New Flewelling Portable Set, L. H. Bolen; Gold Cup Award Standing., Advance Programs for Large Stations; Radio Frequency on Unidyne Set

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Vol. X

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SATURDAY, JULY 26, 1924

No. 3

HEARS ENGLAND ON LOOP

WLS SHOWS KIDDIES WHAT MAKES IT GO

1100 CHILDREN PUSH WAY INTO LULLABY PARTY

Sandman Daddies, Solemn Old Judge, Dog-Monkey Team and Child Artists Amuse Little Tots

CHICAGO.-Eleven hundred boys and girls, members of the Radio Lullaby club of the Sears-Roebuck Agricultural Foundation's Radiocast WLS, squeezed and pushed their way into the Tiger room of the Hotel Sherman on a recent Friday afternoon to attend the Lullaby Listeners party in charge of big Ford Rush and little Glenn Rowell, studio artists, known to the kiddies as the "Sandman Daddies."

The party started when George Hay, "Solemn Old Judge" announcer of WLS, blew the locomotive whistle of the WLS Unlimited and explained to the kiddles "what makes the wheels go round." Ford Rush and Glenn Rowell put on a special lullaby stunt and introduced the little club members to "Smoky," the Duck, and "Tweedle-ee," the Chickadee.

Dog-Monkey Team Performs

A clown stunt with a dog and a monkey as the star actors created a riot of applause. Francis McClaskey, twelve years old, gave two readings and little Ulamoe Loser executed a toe dance of her own Seven-year-old Geraldine Gunsburger and six-year-old Joan Brautigan gave several duet dialogue dances. The automatic doll dance and Under the Old Umbrella were

After a tour of the station and a peep into the microphone, ice cream and cake were served as the last act on the program. Supervision of the program was under the direction of Edgar L. Bill, director of Station WLS.

Germany Has First Radio Show; 187 Firms Exhibit

WASHINGTON, D. C .- The first German Radio exhibition was recently opened in Hamburg according to a report received here at which there were 187 exhibits with more than a hundred German firms being represented. No apparatus of foreign manufacture was exhibited.

The report states that the exhibits covered all varieties of receiving sets from the most elaborate and expensive to the simplest and cheapest and include all kinds of accessories and parts. One receiving set was offered for sale at the equivalent of \$10. Other sets were offered to as high as \$300. It was estimated that more than 15,000 visitors attended the exhibition during the first few days.

MAN OPENS GARAGE WITH ETHER WAVES

ONDON.—Using Radio to eook meals, open doors, drive a car etc., as recently described by a prominent Radio engineer, has been applied by a progressive English amateur. He has installed a small transmitting set on his automobile. When he arrives at the door of his garage, he presses a key on the dashboard. Instantly the doors open; closing again after the ear has passed through.



Anna Case, Metropolitan Opera Star, who proved the Star Spangled Banner could be sung artistically, when, with the national anthem, she opened the Democratic National convention, held in Madison Square Garden, New York City, and Radiocast from a score of stations. © Strauss-Peyton

KQV Furnishes Music for Marriage at Private Home

PITTSBURGH.—One of the most unique programs of the season was given from Station KQV located here. During a mar-

ceived in the home where the wedding took place.

Starting off with the strains of Lohengrin's "Bridal Chorus," the eeremony began, and during the entire wedding music was being played very softly. At the close of the program, the usual announceriage eeremony at a distant point, music ment of the station was given, with conwas Radioeast from the station and re- gratulations to the groom and bride.

FLEWELLING GETS POLDHU ON ONE TUBE

Famous Inventor's Super-Regenerator Brings in Short Wave "Beam" Plant

2YT Works on 94 Meters

CHICAGO.—Shattering all records for what has been considered good reception, E. T. Flewelling, internationally famous Radio engineer, has recently been successful here in hearing Radiocast 2YT, Poldhu, England, using but one tube and a loop aerial in the super-regenerative circuit invented by Mr. Flewelling and bearing his name.

Bridging a distance of approximately 3500 miles on the single tube super-loop aerial set is not the only surprise however, but in addition there is the information that 2YT was using Marconi's new "direct ray" transmission system, and that on 94 meters.

The single tube super, however, had no difficulty in bringing Poldhu on the head receivers. The English station was sending test calls and some music, evidently phonograph, at the time heard

Intimates New Invention

Mr. Flewelling, who was brought into the public eye two years ago when he invented the simple super-regenerative receiver, had but few comments to make on the achievement.

'It is but a demonstration of what can be done in Radio," he said. "Very soon, by next winter perhaps, you will find such reception common on better made sets. The short wave and directed transmission are part of the seeret. Sensitive sets, well designed, are another factor. The Flewelling super can accomplish the result, as you have just seen.'

Asked if there was credence to the rumor that he had something new in store for Radio, the young inventor was elusive. "I have been making some very interesting experiments. What they are and when they will be finished I eannot say just now. You will have to wait. I am

HAWAIIANS TUNE IN TO LEARN UKELELE

not ready to speak further.'

ITTSBURGH. - Radiophans who have been listening to Station WCAE recently, have been given a treat in music. Every Monday night, C. Martin McGee, recognized authority on the ukelele, has been giving lessons to the Radiophans. From the enormous amount of mail which has been received by the station, eampers and vacationists are taking to ukeleles like ducks to water. Honolulu has not reported yet, however.

www.americanradiohistory.com

ONLY ONE DRILL

OFFICIAL BALLOT No. 10

Announcers' Contest

RADIO DIGEST FIRST ANNUAL GOLD CUP AWARD

Gold Cup Award Editor, Radio Digest, 510 North Dearborn St., Chicago, Ill.

Please	credit	this	hallot	25	one	vote	for:
riease	credit	11112	Danot	43	One	AOTC	101.

of	Station
(Announcer's name)	(Call letters)
Signed	

If you desire, tell below in five or less words what you most like about the announcer for whom you have cast this ballot:

City.....State.....

HAY FAMILY LEADS IN GOLD CUP AWARD Henry Field A. F. Edes

GEORGE, WLS, WITH BILL, KFKX, LEADERS NOW

"Hired Hand" and J. M. Witten Third and Fourth at Halfway Point in Voting

balloting in the Radio Digest First Annual Gold Cup Award! At the halfway point a bonus of seventy-five, or a total of 30 of this year as compared with 203 in (for the tabulation of votes given here- ninety-one votes. their ballots in consecutive series to get prises, maybe a stampede. Who knows? stations as compared with one last year. bonus counts.

And it is on account of that saving that the dope may be overturned from issue to issue from now on! While "The Solemn Old Judge" now has a lead of over eight hundred votes on his nearest competitor for honors as world's best, next week's returns will show-ah, but we will have to wait till next week to find out just what it will show.

Watch out for the dark horses! There is at least seventy-five of them not listed

Hay Family Likes Gold Cups Bill Hay, KFKX, Hastings, second in the number of votes, is pushing his namesake hard for first place. It isn't because of mistake in name either, for every ballot is labeled KFKX. Evidently popularity runs in the Hay family.

The famous "Hired Hand" (we aren't allowed to tell his name) of WBAP, Fort Worth, is in third place. Members of the Truth Society-to the rescue! Let's don't get into a Democratic convention deadlock on this question.

J. M. Witten, WOS, Jef-fer-son Ci-ty, holds down fourth position without a murmur. JMK is good at that. Look at the way he holds down the Missouri State Prison band.

