAL SIZE"

The JEWELL HANDY "B" BATTERY VOLTMETER

¶The Jewell No. 84 instrument is shown above in actual size and was designed by us in response to a wide demand for a handy and inexpensive instrument for testing "B" batteries. It is sturdy in construction and much more accurate than the small pocket type testers on the market. While it is a small and inexpensive instrument, it is a "quality product." Jewell instruments lead the world in radio.



No. 57

(7.5 and 150 volts is the popular range in this double reading portable voltmeter for testing "A" and "B" batteries.) \$10.50

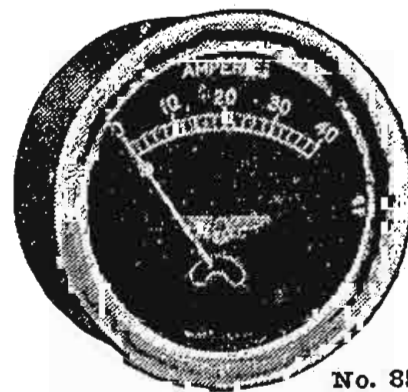
JEWELL "15-A" RADIO INSTRUMENT CATALOG. EVERY RADIO FAN SHOULD SEND FOR A COPY

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JEWELL ELECTRICAL INSTRUMENT CO.

1650 WALNUT STREET CHICAGO

"25 Years Making Good Instruments"



No. 85

(Use a Jewell No. 85 ammeter (0-40 amps.) for testing your Dry "A" batteries.)

\$2.00

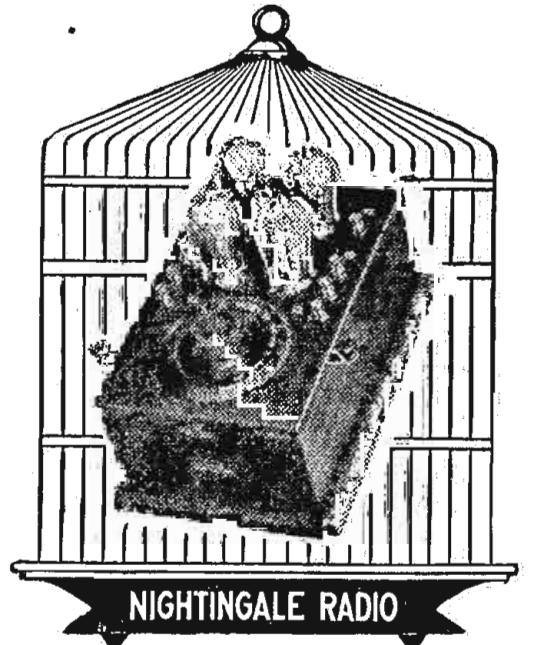
Hansen "BIRD-CAGE" Radios



4-Tube Radio Set

\$32.50

Without Accessories



A simplified, loud speaking, long range set at a price within the reach of all. It is a wonderfully good set in spite of its low price.



- Hansen CARDINAL. 3 Tube Reflex..... \$50.00
- Hansen BLUE BIRD. 4 Tube Radio Frequency..... \$57.50
- The Blue Bird with one stage of tuned Radio frequency has great selectivity and wonderful distance. It is easily worth twice its price.
- Hansen BOBOLINK. 2 Tube Reflex..... \$25.00
- AMERICAN EAGLE. This we believe to be the best high grade 6-tube loop set on the market today..... \$150.00

- Ed. Mum RECEIVERS 4 tube very selective..... \$90.00
- 6 tube loop..... \$135.00

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



- DISTRICT DISTRIBUTORS
- Badger Radio Co.....Milwaukee, Wis.
 - Phil Gross Hdw. Co.....Milwaukee, Wis.
 - Goulding Mfg. Co.....Milwaukee, Wis.
 - Maxwell Elec. Co.....Toledo, Ohio
 - Inland Ignition & Radio Co.....Spokane, Wash.
 - Chas. B. Scott Co.....Scranton, Pa.
 - Peter J. Constant & Co.....New York

WGY DRAMATISTS IN NEW PLAY TRYOUTS

PLAY NEW SELWYN CROOK DRAMA SUCCESSFULLY

Radio Production of Shows Before Actual Legitimate Staging Expected to Be Innovation

NEW YORK.—Arrangements have been made with one of New York's leading theatrical producers to have the WGY players at Schenectady try out a number of new plays by Radio before they are produced on the legitimate stage this season.

Through the courtesy of Selwyn and company, "Silence" was Radiocast on October 3. "Silence" is a crook play by Max Marcin. It was played over the Radio before it was produced on the stage. The WGY players interpreted it from the author's script without having first witnessed its production.

It met with a huge success. **Original Artists on Staff**
Practically the same group, of players as was used last season will make up the company of 1924-1925. They are the oldest Radio players on the air. Since the time of the first experimental play, "The Wolf" was Radiocast over two years ago the company has remained almost intact. This season will see the return of Miss Viola Karwoska, who was the leading woman when the players first started and who has not been heard for over a year.

Although numerous other stations are now broadcasting plays as a regular feature, the experiment of trying out new plays to be used eventually on the stage by Radio, is an innovation. The results should be exceedingly interesting to note. Should the procedure become common it will undoubtedly have a great effect on the legitimate drama. Listeners in will have an opportunity to choose and decide which shows appeal to them before they attend.

Aside from the number of "try-out" plays to be Radiocast before actual production on Broadway the company has planned a repertoire of its own. Among the plays will be "The New Poor," "Enter Madame," "Friendly Enemies," "Zander the Great" and a special production of "The Jest."

Prince of Wales Ardent Radiophan According to Statements of Friends

Has Two High-Power Sets in England and One at Ranch in Calgary to Keep in Touch with March of World Events—Special Set on Prince's Train

NEW YORK.—It is written that a cat may look at a queen, but it remains for a loud speaker to talk to a prince.



Prince of Wales

Let it be known that Edward Windsor, the Prince of Wales and heir to the British throne is an ardent Radiophan. His friends all agree on that.

During the Prince's recent short trip to New York, which he declared was one of the most pleasant he had ever made, members of his staff discussed his interest in Radio. Just before the Prince left for England on his last visit to his ranch in Calgary, Canada, he expressed a desire that a high powered receiver be installed there to keep him in touch with the world's news. Work was immediately started and the set was complete when he arrived.

Prince Ardent Radiophan
"You have probably heard long before this of the keen interest the Prince takes in Radio," said one of his staff members. "A high powered set has been installed for his use at Buckingham palace and another at his residence at St. James palace. The Prince spends much of his time listening to the programs and concerts generally Radiocast in the British Isles. He has, to date, not been fortunate enough to tune in any of the American stations."

cabled from England, will be broadcast by Station CNRC (CFCN) at Calgary.

"The receiving set used by the Prince is a super-heterodyne with a loud speaker similar to that used by the late President Harding while he was visiting San Francisco."

Install Set on Prince's Train

So that the Prince did not have to lose contact with the world even during his trip over the Canadian plains, a special set has been installed on one of the train coaches. It was used to entertain the party and pick up news bulletins which were Radiocast at stated intervals.

"Yes," continued the staff member, "the Prince fully realizes the importance of Radio. His ranch is a long way from the nearest telegraph station and without Radio he would be cut off from the outside world. When he returns to England he will give the British Radiophans a short talk on his trip here."

Southwest Will Hold Show at Dallas for First Time

FORT WORTH, TEXAS.—The first Radio and Electrical Exposition of the Southwest will be entertained in Dallas, October 14 to 19, under auspices of the Southwestern Radio Jobbers Association. Special features will be the army and navy exhibit, dancing ala Radio. Unique programs will be offered daily. Models for the ensuing year will be shown and the Radiophans of this section will be enabled to see and understand just what Radio is doing for their entertainment and education.

WLW TO BROADCAST NOTED HORSE RACE

EPINARD, FAMOUS FRENCH EQUINE AT LATONIA

Track Officials and Trainers to Explain Fine Points and Tell Anecdotes of Turf

CINCINNATI.—Arrangements have been completed with Colonel Matt Winn of the Kentucky Jockey club at Latonia for broadcasting the famous international race between the French horse, Epinard, and the pick of American tracks on October 11.

A microphone will be stationed at the track and special lines with the Crosley Station WLW at Cincinnati from where the story will be put on the air.

The description of the event will be given by Fred Smith, studio director and K. R. Moses, an authority on racing. It will include everything; the crowds, the celebrated track on which the races will be held, the actual race.

In the first race in America, at Belmont Park, Epinard was defeated by a scant half-length. This is considered a remarkable showing by students of the racing game. The horse has always run on the European type turf track which differs greatly from the American type built of dirt. Pierre Wertheimer, owner of Epinard, is expected to give a short talk just before the race.



Fred Smith

WALNART

Chicago

Makers of GOOD GOODS ONLY

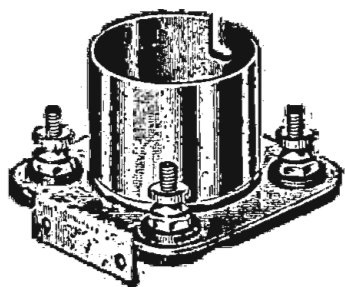


All you need know in Radio

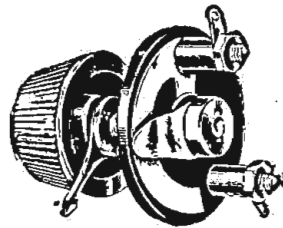
is the name "Walnart" to be sure of guaranteed reliable apparatus and "trouble-proof" service. Write for latest illustrated folder or ask your dealer.

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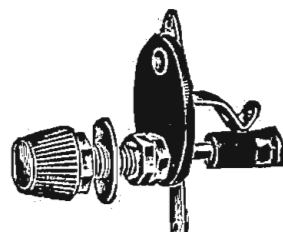
GREEN ST. AT JACKSON BLVD., CHICAGO



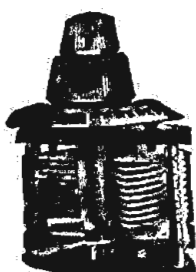
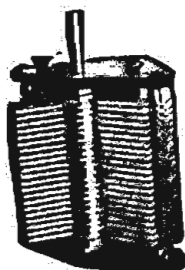
Walnart Sensible Sockets. Lower dielectric loss than all bakelites, fibre or composition sockets. Unconditionally guaranteed. Bakelite insulation. Standard or UV-199 base. List 50c.



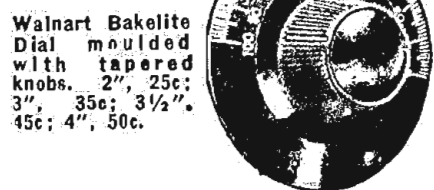
Walnart Variable Grid Resistance. List \$1. With fixed condenser, \$1.25.



Walnart Filament Switch. One hole mounting. Bakelite-Dilecto base. Push and Pull type. List 30c.



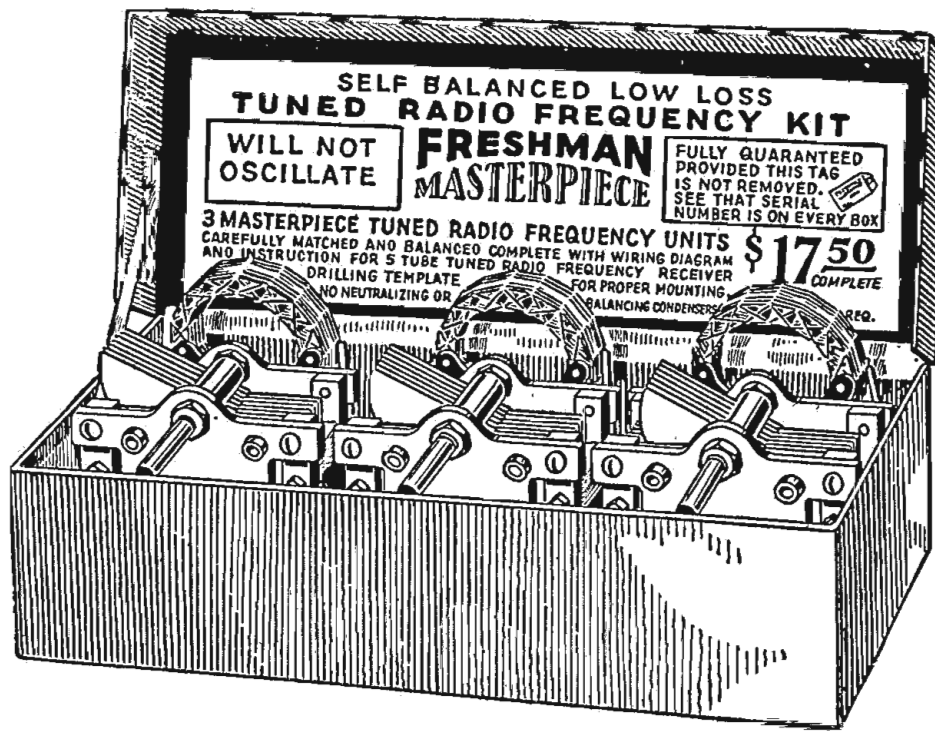
Walnart Variable Condensers, plain and vernier, do not "cut out" or develop wobbliness. Plates accurately pressed, permanently aligned and locked in slotted studs fastened in Bakelite ends. List prices: Plain, 3 plate, \$1.25; 5-pl., \$1.50; 13-pl., \$2.00; 17-pl., \$2.50; 23-pl., \$2.75; 43-pl., \$3.00. Vernier, 13-pl., \$4.00; 23-pl., \$4.50; 43-pl., \$5.50.



Walnart Bakelite Dial moulded with tapered knobs. 2", 25c; 3", 35c; 3 1/2", 45c; 4", 50c.

FRESHMAN MASTERPIECE It's Easy to Build

a five tube radio frequency receiver when you use the Freshman Masterpiece Kit



NO Neutralizing OR Balancing Condensers Required

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

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

\$17⁵⁰

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

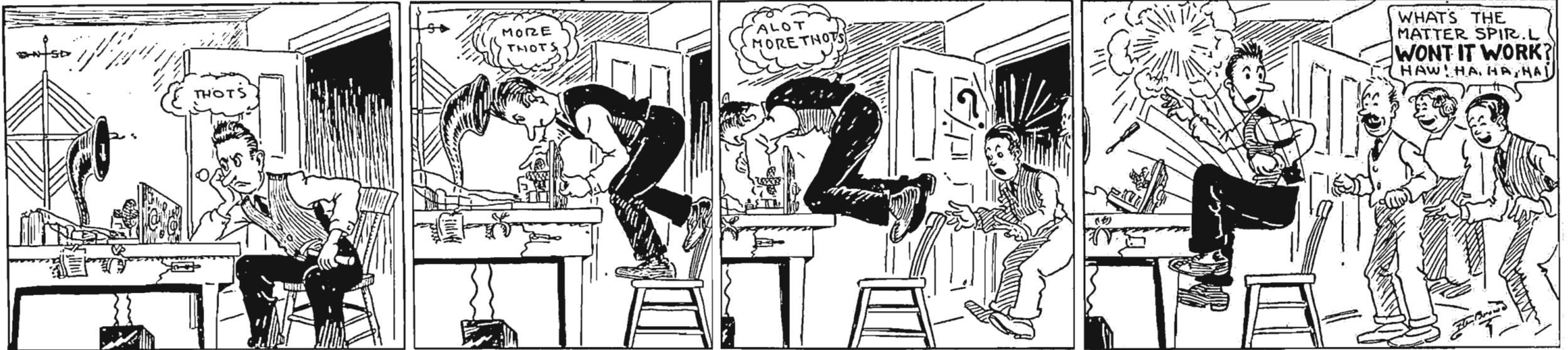
At your dealers, otherwise send purchase price and you will be supplied without further charge.

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THE ANTENNA BROTHERS

Spir L. and Lew P.

Foolish Questions

CONTROL MACHINES
REMOTELY LOCATEDSTART ROTARY CONVERTER
AT 170-MILE DISTANCE

Experiments May Bring About Central Control of Stations Located at Great Distances

LONDON.—Radio control of machinery was demonstrated by one of England's largest electrical machinery manufacturing companies at the great Empire Exposition at Wembley.

A 500-kilowatt rotary converter, similar to those used for traction and lighting purposes was installed in the Palace of Engineering. Ordinarily these machines are started and stopped by an exceedingly complicated system of switches. On this machine a special switchboard was installed and the entire outfit controlled by Radio from Manchester, a distance of 170 miles. The switchboard and machine was set by use of valve relay apparatus.

The transmitting apparatus sent one signal continuously until time to start the experiment. The starting signal was then given. Then the "message" was sent. It consisted of a series of dots and dashes so grouped that they automatically connected with the receiving apparatus and were passed on to a special selective relay which responded to that signal only, thus starting the converter.

WGY Organ Concerts
Acclaimed by Fans

Will Continue Popular Entertainment Through Winter

SCHENECTADY.—Organ music is rapidly coming into its own as a favored feature with the Radiophon.

Fan letters, the true measure of popularity, have swamped WGY with words of approval and requests for more. During the summer Stephen E. Boisclair has been heard during dinner concerts every Tuesday and Thursday evening. Telephone wires bring the music to WGY from Albany where Mr. Boisclair plays.

The Tuesday and Thursday concerts will be continued throughout the winter and the music will be a judicious mixture of popular high class compositions and simple songs familiar to everyone.

WLS Takes Place as
Dramatic Radiocast

Grand Opera Scenes to Be Used During Winter

CHICAGO.—With twenty dramatic performances scheduled for the month of October, a number of which have already been played, WLS, the Sears-Roebuck Agricultural Foundation station will take its place as one of the country's foremost dramatic Radiocasters.

The light opera season has already been started with the production of "The Mikado" and "The Chocolate Soldier." On October 9 the "Red Mill" will be presented. On October 16, "Robin Hood" and on October 23, "Katinka."

With the opening of the Grand Opera season the Thursday evening light operas will be replaced with scenes from the most popular grand operas. Opera stars will sing the parts. A short synopsis will be read of all the scenes not presented.

Shakespearean plays will be read on Tuesday evenings by Anthony S. Wons. He will also read the principal scenes of the story and explain those parts omitted. "Macbeth" will be read on October 7, and "Othello" on October 14.

If this venture into classic art is successful others will be given for the benefit of those who have never had the opportunity to see them on the legitimate stage.

Fans Hear World's Series
from WGR, Buffalo, N. Y.

BUFFALO.—Arrangements have been made at Station WGR with the Buffalo Evening News to Radiocast daily reports of the world series baseball games during the days of play.

The game result announcements will be given the right of way. Reports will be sent from the fields of play by telegraph and put on the air at WGR. Transcribing machines will repeat by direct telephone to the studio the various plays as fast as they are made. While remote control is not to be used this method will equal it in rapidity.

Station WGR has also resumed its daily afternoon program as a result of a new-co-operational plan between the Western New York Radio dealers, the Province of Ontario dealers and the Buffalo Enquirer and Courier.

The afternoon programs were restored after fan mails had indicated that numerous listeners in did not care for the music in the evening.

CO-OPERATION FITS
WORDS AND MUSIC

CINCINNATI.—Another case of exceptional reciprocal co-operation was brought to attention when John Marshall of this city tuned in the words and music of a song, each of which was being Radiocast from a different station simultaneously.

Marshall tuned in both WLW and WSAI at the same time, although their wave lengths are over a hundred meters apart. "Worried" was the number being used at each station. Coincidentally they were playing measure for measure.

Sunday Evening Club Again
Holds Services from KYW

CHICAGO.—An address by former Chief Justice John H. Clarke, of the United States Supreme Court, solos by Louis Kreidler (a member of the Chicago Civic opera), Mabel Sharp Herdien, and the Imperial Male quartet, patriotic numbers by the chorus of one hundred, and an informal Bible talk by Clifford W. Barnes, marked the opening meeting last Sunday of the eighteenth season at the Chicago Sunday Evening club in Orchestra Hall. KYW broadcasts all meetings.

Famous Syncopators
Broadcast from WIP

Members of Orchestra Under 21 Years of Age

PHILADELPHIA.—Syncopated music enthusiasts will welcome the announcement that two programs a week will be played by Harvey Marburger and his vaudeville orchestra and Radiocast from Gimbel Brothers' Station WIP.

Special telephone wires will connect Station WIP with the Cafe L'Algon where the musicians are engaged for the season. Regularly on Tuesdays and Thursday at 8 p. m. Eastern time, the dance music will be put on the air.

Marburger's orchestra is rated as one of the finest in the country and has just returned from a twenty-five week tour with the Keith circuit. The orchestra, composed of eight men, plays twenty-eight different instruments. Because of this all the latest stunts in creating the best dance music is at Marburger's fingertips.

Each member of the band, who range in age from 17 to 21 years of age, is a master of the instrument he plays. The organization also boasts one of the youngest pianists in the country—17 years old. He is an adept at arranging popular airs.



Trade Mark
Reg. U. S. Pat. Off.

The GREBE
SYNCHROPHASE

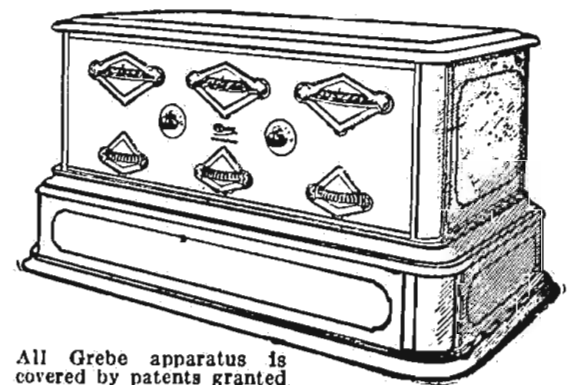
(Trade Mark)

A BROADCAST Receiver that marks another long step forward in radio design and establishes a new set of standards in craftsmanship.

"It is only when the cold season comes that we know the pine and cypress to be ever-green."
—Confucius

In the coming cold season be not surpassed by thy neighbor—set the pace with your Grebe Synchronphase.

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All Grebe apparatus is covered by patents granted and pending.

Ask your quality dealer for a demonstration of the Grebe Synchronphase or write us for literature.

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WD-11



Radiotron WD-11 is famous as the tube that really made possible the swift growth of radio in the home, as we know it today.

Inexpensive to operate—using but one 1½-volt dry cell—doing away with the need for storage batteries—it has lowered the cost of Radio.

Radio Corporation of America

Sales Offices—Dept. 317
233 Broadway, New York

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433 California St.
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Price
\$4.00



This symbol of Quality is your protection.

Be sure that every vacuum tube you buy is marked RADIOTRON.