How Other Nominees Stand

How the other nominees stand can best be gleaned from the following tabulation, which includes only those having to their credit fifty votes or more:

1467

701

655

566

498

496

410

407

378

364

332

255

221

205

111

99

97

88

85

69

€8

67

66

60

59

Station Name George Hay WLSKFKX Bill Hay Hired Hand WBAP J. M. Witten wos WGN Jack Nelson WLW Fred Smith John Daggett KHJKGW Richard Haller WGY Kolin Hager woaw · Gene Rouse Leo Fitzpatrick WDAF H. W. Arlin KDKA WGNSen Kaney Lambkin Kay WSB WOC S. W. Barnett J. T. Schilling WHB Paul Johnson WLAG Major J. J. Fanning WNAC H. E. Ehrhart WDAR WJAX Elmer Johnson A. R. Herske WTAM WJAR John Reilly WCAE Joseph Sartory WWJ E. W. Tyson Harold Selyer WHAS F. W. Johnson CHYC Charles Erbstein WTAS WGI C. R. Emery KUO C. A. Gaal Miss V. A. L. Jones KSB WLAG Eleanor Poehler WHNN. T. Granlund WJAR John Reilly Major Andrew White WJZWEAF Graham McNamee WJZMilton Cross Jennings Pierce KGOKSD William Ludgate Howard Milholland KGO J. Louis Reid

wwj William F. Holliday Morgan Eastman KYW F. A. Buhlert **KFJC** P. A. Greene WSAI KFNF WBZ Walter Wilson KYW Save Votes for Bonus Count!

With this issue is given the tenth ballot (top of page two). There will be but six more. Listeners sending in a complete series of eight ballots for their choice will be given a twenty-five vote bonus, or George Hay, WLS, Chicago, leads the and voted at one time for one announcer,

with was made immediately following the Gold Cup Award editor will have stations this year as compared with 42 publication of the eighth ballot), voting is a large increase in votes to report next last year; 101 class C stations as comstill slow on account of listeners saving issue. Early returns indicate many sur- pared with 327 last year; and two class D

WQJ, UNKNOWING, AIRS REHEARSALS

Ballet Master and Orchestra Leader Didn't Know Microphone Was on

CHICAGO.—One of the most extemporaneous programs ever put on the air, came recently from Radiocast WQJ,, Calumet-Rainbo Gardens station here. During an afternoon program talent was exhausted, so the ever alert announcer, Jerry Sullivan, cut in the orchestra microphone in the ballroom where the Rainbo Gardens show was rehearsing.

Listeners were astonished and well pleased by the impromptu performance, sounding something like this:

"All together now, kick higher! Say, what's the matter with you girls, can't you kick a little higher?"

A few moments later, the orchestra was heard, and after playing a few bars,

stopped. "Ooooooh, what a sour note! Who did that? Try it over again, and see if you can keep time."

Again the orchestra started off, this time it finished playing one of the popular airs, and was rewarded by a word of approval from Ralph Williams, orchestra

While smilingly looking over the orchestra, he glanced up. With a look of consternation at seeing the red Radiocast warning light he cried, "Keep quiet everyone. The microphone is on."

Larger Stations Gain as Smaller Lose in Number

WASHINGTON, D. C .- A compilation of various classes of Radiocast stations just made by officials of the Radio section of a total of thirty-three votes. BUT if the the department of commerce, shows that complete series of sixteen ballots is saved there has been a loss in the smaller stations and a gain in the better class.

the same month of last year; 54 class B

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CONTENTS

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"All the Live News of Radio"1 to	6
Before They Thought of "Mikes," an announcer puzzle	5
Operating and Trouble Shooting for Owners of a Nightingale 4-Tube Set	7
An Evening at Home with the Listener In, a chart to show when to listen in for your favorite station	8
Advance Programs for the Week at the Larger Stations9	-12
Thirty-Minute A-B-C Lessons for Beginners, Chapter XVIII, Part II—Hero Circuits of Radio, by P. E. Edelman	13
England's New Unidyne Radio Receiver, Part III—Radio Prequency Hook-up	15
Flewelling Super Portable Set, Long Distance One-Tube Circuit	17
Questions and Answers	18
Directory of Radiophone Stations, Part IV	19
Radio Illustrated, a page of pictures	20
	<u> </u>

Looking Ahead

What Is Doing in Complicated Circuits? If you're interested, Paul Edelman's next article should appeal to you, for that is his very subject. In it he will study the various methods of stabilizing Radio frequency and some of the peculiarities of reflex circuits. Do you know how to stabilize a Radio frequency set to stop self-oscillation? Read Mr. Edelman's next "Thirty-Minute A-B-C" chapter.

1001 From Halifax, Nova Scotia, to Hastings, Nebraska, on One Tube is the performance record of the set to be described next week by M. J. Rondeau, who seemingly has designed an excellent split variometer circuit. Readers desiring distance with a minimum expenditure for parts will no doubt be interested in the details of Mr. Rondeau's amazing outfit.

E. T. Flewelling Comes to the Fore Again—this time hearing Poldhu, England, in Chicago, using but a single tube loop aerial set, connected, of course, in his marvel super-regenerative hook-up. We promised Mr. Flewelling had something new for you. He has-the Poldhu reception wasn't it-but wait awhile. He'll tell you through Radio Digest exclusively!

Watch the Gold Cup Race Standings Next Week. Will George Hay still lead? Who will hold second, and third positions? The voting is really but starting. The heavy count will register at the close when readers turn in solid blocks of sixteen consecutive ballots (entitling a bonus of seventy-five votes) for their favorites.

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SPELL-BINDERS NOW HAVE ADDED WORRY

RADIOCAST TO INFLUENCE POLITICS FOR BETTER

Radiophan Vote, Too Heavy to Neglect,
Presents Difficult Problem for
Wobbly Politicians

By Carl H. Butman

NEW YORK .- The Radiophans of the country, and practically everyone else are unanimous in the belief that Radio will sooner or later change the methods of selecting presidential candidates. Some assert that it is bound to effect the final vote in November.

Radio, with its pitiless publicity, carries every word uttered at conventions. to members of both political faiths. It shows reactions, reveals the "inside stuff," and exposes faked enthusiasm, "hokum," "bunk," and "apple sauce." Radio takes all fans to the conventions. It has practically killed the old methods of "infighting," and will certainly tend to switch the battle to a more open style of play, as the sport writers say. It may urge the direct primary system of voting for candi-

Hard on Spell-Binders

During the recent political conflicts, not only the regular fans but candidates, political headquarters, community centers. statesmen, governmental officials and editors; even the tired business men, shop girls and tin can tourists listened in on the proceedings. No longer can the lieutenants of a factional cause "put anything over" on the general public, which now has its ear tuned to the air through the aid of Radio.

Spell-binders of the past cannot longer pattern their speeches to a single class of listeners-all classes listen in at the same time. A speaker can neither talk "down" nor "up" to his audience, since the morons and the intellectuals are both on the air. The Radio audience today, especially when a national question is being thrashed out, is cosmopolitan, with a capital C.

No Ether "Editing"

Every speaker will have to be careful for his copy is no longer subject to cerrection and editing; it goes out in the heat of his oratory to the country at large. Even if he is a member of Congress, he cannot claim the privilege of editing his speech as he does for the Congressional Record. The newspapers also get it direct. without the coloring of special political writers or imaginative reporters, sometimes influenced or swayed from the duty of telling the public the story in its bare

and ungarnished truthfulness.

The Radio public, at least, has learned considerable about politics during the past month than it ever knew before. It will not forget soon. The vote of some 25,000.-000 fans must also be considered by campaign managers; another problem for them to handle. Only one solution is available: "Simon Pure" honesty, plain direct statements of facts and sincere promises, for they are talking directly to possible constituents of Radio land who

will not tolerate much.

"Do I Scream Well?" Now Question on Paris Minds

PARIS.—France has just had a new kind of contest that promises to replace the familiar questions in the minds of so many movie-struck people: "Do I screen well?" or "Can I go into the movies?" For the new Radio contest the questions might be: "Do I scream well?" or "Can I go into Radio?"

A long list of contestants willing to make the trial came to a Paris Radiocast studio one night, and tried the audibility and quality of their voices before the microphone. The judges were to pick the ones who could become regular Radio performers, from those whose voices were unsuited for such work. Among the contestants were several well-known by" over the Radio.