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ARNOUX QUILTS WBAP TO TAKE NEW POST

WILL DIRECT NEW STATION TO OPEN IN ARKANSAS

E. L. Olds and W. E. Branch to Assume Director-Announcer Duties Left Open by "G. C. A.'s" Resignation

FORT WORTH.—G. C. Arnoux, director and announcer at Station WBAP in Fort Worth has resigned his position and accepted appointment as chief director-announcer at the new 500 watt station now nearing completion on the New Arlington hotel at Hot Springs, Arkansas.



G. C. Arnoux

"G.C.A." as Arnoux is commonly known here, will assume his new duties shortly although the station will not start broadcasting for some time.

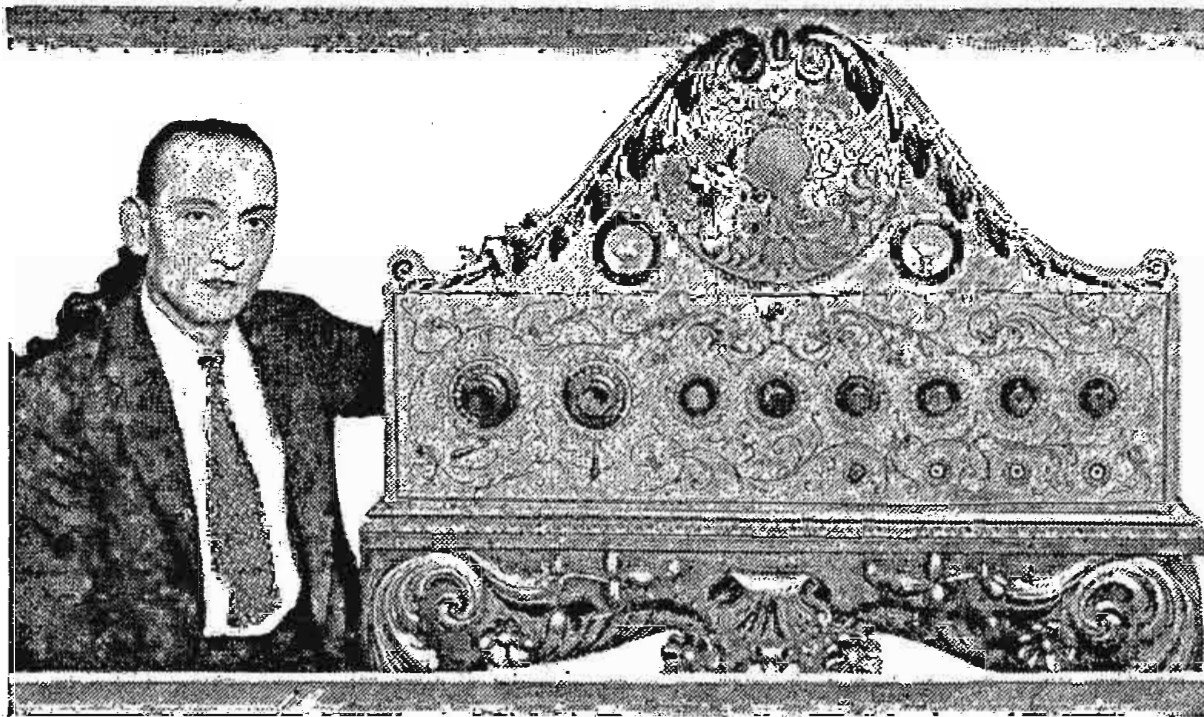
Arnoux started his career before the "mike" over two and a half years ago at Station WBAP. Two and a half years is a short time but Radio men of that day were still in the pioneering class. WBAP boasted a 20 watt station—the marvel of the countryside. Arnoux helped build the station into one of the best known in the country.

From Cowboy to Announcer

He was born in New York. While still a boy he moved to St. Louis and then to Texas. After he had decided that colleges were not made for him he turned coal miner. Cow-punching next occupied his attention. From that he dragged a chain with an engineering crew. Then newspaper work and finally into Radio.

When the war came G. C. A. got no closer to France than San Antonio despite his pleas for a little more action. When the war closed he started out for himself and tramped around the world, to the South Sea Islands, Borneo, and other corners of the earth. But the sound of

SET IN HAMMERED COPPER CASE



This beautiful super-heterodyne receiver is encased in hammered, chased copper and attracted much attention at the New York Radio World's Fair. The builder, beside the receiver, is Alfred Savastano. The grilled work at the top of the center of the panel conceals the horn of a loud speaker.

the loud speaker eventually intrigued him more than the bosun's whistle and he returned to Fort Worth.

At Hot Springs G. C. A. will step into virgin territory. Memphis, St. Louis and Kansas City are the nearest stations and Radio will be carried to thousands of small set owners who were unable to tune these in.

E. L. Olds will assume the duties of Radio editor at WBAP. W. E. Branch, technician at WBAP will take over the work of program direction.

Minnesota College Resumes After All Summer Silence

NORTHFIELD, Minn.—WCAL, St. Olaf college station, resumed its broadcasting recently after the summer vacation. During the first week it sent out a complete schedule of two musical programs, the first of a new series of book talks by Dr. George Weida Spohn of the St. Olaf department of English, two sacred programs, and the usual college chapel exercises every morning except Monday.

EDISON STATION WTAT AT BOSTON RE-OPENS

New Call Letters WEEI to Replace Old WTAT

BOSTON.—After a silence of several weeks Station WEEI, formerly WTAT, of the Commonwealth Edison Light company of this city, opened its new schedule on September 29.

The new station was dedicated with an address on "WEEI Policy" by Charles L. Edgar, president of the light company. A popular program of quartet, vocal and instrumental numbers was given, including dance music by Dok-Eisenbourg and his Sinfonians.

Charles Birton is superintendent of broadcasting. C. R. Emery is program director.

It is understood that WTAT will continue to operate as a station of 100 watts. It will use the old call letters. WEEI will broadcast on 500 watts.

HELPFUL HINTS FOR RAISING THE CHILD

PHILADELPHIA.—Radio has taken on a new character—that of nursemaid. Mrs. James D. Nery of Deepwater, N. J., called Station WDAR, informed them that although she had been an attentive listener to all the baby health talks, the arrival of a new son showed her there was much more to know, and requested WDAR to Radiocast more lessons in infant technique. The station obligingly did it.

Hired Hand and Gang Give Program at WMC

Prominent Texas Business Men Perform with Police Band

MEMPHIS.—Accompanied by a sextet of Texas business men and the Texas Police band, the "Hired Hand" of Station WBAP at Fort Worth recently took charge of an entire program at Station WMC in Memphis.

The festivities started when announcer Jerry Deering announced the coming of the popular "Hired Hand" with three blasts of Hushpuckinny whistle. The singers call themselves the "Saxet." (Texas spelled backwards). As encore followed encore they alternated with the police band, rated as one of the finest in the south. The music was such as grows only in Texas according to reports from listeners in.

Because of the crowd and the smallness of the WMC studio, the entire program was Radiocast from the Scottish Rite Temple.

Western Radio Company Sells WOQ to Unity School

KANSAS CITY, MO.—Station WOQ here has been sold by the Western Radio company to the Unity School of Christianity and has for some time been furnishing religious programs. The Unity school plans to increase the power to be equal to or greater than the other local broadcasters, WDAF and WHB. The station has already been moved into new quarters which are much larger and better furnished than the old. The Unity school is internationally known.

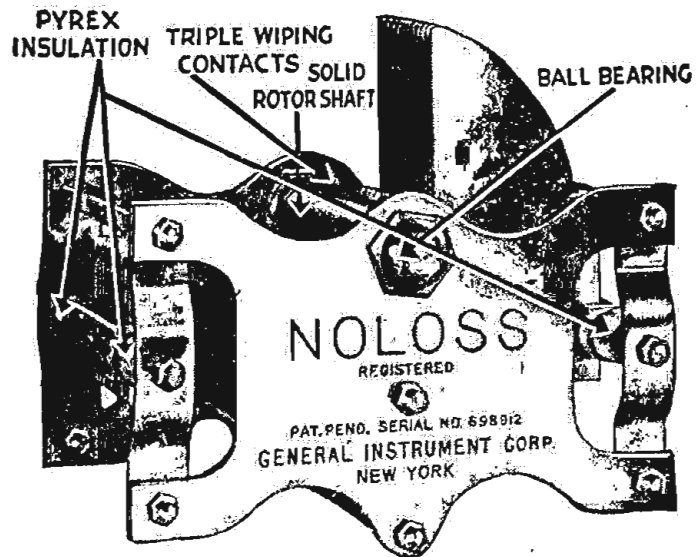
On your guard

Beware imitations. We have counted 19 imitations of our products. It is up to you to make sure you are getting a genuine General Instrument Corporation condenser.

NOLOSS

TRADE MARK

Insulated with Pyrex



Air, Isolantite, Pyrex, Corantum and Quartz are the only recognized zero or minimum loss insulations in existence. GENERAL INSTRUMENT CORPORATION INSULATES WITH AIR, ISOLANTITE, PYREX, CORANTUM AND QUARTZ. Thus you are assured greater distance, increased selectivity and clearer reception. By eliminating energy waste these condensers overcome losses and give power to your set.

Type	Maximum Capacity	Minimum Capacity	Price
51X	.0025 mfd.	9 mmfd.	\$6.00
51A	.0003 mfd.	11 mmfd.	6.00
51D	.0005 mfd.	13 mmfd.	6.50
51F	.001 mfd.	20 mmfd.	7.00
52D	.0005 mfd.	13 mmfd.	9.00
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NEW MODELS

Bristol Radio Receivers

Incorporating the Patented Grimes Inverse Duplex System

Watch for further announcements in all leading radio publications.

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

Ask for Bulletin No. AY-3017

Manufactured by

THE BRISTOL COMPANY
Waterbury, Connecticut

GRIMES SYSTEM INSURES NATURAL TONE QUALITY



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

GIVE PLAY-BY-PLAY GRID YARNS AT KYW

"RADIO-FOOTBALL" TAKES PLACE AS A NEW SPORT

Comfort-Loving Fans Now Follow Game from Easy-Chairs with Set and Chart

CHICAGO. — Westinghouse Station KYW has opened its third season of football Radiocasting.



Harold A. Fall

When the referee's opening whistle blows and the ball sails down the field on the initial kickoff, Harold A. Fall of the well-known football voice steps to his place in front of the microphone on top of the press-box at Stagg field and listeners in "hear" the game, play by play until the timekeeper's watch ticks off the last minute.

According to thousands of letters received at the station Radio football has become a national sport. No more must the fan who loves comfort sit in a drizzly autumn rain chilled by the icy zephyrs on their way down from Hudson bay or push and be pushed by an excited crowd as he tries to find his seat—for which he paid several round, iron dollars. No more. Now he adjusts the loud

Football Radiocasts

October 11
Brown-Chicago at Stagg field, Chicago, KYW (536), WMAQ (448).
Columbia-Wesleyan at Baker field, N. Y., WEAJ (492).
Iowa-Ohio at Iowa City, WHAA (484), WBAV (423).
Pitt-West Virginia at Forbes field, Pittsburgh, KDKA (326).
October 18
Indiana-Chicago at Stagg field, Chicago, KYW (536), WMAQ (448).
Lawrence-Iowa at Iowa City, WHAA (484).
Ohio Wesleyan-Ohio at Columbus, WEAO (360).
West Point-Notre Dame at Polo grounds, New York, WEAJ (492).

speaker or the headphones, leans back in his easy chair and with his "play by play" chart in hand follows the teams up and down the field to "Shorty" Fall's voice.

And he gets it all. The whistle of the referee, the audible bumps of hard tackles, the bark of the quarter back, the shouts of the crowd and the blare of the bands.

Fall is described by his listeners as being the only man who can describe a game so accurately that they feel they are at the field. He never misses a play and he has the faculty of giving his audience the same excitement he feels.

Program in Eighteen Languages

NEW ORLEANS, La.—The Radio Corporation of America will establish a broadcasting station in connection with the International Trade exhibition at this city, it has been announced. The programs will be broadcast in eighteen languages, and is regarded as one of the most elaborate series of programs known thus far in the Radio field.

START DRIVE TO RAISE FUNDS; PUBLIC HELPS

Station KFIX to Erect New Radio Buildings Soon

INDEPENDENCE, MO.—A drive to raise \$10,000 for the erection of new Radio buildings and for installation of many new improvements in Station KFIX has been started.

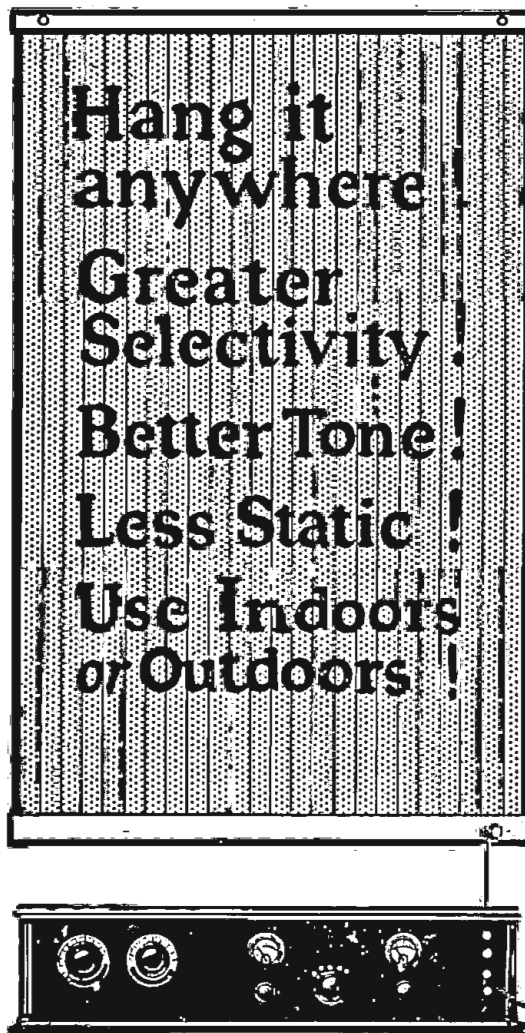
The power is to be increased from 259 watts to 1,000. Plans calling for the erection of two new steel towers, each 150 feet high, have been drawn. A new studio, embracing all the latest advanced in the science of acoustics, is to be erected. It is expected that these changes will give KFIX a dependable coast-to-coast range. The station owned and operated by the Reorganized Church of Jesus Christ of Latter Day Saints was licensed in 1923. It has maintained a regular schedule.

The campaign was started after the matter had been discussed by the members of the church and numerous listeners in had expressed a willingness to assist in starting the drive to raise funds. Contributions are being solicited from all members of KFIX's audience.

Distress Call Saves Men Caught in Flaming Plane

MADRID, Spain.—Flying from Alicante (Spain) to Oran (Algeria), a postal seaplane took fire following a breaking of the gasoline feed line, and was forced to go down to the sea immediately. Fortunately time was found before alighting to send out a Radio call for help, together with the plane's bearings. A motor boat set out promptly from Oran and found the plane burning fiercely on the sea and the two men just on the point of being forced to relinquish their hold on it. The men were rescued with only slight burns on their hands, although the mail was lost.

Effarsee brings the stations in!



Hang it anywhere!
Greater Selectivity!
Better Tone!
Less Static!
Use Indoors or Outdoors!

A good radio weather Effarsee Portable antennae has brought in stations 2,000 miles away in loud speaker volume on a four tube set. It stops all the worry about aerials that has prevented many people from buying radio sets. It reduces static, improves the tone of instrument, and increases selectivity. It is much better than a loop. Every set owner should have one to use on nights when static is bad, or to use in series with an outside aerial to stabilize the signals and improve the tone. Three sizes: \$1.00, \$1.50, and \$2.50. Money back if not satisfied! If your dealer can't supply you write direct. Dealers, Jobbers and Manufacturers Agents: Effarsee has proved itself in the hands of good houses. It will be a big thing in radio this year. Write for our proposition.

Effarsee

PORTABLE ANTENNAE

The Fishwick Radio Co.
Edwards Bldg., Cincinnati, Ohio

Anyone can use a storage battery now

CHARGING a storage battery ten years ago was a task needing expensive apparatus and the services of a specialist. To-day, anyone can do it in the home. No knowledge of electricity is needed. It can be done economically, simply, automatically, with

The New Silent GOLD SEAL HOMCHARGER

just as more than 200,000 satisfied users of Homechargers are doing right now.

If you are one of the many who envy the results of storage battery tubes but think you can't enjoy them unless you are a battery expert, go right out now and buy those tubes, a battery and a Gold Seal Homecharger.

Here's all you have to do to maintain a storage battery: add a little water once in a while (your eye will tell you when); charge it regularly. To use the Homecharger, screw a plug in any lamp socket, slip two spring clips over the battery terminals, go to bed and forget about it. Next

morning the battery is charged. What could be easier?

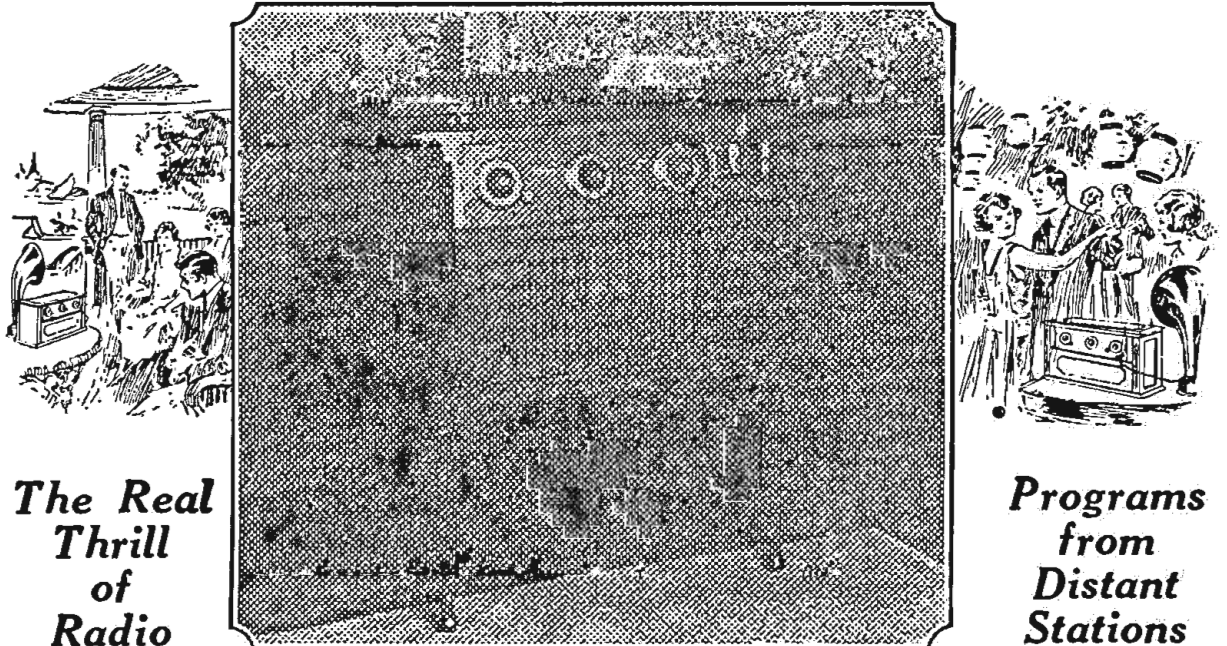
The Gold Seal Homecharger—simple, efficient, dependable, quick. Cannot injure battery, furnishings, anything or anybody. Handsome, finished in mahogany-red and gold. Approved by Fire Insurance Underwriters. Unqualifiedly guaranteed. Only one moving part, replaceable for \$1 after thousands of hours of use. Silent—its faint hum cannot be heard in the next room.

Popularly priced; buy it at your dealer's for \$18.50 complete; \$25.00 in Canada. For radio at its best, use storage battery tubes, any good battery and the Gold Seal Homecharger.

FREE! Send for our interesting free booklet, "The Secret of Distance and Volume in Radio," containing valuable information on this subject and fully describing the GOLD SEAL HOMCHARGER.

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The Real Thrill of Radio

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WHEN you own a Radiodyne you can listen in on programs thousands of miles away. Jazz music from Chicago—speeches from Washington—opera from Boston—"Hits" from Broadway—news from "The Coast"—your Radiodyne brings them to you no matter where you live.

Gets Wonderful Results With 60 Foot Aerial

Radiodyne

Works Just As Well Without Loop or Aerial

"I am using a 60 foot outside aerial and the results are wonderful. I use no ear phones. Am reaching from coast to coast with a loud speaker."
Harry Herz, Milwaukee, Wis.

"With a 30 ft. wire lying on the floor we heard 32 stations in one night, including Omaha, Newark, Atlanta and Ft. Worth on loud speaker, clear and distinct."
H. N. Walker, Detroit, Mich.

Write for illustrated folder which describes the RADIODYNE in detail. Every radio fan will be interested in this new type receiver.

Western Coil & Electrical Co., 312 Fifth Street, Racine, Wis.

GRAND OPERA AT KFI THURSDAY EVENING

Wednesday, October 8

Silent night for: CKAC, KGO, WCAL, WFAA, WFI, WGY, WIP, WJY, WMC, WOAW, WRC.

CHCY, Montreal, Can. (Eastern, 341), 8:45-11 p. m., Royal Canadian highlanders.

CKAC, Montreal, Can. (Eastern, 425), 1:45 p. m., Mount Royal hotel luncheon concert.

CNRC, Calgary, Can. (Mountain, 440), 8:45-10 p. m., Jas. MacLure and his Radio orchestra.

KOKA, E. Pittsburgh, Pa. (Eastern, 326), 12:15 p. m., concert, Daugherty's orchestra; 6:30, dinner concert, Pittsburgh Athletic association orchestra; 7:15, children's period; 8, program, League of American Pen women; 8:15, "The Role of Chemistry in Every-Day Life," "The Chemist's Work," Alexander Silverman; 8:30, special program; 9:55, program closes.

KFAE, Pullman, Wash. (Pacific, 330), 7:30 p. m., Paul E. Christen, baritone; Bernice Metz, pianist; "Fire Prevention in Washington," Lincoln Lounsbury, extension; "Care of the Feet," U. S. Public Health service.

KFI, Los Angeles, Calif. (Pacific, 469), 5:30-6 p. m., talk, Dr. R. L. Power; 6:15-7:30, detective stories; concert; 7:30-8, George and Jack Pepper, violinists; 8-9, Evening Herald, Kennedy broadcasters; 9-10, American League of Penwomen; 10-11, Hollywoodland community orchestra; 11-12, Cocanut Grove orchestra.