BRITISH HAVE NEW 25 KW. RADIOCAST

ONDON.-The British Broadcasting company with headquarters in this city, recently put in service their new station, 5XX, which will work on 1600 meters with a power of 25 kilowatts. This station should be easily audible in the United States during the coming winter. Plans are being made for another large station, which will be erected in the near future.

WSB KAY AS WNAC **GUEST ANNOUNCER**

ROSTON.—Station WNAC, Shepard Stores here recently had as guest announcer, Lambdin Kay, announcer at the Atlantic Journal Radiocast, WSB. Mr. Kay was in the city helping to celebrate the Elk's National convention and announced the concert program of Station WSB from WNAC. Station WNAC has purchased a new 500-watt transmitter which will be placed in operation by September.

RIGHT OFF THE CHEST OF NELLIE



Nellie Revell, considered the world's greatest woman press agent, as she recently Radiocast from WIP's control studio on the steel pier at Atlantic City. Miss Revell, who succeeded in a four-year fight against an ordinarily fatal spinal disease, while in a plaster cast and unable to move, wrote her famous "Right Off the Chest," telling of her hospital experiences and giving inspiration to the afflicted. Foto Topics Photo

Backs Manufacturers' Body

CHICAGO.—The Radio Manufacturers' association was permanently organized recently at a meeting here attended by cerns representing more than one hun-treasurer.

dred million dollars. Manufacturers as far away as New York were represented in the organization which is to cover the entire United States and Canada.

Major Herbert H. Frost was unanimously elected president, Frank Reichman, singers and speakers, not all of whom "got representatives of more than forty con- vice-president, and A. J. Carter, secretary-

ITALY LIKES SECRET RADIOCAST SYSTEM

HAMMOND MAKES HIT US-ING MIESSNER IDEA

Success Greets Italian Trials-Device Dedicated to Public in 1915 in United States

ROME.—The visit of John Hays Hammond, Jr., to Italy and France has created a keen interest in his plans for improved methods of Radiocasting. Very interesting results have been demonstrated in both countries. In Rome, Mr. Hammond worked with the military authorities, making many transmissions on various wave lengths with his system of secret, noninterfering waves.

Among other trials, he transmitted steadily for periods of several hours between two stations a considerable distance apart, while at the same time six Italian military stations tried to interfere. For a part of the tests the interfering stations were even informed of the wave lengths being used by the Hammond stations. According to Mr. Hammond, the transmissions were not interrupted in the least.

Patent on Non-Patentable Device? The principle of the Hammond system is that of multiple modulation. Revised originally for a Radio control system of boats, torpedoes, and the like, it has proved to have important possibilities for Radiocasting.

Although this invention is claimed by John Hays Hammond, Jr., it was in reality invented by Benjamin F. Miessner who worked for Mr. Hammond in 1915. At this time, Mr. Miessner dedicated the invention to the public, and as far as the American rights are concerned, the device is unpatentable; although so-called patents have been issued to Hammond, who recently sold them to the Radio Corporation of America.

JOHN REINARTZ GIVES **NAVY FRUITS OF WORK**

Famous Amateur Is Awarded Second District Radio Cup

NEW YORK.—In a short acceptance speech after receiving the Radio Cup, an annual award of the executive Radio council, second district, given to the Radio amateur whose experimental work during the year most befits him for the honor, John L. Reinartz, recognized Radio engineer and amateur experimenter announced at a monster convention of Radio amateurs from the metropolitan area that he had turned over to the Navy department his entire developments on a Radio transmitter functioning on ten meters.

He further declared that his system could be adapted in less than ten minutes to any amateur station operating today. Previously, Radio communication on 100 meters was considered epoch-making. At this high frequency, special insulation is necessary, as bakelite bursts.

Mobilizing Relief Force; Use Radio Communication

CLEVELAND.-When all other means of communication failed, as a result of the devastating storm that swept northern Ohio recently, Radio filled the breach.

An amateur in Lorain, Ohio, kept in constant touch with another amateur in Cleveland, and as a result, Station WTAM, was enabled to expedite the mobilization of relief forces. Besides organizing relief, various army units were notified to mobilize and speed to the stricken zone.

Harry Geise at WQJ

CHICAGO.-Harry Geise, pianist and composer, has been added to the staff of Station WQJ here. Mr. Geise was at one time pianist for Wendell Hall, and collaborated with him in writing some popu-

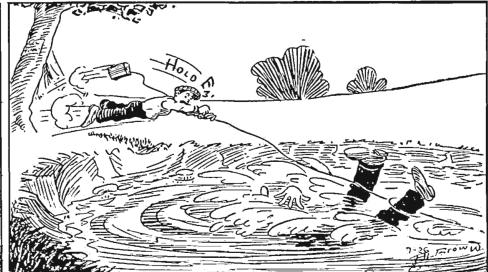
THE ANTENNA BROTHERS

Spir L. and Lew P.

Part III—Another Fish Story







HOME-TOWN ARTIST GETS OPPORTUNITY

DISTANCE LOSES ENCHANT-MENT GRADUALLY

Radiophans Learn Real Joys of Reception—Interest in Local Talent May Improve Quality

NEW YORK.—Distance is beginning to lose its enchantment for the Radio enthusiast. The great American listening public has come to accept Radio as an indispensible service in the home rather than an experimental novelty which depends for its interest on long-distance "stunts." The question no longer is "How far can I reach?" but "What program shall I hear?"

Many a Radiophan this summer has discovered for the first time that in his efforts to sweep distant fields he had been missing the real joys of Radio reception. The enthusiast now realizes that in many cases the best entertainment, the most interesting news features, were being Radiocast from a nearby station, within casy reach, while he, with his ears fixed for "distance," had been deaf to the true appeal that Radio made.

Root for Home-Town Talent

Radiophans in many parts of the United States are becoming fervent "rooters" for their home-town talent, and many interesting factors are likely to develop from this movement.

For one thing, the encouragement thus lent to local talent should result in a great improvement of program material. For another thing, the general practice of choosing a program upon merit rather than upon distance would solve some of the serious problems of interference now experienced in the air.

As the attention of Radiophans was concentrated on the programs of local stations, there would arise a community interest in singers and musicians—native sons and daughters, as it were.

Local Artists Get Chance

The development of this spirit would mean a great deal for the industry as a whole. In turn local artists would be given the opportunity to win public recognition for their talents, and this might lead to their success in broader fields, just as the reputations of established artists have been enhanced by their appearance before the enormous audiences offered by Radio.

As an example of what community spirit can do for an artist the example of a Seattle composer of music may be given. This composer attracted so much favorable attention through his appearances at the local station that he was able to start on a tour of the larger stations with a good prospect of having his works published. Before he left, he was presented with a watch, a testimonial from the Radio public subscribed to on its own initiative.

New Sound-proof Studio to be Built by Station WHA

MADISON, WIS.—A sound-proof Radiocasting studio, literally a "padded cell," to reduce reverberations, will be installed in Station WHA, this summer. Much new equipment, including new microphone and amplifier, will be added.

To make the new studio sound-proof, so that there will be no reverberations of sounds, the walls and ceiling will be covered with Balsam wool, a new deadening material. Heavy velour curtains at the windows, and a thick rug on the floor.

Besides the new studio, WHA will install two new motor generators, one a two-kilowatt machine, to supply the plate circuit of the tubes to increase radiation from the station, the other to heat the filaments of the transmitting tubes. As this generator will be direct current instead of alternating, it will reduce the "humming" noise.

Einstein Ridicules Death Ray

BERLIN.—Dr. Albert Einstein, according to a statement he released here recently, cannot see the relativity theory in the so-called "death ray." He says frankly that it is all a bluff. He maintains that there are only two electromagnetic waves which could come into the question, and that these two could react only through a metallic layer.

German Radio Increases

BERLIN.—Radio continues to grow steadily in Germany where, before the latest government edict, all amateurs were obliged to make use of material furnished by the state and none other. Now amateurs may use any material they wish on payment of a yearly tax of twenty-four marks.

Southwest Organizes

DALLAS, TEX.—Organization of the Southwest Radio Jobbers association here was completed at a meeting held recently at the Adolphus hotel. A. I. Folsom is retary-treasurer.

TELL ARTIST EDITOR OF YOUR FAVORITES

o YOU have a favorite Radiocast artist whose picture has not appeared in Radio Digest? If so tell the Artist Photo editor about it. Write him a little note mentioning the artist's name and station and he will attempt to give you what you want. The photographs, however, will be restricted to those artists for whom there are a number of requests. Space limitations demand the latter provision. Just write your note to the Artist Photo editor, care of Radio Digest, Chicago.

WIAY, Born Twice, Has Final Funeral

Washington Radiocast, Pioneer, Closes Down Permanently

WASHINGTON, D. C.—WIAY of Woodword and Lothrop, which has had two births since the advent of Radiocasting, has been closed permanently, as announced by C. O. Fischer, manager of the station. No reason was given for the "shut-down" of WIAY, whose voice has been familiar to Washington Radiophans several years.

In August, 1922, when Radiocasting was passing through its pioneer period, WIAY was first born. It entertained the national capitol's initial crop of Radio enthusiasts afternoon and evening until June, 1923, when it "signed off" following the opening of Washington's two high power stations, WRC and WCAP.

Unostentatiously, WIAY, after an absence of almost a year, was resurrected last March, and has been Radiocasting morning and afternoon programs since. During this period it did not interfere with the programs of WRC and WCAP.

Kiddies Miss Uncle Bob

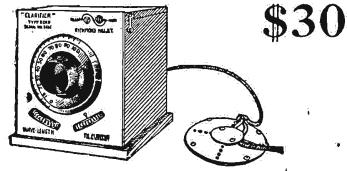
CHICAGO.—Uncle Bob, KYW bedtime story-teller par excellent, was missing from the air recently and hundreds of kiddies wrote asking what the trouble was. He had been in New York, making records for the Victor company. Eastern children were given a treat when he went before the mike at Station WDAR and told one of his famous stories. His place was taken during his absence by Harry Davis, Uncle Bob's right hand man.





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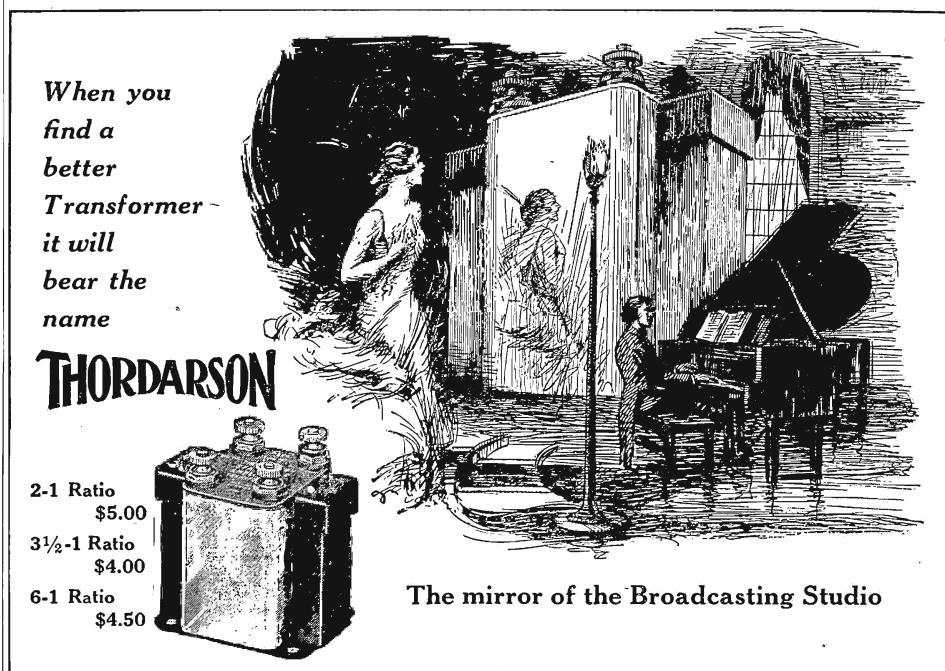
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CHICAGO, ILL.

To the left is Mable Ewer, one of the few women

announcers of this country. Besides announcing from Station WFI, she takes care of her eight children. Below is shown a noted announcer at WS—, a sta-tion in the mid-west.

women

BEFORE THEY THOUGHT OF "MIKES"

The husky looking youth on the left is announcer at W——, one of the large stations in the East. Be-

low is shown Steve Trumbull, the "Mark Twain" of Radiocast KYW.

Former tramp reporter and now playwright, he makes an ideal announcer. Very versatile and sh-h-h girls, he's single and not hard to look at.



Steve Trumbull, KYW

O YOU remember the young man whose picture was in last week?
Big smile on his face n' everything.
Well, that was "Steve Trumbull," the sunshine kid himself. He has had such a varied career, that it would make Jack

London roll over in his grave.

Born June 4, 1898, down among the bayou's of ol' Louisiana, Steve spent his childhood like any other rambunctious kid, and, after leaving school, beat his way to New Orleans where he signed on

board a sailing ship bound for China.

After safling for a few years, he found that he had a soul, and decided that he would take up newspaper work. He became a reporter and travelled from job to job, from Alaska to the Cape Verde **isl**ands.

Upon being asked a number of ques-tions, he gave the following answers: Height: 5 feet 11 inches; eyes: brown, unless he has had an argument and come off second best; hair: brown, that is, what is left of it; condition of servitude: single, but one never knows; habits: plenty of 'em, all but cocaine and hasheesh; hobby: the sand dunes of Indiana (not being the proud possessor of a bungalow, he sleeps in the sand); ambition: to throw the Shubert brothers, A. H. Woods and other producers out of business (he writes plays himself); aversion: blue noses, Mr. Sumner and the Comstock's; gifts from fans: tobacco, candy, ties, pipes, pictures and once in a while, although very seldom, insulting letters; creed as announcer: avoid orations, don't be formal, smile, when possible, and try to put yourself in the other fellow's place.

Since becoming civilized, Steve has been connected with the Little Theater movement. He is the author of two plays, which have been produced, and at the present time is at work on another.

Radio Standards Meet

NEW YORK.—The sectional committee on Radio of the American Engineering Standards committee held its first meeting here recently. Sub-committees were organized to proceed with actual stand- ley Radiocast WLW, was declared winner ardization.



Mabel Swint Ewer, WFi ABEL SWINT EWER, announcer at WFI, Strawbridge and Clothier, Philadelphia, whose picture was shown last week all bedecked in a velvet and fur-trimmed bonnet, is one of the most popular women announcers in the East. One reason for this is that she has lived in the East all her life, and was

born way down east in Massachusetts.
She comes from a musical family. Virtually all of her relatives, her father, mother, sisters and brothers, have earned some distinction in the musical world. Is it any wonder, therefore, that Mrs. Ewer -yes, she's married, and there's much

Moscow Fan Uses Crystal as Oscillating Generator

MOSCOW.-A Russian engineer, M. Lossev, has successfully shown that a crystal detector may be used also as an oscillating generator. A zincite crystal is used in contact with a carbon filament. The source of current is a twenty-volt battery. The detector is arranged in parallel with an inductance, regulation of the flow of current being accomplished by resistances in the battery circuit.

It is possible, according to Mr. Lossey, to obtain oscillations of any frequency from audible notes up to 10,000,000 cycles per second. Tuning is done by varying the inductance and resistance of the circuits, no condensers being employed.