KFKB, Milford, Kans. (Central, 286), 7:20 p. m., college of the air; 7:30, "Gas, Natural and Artificial, as a Fuel," J. P. Calderwood; 7:45, development of farm water supplies; 8, KFKB orchestra; 8:30, "Doctoring with Dupe," Dr. J. R. Brinkley; 9, KFKB artists; 12, dance program.

KFNH, Shenandoah, Ia. (Central, 266), 7:30 p. m., old-time fiddling, Coburg, Ia.

KFOA, Seattle, Wash. (Pacific, 455), 8:30 p. m., Modern Woodmen of America, Elliott Bay Camp No. 5138, M. W. of A.; Mrs. W. H. Pittwood, soprano; Ben Boyer, mandolinist; "Woodcraft," Dr. W. H. Pittwood; Lawrence Tomkins, bass; John R. Wilson, baritone.

KFSG, Los Angeles, Calif. (Pacific, 278), 2:30-4:30 p.

Headliners of the Week

RADIO will make it easier for the amateur archeologist to find fossils this week if he tunes in for WJZ any night between October 8 and 10. Professor Ralph V. D. Mafnoffen, president of the Archeological Institute of America will open the New York University Broadcast bureau. Fifteen bands and the merrymaking of a vast throng from the microphone of KSD will please the more frivolous this week when the annual street carnival of St. Louis floats over the ether.

The music and story of the grand opera "Romeo and Juliet" will attract opera lovers to KFI Thursday evening. If you prefer good band music, you will pick instead the concert at WIP when the Philadelphia Police band, a nationally famous organization, will play many familiar airs to the baton of its director, Lieutenant Joseph Kiefer.

Whether English or Americans are the more eloquent speakers will be determined Friday night when WEAO

will Radiocast the debate between the Ohio State university and Oxford university, England. One of the debaters on the Oxford team is Malcolm MacDonald, son of the British premier.

Be not surprised if the air reminds you of a pickle or a bean Saturday night. The 57 varieties will be on the Westinghouse stations. The employees of this large company will eat in unison in sixty-two cities all over the world at 5:30 p. m., Central time. (Figure this out if you can.) President Coolidge will be the first speaker.

Thirteen has no terror for Fred Smith's WLW family. Their defiance of tradition took definite form when they decided on this date for the dedication of the new studios. But please note this is Monday and not Friday the thirteenth.

The good ship "H. M. S. Pinafore," having sailed the comic opera seas for many years, has been overhauled and will take to the air Tuesday, October 14, at KGO, Oakland.

violinist and Stephen Balogh, pianist; 7-7:30, Paul Specht's dance orchestra; 7:30-7:10, Emily's surprise party; 7:40-8:10, Al Raymond and his orchestra; 8:10-8:20, "Bad Boys and Girls," Jess Perlman; 8:20-8:30, songs, Cantor Saul Goldfarb; 8:30-8:45, Signore Landino, tenor; 8:45-9, Kiwanis club boy's period, Wm. J. Stuart; 9-9:15, Alfred Dulin, pianist; 9:15-9:45, Plantation serenaders; 9:45-10, Leo Wood's air troops; 10-10:10, base ball statistics, Al Munroe Elias; 10:10-11, Clover Gardens dance orchestra.

WHO, Des Moines, Ia. (Central, 526), 7:30-9 n. m., Bankers Life Radio orchestra, W. L. Marsh, director.

WIP, Philadelphia, Pa. (Eastern, 509), 1 p. m., Gimbel tea room orchestra, Ray Steen, director; 3, recital, Ada Turner Kurtz studio; Ishnee Riediger, soprano; Naomi Gilbert, contralto; John Abnet, tenor; Flora Rlpha, accompanist; 6:05, Walter Schwartz orchestra; 7, Uncle Wip's bedtime stories.

WJZ, New York, N. Y. (Eastern, 455), 10-10:20, a. m., housewives daily menu, Mrs. Julian Heath, 10:20-10:30 "Household Equipment," Ethel R. Peyser;

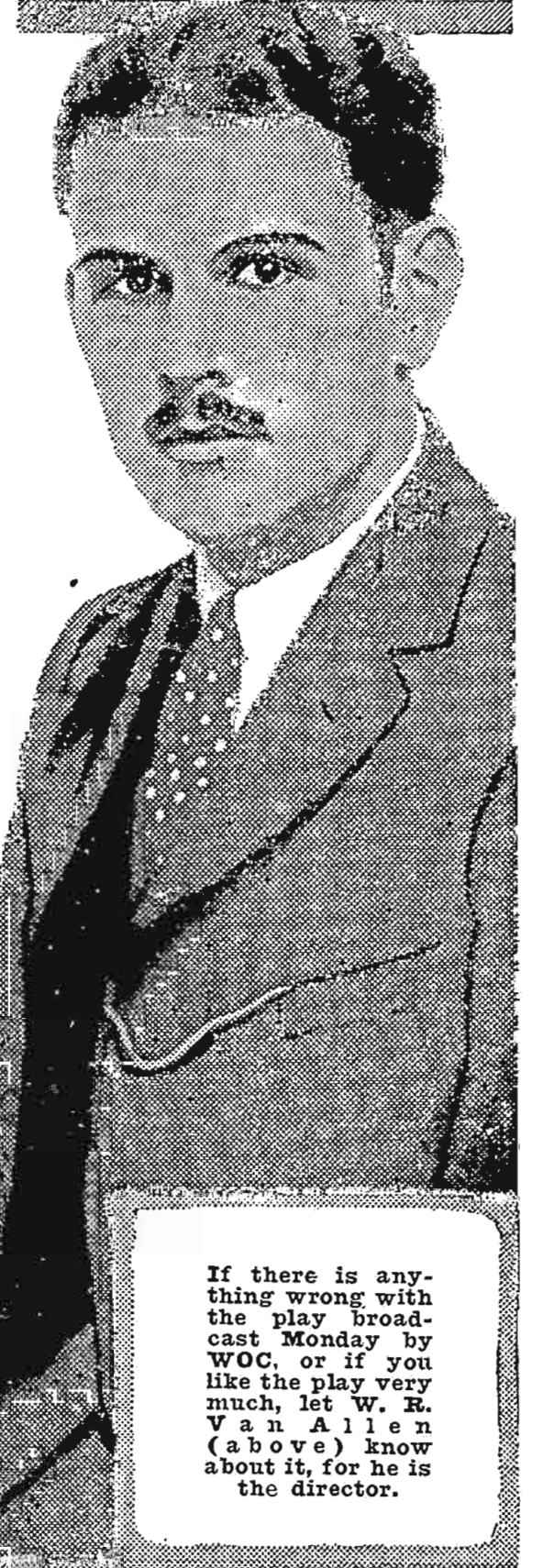


Coy V. States, as he appeared in the part of the Professor in the comedy "Kleptomaniac," recently broadcast from WOC, Davenport, he will play a leading role in "He's a Lunatic," to be given Monday night.



Fern Winslow is the charming leading lady in the play "He's a Lunatic," at WOC, Davenport, October 13.

W. A. Mitchell (below) is another member of the P. S. C. dramatic club and will take part in the Radio play broadcast by WOC, Monday.



If there is anything wrong with the play broadcast Monday by WOC, or if you like the play very much, let W. R. Van Allen (above) know about it, for he is the director.

m., auditorium service, organ; congregational singing; prayer, testimonies; "Deeper Bible teaching on Divine Healing," Aimee Semple McPherson; altar call; 6:30-7:30, Gray studio children's program, Mrs. Edward Hughes, assisted by daughters, Mary Elizabeth and Betty; Mrs. Rose, pianist, assisting artists.

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

KGW, Portland, Ore. (Pacific, 492), 12:30 p. m., Bill Darby's orchestra; 5, children's program; 8, program, Rose City concert company; 10, George Olsen's Metropolitan orchestra.

KH, Los Angeles, Calif. (Pacific, 395), 12:30-1:15 p. m., concert; garden talk, Fred C. McNabb; 2:30-3:30, matinee musicale; 6-6:30, Art Hickman's concert orchestra, direction, Edward Fitzpatrick; 6:30-7:30, children's hour, "American History," Prof. Walter Sylvester Hertzog; Dick Winslow, juvenile screen actor and reporter; bedtime story; Uncle John; 8-10, Dr. Mars F. Baumgardt; the Piggly-Wiggly girls; the Wesleyan quartet, Huntington Park Methodist church; 10-11, Art Hickman's dance orchestra, Earl Burnett, director.

KLX, Oakland, Calif. (Pacific, 509), 6 p. m., announcement of prize winners, Aunt Elsie matinee contest; 8-10:20, Pais's KLX Hawaiians; Mabel Seroy Keeney, vocalist; songs, Ralph Sedgewick; Eleanor Rathke, pianist; songs, Theo. Tremblay Neddin, vocalist; Pearl Collar, accompanist; American theater orchestra; H. I. Krick, pianist; Clement Barker, organist.

KOB, State College, N. Mexico (Mountain, 360), 7:30-8:30 p. m., "Some New Developments in Home Demonstration Work," Roberta S. Sinclair; Prof. John Overbeck, cornetist; violin, flute, piano trio, Dean and Mrs. A. P. Taylor, Loomis.

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

KQV, Pittsburgh, Pa. (Eastern, 270), 9-10 p. m., regular evening artists' program.

KSD, St. Louis, Mo. (Central, 546), 7:30 p. m., Velled Prophet ball.

KYW, Chicago, Ill. (Central, 536), 11:35 a. m., table talk, Mrs. Anna J. Peterson; 6:35-7, children's bedtime story; Uncle Bob; 7-7:30, dinner concert, Congress hotel; 7:30-8, program, KYW's studio, Duncan Slaters Music Publishing company; 8-8:30, musicale; 8:30-8:45, around the town with KYW in Chicago; 8:45-9:05, Helen Klumball, soprano; Louis Meehan, tenor; Earl Wettelsnd, pianist; 9:05, "Good Roads," Chicago Motor club; 9:15, talk, W. A. Durgin; 9:45-12:30, midnight revue; W. Remington Welch, organist.

WAAM, Newark, N. J. (Eastern, 263), 11-11:15 a. m., piano recital; 11:15-11:30, market reports from Center Market Newark; 8-8:30 p. m., songs, Victor Wilbur; Barit Joe Macy, pianist; 8:30-8:45, Shu-Milk Kid, request; 8:45-9, Ben Friedman, baritone; 9-9:15, Burr MacIntosh, speaker; 9:15-9:30, Shu-Milk Kid; 9:30-9:45, Ben Friedman, Joy boy; 9:45-10:15, Ray Southwick Connodo dance orchestra.

WBAP, Fort Worth, Tex. (Central, 476), 7:30-8:30 p. m., concert, School of Music of the Texas Christian university; 9:30-10:45, concert dance music.

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

WBBR, New York, N. Y. (Eastern, 273), 8 p. m., Irene Klinepeter, soprano; 8:15, "Progression of the Divine Plan," Bible study; 8:45, Irene Klinepeter.

WBZ, Springfield, Mass. (Eastern, 337), 6 p. m., Westinghouse Philharmonic trio; 7-10, "Her Experience in Canning," Edna Gooding; 7:30, bedtime story for the kiddies; 7:40, Westinghouse Philharmonic trio; Irene Atkins, pianist; 8:15, Women's Philharmonic orchestra; Maude Erickson, soprano; Vincenzo Spolizno, tenor; 10, Mrs. Fred Winslow Adams, soprano; Willard Clark, baritone; Benjamin Buxton, accompanist; 11:30, Leo Reisman and his Hotel Brunswick orchestra; 12, popular songs, Hotel Brunswick studio; 12:15 a. m., Leo Reisman and his Hotel Brunswick orchestra.

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

WCAL, Northfield, Minn. (Central, 360), 9:45 a. m., St. Olaf college chapel services.

WCAP, Washington, O. C. (Eastern, 469), 7:30-7:45 p. m., music; 7:45-8, address, Warren Irving Glover; 8-10, Bob Lawrence Community concert.

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

WOAF, Kansas City, Mo. (Central, 411), 3:30-4:30 p. m., the Star's string trio; 6-7, school of the air, piano tuning-in number on the Duo-Art; address, auspices of the Health Conservation association; address, speaker from the Meat Council of Greater Kansas City; the Tell-Me-a-Story lady; music; the Hanlein-Knutson Trio ensemble; 8-9, program, Beatrice Polndexter, Mrs. Jennie Schultz; 11:45-1 a. m., Night-hawk frolic, the "Merry Old Chief," the Plantation players.

WOAR, Philadelphia, Pa. (Eastern, 395), 11:45 a. m., daily almanac; 12:02 p. m., Stanley theater organ recital; 12:30, sermon, auspices Philadelphia Federation of churches; Arcadia cafe concert orchestra; 2, Arcadia cafe concert orchestra; 4:30, Edna Finestone, pianist; 7:30, Dreau Daddy's bedtime stories; 7:55, "The Conversation Corner," Arnold Abbott; 8:30, "Fire Prevention," George Elliott, director of Department of

Public Safety; Helen Paul Parlides, soprano; 10:15, dancing lessons, Arthur Murray; 10:30, Arcadia cafe dance orchestra, direction of Howard Lanin.

WEAF, New York, N. Y. (Eastern, 492), 11-11:15 a. m., Minnie Well, pianist; 11:15-11:45, young mothers' program; 4-5 p. m., Mark Davis and his dance orchestra; 6-7, dinner music, Waldorf-Astoria hotel; 7:15-7:30, Chas. Tobias, tenor; 7:30-7:45, talk, American agriculturist; 8-8:15, Carrie B. Brookheris, pianist; 8:15-8:30, Emma Burkhardt, contralto; 9-10, Empire State Novelty orchestra.

WEAO, Columbus, Ohio (Eastern, 360), 9 a. m., music, Marguerite Manley Siedel School of Music talent; 11 a. m., music, Siedel School of Music talent; 1:30 p. m., music, Siedel artists; 4 p. m., farm talk, Ohio State university faculty member; music, Siedel artists.

WFAA, Dallas, Tex. (Central, 476), 12:30-1 p. m., program, entertainers from Dallas theaters.

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

WGN, Chicago, Ill. (Central, 370), 1:40 p. m., luncheon concert; 2:30, Lyon & Healy artists' concert; 3, rocking chair hour, features of interest to women; 5:30, Skeezix time; 6:30-7:30, dinner concert; 8:30-9:30, Rose Slickinger, soprano; Katherine Jardine, accompanist; George R. Rees, baritone; Fred Agard, tenor; 10:30-11:30, Jack Chapman dance orchestra.

WGR, Buffalo, N. Y. (Eastern, 319), 12:30-1 p. m., George Albert Bouchard, organist; 2, world series baseball game; 6:30-7:30, dinner music; 9-10:30, concert, Argo Musical club, Frances Cady, director; 10:30-11, recital, Alice Mackie, soprano and assisting artists; 11:30, supper-dance music, Vincent Lopez Hotel Statler orchestra, Harold Gieser, director.

WHAS, Louisville, Ky. (Central, 400), 4-5 p. m., Alamo theater orchestra; readings, Courier-Journal and Louisville Times; 7:30-9, Rosson's entertainers of Jeffersonville; Katherine Rosson, pianist; Murray Moore, banjoist; Wilbur Wells, saxophonist; Robert Hutsall, saxophonist; J. J. Humble, sousaphonist; Edward H. Rosson, drummer; Addy Britt, baritone.

WHB, Kansas City, Mo. (Central, 411), 2-3 p. m., ladies' hour program, Sweeney Radio orchestra; 7-8, "Fire Protection," auspices, National Fire Protection association; music, Sweeney Radio trio.

WHN, New York, N. Y. (Eastern, 360), 2:15-2:45 p. m., Jimmy Clarke and his entertainers; 2:45-3, Original Dixie Trio, courtesy Harry Moss; 3:45-4, John O'Pray, tenor; 4-4:15, Bernard Eagen, baritone; 4:15-4:30, Mildred Van Vleet Feldman, pianist; 4:30-4:45, Helene Rhoda, soprano; 4:45-5, "Americanism," May M. Gooderson; 5-6:30, Andy Grant's Aunt Jennie orchestra, courtesy Harry Moss; 6:30-7, Olcott Vail,

10:30-10:50, "General Hygiene of School Child," Marguerite A. Wales, visiting nurse service; 10:50-11, fashion talk, Eleanor Gunn; 4-5 p. m., specialty numbers; 5:30-6:30, New York Stock exchange reports. Evening Post News; 7-8, Irving Selzer's Cafe Boulevard orchestra; 8-8:15, Wall Street Journal review; 9:05-9:30, Alexander Brackocki, pianist; 10:30-11:30, Greenwich Village Inn orchestra.

WLS, Chicago, Ill. (Central, 345), 12-1 p. m., noon-day farm program; music numbers, Nubs Allan; talk, G. C. Biggar; 3:45-4:45, homemakers' hour; dress-making hints, study your type; "Holiday Ideas from the City Shops," L. Dunningan; daily recipe, market notes; 6:30, Ralph Emerson, organist; 6:45, Ford Rush, Glenn Rowell; 6:50, Ralph Emerson, organist; 7, Isham Jones and his College Inn orchestra; 7:05-7:15, WLS tribe of Lone scouts; 7:15-7:45, boys' and girls' hour, program, Campfire Girls of America; 7:45-8, lullaby time; 8-9, "Co-operative Marketing of Live Stock," Charles Stewart; 9, Hutter School of music; 9:15, Isham Jones and his College Inn orchestra; 10, H. D. Saddle's poem period; 10:30, Isham Jones and his College Inn orchestra; 10:45, Ford and Glenn time.

WLW, Cincinnati, Ohio (Central, 423), 4 p. m., 10 lesson, Fred Smith, international language instructor; concert for shut-ins; 8, Virginia Entertainers; 9, Formica band, Richard Pavey, soloist, Walter Esberger, director.

WMAQ, Chicago, Ill. (Central, 447.5), 1 p. m., speeches, weekly luncheon of the association of commerce; 4, sport results; 4:10, beauty talk, Mme. Grace Earl; 4:30, program; 6, Chicago theater organ recital; 6:30, stories for children, Georgene Faulkner; 8, "The Wave of Lawlessness in America," Prof. Andrew Bruce; 8:20, WMAQ play-night, William Ziegler Nourse, director; 9:15, Mildred H. Hostetter, soprano; 9:45, talk from one of the Chicago charities.

WMC, Memphis, Tenn. (Central, 500), 12:30 p. m., noonday concert, Skyline serenaders.

WMM, Cincinnati, Ohio (Central, 369), 8 p. m., Goodrich Silverton orchestra; 9, talk, "Bits of Cincinnati History," George W. Platt; 9:15, cellist, Oscar Kirsche, piano solos; Edward H. Schoelwer; soprano solos, Loretta Steffen; baritone solos, George Egbers; 10, Jimmie Dearing's Rainbow orchestra.

WOC, Davenport, Ia. (Central, 484), 12 m., chimes; 7 p. m., sandman's visit, Val McLaughlin; 7:20, "Fire Prevention," Eugene Walsh; 8, Erwin Swindell, organist; Dorothy Sanderson, pianist.

WOO, Philadelphia, Pa. (Eastern, 509), 11 a. m., organ recital, Mary E. Vogt; 12:02 p. m., Wanmaker crystal tea room orchestra; 5:15, organ recital, Mary E. Vogt; 7:30, A. Candelori ensemble from Hotel Adela.

(Continued on page 12)

OXFORD DEBATE AT WEAO THURSDAY

Where to Hear Talks

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11-12 m., Fred
p. m., "Hallowe'en
Downing"; "Rainier
Sanger; 7-8, Ralph
orchestra; Dorothy
ur W. Ward, tenor;
Ralph Williams and
hers, steel guitarists;
n, contralto; Lester,
lam Molnaire, tenor;
annigan and O'Hara,

rn, 469), 3 p. m.,
oent, women's wear;
ritone; 3:20, "Beauty
3:25, current topics,
; 3:35, Ethel Grant,
street; 4, songs, 6,

8 p. m., Travelers
e university Stormy

6-8 p. m., Tip-Top
Dreamland orchestra;

33), 6:45-7:45 p. m.,
ader; Sandy Meek,

8 a. m., setting-up
alk, women's editor;
Detroit News orches-
; Donald Pratt, bari-

ber 11

KQV, KOB, WAAM,
WGR, WHO, WJY.

25), 7 p. m., kiddie:
7:30, Rex Battle and
t orchestra; Herbert
sereau, cellist; 8:30,
Joseph C. Smith and
estra; George Fisburg,

rn, 326), 1:30 p. m.,
West Virginia football
45, World's Uniform
over Johnson; 8, sport
"Heinz Demonstration

469), 2 p. m., grand
ma Schleichl," 6:45-8,
Webb; 8-9, Raymond
on Chamber of Com-
club; 11-12, Coconut

286), 8 p. m., KFKB
p makers.

l, 266), 7:30 p. m.,
Woodward Candy com-
ie bunch.

cific, 278), 3:30-4:30
an recital, Roy Reid
rvice, special musical
solists; congregational
l, "divine healing,"
r call.

312), 4-5:30 p. m.,
rancis; 8, Radio air-
ractor: (Listeners are
s in an airship on a
to be represented by
India, England, Ire-
lnavia, China, Japan,
the airship's company:
o, O. J. Stovall, guitar-
bnry B. Lister, reader;
Carlson Wood, con-
Mrs. George Farwell,
mpanist; Contessa Ag-
guitarist; Carl Ander-
Halstead's orchestra.
92), 10 p. m., George

sific, 395), 12:30-1:15
ater-Kent Radio com-
us; 2:30-3:30, matinee
an's concert orchestra.
6:30-7:30, children's
t; bedtime story; Uncle
tinent National bank.
9-10, concert, courtesy
association; 10-11, Ari

(Pacific, 509), 2:30 p. m., Pomona-

Hickman's concert orchestra: 6:30-7:30, children's hour;
"American History," Prof. Walter Sylvester Hertzog;
Richard Headrick, silver-sheet starlet; bedtime story,
Uncle John, 8-10, concert, courtesy, Mullen and Bluett,
arranged by G. Allison Phelps; 10-11, Art Hickman's
dance orchestra, direction, Earl Burnett.

WFI, Philadelphia, Pa. (Eastern, 395), 1 p. m., Meyer
Davis Bellevue Stratford concert orchestra; 3, report
closing pricea Chicago grain market; Caroline Hoffman,
pianist; 6:30, Meyer Davis Bellevue Stratford concert
orchestra; 7, Sunny Jim, the kiddies' pal.