Wins Popularity Contest

CINCINNATI.—In a popularity contest conducted by a newspaper here for the best studio director, Fred Smith, of Crosand received a handsome wrist watch.

being one of the best trumpeters in the country?

The "more than that" about the marriage question is that Mrs. Ewer, when not doing her duty at WRI, is looking would say, is an accomplished musician.

more than that—has the reputation of Mrs. Ewer's voice is not only familiar as an announcer, but also through the introductory remarks made by her before the orchestra Radiocasts. She was born, near Boston, but when we know not, and it isn't because Mrs. Ewer won't say when after the welfare of eight children. And she was born, but because—well you know each and every one, as an announcer how men feel about asking women such personal questions. As the lines of She is also president of the Woman's Symphony orchestra of Philadelphia, which has been heard often from WFI.



Bristol Single Control Radio Receiver

Complicated combinations are eliminated when tuningo in with Bristol Single Control Radio Receiver—every station is on the one dial. It gives the joys of radio with technicalities left out.

The well-known Grimes Inverse Duplex System (non reradiating) is utilized in this Receiving Set. Because of the reflex, only four tubes are required to give power equivalent to six. The price, without accessories, \$190.00.

Audiophone Loud Speaker

and Baby \$12.50.

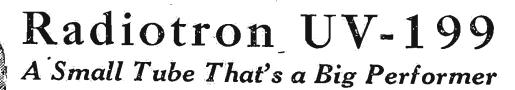
tion of the original.

You forget the radio equipment when listening thru the Audiophone Loud Speaker. The tone is full, clear and pleasing. It gives a true reproduc-Made in three models—Senior \$30.00, Junior \$22.50,

Ask for Bulletins Nos. 3014 and Ay-3015

Made and Sold by

THE BRISTOL COMPANY Waterbury, Connecticut





for detection

\$5.00

This symbol of

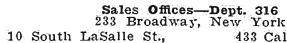
quality is your

prolection.

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

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

Radio Corporation of America



433 California St., Chicago, Ill. San Francisco, Cal.

NOMINATION CERTIFICATE

Announcers' Contest

Radio Digest First Annual GOLD CUP AWARD GOLD CUP AWARD Editor, Radio Digest, 510 N. Dearborn St., Chicago, Ill. Dear Sir: l nominate Signed

Town State.....

TRANSMIT CHEAPER **USING SHORT WAVE**

NEW SYSTEM TO INCREASE SPEED OF MESSAGES

Marconi Talks to Large Audience in England About New Experiments with Beam Transmission

LONDON.—Speaking before the Royal Society of Arts here recently, Senatore private yacht, while at sea.

Senatore Marconi told of his recent experiments on his yacht Elecktra-which is Radio communication. one of the wonders of the world and equipped with probably the finest Radio station in existence—transmitting signals by the new beam or short wave system, through vast distances in record time with hours over distances of at least 23,000 a fraction of the power required for the miles by using only one kilowatt of enpresent long distance Radiocast installa-

Signals have been exchanged by the new method between Cornwall, England, and Argentina, with such regularity and extraordinary speed that he is certain it will permit service between Europe and ordinary transmission. the United States to be conducted at any speed, and with low power expenditure. He is confident that with the new system! more than double the traffic in six hours bulk.

that they are able to handle now in twenty hours with the super Radio stations.

Will Speed Up Service

By means of the new system, economical low power stations can be established which will maintain a direct high speed service with the most distant parts of the globe during a considerable number of fixed hours of the day, he said.

The system also will bring about comparative secrecy, unobtainable with any other system of Radio communication, and is so economical it will make possible a general reduction of the telegraphic rates.

Beam Waves Directional

"It was only recently discovered," said Marconi, "that these short waves, which Guglielmo Marconi, gave the results of his alone can be, in practice, confined to beams experiments in beam system of transmis-sion which he conducted on board his not obtainable by the use of the lower frequency or long wave system, which up to now has held the field for long distance

His tests on the yacht Elecktra convinced Senatore Marconi that it would be possible to carry out reliable commercial services for a large portion of every twenty-four

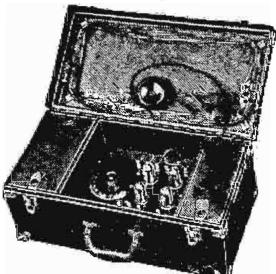
To his surprise Senatore Marconi said he had found signals from Cornwall, England, were received strongly and clearly in Sydney, Australia, and they were better than those received from the high power station at Carnarvon, England, used for

During May, American Radio manufac-He is confident that with the new system turers exported \$299,903 worth of apwireless stations will be able to handle paratus to 45 countries. Canada took the

HANSEN BIRD CAGE LINE



4-TUBE PORTABLE RECEIVER \$92.50 COMPLETE



"Don't forget that this is not an ear phone-but a loud speaker portable."

WITHOUT ACCESSORIES

4-TUBE RADIO SET

Write for Literature

Dealers-A wonderfully attractive proposition JOBBERS-We want one responsible and active distributor in each state

National Distributor

NEW CIRCULARS OUT TODAY

DE LUXE AMBASSADOR

C.O.D.

SET CONSISTS OF DRILLED 7 x 10 Radion Mahoganite Panel, engraved in Gold.

1 Genuine Ambassa-dor Master 3-Circuit Litzendracht Tuning

Genuine Comsco Bakelite-End Condenser.

1 Triploid Mounting Socket. 2 Premier Hegehog

Audio Transformers 4 Brunswick Underslung Foundation Brackets.

2 Brunswick Jacks with Gold - Plated Fronts; 1 for phones; 1 for loud speaker. 1 Freshman Mica

Grid Condenser. Standard Glass-Enclosed Grid Leak.

2 30 - Ohm Shackton Bakelite Rheostats. 2 Moulded Mahogany Dials grained match panel.

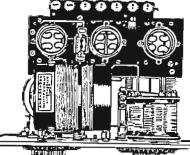
5 Lengths Professional Round Bus-Bar. Set of 7 Moulded Engraved Binding

Posts completely mounted.
Special Blue Print for this circuit. Not an ordinary hook-up, but in clear picture form child can understand and make. Assembled ready to wire, and packed in handsome box, complete.

Only \$27.95

C. O. D. Send no money.

Send for new handsome descriptive circular, FREE, showing official Now again you can buy this GREATEST of Genuine Licensed Hazeland private tests reports and private tests reports are private tests reports and private tests reports are private tests reports and private tests reports and private tests reports are private tests and private tests reports and private tests reports are private tests and private tests reports and private tests reports are private tests and private tests are private tests and pr ivate tests. reports, etc., proving how wonderfully the "De Luxe Ambassador" overcomes summer reception troubles.



ACCESSORIES Everything needed to operate after building is listed here-

3 Type 201-A Tested Tubes\$11.70 1 60-Ampere Hour

Storage Battery \$11.25 2 45-Volt Extra Large

Enco "B" Batteries \$6.50 1 pr. 3000-ohm Head

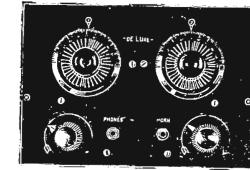
Phones and Cord \$3.75 1 Phone Plug, Double

..... \$.90 1 Antenna Equipment \$1.50

Complete outfit, \$35.60 (Parts Also Sold Separately)

SPLENDID CABINET

Order Building Kit and Accessory Outfit both together, and we will send Fine Mahog-Finish Cabinet



Fits Snugly Behind a 7x10 PANEL SHIPPED TO YOU AS A COMPLETE 3-TUBE **PORTABLE ASSEMBLY** ALL READY

TO WIRE

All Mounted

Like Picture

SPECIAL SUIT CASE CABINET

Space for set, "A" and "B" Batteries and Antenna. Covered with fine automobile leather Fabrikoid, re-inforced corners, handle, special conven-ient doors. A truly elegant, high-class affair that you will delight to own. Addi-

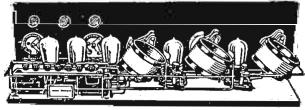
\$12.00 The RADIO-

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Broadcasting Regularly from Our Own Studios Through Station WHN Executive Offices, Dept. RD726

55 VESEY ST., NEW YORK CITY Every Article Sold on WRITTEN Money Back Guarantee

tine 5-tube Neutrodynes which we recently stopped advertising because the Special Parts necessary for perfect synchronization could not be secured fast enough to supply our orders. A new edition of FREE illustrated descriptive circulars is now ready. Send for your



THIS GENUINE STANDARD SET CONSISTS OF—

1 Drilled Mahoganite Panel, 1 Tubular Glass Grid Leak.
polished mahogany effect, 1 Set Engraved Binding
engraved in gold.
Posts.
Four - inch Mahogan - 1 .002 Micon Condenser.

ite Dials, gold engraved.

2 Gold Plated Jacks.

3 Genuine Hamilton Genuine Hazeltine Neutroformers mounted on the All packed in attractive box. famous Comseo - Bakelite End Condensers. Positive-ly the only Neutrodyne Kit including them. 2 Hazeltine Neutrodons. 5 Heavy Bakelite Sockets.

1 6-Ohm Rhoostat with gold plated knob to match panel.

1 30-ohm Rheostat with gold plated knob to match panel. 2 Genuine Killark Completely Shielded Audio Transform-

ers. 1 Baseboard. 20 Feet Tinned Bus-bar. 1 .00025 Freshman Grid Condenser. OPERATING OUTFIT

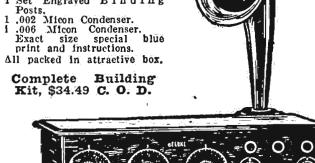
5 Tested Tubes (Type 201A)....\$19.50 2 45-Volt Extra Large Variable "B" Batteries for Neutrodyne 1 60-Ampere Hour Storage Bat-

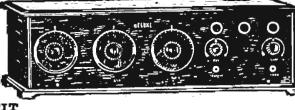
tery, guaranteed 2 years..... 11.25 pr. 3000-ohm Head Phones and Cord

1 Phone Plug, double......

1 Antenna Equipment......

Complete Outfit, \$43.40, C.O.D. (Parts Also Sold Separately) If you order Building Kit and Operating Outfit both together, we will include Fine Mahogany Pinish CABI-NET PREE.





Send No Money

We ship C. O. D. When shipment arrives pay your postman. Then enjoy your purchase under our WRITTEN MONEY-BACK GUARANTEE. Remember, you buy SAFELY from The Radio Shack, the Largest Radio Dealers in America—built upon Quality, Service, Value and the uni-versal Respect and Confidence of the radio public.

Factory Built GENUINE Genuine |FREED-EISEMANN Sets with 84 NEUTRODYNE KIT Serial Numbers LIST \$120 LIST \$24 LIST \$63.25

OPERATING AND TROUBLE SHOOTING

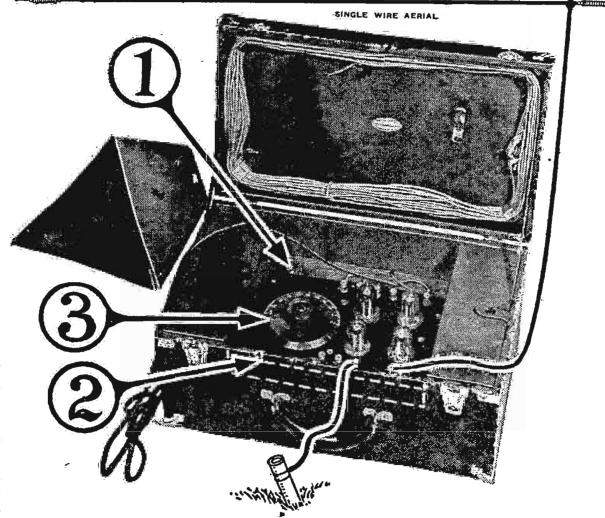
For the Owner of a Nightingale 4-Tube Portable Set

"PERATING an Trouble Shooting" is a Radio Digest feature whose purpose is to study the late models of various standard receiving sets and to show the newly initiated Radiocast listener, who has purchased such a set, how he can operate it to get the best there is in it and how he can overcome minor difficulties which may be causing some trouble. On page 7 this week the Nightingale 4-Tube Portable Set is described. Radiophans with other sets will also find these articles worth while reading, particularly the notes on trouble finding.

HIS portable outfit comes equipped with aerial wire, ground wire, tubes, batteries and loud speaker.

Aerial and ground wires are looped around four hooks in the cover of the case. The aerial wire which is about 100 feet long is equipped at one end with an insulator which can be conveniently fastened to the branches of some tree or if necessary the whole wire can be tossed up over projecting limbs. The terminal end connects to the antenna post of the set. A convenient ground connection is also looped around these hooks. This insulated wire has a terminal at one end to be connected to the ground post of the receiver, while the other end has a heavy clamp which can be attached to a metal rod or post driven into the ground.

The loud speaker is somewhat unusual in the sense that it consists of a unit enclosed in a small removable pocket snapping to the inside of the receiver. The horn is made up of a piece of leatherette covered surface folding compactly to a flat form which is hooked into a metal strip in the inside of the top cover. When unfolded, the ends snapped together by means of snap fasteners, a three corner horn is formed in the small end of which the unit fits into place. A metal seat



on to the strip in the top cover thus placed: providing a mounting for the unit over the set. This is not shown in place in the illustration so as to avoid obstructing the view of the controls of the set.

Four dry cell tubes are furnished the type along the .06 amperes filament current consumption but with standard bases are used. Therefore only three dry cells are necessary for current supply. These dry cells are contained in the left hand compartment of the set while four small 22½ volt B battery units are enclosed in the right hand compartment. The set is completely connected up ready for operaof the loud speaker, aerial and ground.

Phone Connections When connecting phone or loud speaker, and you wish to use:

4 tubes: Connect terminals to binding posts marked Ph and 2 AF.

3 tubes: Connect terminals to binding post marked Ph and 1 AF. 2 tubes: Connect terminals to binding

posts marked plus B DET. and DET. Operation

Place the set with the tubes away from

on the back of the unit can be hooked the knobs nearest you. When set is so

The farther right hand tube is the Radio

frequency amplifier. The nearer right hand tube is the de-

The nearer left hand tube is the first

stage of audio frequency amplification. The farther left hand tube is the second stage of audio frequency amplification.

Dial 3 controls the wave length received. Move the right-hand rheostat No. 2 lever up until the tubes become noisy, then lower slightly. The left-hand lever No. 1 controls the Radio frequency tube, up. Then place one tube in set and try and the right-hand lever No. 2 controls rheostat in order to be sure you haven't tion with the exception of the connection the detector and audio amplification misplaced B battery wires. This will tubes. Throw the rheostat lever No. 1 save your tubes.

up to the top, slowly rotate the tuner dial No. 3, then the wave will cause the Radio frequency tube to oscillate, emitting a whistling sound, lower this lever No. 1 until the whistle ceases and the music comes in, usually slight adjustments are necessary—both with the tuner dial and the hand levers, to perfect the

The operator should record the dial positions for the various stations, thereby, being enabled to turn at will to the station desired, provided the batteries or aerial have not been changed.

Too much battery (rheostat too high) on the Radio amplifier will cause this tube to spill (become paralyzed), and this is easily corrected by lowering the rheostat lever and then raising it again, but not so high as to cause this tube to repeat the "spill."

In selecting new hard tubes, try each one of the three in the Radio frequency socket, as this tube should be the most sensitive in the set.

Place tubes in sockets pressing down firmly and turning clockwise until locked into place. Turn on rheostat and all tubes must burn.