WOAW, Omaha, Nebr., (Central, 526), 6 p. m., story
hour, Doris Claire Secord; 6:30, Seward, Nebr., 9,
Seward, Nebr.
WQQ, Davenport, Ia. (Central, 484), 12 m., rhimes; 7

KPO, San Francisco, Calif. (Pacific, 423), 1-2 p. m.,
Rudy Selger's Fairmont hotel orchestra; 2:30-3:30,
program, "Jazz-O-Maniacs"; 3:30-5:30, tea dansant,
(Continued on page 14)

1:30
2, KGO

Saturday, October 11

(Continued from page 13)

E. Max Bradford's Versatile band; 8-12, Art Weidner and his popular artists. KSO, St. Louis, Mo. (Central, 546), 7 p. m., orchestral music, specialties, Missouri theater. WBAV, Columbus, Ohio (Eastern, 423), 12 m., 11a Lorbach Owens, pianist; 2:30 p. m., play by play report of Iowa-Ohio State football game, received by wire from field at Iowa City, Iowa. WBBR, New York, N. Y. (Eastern, 273), 8 p. m., A. Martens, mandolinist; 8:15, Bible questions and answers, Judge J. P. Rutherford; 8:45, A. Martens, mandolinist. WBZ, Springfield, Mass. (Eastern, 337), 6:30 p. m., Leo Relsman and his Hotel Brunswick orchestra; 7:30, bedtime story for the kiddies; 7:40, Hotel Kimball trio, Jan Geerts, violinist; Arnold Janser, cellist; Lloyd Stoneman, pianist; 8:30, Women's Philharmonic orchestra; 9, Weltuna Conservatory Junior orchestra; 10, Albert Edwards, baritone. WCAE, Pittsburgh, Pa. (Eastern, 462), 3 p. m., Prof. Otto Kaitels, pianist; 6:30, dinner concert, William Penn hotel; 7:45, popular songs, Lew Kennedy; Irene Setzler, accompanist; 8:30, musical program. WCAL, Northfield, Minn. (Central, 360), 9:45 a. m., channel service; 12 midnight, musical. WCC, Croit, Mich. (Eastern, 517), 4:15 p. m., musical program, 5, dinner concert. WOAF, Kansas City, Mo. (Central, 411), 3:30-4:30 p. m., the Star's Radio orchestra; 6-7, school of the air, piano tuning-in number on the Duo-Art; address, member of the editorial staff of the Star; the Tell-Me-a-Story lady; music, the Hanlein-Knutson Trio ensemble; 11:45-1 n. m., Nighthawk frolic, the "Merry Old Chief" and the Plantation players; Eddie and Bobbie Kuhn's Kansas City Athletic club orchestra. WOAR, Philadelphia, Pa. (Eastern, 395), 11:45 a. m., daily almanac; 12:02 p. m., Stanley theater organ recital; 12:30, Arcadia cafe dance orchestra; 2, Arcadia cafe concert orchestra; 2:30, Charles E. Silverthorn, baritone, Joseph Earnshaw, pianist, Emil Fritz, flutist; 7:30, Dream Daddy's bedtime stories. WEAF, New York, N. Y. (Eastern, 492), 1:45-4 p. m., play by play discussion of Columbia-Wesleyan football game, direct from Baker field, New York city; 4-5, Clifford Lodge dance orchestra; 6-7, dinner music, Waldorf-Astoria hotel; 7-7:30, thrilling adventure stories for boys, Fred L. Turner; 7:45-8, Charles Wald, musical glasses; 8:15-8:30, Josiah B. Free, baritone; 8:30-8:45, Nancy McCord soprano; 8:45-9, Virginia Maccellini, pianist; 9-9:15, Rube Davis, violinist; 9:15-9:30, Walse Gilber, pianist, and Ahner Silver, singer; 10-11, Count De Martini and his hotel St. George concert orchestra; 11-12, Vincent Lopez and his Hotel Pennsylvania orchestra. WEAO, Columbus, Ohio (Eastern, 360), 9 a. m., music, Marquette Manley Siedel School of Music talent; 11, music, Siedel artists; 1:30 p. m., music, Siedel artists. WFAA, Dallas, Tex. (Central, 476), 12:30-1 p. m., "The Place of Athletics in Education," Ray Morrison; 8:30-9:30, Elizabeth Gay Jones, pianist; 11-12, Adolphus hotel orchestra. WFI, Philadelphia, Pa. (Eastern, 395), 1 p. m., Meyer Davis Bellevue Stratford concert orchestra; 3, playlet, pupis Margaret Eleanor Blessing; Loretta Kerk, pianist; 6:30, Meyer Davis Bellevue Stratford concert orchestra; 7, Sunny Jim, the kiddies' pal; 8, "Annual Competition for Rhodes Scholarship," Dr. Frank Adelotte; Swathmore College glee club. WGN, Chicago, Ill. (Central, 370), 1:40 p. m., luncheon concert; 2:30, rocking chair hour, features of interest to women; 5:30, Skeezix tune; 6:30-7:30, dinner concert; 8:30-9:30, R. E. Silas, J. P. O'Leary, soloists; Mary Hartley, reader; Thora Martens, contralto; 10:30-11:30, Jack Chappin, dance orchestra. WGR, Buffalo, N. Y. (Eastern, 319), 12:30-1 p. m., George Albert Bonhard, director; 2, world series baseball game; 6-7:30, Halpryd String quartet. WGY, Schenectady, N. Y. (Eastern, 380), 8:30 p. m., dance music, Kennore hotel. WHAS, Louisville, Ky. (Central, 400), 4-5 p. m., Alamo theater orchestra; 7:30-9, Sylvia trio, Fannie Elizabeth Stoll, Myrl Chrisman, Evelyn Kaiser. WHB, Kansas City, Mo. (Central, 411), 2-3 p. m., ladies' hour program, Sweeney Radio orchestra; 8-9:30, Christian Science services, Convention hall. WHK, Cleveland, Ohio (Eastern, 283), 8 p. m., Rainbow club program; 8:15, Bethany orchestra; soloists; 10, Ray Stillwell's orchestra; Jessie Sempie, Alice Crandall, soloists; June Farley, soprano; Scotty Middleton, Harry Bloom, songs; Ethel Rhode, pianolo; songs; Betty Bugbee, Violet Owens, Lucille Phillips, Betty Booth; Dean Smith, pianist; John Peattie, banjoist. WHN, New York, N. Y. (Eastern, 360), 2:15-2:30 p. m., songs, Bert Dixon, Elmo Russo; 2:30-2:45, Samuel Weber, blind pianist; 2:45-3, Blue Ridge entertainers, Harvey Hewitt, director; 3:45-4:15, Ellen Montague Cross Concert company; 4:15-4:30, Elias Cohen, violinist, Ruben Kroll, pianist; 4:30-4:45, Kathryn Connelly, soprano; 4:45-5, Kiwanis Club boys' period, Wm. J. Stuart; 5-6, Johnston-Davidson society orchestra; 6:30-7, Oleott Vail, violinist, Stephen Balogh, pianist; 7-7:30, Paul Specht's Alamo orchestra; 7:30-8, Hotel Carlton Terrace orchestra; 8-8:15, "Personal Chats of Screen Life," E. S. Colling, movie critic; 8:15-8:30, Arthur Stone, blind pianist; 8:30-8:45, "Goodnight Children," Elizabeth Morris-Jones; 8:45-9, songs, Tom Bracken, Bob King; 9-9:15, Pergola brothers, accordion and banjo selections; 9:15-9:30, Jimmy Flynn, tenor; 9:30-9:45, "Columbus Day," Hon. Jos. A. Lawson, National Security League; 9:45-10, Fitzpatrick brothers, songs; 10-10:10, baseball statistics, Al Munroe Elias; 10:10-10:15, Lillian Havel; 10:15-10:30, Victor Wilbur, baritone; 10:30-11, Chas. Degele, violinist; Segerer brothers in zither selections; 11-11:30, Jimmy Clarke and his entertainers; 11:30-12, Fletcher Henderson's Roseland dance orchestra. WIP, Philadelphia, Pa. (Eastern, 509), 1 p. m., organ recital, Karl Bonawitz; 3, play by play description of football game between University of Pennsylvania and Swarthmore college; 6:05, St. James, dance orchestra; 7, Uncle Wip's bedtime stories; 8, "The Ballet and It's Development in America," Florence Cowanova, permiter danseuse; 8:15, Al Zensay and his orchestra; 9, Mason-Heflin male quartet, Roy MacClellan, first tenor; Frederick Anne, second tenor; Albert Hirst, baritone; Henry L. Booth, bass; 10:05, Harvey Marburger's dance orchestra; 11:05, organ recital, Karl Bonawitz. WJZ, New York, N. Y. (Eastern, 445), 4-5:30 p. m., tea music; 5:30-6:30, New York Stock Exchange reports, Evening Post news; 7-8, Waldorf-Astoria hotel dance orchestra; 9-9:30, "The Cost to Business of Stolen Mail," Owen A. Keen; 10:30-11:30, Hotel Astor dance orchestra. WLAG, Minneapolis-St. Paul, Minn. (Central, 417), 10:45 a. m., girls club, Betty Crocker; 2 p. m., football game, Haskell Indians and U. of M.; 6, baseball scores and sport hour; 8, fire prevention talk; 8:30, Imperial quartet, D. Grendel, director; Alfred E. Nelson, tenor; J. H. Larson, baritone; Walter E. Peterson, bass; Carl Jensen, accompanist; Helen L. Anderson, pianist; 11, Sam Heaman's Golden Pheasant orchestra. WLS, Chicago, Ill. (Central, 345), 7:45 p. m., lullaby time, Glenn Rowell, Ford Rush; 8:15 a. m., Saturday night Mardl Gras; Ralph Emerson, organist; barn dance fiddlers; 1-lam Jones and his College Inn orchestra; Carpenter and Ingram, "The Harmony Girls"; Glenn Rowell and Ford Rush. WMAQ, Chicago, Ill. (Central, 447.5), 6:30 p. m., Hotel LaSalle orchestra; 8, Salvation Army band; 8:40, "Scandinavia," Dr. Max Henius; 9, weekly, Chicago theater review. WNC, Memphis, Tenn. (Central, 500), 12:30 p. m., noon concert, Strline roof cafe, Skyline serenaders; 8:30, Memphis Plectrum orchestra; Fred Hughes, tenor. WOC, Oavenport, Ia. (Central, 484), 12 m., chimes; 7, sandman's visit, Val McLaughlin; 9, the Palmer School Radio orchestra; Ralph W. Fuller, baritone. WWH, Cincinnati, Ohio (Central, 309), 10 p. m., Hawaiian guitar duets, Joel Hubbell, Harold Collins; whistling solos, Mrs. Bridgeford; tenor solos, Raymond Kuss, Mrs. R. L. Kuss, accompanist; 11, Auburn's orchestra, Lawrence Aisholz, director. WOAW, Omaha, Nebr., (Central, 526), 6 p. m., popular half-hour; 6:20, dinner program, Girls' Tech High quintet; 9, program, First Christian church orchestra, Joseph F. Woolery, Jr., director; 11, Wow! Frolic, Omaha Nighthawks.

WOO, Philadelphia, Pa. (Eastern, 509), 11 a. m., organ recital, Mary E. Vogt; 12:02 p. m., Wainmaker crystal tea room orchestra, Robert E. Golden, director; 5:15, Mary E. Vogt, organist. WOB, Newark, N. J. (Eastern, 405), 2:30-3:30, p. m., Kenneth N. Schenck club orchestra; 6:15-7:15, Willy Crocker and his Ambassadors; 7:15-7:30, Jolly Bill Steinke; 8-8:15, Lena Kaufman, violinist; 8:15-8:30, Rabbi Joseph Glushak, baritone; 8:30-8:45, Lena Kaufman; 8:45-9:15, David Bargarles trio concert; 9:15-9:30, Rabbi Joseph Glushak; 10:30-11, Ben Friedman entertainers. WQJ, Chicago, Ill. (Central, 448), 11-12 m., "Pressure Cookers," H. F. West; 3-4 p. m., "Koffee" klatch, 300 Indians will be entertained in the Radio room of the Rainbo gardens; 7-8, Otis Pike Jester, soprano; Mary House, pianist; William Malnabe, tenor; 10-2, Ralph Williams and his Rainbo skylanders; Jerry Sullivan, song writer; the Medollans, harmony singers; George A. Little, Larry Shaw, song writers; Marlon Morans, prima donna; Mallo and Little, song writers; songs, Lew Butler. WRC, Washington, O. C. (Eastern, 469), 6 p. m., children's hour, Peggy Alphon; 7:45, Bible talk; 8, Fanny Shreve Heartsill, soprano; 8:15, music; 8:30, Francis P. Heartsill, bass; 8:45, to be announced; 9:55, time signals. WSAI, Cincinnati, Ohio (Central, 309), 8 p. m., chimes concert; 8:15, baritone solos, George Clifford Cook; violin solos, Ora May Ballinger; cornet solos, Virginia Bush; 9, weekly news review, Rutherford H. Cox, male quartet; 12, Freda Sanker's Toad Stool orchestra. WSB, Atlanta, Ga. (Central, 429), 8 p. m., old time string band, Porterdale; 10:45, Journal Hired Help skylark. WTAM, Cleveland, Ohio (Eastern, 390), 9 p. m., WTAM dance orchestra, Ky Jones, director. WTAS, Elgin, Ill. (Central, 286), 6-8 p. m., Tip-Top String sextette; 8-12, The Arcadians, Sol Wagner, director; Harmon's Arcadia ballroom. Dreamland orchestra. WTAY, Oak Park, Ill. (Central, 283), 6:45-7:45 p. m., Dorothy Culler, pianist; Mark K. Christl, soprano; Frank Sortino, accordionist; 9-9:45, 10:15-11:15, Polly Willis, soprano; Art Linick, song writer; Guyon's Paradise orchestra. WWJ, Detroit, Mich. (Eastern, 517), 8 a. m., setting up exercises, R. J. Horton; 9:30, talk, women's editor; 12 m., musical program; 3 p. m., Detroit News orchestra; 5, football scores.

Sunday, October 12

Silent night for: CKAK, KGW, KOB, KQV, WCAE, WHN, WHO, WMC, WOR, WWJ. CHYC, Montreal, Can. (Eastern, 341), 7-8:45 p. m., from the people's forum, Miss Slattery. CKAC, Montreal, Can. (Eastern, 425), 4:30 p. m., social concert. KFI, Los Angeles, Calif. (Pacific, 469), 10-10:45 a. m., L. A. Church Federation service; 6:45-7 p. m., "Musical appreciation talk," Paul Reese; 7-8, Metropolitan theater program; 8-9, Ambassador hotel concert orchestra; 9-10, Examiner studio concert; 10-11, Packard six orchestra. KFKB, Milford, Kans. (Central, 286), 10-12 m., religious services, First Congregational church, Dr. Slade, pastor; 8-10 p. m., International Bible Students association. KFNF, Shenandoah, Ia. (Central, 266), 3 p. m., sacred concert, Mrs. C. H. Amick, director; 6:30, regular sacred song service. KFSG, Los Angeles, Calif. (Pacific, 278), 10:30-12:30 noon, morning service, organ, Esther Pricke Green; congregational singing; prayer; choir anthem; triple male quartet; announcements; vocal solo; sermon, Aimee Semple McPherson; 2:30-4:30 p. m., afternoon auditorium service, organ, Roy Reid Brignall, silver band; congregational hymns, invocation, reception of members, announcements, silver band, vocal solo; sermon, Aimee Semple McPherson; 7-10, special musical hour with congregational singing, choir, silver band, and features of vocal and instrumental music; sermon, Aimee Semple McPherson; altar call, after service; 10-11, organ recital, courtesy, Roy Reid Brignall with assisting artists in vocal selections. KGO, Oakland, Calif. (Pacific, 312), 11 a. m., service, First Baptist church; 2:30 p. m., KGO Little Symphony orchestra, Carl Rhodehamel, director; 7:30, service, First Baptist church. KGW, Portland, Ore. (Pacific, 492), 6 p. m., church services, Portland Council of churches. KHJ, Los Angeles, Calif. (Pacific, 395), 10 a. m., sermon from KHJ studio; 10:30-12:30 noon, organ recital and service from First M. E. church; Arthur Blakeley, organist, Rev. E. E. Helms, pastor; 6:30-7 p. m., Art Heikman's concert orchestra, Edward Fitzpatrick, director; 7-7:30, Arthur Blakeley, organist; 8-10, special de luxe concert program. KSO, St. Louis, (Central, 546), 9 p. m., Grand Central theater. KYW, Chicago, Ill. (Central, 536), 11 a. m., Central church service; 2:30 p. m., studio chapel; 7, Chicago Sunday Evening club. WCOB, Zion, Ill. (Central, 345), 8 p. m., mixed quartet; duet, Bishop, Sparrow; Glen R. Sparrow, tenor; cornet and euphonium duet, Stewart and Dunn; cornet and trombone duet, Mason, Mason; Paul Stewart, cornetist; Gerald Mason, cornetist; William C. Dunn, euphonium soloist; Daniel Mason, trombonist. WCX, Detroit, Mich. (Eastern, 517), 4 p. m., Radio chapel service at Detroit Free Press studio; 7:45, services, central M. E. church, Dr. Lynn Harold Hough; Hudson quartette. WOAF, Kansas City, Mo. (Central, 411), 4-5 p. m., program, Sabetha band. WOAR, Philadelphia, Pa. (Eastern, 395), 8:30 p. m., first of series of Forum talks, prominent speakers. WEAF, New York, N. Y. (Eastern, 492), 3-5 p. m., services; 7:20-9:15, Capitol theater; 9:15-10:15, Skinner organ recital. WFAA, Dallas, Tex. (Central, 476), 6-7 p. m., Radio Bible class, Dr. William M. Anderson, pastor; 7:45-9:15, service, City Temple Presbyterian church, Dr. L. D. Young, pastor; 9:15-9:30, Wendell Hall; 9:30-11, Foxrotters. WFI, Philadelphia, Pa. (Eastern, 395) 4:30 p. m., services, Rev. William L. McCormick; 7:30, services, Arch Street Presbyterian church, Dr. D. D. MacCately, minister. WGN, Chicago, Ill. (Central, 370), 11 a. m., Uncle Walt's comles; 11:45, Chicago Theater symphony concert; 2:30-5:30 p. m., Tribune Master artists concert; 9-10, Drake Concert ensemble; Olga Meinn, soloist. WGR, Buffalo, N. Y. (Eastern, 319) 3 p. m., vesper services, auspices of Buffalo Council of churches, W. W. Shannon and C. H. Weiland, speakers; 7:20, organ recital and church service, Central church, (Presbyterian), featuring William Wall Whitlitt, organist, and the Rev. William J. MacAlpine in sermon, "Worry—America's Arch Enemy." WGY, Schenectady, N. Y. (Eastern, 380), 10:45 a. m., First Methodist church, Dr. Philip L. Erick, pastor; 7:30, services, First Methodist church. WHB, Kansas City, Mo., (Central, 411), 9:15-11 a. m., services of the Linwood Boulevard Christian church, Dr. Burrell Jenkins, pastor; 8-9:15 p. m., Evangelical services, conducted by Carl C. Walker. WHK, Cleveland, Ohio (Eastern, 283), 8 p. m., chapel service, auspices Cleveland Federated churches, Rev. E. K. Wright, conductor; current religious topics; sacred music; invocation; 9, Mary E. Black, soprano; O. A. Bryan, baritone, pianist; Leonard Z. Bryan, tenor, violinist; Elaine Almondinger, contralto; Ger-kowski trio; 10, Telling-Belle Vernon orchestra. WHN, New York, N. Y. (Eastern, 360), 3-4 p. m., Queens County Christian Endeavor meeting. WHO, Oes Moines, Ia. (Central, 526), 7:30-9 p. m., Bankers Life Radio orchestra, W. L. Marsh director; Kathryn Fletcher, cellist; Helen Birmingham, accompanist; Mrs. La Vere Braucht, soprano; Gladys McMahon, accompanist. WHZ, New York, N. Y. (Eastern, 455), 9-11 a. m., children's hour; 11-12, church services; 2:30-3:30 p. m., Radio Bible class, auspices of Federation of churches; 3:30-4:30, specialty numbers; 7-8:15, Hotel Pennsylvania orchestra; 8:15-8:30, Belva Jaeger, violinist; 9-10, specialty numbers.