Connect the battery clamp that is wired to the instrument post marked plus B DET. to 18 volt stud or terminal of the

Various stations are tuned in by slowly turning the tuner dial No. 3. The plus B detector battery clamp must be shifted up or down on the B battery terminals until the best tones are received, 16 to 18 volts usually being best. It is also necessary to move the rheostat knob in order to secure the best volume and tone.

A little experimenting will soon indicate the best combination for local conditions. Do not burn tubes brighter than is necessary for good reception, they will last longer.

Poor operation is usually caused by some defect outside the set. Noises are usually due to defective or discharged batteries, a poor ground, or poor wire connections. Scrape all wires till bright where connections are made.

Caution: When connecting up set remove all tubes until set is connected

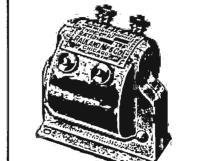
No. 24 of a Series Featuring Experiences of "ALL-AMERICAN" Users

"Have Experimented with every make—Found All-Americans Best" By C. O. Bynum, Temple, Okla.

"I have used and experimented with every make of audio frequency transformers on the mar-

ket-but found the 'All-American' best for every purpose. "L have a tuner, detector and a two-stage amplifier of my own make and design. On my first step I use an All-American ratio 10-1 and on the second step a 5-1 All-American—and I want you to know that I

have some amplification, believe me. 'Can tune in on stations in Chicago and dozens of others, plugging my phones in on the second



All-American Audio Frequency Transformers. Come in three ratios: 3:1, \$4.50; 5:1, 10:1, \$4.75. The best—no necessity to pay more.

"I can plainly understand all announcements seventy feet away from the phones. I don't use a

loud speaker -- just hang my phones on the wall and the programs can be heard all over the house—and above all, perfect.

'All-American Transformers saved the day for me. You make the best on the

SPECIAL OFFER Just out! New All-American "Radio Key Book." 48 pages of valuable hook-ups and up-to-the-minute Radio information. "Worth a dollar!" Send 10c in coin or stamps to Rauland Mfg. Co., 2640 Coyne St., Chi-

All the better dealers sell the "ALL-AMERICAN" RAULAND MFG. CO., 2640 Coyne St., CHICAGO PIONEERS IN THE INDUSTRY

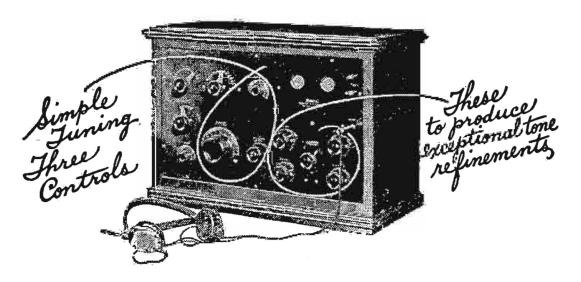
Audio and Radio Frequency; Power Amplifying (input and output)



Over three-quarter million in use. Standard on the better sets

AMPLIFYING TRANSFORMERS

Largest Selling Transformers in the World



I T HAS been the tradition of the Federal Company, over its 25 years in manufacturing Electrical Communication Equipment, that it must give its users the highest refinements of the art.

Federal tradition will not permit the manufacture of a radio set just for radio noises. Each and every manufacturing necessity to produce a harmonious set is known to Federal Engineers, and no Federal set is produced without them.

Federal radio sets are built with two thoughts in mindfirst: simplicity of operation, but three controls being necessary—second: special controls for refinement if the user is interested in reproducing all the beauty of tones that fill the air.

"Lovers of good music" know why Federal is better, and know the real value of the refinement placed at their command to make it easy to obtain the clearest tone reception.

FEDERAL TELEPHONE & TELEGRAPH CO. Buffalo, N. Y.



Boston New York **P**hiladelphia Chicago Pittsburgh San Francisco

Look for this sign

Bridgeburg Canada London England



AN EVENING AT HOME WITH THE LISTENER IN

(SEE INSTRUCTIONS FOR USE BELOW)