Monday, October 13

Silent night for: CKAK, KFSG, KYW, WEAH, WFI, WGN, WHAS, WIP, WJY, WLS, WMAQ, WQJ, WRC, WTAY. CKAC, Montreal, Can. (Eastern, 425), 1:45 p. m., Mount Royal hotel luncheon concert; 4:30, fourth floor lesson. KFAE, Elmer, Wash. (Pacific, 330), 7:30 p. m., Gladys Fraser, violinist; Norma Sparlin, pianist; "The Future's Hope," Mary Sutherland; "Washboards in the Highways," Prof. Homer, J. Dana. KFKB, Milford, Kans. (Central, 286), 7:20 p. m., college of the air; 7:30, "The Development of the Shorthorn Breed," D. L. Mackintosh; 7:45, "Growing Grapes," R. J. Barnett; 8, KFKB orchestra; 8:30, "Gland Transplantation as an Adjunct to General Surgery," Dr. J. R. Brinkley; 9, KFKB artists; 10-12, dance music. KFOA, Seattle, Wash. (Pacific, 455), 8:30 p. m., Seattle Post Intelligencer. KGO, Oakland, Calif. (Pacific, 312), 3 p. m., studio musical program, Parent-Teacher association speaker; 4-5:30, Henry Halstead's orchestra; 5:30-6, Aunt Betty stories, KGO kiddies klub; 8, educational program; Arion trio; 10-1 a. m., Henry Halstead's orchestra. KGW, Portland, Ore., Pacific, 492), 5 p. m., children's program; 8, Elks quartet, Ernest Crosby, first tenor; Ross Fargo, second tenor; Charles Thomson, first bass; Walter Hardwick, second bass; Matt Howard, accompanist; Elsie Cramer, mezzo-soprano; Margaret Notz, pianist; Marie Chapman McDonald, violinist. KHJ, Los Angeles, Calif. (Pacific, 395), 12:30-1:15 p. m., concert features. KQV, Pittsburgh, Pa. (Eastern, 270), 9-10 p. m., regular artists' program. KSO, St. Louis, (Central, 546), 6:45 p. m., Statler Hotel orchestra; 9, Seela Call, soprano; 11, Gene Rodemich dance orchestra. KYW, Chicago, Ill. (Central, 536), 11:35 a. m., table talk, Mrs. Anna J. Peterson; 6:35-7 p. m., children's bedtime story, Uncle Bob. WAAM, Newark, N. J. (Eastern, 263), 11-11:15 a. m., piano recital; 11:15-11:30 Center Market quotations; 11:30-11:45, music; 8-8:30 p. m., Victor Wilbur, baritone, Joe Macy, piano; 8:30-8:45, Sweet Marie; 9-9:30, Original Palisades serenaders; 9:30-10, Adele Grassgreen, soprano; 10-11, Sterling dance orchestra. WAAW, Omaha, Nebr. (Central, 286), 7:30-9 p. m., program, Mrs. Edward Morearty. WBAP, Fort Worth, Tex. (Central, 476), 7:30-8:30 p. m., "Moments from the Majestic," 9:30-10:45, concert, Foster Merrill Music house. WBAV, Columbus, Ohio, (Eastern, 423), 12 m., 11a Lorbach Owens, pianist. WCAY, Milwaukee, Wis. (Central, 266), 8-9 p. m., mixed program sponsored by the Hopeful Hository company. WCOB, Zion, Ill. (Central, 345), 8 p. m., Zion band; Dorothy Bull, soprano; Ralph Bull, tenor; Emma Reynolds, soprano; Evelyn Uhlik, contralto; Mrs. White Side, baritone; Bessie Wiedman, pianist; Lillian DeHenne, reader. WCX, Detroit, Mich. (Eastern, 517), 4:15 p. m., musical program; 6, dinner concert; 8:30, musical program; Bertha Bright Knapp, contralto. WOAF, Kansas City, Mo. (Central, 411), 3:30-4:30 p. m., the Star's string trio; 5-5:30, weekly Boy Scout program; the Kansas City council; 6-7, school of the air, piano tuning-in number on the Duo-Art; personal message, Roger W. Babson, statistical expert; the Tell-Me-a-Story lady; music, the Hanlein-Knutson Trio ensemble; 8-9:30, semi-classical program, Gilbert Jaffy, violinist; vocalists; 11:45-1 a. m., Nighthawk frolic, the "Merry Old Chief"; the Plantation players. WOAR, Philadelphia, Pa. (Eastern, 395), 11:45 a. m., daily almanac; 12:02 p. m., Stanley theater organ recital; 12:30, Arcadia cafe concert orchestra; 2, Arcadia cafe concert orchestra; concert, Stanley theater; 4:30, Edna Finestone, pianist; 7:30, Dream Daddy's bedtime stories; 7:50, moving picture, review, James A. Nassau; 8, banquet Republican Woman's organization of Pennsylvania, Mrs. Hamme, speaker; 9:30, recital, Welsh singers; 10, Howard Lamin's Arcadia cafe. WEAO, Columbus, Ohio, (Eastern, 360), 9 a. m., music, Marquette Manley Siedel School of Music talent; 11 a. m., music, Siedel artists; 1:30 p. m., music, Siedel artists; 8 p. m., concert, Milton Webster Vale, 80-year-old fiddler and John Bohannon, banjoist. WFI, Philadelphia, Pa. (Eastern, 395) 1 p. m., Meyer Davis Bellevue Stratford concert orchestra; 3 report, closing prices Chicago grain market; Loretta Kerk, pianist; 6:30, Bellevue Stratford concert orchestra; 7, Sunny Jim, the kiddies' pal. WGN, Chicago, Ill. (Central, 370), 1:40 p. m., luncheon concert; 2:30, Lyon & Healy artists concert; 3, rocking chair hour, features of interest to women; 5:30, Skeezix time. WGR, Buffalo, N. Y. (Eastern, 319) 12:30-1 p. m., George Albert Bonhard, organist; 2:30-4:30, the Radio Dealers Musical program, A. J. Erlsman, director; 6:30-7:30, dinner music; 8:35-8:50, address, Ernest C. Carpenter, former school teacher of Pres. Coolidge; 8:50-9, Lena C. Rosenbloom, elocutionist; 9-11, concert, Niagara Battery corporation; 11:30, supper-dance music, Vincent Lopez Hotel Statler orchestra, Harold Glezer, director. WGY, Schenectady, N. Y. (Eastern, 380), 2 p. m., "Better Bedding," Leo J. Simon; 7:45, Earl Rice, pianist; Isabelle Franklin, soprano; Frederick A. Clinkner, cornetist; Walter Reagles, tenor; Isabelle Franklin, soprano. WHAZ, Troy, N. Y. (Eastern, 380), 9 p. m., Columbus club Italian band; "The Man on the Tall Tower," William G. Howard; 12, transccontinental and international program, Campus serenaders.

Tuesday, October 14

Silent night for: KQV, KSO, WOAR, WGR, WHO, WHH, WOC, WOO. CKAC, Montreal, Can. (Eastern, 425), 7 p. m., Kiddies' stories in French and English; 7:30, Rex Battle and his Mount Royal hotel concert orchestra; Rex Battle, pianist; 8:30, La Presse studio concert; 10, Joseph C. Smith and his Mount Royal hotel orchestra. KFI, Los Angeles, Calif. (Pacific, 469), 6:45-8 p. m., Aeolin organ recital. KFKB, Milford, Kans. (Central, 286), 7:20 p. m., college of the air; 7:30, "Rotation for Wheat," L. E. Call; 7:45, "Winter and Spring Culling of Pullets," H. H. Stoup; 8, KFKB orchestra; 8:30, "Diseases of Middle Age," Dr. J. R. Brinkley; 9, KFKB artists; 10-12, dance music. KFNF, Shenandoah, Ia. (Central, 266), 7:30 p. m., concert, Henry I'feld Seed company. KGO, Oakland, Calif. (Pacific, 312), 4-5:30 p. m., concert orchestra, Hotel St. Francis; 8, "H. M. S. Minifore," KGO Opera company; Arion trio; 10-1 a. m., Henry Halstead's orchestra. KFSG, Los Angeles, Calif. (Pacific, 278), 3:30-4:30 p. m., organ recital, Esther Pricke Green; Sarah Karcher, violinist; 6:30-7:30, Gray studio children's program, presenting Harry James Beardsley (Cousin Jiu) and associates; Eugene Lamb, pianist. KGW, Portland, Ore. (Pacific, 492), 12:30 p. m., concert; 5, children's program; 8, agricultural lectures, Oregon Agricultural college extension service; 8:30, concert, Civic Music club artists. KHJ, Los Angeles, Calif. (Pacific, 395), 12:30-1:15 p. m., concert; 2:30-3:30, matinee musicale; 6-6:30, Art Heikman's concert orchestra, Edward Fitzpatrick, director; 6:30-7:30, children's program, "American History," Prof. Walter Sylvester Hertzog; the Sandman quartet; 8-8:30, children's program, Chicago Musical college; 8:30-8:45, speeches, auspices American Farou Bureau federation; 8:45-9:30, musical program; 10, a home program. WHB, Kansas City, Mo. (Central, 411), 9:15-11 a. m., bedtime story, Uncle John; 8-10, special de luxe concert; 10-11, Art Heikman's dance orchestra, Earl Burnett, director. WAAM, Newark, N. J. (Eastern, 263), 11-11:15 a. m., piano recital; 11:15-11:30, Center Market quotations; 11:30-11:45, music; 8-8:15 p. m., Alice Rineke, violinist; 8:15-8:30, Lillian Spitzer, pianist; 8:30-8:45, Narcisse-de-Chine; 8:45-9:15, Canadians dance orchestra; 9:15-9:30, Narcisse-de-Chine; 9:30-11, Canadians dance orchestra and entertainers. WBAP, Fort Worth, Tex. (Central, 476), 7:30-8:30 p. m., concert; 9:30-10:45, old-time music, Tom Bean Fiddlo band. WBAV, Columbus, Ohio, (Eastern, 423), 12 m., 11a Lorbach Owens, pianist; 8 p. m., Scarlet and Gray orchestra, dance music. WCAY, Milwaukee, Wis. (Central, 266), 9:15-10:30 p. m., musical program with dance. WCX, Detroit, Mich. (Eastern, 517), 4:15 p. m., musical program; 6, dinner concert; 10, Red Apple club. WOAF, Kansas City, Mo. (Central, 411), 3:30-4:30 (Continued on page 18)

Eight Tube Super-Heterodyne Receiver

Chapter I—The New Multitube Circuit

By Harry J. Marx

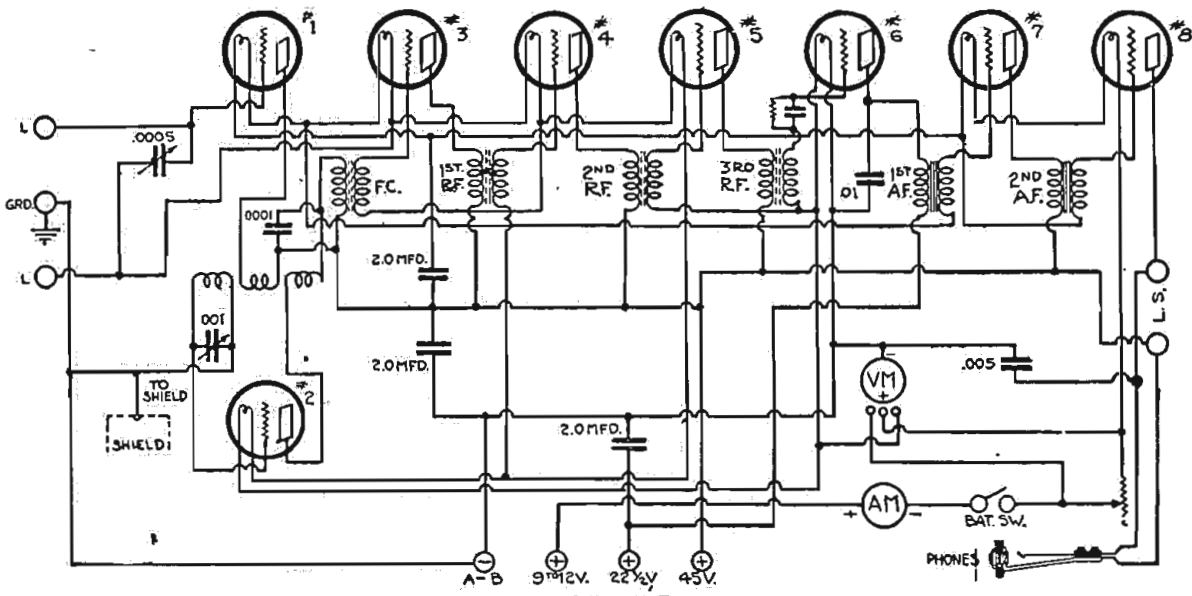


Figure 1

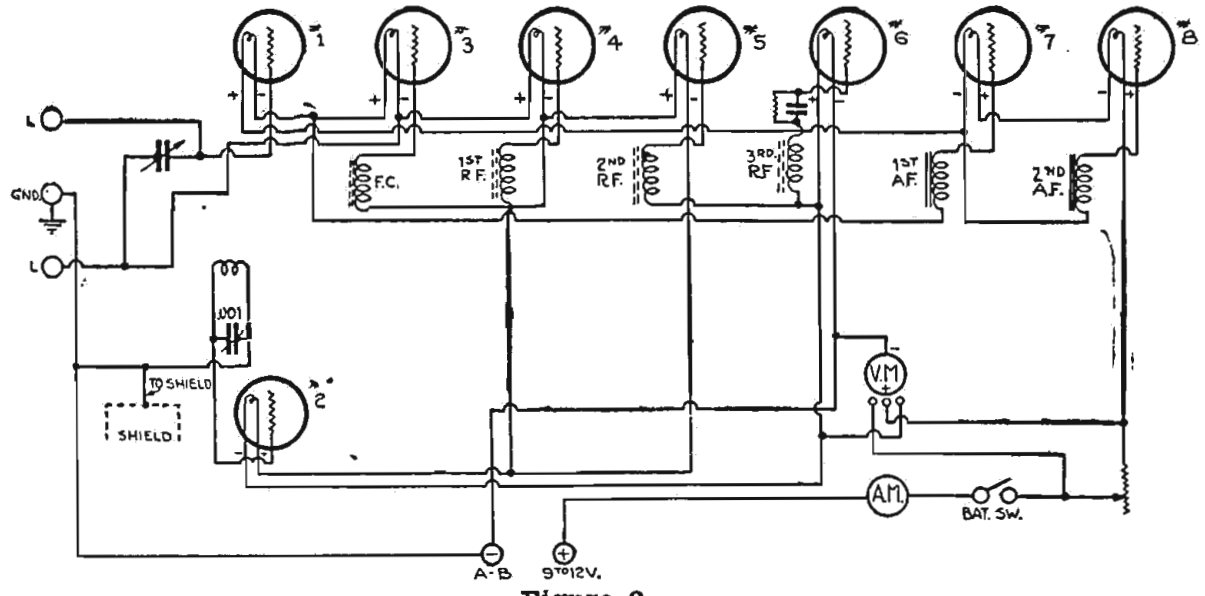


Figure 2

UNLESS there is something to be gained it is foolishness to build an eight tube set rather than a five tube outfit. Nine times out of ten the additional tubes are tube noises, amplifying interference and creating greater difficulty of operation than ever before. Unless care is taken, the average super-heterodyne constructor will be more apt to regret his expense and work than derive pleasure and satisfaction from its operation.

It would be wise to first consider the advantages of a super-heterodyne receiver and how they are obtained. The first and big factor is its selectivity, due to the application of the heterodyning principle. Unfortunately this unusual selectivity can be easily destroyed or nullified by the introduction of resistance and losses in the circuit through the use of inferior quality of apparatus.

Stages of Intermediate Frequency

The second factor is the volume that can be obtained even on long distance reception. This is accomplished by means of the stages of intermediate frequency or long wave amplification and their efficiency at the heterodyned or beat frequency. Poor design or improperly matched transformers and filter couplers will easily create more trouble and grief than can be imagined, so be careful of the apparatus you select.

The effect of nearby interference and body capacity on control dials is very apt to make tuning a torture rather than a pleasure. If the set radiates energy into an aerial it may invite considerable comment from the fans in the neighborhood.

Very often the oscillator circuit not only heterodynes through the pick up coil, but may also pass some more heterodyning into the balance of the circuit, resulting in poor reproduction at the output.

The set is not hard to build, but it requires care and considerable good judgement in the selection and design of the apparatus. There are a number of good kits now available on the market, so the reader need not worry that there is only one set that can be used.

Air Core or Iron Core

In commenting on kits it might be well to state there are numerous arguments both ways for air core and iron core intermediate frequency transformers. Although air core type are used in this set the iron core are by no means condemned. Both types cannot be used at the same time.

Another point to be remembered is the fact that the oscillator coupler, the filter coupler and the intermediate frequency transformers must be designed to work together. It is by no means advisable to get a miscellaneous collection of these various parts and then expect them to work as well together as matched appar-

atus. The best method is to purchase a kit of matched units that have been tested for uniform operation.

Super-Heterodyne Circuits

There have been presented numerous variations of super-heterodyne circuits, such as resistance coupled, transformer coupled, Hartley oscillator, Colpitts oscillator, second harmonic, ultradynes and numerous other applications with as many various names.

The comparison in efficiency of transformer and resistance coupled Radio frequency amplifiers for super-heterodyne circuits, has been amply discussed in the past. Few will contradict the decision that the transformer coupled method is the most advisable to use.

The problem of what type of oscillator system to use is simply a question of which type is most adaptable for the particular circuit features that are being contemplated. The various oscillator systems accomplish the same thing with but slightly different methods and results.

It is not intended that this article go into a detailed discussion of all the modified circuits, such as the "second har-

monic" or Ultradyne receivers. Numerous publications have carried articles covering these circuit features and the average fan is doubtless familiar with them. The question of the efficiency of the "second harmonic" receiver can be more easily settled by the experience that the "second harmonic" of any oscillating tube has a very uncertain and varying value. Very often the fundamental frequency from a given tube is very weak and just sufficient to give only fair amplification with a moderately strong signal. Since the cycle amplitude of the second harmonic frequency seldom if ever exceeds more than 10 per cent of the fundamental it becomes obvious that operation on the fundamental develops much more stable and positive amplification.

The introduction of additional inducances into the grid circuit for harmonic operation usually develops more resistance to the circuit and not only further reduces amplification on weak signals, but detracts considerably from the selectivity of the receiver.

In other modifications of the circuit, (Continued on page 18)

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English Vocabulary Enlarged

Five Thousand New Words Result of Radio

THE English language has been increased by 5,000 words by the event of Radio. Radio not only has precipitated the exchange of ideas, but it has enriched our very speech with a vocabulary indispensable to those that would understand the mechanism. Who ten years ago ever concerned himself with Radio frequency problems? Who today would neglect to tune in and get his favorite station? We may have known of atoms, of electrons, of protons and of triodes; but we now have a knowledge of inductance, of crystal detectors, of tuning coils, of variometers, of triode detectors and of autodynes. Audion and potentiometer were once Greek to most of us and the amplifiers, Radio amplification and Radio triodes were little less than a dead letter.

Today the Radio world has enriched us by contributing not merely the working knowledge of these terms themselves, which every live wire in leicography has placed on record, but by compiling new, useful and educational words to our language.

Fooling with Radio

Playing with the Science Is What Has Made It

PROBABLY one of the commonest expressions heard in American households today, when the whereabouts of father or his son is sought, is, "Oh, he's fooling with the Radio."

It is quite fortunate for the new science that he is. There is more in the phrase than is realized. Radio owes a larger part of its development to this so-called "fooling" than can ever be estimated. Not only "fooling" by father and other novices, but by experts and engineers.

It is easy to understand how a man who has been busy in a store or office all day is glad to get home at night and "fool with the Radio." It makes him forget the cares of the day. But it is not quite so easy to understand why Radio experts and research men who have worked at top speed all day on Radio problems of one kind or another start in as soon as they have had their dinner at night to "fool with the Radio" at home.

Radio widows may not all agree, but, of course, the real answer for their strange conduct is that they are impelled by the urge of experimentation. To members of their families who are waiting to go to the movies or to be taken out in the car, they are simply "fooling with the Radio," but in reality they are conducting the practical experiments from which so many of the improvements of the last five years have resulted. They are certainly striving to make the set work better, to make it simpler, to eliminate minor difficulties, to increase its range, and above all to perfect the quality of the tone. It is the never ending quest for perfection which is bringing Radio, in common with other public utilities, to new stages of efficiency and usefulness.

Short Wave Broadcasting

Less Powerful Wave May Not Supplant High Power

UPON the return to this country of Mr. Sarnoff, of the Radio Corporation of America, after completing his trip through several of the European countries and studying Radio matters, at first hand we are informed of his conclusion regarding the experiments with short waves. He sees no likelihood of less powerful short waves supplanting those of high power and long in so far as commercial use is concerned. Yet he does grant to these tests the probability of disclosing some very interesting and valuable data on the exact character of an electromagnetic wave. The reported reaction of foreign Radiocast directors favorable to Mr. Sarnoff's suggestion to use greater power for transatlantic reception may result in our being able to pick up some of their programs.

RADIO INDI-GEST

Wuxtre-e-e-e-e-e!

Exclusive Interview with Third Trombone Player

MILWAUKEE.—Languidly flicking the ash from his Mecca, the Third Trombone Player gave the following interview to a representative of Radio Indi-Gest in his palatial mansion situated in Milwaukee's newest and most aristocratic residence district, Bootlegger Heights.

Q.—"Who will be our next President?"
A.—"Judging from the papers, the Prince of Wales."
Q.—"What will be the future demand for nine tube sets?"

A.—"The birth rate keeping up, fine."
Q.—"What do you think of prohibition?"
A.—"Really, we have so little of that sort of thing here in Milwaukee that I can not form a fair opinion. However, I intend to take a trip to Chicago where the law is enforced and at that time will be able to give you my idea of it."

Q.—"What criticisms do you make of the present day Radio stations?"

A.—"None, except that they might have a few Irishmen in the Calumet Rainbo Baking Powder Garden station. One tires of Jerry Sullivan, O'Hare, Flannigan and the other German comedians. Let us have a few Irishmen."

Q.—"What are your plans for the future?"
A.—"Cultivate a Greek accent and open a fruit stand. Gawd knows this is a helluva country for Americans."

Ah yes,—and so it goes. "The flower once blown forever dies," as my old time friend O. K. used to remark on such occasions.

It is a pity that he died before Radio was invented. Reckon it would have cheered the old boy to have a portable Radio set singing beside him in the wilderness. Well, they named a cigarette after him which is a darn sight more than they will do for either of us. With which sentiment I sign off.

What Are the Night Winds Saying?

On the broad north western prairie,
Not so many years ago—
Lo, the red-man, pitched his tepee
Midst the herds of buffalo.

And he hunted in the sunlight
With his arrows and his bow,
Till the darkness drove him homeward
To his campfire's ruddy glow.

Then he hears the night winds whisper,
As they softly come and go;
And he wonders what they're saying,
But he cannot tell—poor Lo.

He can read the signs of sunset,
And of plants that bloom and grow;
But he cannot tell the meaning
Of the evening winds that blow.

So he listened and he pondered,
But there seemed no way to know
What would have been, oh, so simple
Had he known of "Radio."

Changes have come o'er the prairie
Since that day—not long ago—
When the red-man pitched his tepee
Midst the herds of buffalo.

Now, when evening breezes whisper,
And their song we want to know;
We just turn the aerial westward
And tune in on K. P. O.

E. H. D.

Boy! Page Mr. Marconi

Dear Indi: A guy I know (he ain't no friend of mine, because he has a single circuit set) sez that he put his finger on his detector jack and the signals came in louder.

This boob decided he would put a wire under said jack and hold it in his hand. He loosened up the Jack and put the wire around it, then he put the other end in his mouth so that he could tighten up the jack. The boy then sez that the signals knocked his ears off. His nightly occupation now is sitting with a wire in his mouth getting the distant ones. R. E. FLEX.

—Or Write Your Own Verses

1.
The soup's in the fork,
The spaghetti's on the tree.
The air's fulla Radio
That ain't no good to me.

Chorus
I ain't gonna tune no more, no more,
I ain't gonna tune no more.
If the squeels in the air
Don't stop their noise,
I ain't gonna tune no more.

2.
I tun 'er in the morn,
I tun 'er in the night.
The squawks the air turns up
Are an awful fright. —5XV.

After Me, You Come First

Dear Indi: Tell Soozee that if Sir Arthur has escaped, permanent, I might sight her to a substitute eligible, this prospect for a fast worker only. River road flivver method would only cramp her style here.

SIGNING OFF.

Stop, Stop, You're Killing Me!

Dear Indi: Laboratory experiments have shown that Sol Lution is Ju-ice and positively comes from Nega-Pole-and goes direct over various circuits even though this act is sometimes shocking. ALUNUS.

A New Educator



"RUSSIA TAKES UP RADIO"

Condensed

By DIELECTRIC

WHN is conceded to be—. You're right! Much of their past was forgotten when Will Rogers came across with his original brand at the testimonial dinner to Commissioner Enright of New York city. Nothing quite takes the place of a Radiocast dinner, I mean, of course, where you hear from men not usually guests at your own table. Little remarks passed from behind a guarding hand are heard by mike—and the rest of us.

I don't know why they send soft music with KDKA's Radiocast of a tour around the world, unless to entertain those not caring for a picturesque description of some of the beauty spots of Europe. Told in so interesting a style most anyone would wish to hear more of this style of feature. It rests an overjazzed loud speaker, to say the least.

Some credit is due WTAM for selecting the Cleveland musical association to provide an evening's enjoyment. It was a joy to hear well trained voices in well suited selections. A "Love Dream" voice scatters and flows all around the Jewel Song from Faust. Then, too, this Radiocast station has much to offer in careful modulation.

"The Eveready Hawaiian Orchestra through WEAf." Precisely!!

Of all the neo-Heifitz fiddlers there are, standing before dozens of mikes night after night, it is decidedly refreshing to tune to a station presenting an artist in his or her own right. Such a case was that of Rose Becker, whose playing at WEAf makes me think now of faultless intonation—oh, such a rarity!—and a tone that warms one. You don't tire of listening to many numbers with such a violinist.

Stribling and Robson fought a good fight with the aid of WBZ's announcer and no listener in was surprised to hear the decision given to the Georgia boy. Then Tunney and Greb discussed physical prowess out of reach of KDKA except through wired description, nevertheless, the smoky air of Pittsburgh pervaded most of the "Pioneer's" announcements until we finally realized Tunney was the victor.

Several million people in these good old United States are fast becoming blase who never thought of the term before. If that ain't so, then why did so many folks take the trouble to wire their appreciation to WOS for the Old Time Fiddlers? A surfeit of new things makes the old ones take on an attractive flavor. There's something homey anyway about "Jefferson City, Missourah" wherever you live.

It's about time Calvin came on the air again. We've had John trying out the various Radiocast systems of the country until the regulars can recognize his voice instanter. Of course, if it wasn't for proper decorum, no one would have to introduce the President. Every mike in the land knows enough to come to attention at the sound of the first syllable spoken by the occupant of the White House.

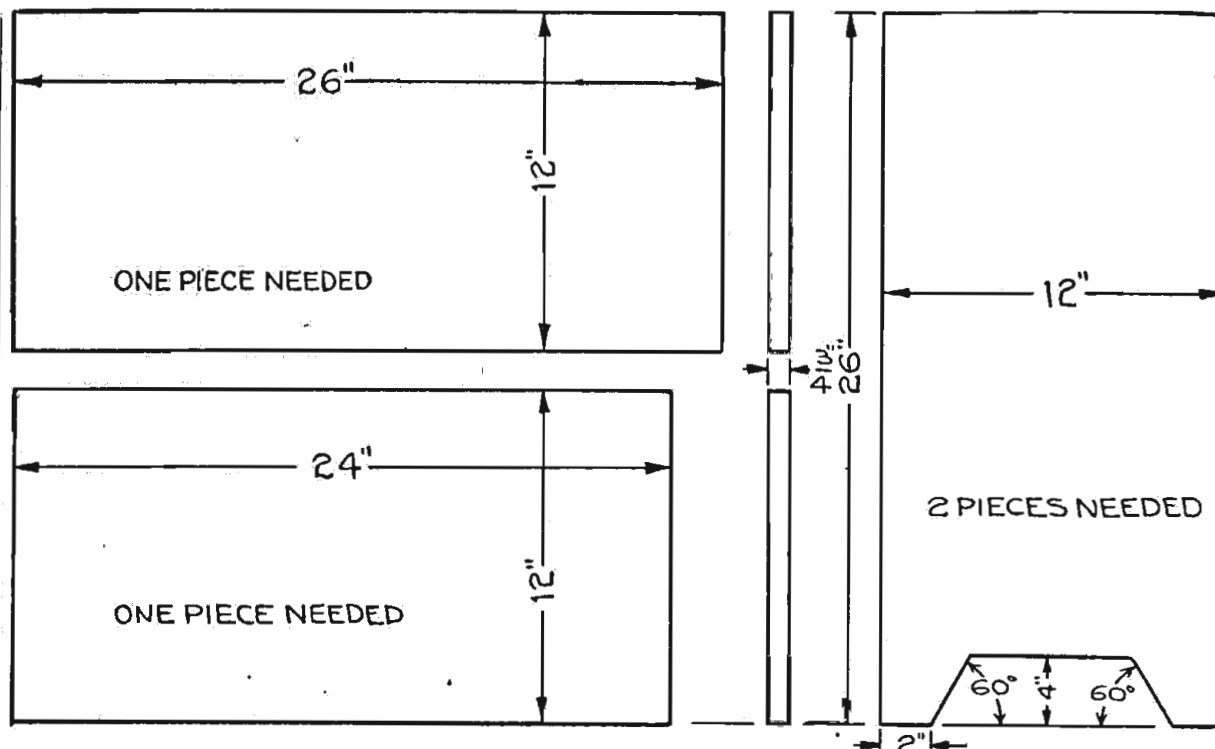
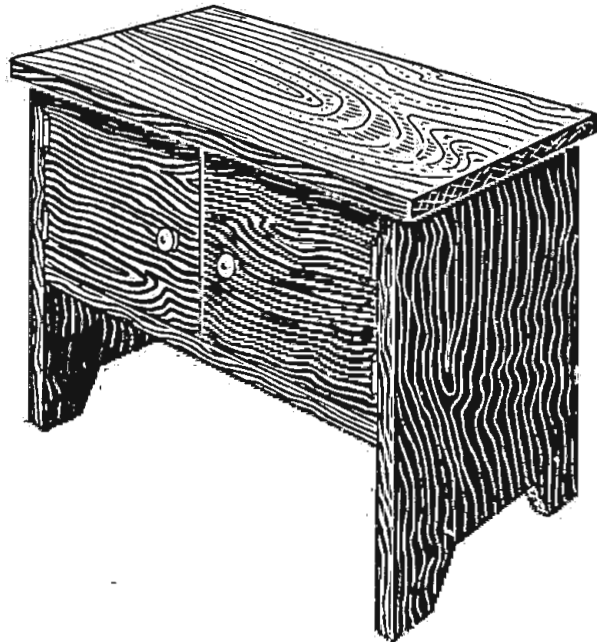
One evening when every jazz band was wailing through the same piece and all the singers were "sad and weary," at least one fan found comfort in the declared fact that prize ewes and exceptional ears of corn were to be seen at the Chicago Fair. Now a ewe may bleat and corn ferment but—jazz goes on forever and ever.

Console and Cabinet Making for Receiving Sets

Chapter IV—Inexpensive Table Stand for Set

By Charles F. Smisor

WHEN it comes to making up stands, tables and elaborate housing for the receiving set it is more of a problem in designing than it is in the making of the piece of furniture. A few designs will be given in the succeeding chapters and they will cover in almost every detail the construction of cabinets and con-



solely, so that if you have the creative ability you can design something that will meet with your requirements for a set and something that will fit in and harmonize with your present furnishings.

The piece of furniture for this week is a table or stand on which to place the receiving set cabinet. This piece of furniture was constructed entirely of the leaves from a discarded oak dining table. These leaves were for use in making an extension when guests came and more table top space was needed.

Preparing the Wood

Again the preparing of the wood is the most essential part of the making of this stand. If new boards are used the task will not be so difficult in getting a finish. The old leaves had to be planed to remove all the wear and stains. Hand planing would be too much of a task for the average person to do; however, if there is a nearby mill the boards can be planed easily and quickly and they will present the same surface as if new mill planed boards were used.

Follow out the instructions as they were given in chapter three for preparing the surfaces, after which the boards are laid out and cut to the dimensions given. Two end pieces are required, as given. The lower part of these pieces are cut

Assembling the Parts

The assembling of the parts is a simple matter, for the top and shelf joins the end pieces with a length of brass angle A of about 1/2-inch size. If the brass angle cannot be procured in your vicinity, angles like the one shown at B may be used. These angles can be procured from almost any hardware or department store. They are fastened with wood screws. Be careful to have the parts join closely and that the screws are set to draw the joints together when they are turned in tightly.

As there is no upright piece at the center of the shelf for the doors to butt against, it is necessary to have some holding means for the doors when they are closed. The small catch C in which a plunger with a ball end is kept pushed out

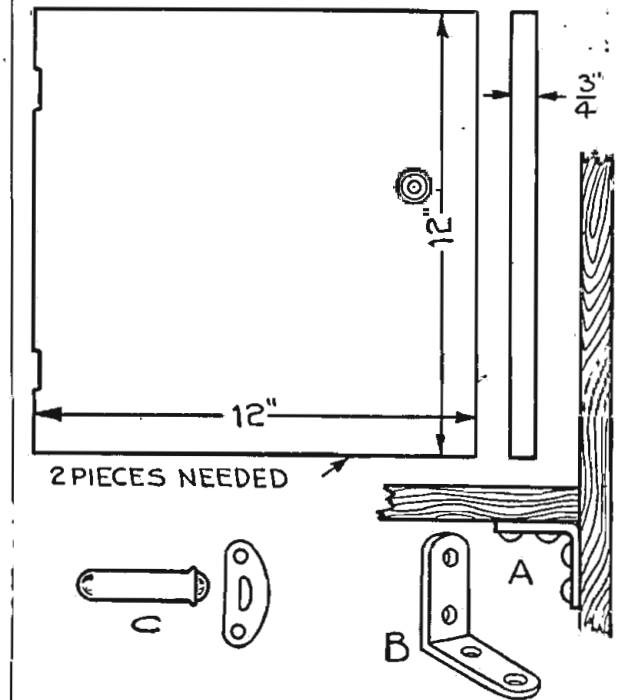
of its socket makes a good holding means for the doors. Two of these catches will be required. A hole is bored in the thickness of the door from the bottom and about 1 inch back from the upright inner edge of the door to admit the socket of the catch. This hole should be of such a diameter that the catch socket will have to be driven in with a hammer. The plate with the hole to receive the ball end of the plunger is attached directly to the shelf board at the proper location. This part of the catch should be carefully mortised in the wood. If this is not done a poor joint will be the result.

Knobs can be procured in various kinds of wood; however, the ones used on this stand were of glass. This is a matter of taste and any suitable knob can be used.

Shelf for the B Batteries

There was no back used in this stand, the B batteries were placed on the shelf

and the wires run from them to the set through the back opening. If the builder so desires a back can be put on made of thin boards or veneer boards. When using a back, holes will need to be made in



the boards for the wires coming from the batteries.

If the boards have been planed and well sandpapered and care used in putting (Continued on page 18)

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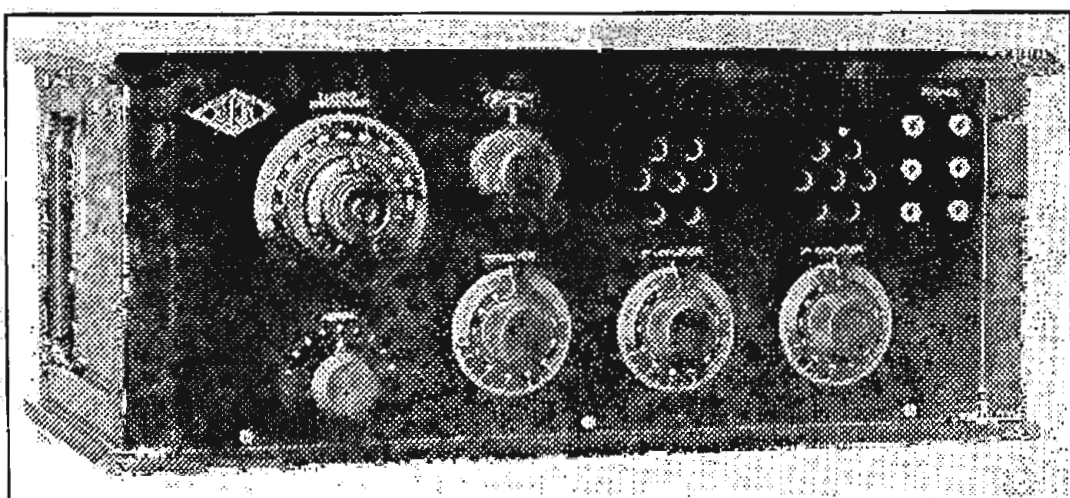
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CABINET MAKING

(Continued from page 17)

the pieces together the work of final finishing will be lessened. In chapter three full details were given for the final finishing and varnishing.

This little stand will make a suitable place for the receiving set and the expense of building it is practically nothing, not considering the time in its construction. The size is suitable for a cabinet set having a panel of 21 inches. It will accommodate a larger size, but anything larger than 21 inches in length does not harmonize with the outlines of both set and stand.

(In the next article a stand of somewhat similar construction will be described, but on more elaborate details. It will require more work to build, but it will pay to construct this cabinet stand.—Editor's Note.)

SUPER-HETERODYNE

(Continued from page 15)

tubes are intended to perform double duty by means of reflexing or the combining of the two distinct functions for the same tube. This, of course, presents distinct advantages, but when it is considered that the amateur has had more than sufficient trouble in the simple type of reflex circuit, it will readily be appreciated that the difficulties are decidedly multiplied when adapted to a more advanced type of circuit operation as the super-heterodyne.

For these reasons, no effort has been made to conserve tubes, but to present a simple receiver that will give good clear reception with minimum amount of noise and interference, but a high degree of selectivity.

The Circuit

The circuit is shown in Figure 1. Two distinctly unusual features immediately become apparent. The one, namely, the series connection of tube filaments and the grid biasing system, will be taken up later.

The more interesting feature is the method employed for coupling the oscillator system into an integral part of the main circuit.

The credit for this particular development in heterodyne circuits goes to Mr. LeRoy E. Humphries, an engineer of Atlanta, Georgia. In this circuit the first tube is used for one stage of Radio frequency amplification on the incoming short waves. The pick up coil of the usual oscillator coupler is in the plate circuit of this first tube. In this way the output of this tube number 1 is used to modulate the grid of the oscillator tube number 2. Since the local oscillations are just coupled to the plate circuit of the first tube, all reradiation from the set is cut off from the antenna circuit.

The primary of the filter coupler is connected in series in the plate circuit of the oscillator tube number 2. Tuning of the oscillator circuit does not affect the tuning of the input circuit.

The inductance in the plate circuit has been made of just sufficient value to prevent the first tube oscillating throughout the range of wave lengths employed in broadcasting.

The balance of the circuit, with the filament and biasing connections, conforms to the standard type of circuit.

In order to simplify the filament and grid wiring throughout the entire circuit, the illustration shown in Figure 2 was made up. In this diagram all other wire and apparatus has been omitted. The various parts making up this hook-up are shown in the same relative positions.

The Filament and Grid Circuits

First—all tubes are connected in series. Starting from a negative A terminal the series connections arrange the tubes in the order: detector number 6, oscillator number 2, amplifier number 5, amplifier number 4, amplifier number 3, amplifier number 1, then to audio amplifier number 7, audio amplifier number 8 and through the master rheostat, battery switch and ammeter to the positive filament terminal.

The small peanut type of vacuum tubes, 215A, are used. These draw 0.25 ampere at about 1.1 volts each. Connected in series they still draw 0.25 ampere, but require a potential of 8 to 9 volts. Using a 30-ohm rheostat, two 6 volt storage batteries, or better still, 8 dry cells connected in series, permits very satisfactory adjustment and most economical operation for not only the A battery but also the B batteries.

Since no potentiometer is used, some method of biasing becomes essential. The method illustrated in this circuit is not original, but is covered by patents for commercial production and used by only one manufacturer.

By connecting the grid return of each tube to the negative terminal of the tube ahead of it in the series connection, a bias of one volt is obtained. This not only improves the operation of the tube, the quality of reception, but also produces economy of plate battery current consumption.

In order to more easily understand the bias the order of the series connections of the tubes starting from the negative side is shown in the first column of tube numbers—the second column shows the tube number to which the grid return of each tube is made.

Tube 6 grid return goes to positive 6
Tube 2 grid return goes to negative 6
Tube 5 grid return goes to negative 2
Tube 4 grid return goes to negative 5
Tube 3 grid return goes to negative 4
Tube 1 grid return goes to negative 3
Tube 7 grid return goes to negative 1
Tube 8 grid return goes to negative 7

With the exception of the detector, the grid return of which goes to the positive side of its own filament, all the grid circuits couple up with the tube ahead, giving a 1-volt negative grid bias.

(For those who would rather use the standard A or 99 type of tubes the hook-up diagram will be presented in the next article.—Editor's Note.)

One of the best-known French Radio periodicals remarks that French inventors should cease "hiding their lights under a bushel" and assert their claims to their inventions. It is stated that the famous Hartley circuit was actually invented by a Frenchman named Ditte.

Tuesday, October 14

(Continued from page 14)

p. m., the Star's string trio; 5-5:30, weekly child talent program, Mrs. Estelle Logan, director; 6-7, school of the air, piano tuning-in number on the Duo-Art; the Tell-Me-a-Story lady; music, the Hanlein-Knutson Trio; 11:45-1 a. m., Nighthawk frolic, the "Merry Old Chief"; the Plantation players.

WDAR, Philadelphia, Pa. (Eastern, 395), 11:45 a. m., daily almanac; 12:02 p. m., Stanley theater organ recital; 12:30, Arcadia cafe concert orchestra; 2, Arcadia cafe concert orchestra; 7:30, Dream Daddy's bedtime stories; 7:50, "Both Sides of the Footlights," Arnold Abbott.

WEBJ, New York, N. Y. (Eastern, 273), 7-7:10 p. m., reviews of motion pictures on Broadway, Blybrant Radio dramatic critics; 7:30-8:15, Jimmy Clark and his White Way entertainers; 8:20-9, Rivoli Theater ensemble personal direction of Hugo Rosenfeld.

WEAO, Columbus, Ohio, (Eastern, 360), 9 a. m., music, Marguerite Manley Sledel School of Music talent; 11 a. m., music, Sledel artists; 1:30 p. m., music, Sledel artists.

WFI, Philadelphia, Pa. (Eastern, 395), 1 p. m., Meyer Davis Bellevue Stratford concert orchestra; 3 Caroline Hoffman, pianist; 6:30, Meyer Davis Bellevue Stratford concert orchestra; 7, Sunny Jim, the kiddies' pal.

WGN, Chicago, Ill. (Central, 370), 8:30-9:30 p. m., Martha Bjorn, soprano; F. W. Schmidt, tenor; Premier quartet; Rosemary Hughes, soprano; 10:30-11:30, Jack Chapman dance orchestra.

WGR, Buffalo, N. Y. (Eastern, 319) 12:30-1:30 p. m., George Albert Bouchard, organist; 2:30-4:30, the Radio Dealers Musical program, A. J. Erisman, director; 6:30-7:30, Halldryd Stringed quartette.

WGY, Schenectady, N. Y. (Eastern, 380), 2 p. m., "When Should We Vote," Irene B. Taylor; 7:45, "Your Child's Education," Angelo Patri; 7:55, Chinese night; WGY orchestra; descriptive prologue, Edward H. Smith; "New York's Chinatown a Quarter Century Ago," Edward H. Smith; "Mel Lee, the Beautiful," Edward H. Smith.

WHB, Kansas City, Mo., (Central, 411), 2-3 p. m., ladies' hour program, Sweeney Radio orchestra; 8-9, soprano solos, Elizabeth Ransom Hinton; dance music, Sweeney Radio orchestra.

WHK, Cleveland, Ohio (Eastern, 283), 6 p. m., Marjorie Moore's Melodious maids, Grebe's Rathskeller.

WHN, New York, N. Y. (Eastern, 360), 9:30-10 p. m., Bertram J. Goodman orchestra; 10-11, vaudeville show; 11:30-12 m., Club Alabam orchestra; 12-12:30 a. m., Parody club orchestra.

WHO, Des Moines, Ia. (Central, 526), 7:30-9 p. m., Bankers Life Radio orchestra.

WIP, Philadelphia, Pa. (Eastern, 509), 1 p. m., organ recital, Karl Bonawitz; 3, songs, Harry Link; 6:05, Ehrenzeller's concert orchestra; 7, Uncle Wip's bedtime stories; 10, "Behind the Screen with Screen Folk," E. M. Orowitz; 10:30, Harvey Marburger's dance orchestra from Cafe L'Aiglon.

WJAX, Cleveland, Ohio (Eastern, 390), 7:30 p. m., program arranged by Cleveland News-Leader; E. G. Johnson, bedtime story; Don Palmer, Radio cartoon; Cleveland male chorus, Albert Downing, director; Joe Smith-Martha Lee club orchestra.

WJY, New York, N. Y. (Eastern, 405), 7:30-8:15 p. m., Leonard Nelson's Knickerbocker Grill orchestra; 8:15-

8:30, "Current Events," Prof. R. D. Suth; 9:15-9:30, Jack Silverstein, violinist; 9:45-10, Time Pop Question game; 10-11, Plaza Theater's concert orchestra, Eugene Conte, director.

WLAG, Minneapolis-St. Paul, Minn. (Central, 417), 10:15 a. m., Betty Crocker; 2 p. m., league of women voters; 5:30, children's hour, Gold Medal lady; 6:30, George Osborne's Hotel Nicolet orchestra.

WLW, Cincinnati, Ohio (Central, 423), 10 p. m., Cummins orchestra; Ohio Rubber male quartet; 11, instrumental trio; Cummins orchestra; 11:35, Uncle Jake Rutz Pumpkin Vine orchestra; 11:55, Chubb-Steinberg orchestra.

WMAQ, Chicago, Ill. (Central, 447.5), 4:10 p. m., lecture, Red Cross; 4:30, pupils, Gunn School of Music; 6, Chicago theater organ recital; 6:30, Hotel La Salle orchestra; 8, Harry Hansen, literary editor; 8:20, travel talk, Clara E. Lauchlin; 8:40, ten-minute talks, Association of Commerce of Chicago; 8:50, U. S. civil service commission; 9:15, music.

WMC, Memphis, Tenn. (Central, 500), 12:30 p. m., noonday program, Skyline serenaders; 8:30, old-fashioned songs, Mrs. E. W. Scott; 11, midnight frolic, Ernest F. Hawk, pipe organist.

WOAW, Omaha, Neb. (Central, 526), 6 p. m., dramatic hour, Davis Studio of expression; 6:30, dinner program, Randall's Royal orchestra, Brandels store restaurants; 9, program from vocal study of Walter B. Graham; 10, dance program, Frank W. Hodek, Jr. and his orchestra, Rosoland gardens.

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

WOR, Newark, N. J. (Eastern, 405), 2:30-2:40 p. m., Matilda Rosenstrauh, pianist; 3:3-3:15, Matilda Rosenstrauh; 6:15-6:30, Clifford Lodge orchestra; 6:30-7, man in the moon stories for children; 7:15, Clifford Lodge orchestra; 7:15-7:30, Jolly Bill Steinke.

WQJ, Chicago, Ill. (Central, 448), 11-12 m., "What Football Will Do for Your Boy," John Meehan; "The Care of Canaries," L. J. Andrus; 8-4 p. m., "Croquettes for Supper," Cora Beeman; talk, Alexander M. Damon; 7-8, Ralph Williams and his Rainbow garden orchestra; James Mitchell, baritone; Merrie Boyd Mitchell, soprano; Carl Linner, pianist; 10-2, Ralph Williams and his Rainbow garden orchestra; Otis Pike Jester, soprano; Mary House, pianist; Harry Geise and his "How Do You Do" song; Edna Solomon, alto; Paul Lougher, tenor; Will Rossiter; Nubs Allen, alto; Mable and Little, song writers.

WRC, Washington, D. C. (Eastern, 469), 5:15 p. m., radio instruction; 6, children's hour, Peggy Albion; 7:15, dance program; 8:15, songs, Flora McGill Keefe, alto; 8:30, music; Flora McGill Keefe, alto; 9, "The Political Situation in Washington," Frederick William Wile; 9:20, Irving Boerstein's Wardman Park hotel trio; 9:55, time signals.

WSA, Cincinnati, Ohio (Central, 309), 7 p. m., Hotel Gibson orchestra, Robert M. Visconti, director; 7:30, chimes concert; 7:45, bedtime stories, Ethel Knapp Behrman; 8, Gibson orchestra; 9, mixed musical program.

WSB, Atlanta, Ga. (Central, 429), 8 p. m., songs, Henry Mullins, baritone; 10:45, Radiowl entertainment.

WTAS, Elgin, Ill. (Central, 286), 6-8 p. m., dinner program, Tip-Top Inn string sextette; 8-12, Harmon's.

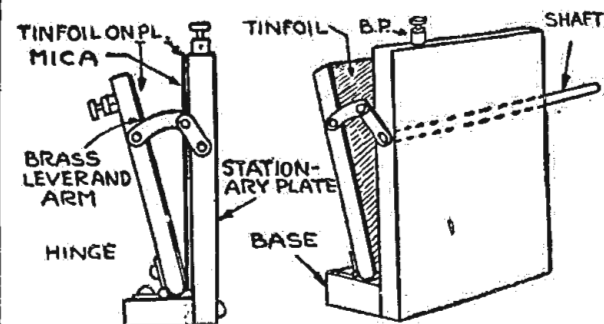
WTAY, Oak Park, Ill. (Central, 283), 6:45-7:45 p. m., Glenn Bruce; Sandy Meek, baritone; Raynor Dalheim and company orchestra.

WWJ, Detroit, Mich. (Eastern, 517), 8 a. m., setting up exercises, R. J. Horton; 9:30, talk, women's editor; 9:45, Fred Shaw, pianist and songster; 12 n., musical program; 7 p. m., Detroit News orchestra.

Homemade Variable Condenser

The size of the condenser will depend on the capacity required. Only three main pieces are necessary, these being the base, the movable and the stationary plate, all of which may be made of wood. The stationary plate is fastened in an upright position to the base. The movable plate is fastened to the base with a small hinge, so that two plates will press solidly together and the movable one may be swung to and away from it. The two surfaces of the plates that press together are covered with tinfoil or metal (such as copper or brass). On the two plates are arranged two binding posts as shown, each of these making contact with the metal or foil on the plate. On the stationary plate over the metal (or foil) is glued a piece of thin mica to prevent the two plates from shorting. A brass

lever and arm are cut in the shape shown and fastened to form a hinge, one piece being fastened to the shaft so that when



the shaft is turned the movable plate is moved to or away from the stationary plate.—Evermont Fisel, Lebanon Junction, Kentucky.

Does Your Family Miss the Radio?

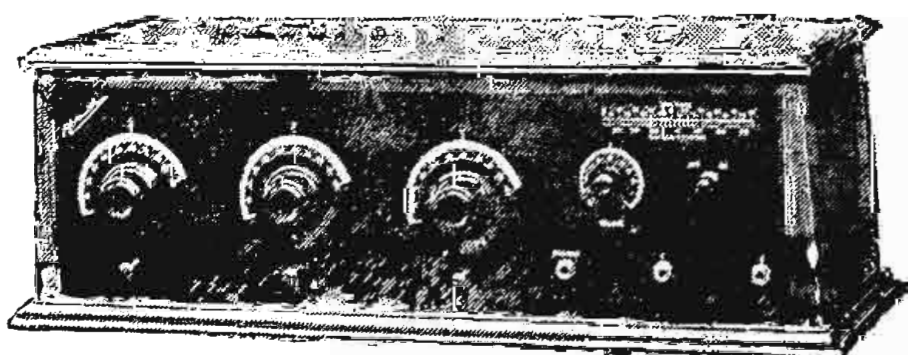
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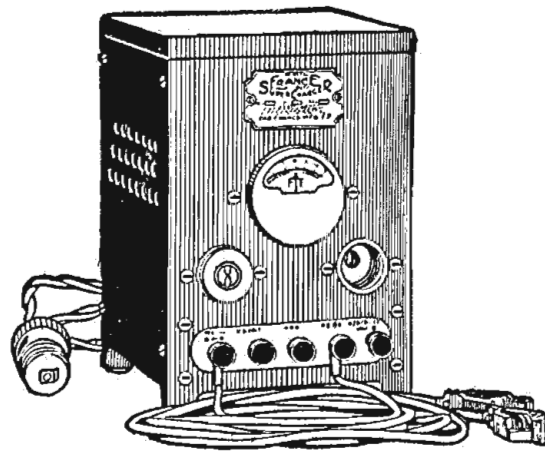
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Helpful Hints to Get the Most from Radio

Chapter IV, Part Two—Radio Inductance and Tuning

By Thomas W. Benson

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

- Chapter V—Variable Condensers.
- Chapter VI—Crystal and Tube Detectors.
- Chapter VII—Sockets and Rheostats.
- Chapter VIII—Grid Leaks and Biasing.
- Chapter IX—Jacks and Switches.
- Chapter X—Amplifying the Signals.

THE several types of inductances described in the last chapter are combined in practice to form the numerous types of tuning devices in use at present. The simplest form of tuning is that shown in Figure 7, where a single inductance, either of the coil wound, spider web or low loss type is tapped at a number of points and leads brought to switches. The adjustable inductance so formed is connected to the aerial, which furnishes the capacity to form a tuned oscillatory circuit. The detecting device, in this case a crystal detector, is connected across the inductance. Such a tuner, being the common single circuit tuner, has many outstanding disadvantages.

In the first place the aerial capacity is bound to have a fairly high resistance which gives broad tuning. Tapping the coil leads to losses because the unused turns absorb energy again, reducing the sharpness of the tuning.

Disadvantages of the Single Circuit

The disadvantages of the single circuit tuner led to the development of coupling devices whereby the tuning circuit was not connected to the aerial and with all the factors of resistance under control permitted sharp tuning. The earliest form known as the loose coupler was used for years by both amateur and commercial

operators, but the advent of broadcasting with the short waves used led to the use of the variocoupler.

Designed originally simply as a coupling device, it consists of an outer tube supporting an inductance tapped to permit of tuning the aerial circuit by means of tap switches, while pivoted at one end of the tube was a wood ball on which was wound the secondary winding. The aerial currents flowing through the outer fixed or primary winding would set up a

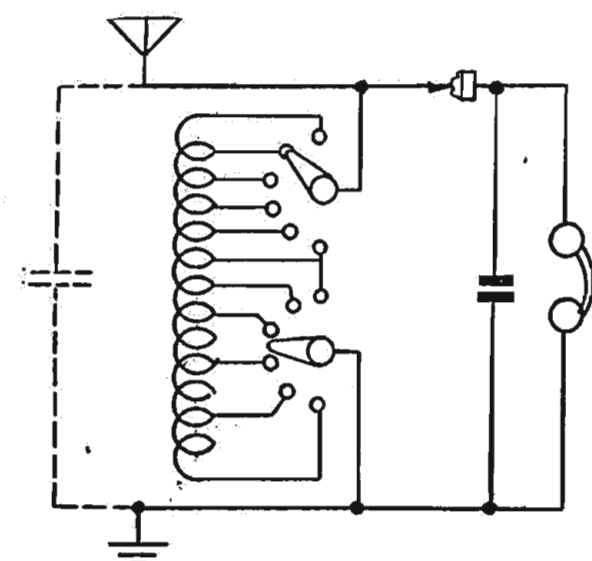


Figure 7—The simplest tuned circuit using a tapped inductance.

magnetic field that would induce currents of the same frequency in the winding on the rotor ball.

By rotating the ball the relation between the fields of the two windings was varied and thus the magnetic effect of the primary upon the secondary circuit was changed, permitting the change of coupling between the two circuits. The variocoupler then is essentially a coupling device, but it was very inefficient in its earlier forms. An efficient variocoupler should be built with a low loss winding as the primary with a similar winding or a spider web as the rotor or secondary.

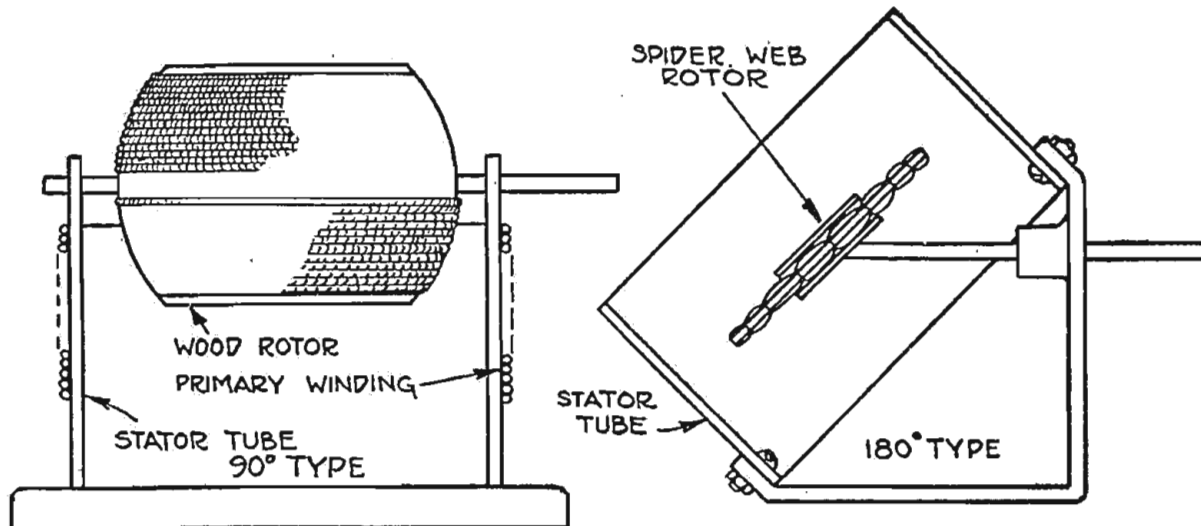


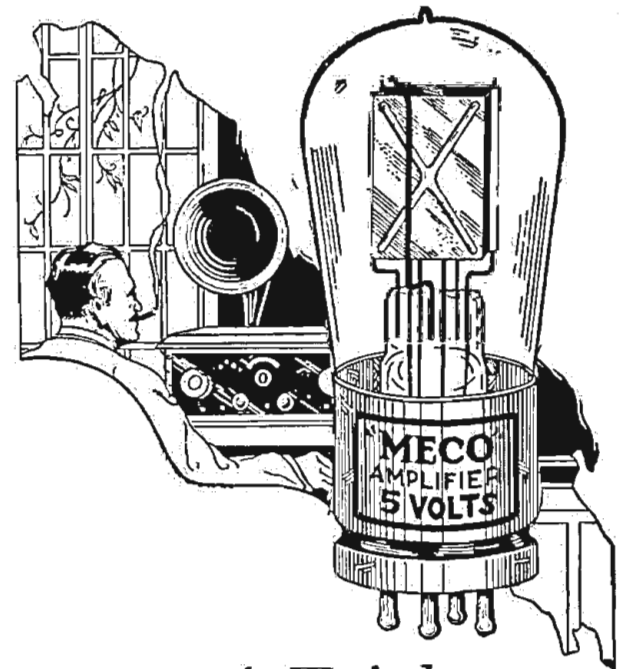
Figure 8—Two types of variocouplers.

Tuning the Secondary

Some method of tuning the secondary of the vario-coupler is necessary when it is used as a coupler. The variometer was developed for this purpose and is essentially a variable inductance without taps. Its principle of operation is to mount one inductance inside the other, winding them on ball-shaped supports, and arranging the inner ball or rotor on pivots. In one position the fields of the two inductances coincide and, assisting each other, have a maximum inductive effect, but when the ball is rotated this mutual action is gradually reduced, reducing the inductance until a point is reached where the magnetic fields of the two coils oppose

when the inductance is at a minimum.

The older wood type and the later moulded type are open to criticism on account of high hysteresis losses in the forms, but the introduction of the low loss variometers with the honeycomb windings have overcome this defect. The circuit employing variometers for tuning is known as the three circuit regenerative shown in Figure 9, where a variometer is (Continued on page 20)



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Write for complete literature

RADIO RECEPTOR CO.
59 Bank St. New York

GET MOST FROM RADIO

(Continued from page 19)

also used to tune the plate circuit to obtain regeneration.

As a general rule all circuits employing a tuned aerial circuit requires adjustable coupling to obtain maximum range and selectivity. This is due to the fact that when two tuned circuits are coupled there is a certain degree of coupling that gives

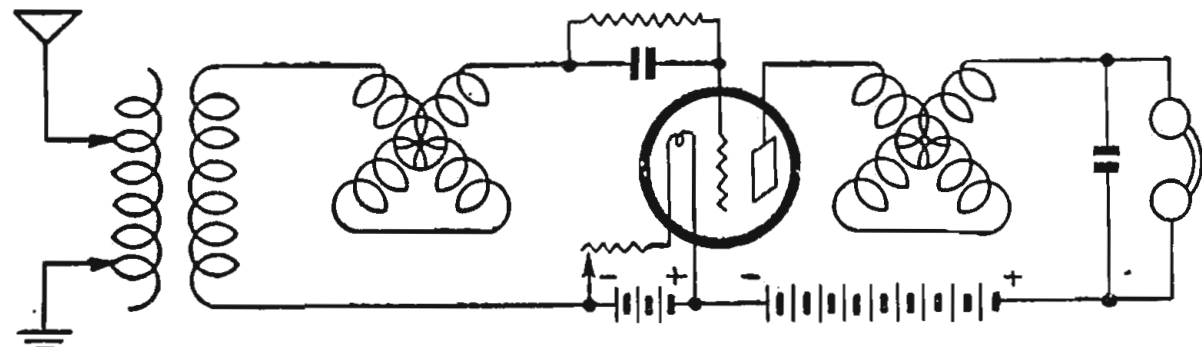


Figure 9—The tuned plate circuit that employs a variable inductance to tune the secondary. The tuned aerial circuit requires a coupling adjustment for efficiency.

the greatest transfer of energy, because with the coupling too close the current in the secondary reacts on the primary and has the effect of increasing the resistance of the secondary. Therefore careful adjustment of the coupling will often improve the results from a coupled receiver. However, if we make the aerial circuit untuned the adjustment of the coupling is not so important and we can employ fixed coupling that is rather tight.

Tuner Similar to Variocoupler

The complete tuner is very similar to a variocoupler. The stator now supports the fixed secondary winding and a primary winding wound next to it consisting of from four to twenty turns. The number of turns is kept low enough that the aerial will not tune to the shortest wave lengths to be received. Thus the aerial tuning as well as the coupling adjustment is eliminated. Pivoted inside the stator of the tube as shown in Figure 10, which is a rotor connected in the plate circuit controls the regeneration. This is the tickler feedback regenerative tuner.

Here again the inductances are subject to the same conditions mentioned in connection with the variocoupler and the efficiency of the instrument is controlled entirely by the losses in the windings. The

aerial losses are few in this coupler, but the design of the secondary winding should meet the requirements of a good inductance in that distributed capacity should be low and the winding made with low losses.

Another factor enters into the design of tuning devices with movable windings and that is connection to the rotating parts. Connections made through the pivots of the rotors are not to be de-

pendent upon because corrosion at these points destroys all the advantages of well

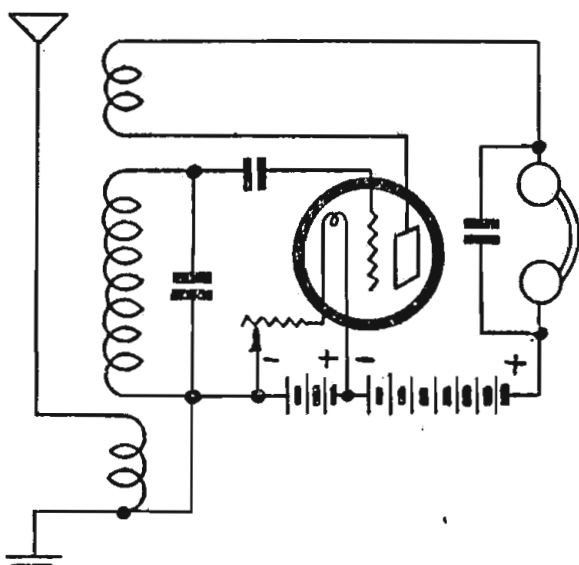


Figure 10—The tuned plate regenerative circuit using a fixed primary eliminating the coupling and retaining efficiency.

designed and well mounted coils, so flexible leads should be employed to the rotors of variocouplers and variometers.

Adjustment of the Feedback
Much of the satisfaction from a tickler regenerative circuit depends upon the accurate adjustment of the feedback. To aid in this respect we have what is termed the 180 degree coupler. The usual type of variocoupler as shown in Figure 8 allows of but a quarter or 90 degree turn from maximum to minimum coupling. But by mounting the stator at a 45 degree angle and mounting the rotor on the shaft at a similar angle it requires a half turn to swing from close to loose coupling.

Nearly all of the above effects of coupling and feedback can be obtained with honeycomb coils or spider webs arranged in the proper mounts. Thus a coupler is made up by arranging two coils or spider

webs in a mount so they can be separated or swung together, but the arrangement is unsightly. The regenerative circuit of Figure 10 is made up by using a specially wound spider web for primary and secondary with a separate web as tickler coil. (Condensers have been shown in some of the circuits without mention of their function. This will be considered at length in the next chapter with a view to obtaining highest efficiency in any circuit. —Editor's Note.)

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Radio Digest,
510 North Dearborn St., Chicago

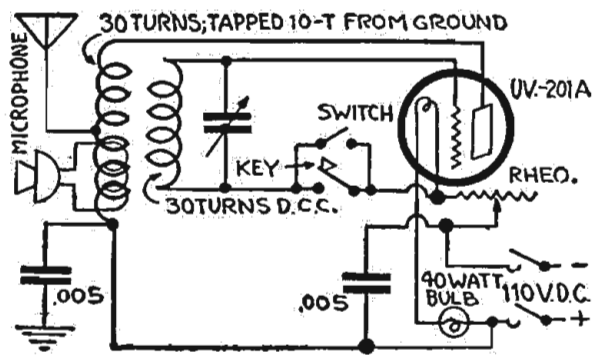
the average power tube, as direct current cannot be stepped up to the required plate

Materials Necessary

- 1 Tube socket.
- 1 Electric light receptacle.
- 1 Single circuit jacks.
- 2 .005 mfd. mica condensers.
- 1 Rheostat.
- 1 Single pole double throw switch.
- 1 11-plate condenser.
- 1 UV-201A tube.
- 1 Homemade coupler.
- 1 7 by 72 panel.
- 2 3-inch dials.
- 6 Binding posts.

voltage and it becomes necessary to use a motor generator, which is sometimes prohibitive considering the expense.

CIRCUIT AND PANEL LAYOUT



Herein is described a low power transmitter of fairly good range that need only be connected to an aerial and a 110-volt direct current line to be in operating condition.

Construction of the Coupler

Procure a piece of cardboard tubing about 4 inches long and a wooden rotor to fit into the tube. Wind the tube with 30 turns of number 18 dcc. wire, tapping off at 10 turns from the ground end as shown. Wind 3 turns of the same wire next to the first coil and connect the ends to the binding posts mounted on the tube. The ends of this coil are connected to the jack A which is for the microphone.

Wind 30 turns on the rotor of either the same wire or some other dcc. wire that will fit. I used number 22.

Arrangement of the Panel Layout

In arranging the panel layout A is the single circuit jack for the microphone, B is the jack for the key, C is the switch to short circuit the key when the microphone is to be used, E is the dial to which the rotor of the coupler is connected, F is the dial of the 11-plate condenser and D is the knob of the rheostat.

The ground shown in the hook-up is not necessary, but if you prefer to use a ground be sure to insert a reliable mica condenser in series with it. You will have much trouble if you do not do this.

After the set is complete connect it up, close the switch on the panel and listen to your set on your receiver. You

should hear a high pitched whistle. Adjust the transmitter until you hear the whistle the loudest and you have the set working.

Make sure that you are within the allotted wave length and that you have an amateur operator's license before trying to transmit.—Chas. Belsky, Detroit, Mich.

Short Aerial Best

Radio frequency receivers operate much better when using a short antenna. In fact, when using a long antenna a variable condenser of the large balanced type should be employed in order to cut down the wave length to that of the broadcast waves.



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Put the file into a carpenter's brace, dip the pointed end into turpentine often while drilling and do not turn too fast. If you are using clear glass, such as 1/4-inch plate glass, turn the glass over before you drill through. This will save shelling, which will happen if you pass the file through from one side.

A very nice panel can be made from 1/4-inch white glass which looks well with the black dials and is cheaper and will drill easily. Keep the drills sharp, put a little weight on while drilling but not enough to break the glass. The drill will get quite hot if you do not watch it closely.—R. Compton, Los Angeles, Cal.

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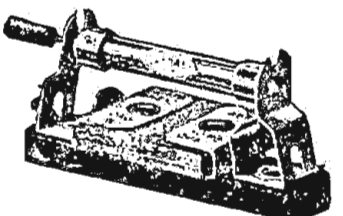
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Questions and Answers

RD-115

(8471) RG, New York, N. Y.

I would like to have a little information on a circuit published March 8 in the Radio Digest, R. D. 115. I have a variocoupler with 14 taps. Can I use this? It is a Fisher make.

On the diagram published please tell me what kind of coil is used in series with the plate and phones.

How many circuits has this set?

A.—The variocoupler mentioned can be used in the circuit offered as R. D. 115, which is a single circuit, regenerative modification.

The inductance connected in series with plate and phones is the rotor of coupler.

Transmitter Details

(08125) RCW, Moline, Ill.

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sending me circuit, if you have one, and please answer the following questions regarding it.

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What, approximately, is the range? Could this set be used for M. C. W. (phone) successfully?

How many rectifier jars? Size? We would like to build a set such as this for experimental purposes, consequently would like to use as few parts as possible. Our regular transmitter is of

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CARTER "ONE-WAY" PLUG
50c
Compare this plug and you'll soon see the difference. Nothing to get out of order. Simple—Sturdy. CARTER design and workmanship.
Insist on the Original Any Dealer can Supply
In Canada—Carter Radio Co., Limited, Toronto
Carter Radio Co.
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KEY TO THE AIR
CAGE ANTENNA
A highly efficient indoor Antenna System sold on a guarantee of Reliable Reception.
Patented. The genuine bears the trade mark Key to the Air.
Price \$2 At your dealers—or direct by mail on receipt of price.
STAFFORD RADIO CO.
Medford Hillside Mass.
Send for circuit diagrams

U.S. TOOL CONDENSERS
100% GUARANTEED
Point Number One
ONE PIECE STATOR
Eliminates broken contacts and soldered joints. Positive results; no leakage. Found in new types—Numbers 3 and 4, celeron end plates; 5 and 6, low loss—metal end plates.
ASK YOUR DEALER
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Six Tools in One
\$1.25
A radio socket wrench that fits every round and hexagon radio nut
Sockets ranging from ¼" to ½"
How it works
Place socket of required size on end of shaft with slots not in line with lugs on shaft.
Buy it from your dealer or direct from us
THE PERRY-FAY COMPANY Elyria, Ohio
Screw Machine Products

Radiophone Broadcasting Stations

Corrected Every Week—Part V

State, City, Call	State, City, Call	State, City, Call	State, City, Call	State, City, Call
Alabama: Auburn, WMAV Mobile, WEAP Montgomery, WKAN	Alabama: Eureka, WBBB Galesburg, WRAM Monmouth, WBBU Mooseheart, WJJD Oak Park, WTAY Peoria, WJAN, WQAX Rockford, KFLV, WLAB Streator, WTAX Tuscola, WJZ Urbana, WRM Zion, WCBZ	Michigan: Ann Arbor, WCBC Berrien Springs, KFGZ Dearborn, WWI Detroit, KOP, WCX, WWJ East Lansing, WKAR Flint, WEA Grand Rapids, WEBK Houghton, KFMW Kalamazoo, WLAQ Mt. Clemens, WABX Petoskey, WBBP Port Huron, WBBH Saginaw, WABMI	New Mexico: Albuquerque, KFLR State College, KOB	Osseo, WTAQ Sisseton, WAR St. Croix Falls, WRAL Stevens Point, WLBL Superior, WDBP, WEBEC
Arizona: Phoenix, KFAD, KFCB Tucson, KFDH	Indiana: Anderson, WEBD Fort Benjamin Harrison, WCBN Fort Wayne, WDBV Greencastle, WLAX Indianapolis, WBBZ Laporte, WRAF Marion, WIAQ Mishawaka, WQAO South Bend, WGAZ Valparaiso, WRBC West Lafayette, WBA	Minnesota: Carver, KFRA Collegiateville, WFBJ Hutchinson, WGAN Minneapolis, KFDZ, KFEX, KFMT, KFQF, WLGA, WLB Moorhead, WPAU Northfield, KFMX, WCAL St. Cloud, WFAI St. Paul, AV7, KFOY	New York: Buffalo, WGR Canton, WCAD Cazenovia, WMAC Ithaca, WEAI Kingston, WDBZ Lockport, WMAK New York, WBY, WBBR, WDBX, WEA, WEBJ, WEBE, WEN, WJY, WJZ, WNYC, WQAO, WSAP Richmond Hill, WAHG Rochester, WABO, WEAM Schenectady, WGY, WRL Syracuse, WFAB, WLAH Tarrytown, WRW Troy, WHAZ Utica, WSL	Wyoming: Laramie, KFBU
Arkansas: Conway, KFKQ Fayetteville, KFMIQ Fort Smith, KFOZ Little Rock, KFLO, KFMB, WCAV Pine Bluff, KFPX	Iowa: Ames, WOI Atlantic, KFZL Boone, KFGQ Burlington, WIAS Cedar Falls, KFJX Cedar Rapids, WJAM, WKAA Davenport, WOC Des Moines, WBO Fort Dodge, KFBR, KFJY Iowa City, KFQP, WHAA Lamoni, KFFV Marengo, KFOL Marshalltown, KFJR Ottumwa, KFJL Shenandoah, KFNF Sioux City, KFMR, WEAU Waterloo, WRAN	Missouri: Butler, WNAR Cape Girardeau, WSAB Carterville, KFPP Columbia, WAAN Fayette, KFQK Independence, KFIZ Jefferson City, KFPP, WOS Joplin, WHAH Kansas City, WDAF, WBB, WOO Moberly, KFPP, KFOJ St. Louis, KFEZ, KFQA, KSD, WCK, WEB, WEW, WMAV, WRAO Warrensburg, KFJN	North Carolina: Charlotte, WBT Fort Bragg, AT9 Wilmington, WBBN	Alaska: Anchorage, KFQD Juneau, KFJU Kukuk Bay, KNT
California: Bakersfield, KDZB Berkeley, KRE Burlingame, KFZ, KFQK Culver, KDBG, KFQI El Monte, KUY Fresno, KMJ Hillsborough, KFQK Hollywood, KFAR, KFQZ Holy City, KFOU Long Beach, KFOI Los Angeles, KFCL, KF1, KFPG, KFPR, KFQ, KFSG, KBJ, KJS, KXN Oakland, KGO, KLS, KLX, KZM Pasadena, KFNL Richmond, KFOU Sacramento, KFBC San Diego, KDPT, KDYM, KFBC San Francisco, KFPV, KFRC, KPO, KUO San Jose, KQW San Luis Obispo, KFBE Santa Ana, KFAP Santa Barbara, KFJH Santa Rosa, KFV Stanford Univ., KFGH Stockton, KJQ, KWG Taft, KFQC Whittier, KFOC	Kansas: Anthony, WBL Beloit, WPAR Manhattan, WTG Milford, KFKB Russell, KFQO Topeka, WJAO, WPAM Wichita, KFOT, WEAH	North Dakota: Fargo, WDAY, WPAK Grand Forks, KFJN, KFJQ	Ohio: Canton, AQ6 Cincinnati, WBE, WHAG, WLV, WME, WSAI Cleveland, KDPJ, WHK, WJAX, WTAM Columbus, WBAV, WCAH, WEA, WMAN, WPAL Dayton, AVS, WABD, WDBS Granville, WJD Hamilton, WBO, WRK Lima, WOAC Newark, WBB Pomeroy, WSAZ Sandusky, WAB, WQAF Springfield, WNAP Toledo, WABR, WTAL Wooster, WABW Yellow Springs, WRAV Youngstown, WDBF	Porto Rico: San Juan, WKAQ
Colorado: Boulder, KFAJ Colorado Springs, KFZ, KFQE Denver, AA3, KFAF, KFDL, KFEL, KFLE, KFPO, KLZ Greeley, KKA Gunnison, KFHA Janiot, KFQS Trinidad, KFBS	Kentucky: Louisville, WHAS, WLAP	Nebraska: Belden, KFQY David City, KFOR Fremont, WQAE Hastings, KFCK Lincoln, WFAV, WJAB, WMAH Norfolk, WJAG Oak, KFQO Omaha, KFCZ, KFOX, KFOV, WAAW, WIAK, WNAL, WQAV Tecumseh, WTAU University Place, WCAJ	Oklahoma: Bristow, KFJK Chickasha, KFGD Muskogee, KFOL Norman, WNAD Oklahoma City, KFJF, KFQJ, KFQR, WKY Okmulgee, WPA Tulsa, WGAF, WLAL	British Isles: Aberdeen, 2BD Belfast, 2BE Birmingham, 51T Bournemouth, 6BM Cardiff, 5WA Glasgow, 5SC London, 2LO Manchester, 2ZY Newcastle, 5NO Plymouth, 5PY Sheffield, 6FL
Connecticut: New Haven, WPAJ Storrs, WABL	Louisiana: Alexandria, KFEY Baton Rouge, KFGC Franklinton, KFLD Jennings, WCBJ New Orleans, WAAB, WAAC, WABZ, WCAG, WCB, WEPB, WIAF, WWL Sbrteveport, KFDX, WGAQ	Nevada: Sparks, KFFR	Pennsylvania: Allentown, WQBA Allentown, WFBG, WGAW Arnold, WCBU Buck Hill Falls, WCBY Butler, WBR East Pittsburgh, KDKA Erie, WQAV Grove City, WSAJ Harrisburg, WABH, WBAK Haverford, WABQ Johnstown, WBBV, WTAC Lancaster, WDBC, WGAL McKeesport, WIK Pottsville, WQAA Philadelphia, WABY, WBBT, WCAU, WDAR, WFI, WGL, WSOE	Canada: Bellefleur, CFQO Calgary, CFAC, CFCA, CHBC, CHCM, CKX Edmonton, CFCK, CJCA Halifax, CHAC Hamilton, CHCS, CKOC Troquois Falls, CFCH Kingston, CFRC London, CFCW, CJGJ Mont-Joli, CJCM Montreal, CFCE, CFUC, CHYC, CKAC Nanaimo, CFDC New Westminster, CFXC Oids, CJXC Ottawa, OA, CKCO, CNRO Quebec, CFQJ, CHCD, CKCI Regina, CKCK St. John, CJCI Saskatoon, CFQC Sudbury, CFRC Toronto, CFCA, CHCB, CHNC, CJCD, CJCN, CJSC, CKCE Vancouver, CFQ, CFYC, CHCL, CJCE, CKCD Victoria, CFCL, CHCE Winnipeg, CKY

PART IV

(Continued from last week)

WTG, Manhattan, Kan. 273 meters. 50 watts. Kan-State Agrl. College. Daily, 9:55 am, 4 pm, weather, Central.	10:30 pm, music. Daily ex Mon, Sun, 4-5 pm. G. M. S.	2TW, Havana, Cuba. 230 meters. 20 watts. Roberto E. Ramirez	6DW, Cienfuegos, Cuba. 225 meters. 10 watts. Eduardo Terry.
WTL, Chicago, Ill. 268 meters. 10 watts. H. G. Sual Co. Daily ex Sun, Mon, 10-12 midnight, music. Tues, Sat, 12-1 pm, French lessons. Central.	2BY, Havana, Cuba. 260 meters. 200 watts. Frederick W. Borton.	2WW, Havana, Cuba. 210 meters. 50 watts. Amadeo Saenz de Calahorra.	6EV, Cabarien, Cuba. 225 meters. 20 watts. Maria Josefa Alvarez. Daily, 10:30 pm.
WWAD, Philadelphia, Pa. 360 meters. 100 watts. Wright & Wright, Inc. Mon, 8 pm. Thurs, 8:30 pm. Eastern.	2CX, Havana, Cuba. 320 meters. 20 watts. Frederick W. Borton.	2XD, Havana, Cuba. 345 meters. 50 watts. Dr. Eduardo Sanchez.	6FL, Sheffield, Eng. 303 meters. British Broadcasting Co. Daily ex Sun, 3:30-4:30 pm, 5:30-11. Sun, 3-5 pm; 8:30-10:30. B. S. T.
WV, Dearborn, Mich. 273 meters. 250 watts. Ford Motor Co. Wed, 8-10 pm, music, lectures. Eastern.	2DW, Havana, Cuba. 300 meters. 100 watts. Pedro Zayas.	2ZY, Manchester, Eng. 375 meters. British Broadcasting Co. Daily ex Sun, 2:30 pm. B. S. T.	6KW, Tuinucu, Cuba. 332 meters. 100 watts. Frank H. Jones. Slogan, "If You Hear the Koo of the Cuckoo You Are in Tune With Tuinucu." Mon, Tues, Fri, Sun, 10 pm, music. Wed, Thurs, Sat, 8 pm, music. Sat, 12 midnight, dance music. Eastern.
WVJ, Detroit, Mich. 517 meters. 500 watts. The Detroit News. Daily ex Sun, 8-8:30 am, setting up exercises; 9:30-9:35, household hints; 9:45-10:25, health talks; 10:25-10:30, weather; 11:55-12, time; 12:05-12:45 pm, sports; 3:30-3:50, music; 3:50-4:15, markets; 5-6, sports. April 22, and every other week, 8:30-10 pm, concert. Sat, 7-8:30 pm, concert. Thurs, 10-12 pm, "midnight special"; Sun, Fill in weeks, 7-8:30 pm, concert; Sun, 11 am, 7:30 pm, church services; 2-4 pm, or 4-6, concert. Eastern.	2FC, Sydney, Australia. 1,100 meters. 5,000 watts. Farmer & Co., Ltd. Daily ex Sun, 12:55 am, chimes; 12:58, time; 1 pm, markets; 3:30, chimes; 3:35, music; 4:45, weather, stocks, news; 6:30, chimes; 6:33, children's hour; 7, markets; 7:55, chimes; 8, music; 9, orchestra; 10, national anthem.	5EV, Colon, Cuba. 360 meters. 10 watts. Leopold V. Figueroa. Sun, 9-11 pm. Eastern.	6XJ, Tuinucu, Cuba. 275 meters. 100 watts. Frank H. Jones.
WVW, New Orleans, La. 280 meters. 5 watts. Loyola Univ.	2HC, Havana, Cuba. 275 meters. 500 watts. Herald of Cuba.	5IT, Birmingham, Eng. 475 meters. British Broadcasting Co.	7AZ, Camaguey, Cuba. 225 meters. 10 watts. Pedro Noguera.
2AB, Havana, Cuba. 240 meters. 20 watts. Alberto S. de Bustamante.	2HS, Havana, Cuba. 180 meters. 20 watts. Julio Power.	5ND, Newcastle, Eng. 400 meters. British Broadcasting Co.	7BY, Camaguey, Cuba. 350 meters. 500 watts. Salvador Rionda.
2BD, Aberdeen, Scot. 495 meters. 1,500 watts. British Broadcasting Co. Daily ex Sun, 3:30-4:30 pm, concert; 5-5:30, women's hour; 5:30-6, children's hour; 7-10:30, concert. Sun, 5:30 pm, 8:30-10:30. Greenwich Mean.	2IQ, Havana, Cuba. 150 meters. 10 watts. Paul Perez Falcon.	5PY, Plymouth, Eng. 235 meters. 200 watts. British Broadcasting Co. Announcer, Henry Hudson. Daily ex Sun, 3:30-4:30 pm, orchestra; 5:30-6:30, children's hour; 7-11:30, music. Sun, 3-5:30 pm; 8-10:30. B. S. T.	7SR, Elia, Cuba. 309 meters. 250 watts. Salvador C. Rionda. Slogan, "Cuba, the Land of Sunshine, Sugar and Tobacco." Mon, Tues, Thurs, 9 pm. Eastern.
2BE, Belfast, Ireland. 435 meters. British Broadcasting Co., Ltd. Announcer, W. T. Guthrie. Daily, 7-	2KD, Havana, Cuba. 350 meters. 100 watts. E. Sanchez de Fuentes.	5SC, Glasgow, Scot. 420 meters. British Broadcasting Co. Daily ex Sun, 8-11, concert.	8AZ, Santiago, Cuba. 240 meters. 20 watts. Alfredo Brooks.
	2KP, Havana, Cuba. 200 meters. 10 watts. Alvaro Daza.	5WA, Cardiff, Wales. 353 meters. British Broadcasting Co.	8BY, Santiago, Cuba. 200 meters. 20 watts. Alberto Ravelo.
	2LC, Havana, Cuba. 250 meters. 30 watts. Luis Casas.	6AZ, Cienfuegos, Cuba. 200 meters. 10 watts. Valentin Ullivarri.	8DW, Santiago, Cuba. 275 meters. 15 watts. Pedro C. Andux. Daily, 4:30-8:30 pm, 10:30-12.
	2LD, London, Eng. 365 meters. 1,500 watts. British Broadcasting Co. Daily 4-11 pm. G. M. S.	6BM, Bournemouth, Eng. 385 meters. British Broadcasting Co.	8EV, Santiago, Cuba. 180 meters. 75 watts. Eduardo Mateos.
	2MG, Havana, Cuba. 280 meters. 20 watts. Manuel Y. Guillermo Salas Music Store. Daily ex Sun, 3-4 pm, music; 10. Eastern.	6BY, Cienfuegos, Cuba. 300 meters. 100 watts. Jose Gandux.	8FU, Santiago, Cuba. 225 meters. 15 watts. Andres Vinet.
	2OK, Havana, Cuba. 360 meters. 100 watts. Mario Garetta Velez.	6CX, Cienfuegos, Cuba. 170 meters. 25 watts. Antonio T. Figueroa.	8GT, Santiago, Cuba. 260 meters. 50 watts. Juan F. Chibas.
	2OL, Havana, Cuba. 290 meters. 10 watts. Oscar Collado.		

Soldered Connections Make Good Reception

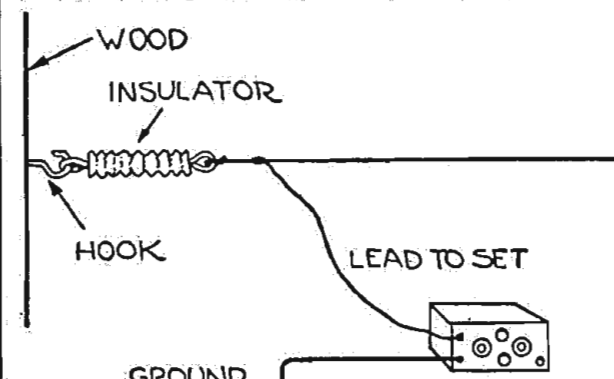
When building a receiver be certain to solder all connections, as corrosion will eventually make the connections poor and cause noises in your receiver. Do not use acid flux, but purchase resin core solder. A small quantity of solder will go a long way when used properly. To make a good connection be certain that both contacts are well heated and hold these connections together with a pair of pliers after removing the soldering iron for a period of approximately 30 seconds.

Simplified Wiring

To many fans who are just building their first set the most difficult problem encountered in the construction is the determination of just which wires are connected and which are still to be connected. To eliminate this uncertainty as each wire is laid in the set the corresponding line in the diagram should be crossed out with a colored pencil line.

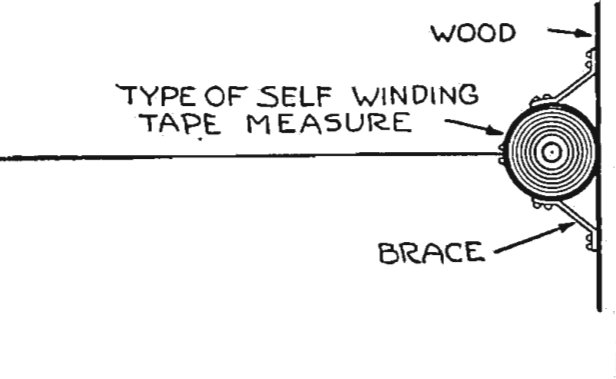
Tape Measure Aerial

A new inside aerial is one on the order of a self-winding tape measure or clothes-line. Any time one wants to "listen in" all that is necessary is to pull out the end of the collapsible aerial to which is at-



tached an insulator. In the interior of the device is a strong spring on the same principle of the tape measure. One end of the aerial is attached to the interior wheel, while the other protrudes out of an opening, to be pulled out and let in at will. A small hook at the end where the

aerial is to terminate, can be used to hook in the eye of the insulator. The kind of wire to be used depends upon the strength of the spring. This kind of an aerial is especially invaluable in the open while camping; in the home where it will



be unnoticed; and for people who do not wish an unsightly looking aerial defacing their home.—Frank Erickson, Milwaukee, Wis.

Ground metal masts used to support antenna.

Radio Circuits Book Useful

Neutrodyne sets may not give good results on the first placing of tubes. Try switching the tubes around until you get the best results. One bad tube in a neutrodyne set will throw it all out of whack. If you are a newcomer in the game buy a good beginner's book on Radio circuits and the fundamentals of the game. Your receiver is a wonderful piece of apparatus, but don't "just turn the dials." Understand what happens when you turn the dials. You will like the game better and get more pleasure if you know what you are doing and not only improve the quality of your reception, but also the range of your set. The best distance records are not obtained on the most sensitive receivers. A three-tube set in the hands of a person with a thorough knowledge of Radio will get more reception than an eleven-tube set in the hands of a person that does not understand its operation.

Phone cords have a habit of becoming kinked after being in use for a short time. These kinks steadily grow worse as time passes unless they are straightened out.



AND here we have her—the one and only woman Al Jolson. And to all appearances the only real competitor he has. She's Miss Rosetta Duncan of "Topsy and Eva" fame. The other half of the black and white combination is her equally famous sister, Li'l Eva. Or as she is more commonly known, Miss Vivian Duncan. They are probably the most popular honest-to-goodness sisters in musical comedy today. Not only are they known to thousands of theater goers but to more thousands of Radiophans who listen eagerly for their semi-weekly songs and dialogue from Station KYW at Chicago where they have been one of the regular features during their year's stay there. Their songs are known by heart to every listener in within hundreds of miles of Chicago. So strenuous did the business of dashing from the theater to the studio become that they had a studio of their own installed just outside the stage doors. Themselves ardent Radiophans, they have expressed a few of their ideas and opinions of Radio in this issue. They tell the amusing story of their first time before the "mike" at Ossining, New York, when Radiocasting was in its swaddling clothes.