(1		***************************************						
Station and City	Met.	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
	-			519	0.1	0.1		
CFCN, Calgary, Alta	440	Silent	12:30- 1:30 Silent	Si!ent 6:30- 7:30	Silent Silent	Silent Silent	11:00- 1:00 Silent	Silent 5:00- 6:00
CHYC, Montreal, Que CKAC, Montreal, Que	341 425	Silent Silent	5:30- 9:30	Silent	6:30- 9:30		5:30- 9:30	
CKCD, Vancouver, B. C	410	10:30-11:30		10:30-11:30			10:30-11:30	
CKCH, Ottawa, Que	435	Silent	Silent	5: 30- 6:00	Silent	Silent	5:30-6:30	
CKY, Winnipeg, Man	450	Silent	8:15-10:00 8:30- 9:00	Silent Silent	8:15-10:00 9:00-11:00		Silent 8:30- 9:00	7:00-8:00 Silent
CYB, Mexico City, Mex CYL, Mexico City, Mex	370 510	Silent Silent	10:00-11:30		Silent	10:00-11:30		Silent
CYX, Mexico City, Mex	330	9:00-12:00	Silent	Silent	Silent	8:00- 9:30	Silent	Silent
KDKA, E. Pittsburgh, Pa	326	5:30- 8:00		5:03-8:00				
KFAF, Denver, Colo KFGZ, Berrien Springs, Meh	360 286	9:00-10:00 7:45- 9:00		Silent 8:00- 9:00	8:30- 9:00 Silent	9:00-10:00 9:00-10:00		Silent 7:45- 9:00
KFI, Los Angeles, Calif	469	12:00- 1:00			8:45- 1:00	8:45- 2:00	8:45- 2:00	8:45- 1:00
KFNF, Shenandoah, la	266	Silent	7:30- 9:00		7:30- 9:00			
KFOA, Seattle, Wash KGO, Oakland, Calif	455 312	10:30-11:30	Silent 10:00 -3:00	10:30:11:30 Silent	Silent	10:30-11:30	Silent 10:00- 3:00	Silent Silent
KGU, Honolulu, Hawaii	360	12:00- 1:30	12:00- 1:30	12:00- 1:30	12:00- 1:30	12:00- 1:30	12:00- 1:30	12:00- 1:30
KGW, Portland, Ore	492	10:00-11:30	9:45-10:30	10:00-12:00	10:00-12:00	10:00-12:30	12:00- 2:00	9:00-10:00
KHJ, Los Angeles, Calif KLX, Oakland, Calif	395 509	8:00- 1:30 10:00-12:00	8:00- 1:30 Silent	8:00- 1:30 10:00-12:00	8:00- 1:30 Silent	8:00- 1:30 10:00-12:00	8:00- 1:30 Silent	8:00- 1:30 Silent
KPO, San Francisco, Calif	423	10:00-12:00	10:00- 1:00	10:00-12:00		Silent		10:30-12:00
KQV, Pittsburgh, Pa	270	7:00-10:00	Silent	7:00-10:00	Silent	7:00-10:00	Silent	Silent
KSD, St. Louis, Mo	546 536	7:00-11:00	Silent 7:00- 9:30	8:00- 9:00 7:00- 2:00	Silent 7:00- 9:30	8:00- 9:00 7:00- 2:00		
KYW, Chicago, Ill NAA, Radio, Va	435	Silent 5:45- 7:20	6:05- 7:20		5:45- 7:40	7:00- 2:00	Silent	Silent
PWX. Havana, Cuba	400	Silent	Silent	7:30-10:00	Silent	Silent	7:30-10:00	Silent
WBAH, Min'p'l's., Minn	417 423	7:00-10:45	7:00- 7:30 7:00- 9:00	7:00- 7:30 Silent	7:00-10:45 Silent	7:00- 7:30 7:00- 8:00	7:00- 7:30 Silent	Silent Silent
WBAV, Columbus, O WBT, Charlotte, N.C	360	Silent Silent	7:30- 8:30	Silent	7:30- 8:30	Silent	Silent	5:30- 6:30
WBZ, Springfield, Mass	337	5:00- 8:00	5:00- 8:00	5:00-10:00	5:00- 6:40	5:00- 9:00	5:10- 8:00	4:30- 8:30
WCAE, Pittsburgh, Pa	462	6:30- 7:30	6:30- 7:30		6:30- 7:30	6:30- 7:30	6:30- 7:30 Silent	4:30- 5:30 Silent
WCAJ, Univ. Place, Neh WCAP, Washington, D. C	360 469	Silent 7:00- 8:00	7:00- 8:00 Silent	Silent 6:45- 8:45	7:30- 8:30 Silent	Silent 6:40- 7:00	Silent	6:20- 9:00
WCBD. Zion, 111	345	7:00- 9:15	Silent	Silent	7:00- 9:15	Silent	Silent	1:30- 5:00
WCX Detroit, Mich WDAF, Kansas City, Mo	517 411	7:30- 9:00	7:30-11:00 11:45- 1:00		7:30- 9:00 11:45- 1:00	7:30- 9:00	Silent 11:45- 1:00	6:15- 7:15 4:00- 5:00
WDAR, Philadelphia, Pa	395	5:30- 9:00		5:30- 9:00	5:30- 6:30		5:30- 6:30	
WEAF, New York, N. Y	492	6.00- 8:00	6:00- 8:00			6:00- 8:00		
WEBH, Chicago, Ill WEAY, Houston, Texas	370 360	6:30-11:30	6:30-11:30 10:00-12:00	6:30-11:30 10:00-12:00	6:30-11:30 10:00-12:00	6:30-21:30 8:00-12:00	6:30-11:30 8:00-12:00	
WFAA, Dallas, Tex	476	8:30- 9:30	8:30-12:00	Silent	8:30-12:00	8:30- 9:30	8:30-12:00	6:00-11:00
WFI, Philadelphia, Pa	395	Silent	5:00- 9:00 5:30- 8:00		5:00- 9:00 5:30- 8:00	Silent 5:30- 8:00	5:00- 9:00 5:30- 8:00	
WGI, Medford, Mass WGN, Chicago, Ill	360 360	Silent 7:30-10:30				7:30-10:30		
WGR, Buffalo, N. Y	319	5:30-11:00	5:30 - 6: 30	5:30-11:00	5:30- 6:30	5:30-11:00	5:30- 6:30	3:00- 4:00
WGY, Schenectady, N. Y WHA, Madison, Wis	380 360	6:45- 9:00	6:45- 9:00 Silent	Silent 7:30- S:30	6:45- 9:00 Silent	6:45-10:30 7:30- 8:30	8:30- 9:30 Silent	6:30: 7:30 Silent
WHAA, lowa City	484	7:30- 8:30 Silent	8:00- 9:30	Silent	Silent	Silent	7:30- 9:00	9:00- 9:30
WHAS, Louisville, Ky	400	Silent					7:30- 9:00	
WHAZ, Troy, N. Y WHB, Kansas City, Mo	3S0 411	8:00-10:00 7:00- 8:00	Silent 8:00-11:30	Silent 7:00- 8:00	Silent 8:00-11:30	Silent 7:00- 8:00	Silent Silent	Silent 8:00-10:00
WHN, New York, N. Y	360	5:30- 1:00			7:30-10:00	7:30-10:00	5:30-10:00	7:30-10:00
WHO, Des Moines, la	526	7:30-12:00	11:00-12:00	7:30-12:00	11:00-12:00		11:00-12:00	7:30- 9:00
WIP, Philadelphia, Pa WJAR, Providence, R. I	509 360	5:00- 6:30 Silent	5:00-11:00 6:00- 7:00	6:00-11:00	.5:00-10:00 Silent	5:00- 6:30 6:00- 9:00	5:00-11:00 Silent	8:30-11:00 Silent
WJAS, Pittsburgh, Pa	286	6:30- 9:00	6:30- 9:00		6:30- 9:00	6:30- 9:00	Silent	Silent
WJAX, Cleveland, O	390	Silent	7:00- 8:00	Silent	7:00- 9:30	Silent	12:00- 3:30 Silent	Silent 6:15- 6:45
WJY, New York, N. Y WJZ, New York, N. Y	405 455	Silent 5:00- 9:30	5:45- 7:00 5:00- 9:00	Silent 5:00- 9:30	5:30- 8:30 5:00- 9:30	5:30- 9:30 5:00- 9:30	5:00- 9:30	
WKAQ, San Juan, P. R	360	Silent	6:00- 8:00	Silent	Silent	Silent	Silent	Silent
WLAG, Min'p'l'sSt. Paul.	417	6:15- 7:00	6:15- 7:00			9:30-10:45	9:30-12:30 7:00-11:00	
WLS, Chicago, Ill	345 423	Silent 7:00- 9:00	5:30-12:00 9:00-12:00		5:30-12:00 9:00-11:00	5:30-10:00 Silent	Silent	6:30- 8:15
WMAQ, Chicago, Ill	448	Silent	5:00- 9:00	5:00- 9:00	5:00- 9:00	5:00- 9:00	5:00- 9:00	Silent
WMC, Memphis, Tenn	500 278	8:30- 9:30	8:30-12:00	Silent	8:30- 9:30 7:00- 9:00	8:30-12:00 5:00- 9:00	8:30- 9:30 8:00- 9:00	Silent 6:30- 8:30
WNAC, Boston, Mass WOAI, San Antonio, Texas.	278 385	5:00- 9:00 Silent	7:00- 9:00 9:30-10:30	5:00- 9:00 Silent	7:30- 8:30	Silent	Silent	9:30-10:30
WOAW, Omaha, Neb	526	6:00-11:00	6:00-11:00	Silent	6:00-11:00	6:00-11:00	6:00-11:00	9:00-11:00
WOC, Davenport, Ia WOO, Philadelphia, Pa	484 509	8:00-11:00 5:30- 9:00	Silent Silent	8:00- 9:00 5:30- 9:00	9:00-10:00 Silent	8:00- 9:00 5:30- 9:00	9:00-10:00 Silent	7:00-11:00 Silent
WOQ, Kansas City, Mo	360	Silent	8:00- 9:30	Silent	8:00- 9:30	Silent	8:00- 9:30	7:00- 7:45
WOR, Newark, N. J	405	4:15- 9:00	4:15- 5:30		4:15- 5:30	4:15- 5:30	5:15- 9:00 Silent	Silent 7:30- 8:30
WOS, Jefferson City, Mo WQJ, Chicago, Ill	441 448	8:00- 9:30 Silent	Silent 6:00- 1:00	8:00- 9:30 6:00- 1:00	Silent 6:00- 1:00	8:00- 9:30 6:00- 1:00	Silent 6:00- 1:00	7:00- 9:00
WRC, Washington, D. C	469	Silent	4:15-10:00	Silent	4:15-10:00	Silent	4:15-10:00	Silent
WSAI, Cincinnati, O	309	9:00-11:00	6:00- 9:00	Silent Silent	9:00-11:00 8:00-12:00	Silent 8:00-12:00	7:00- 9:00 8:00-12:00	2:00 -3:00 7:30- 2:00
WSB, Atlanata, Ga	429 360	8:00-12:00 Silent	8:00-12:00 Silent	Silent	Silent	Silent	Silent	8:00- 9:00
WTAM, Cleveland, O	390	5:00- 9:00	5:00- 6:30	5:00-10:00	5:00- 6:30	5:00- 6:30	5:00-11:00	Silent
WTAS, Elgin, 111	286 283	7:30-12:00 Silent	7:30-12:00 5:45- 8:45		7:30-12:00 5:45- 8:45	7:30-12:00 5:45- 8:45	7:30-12:00 5:45- 8:45	7:30-12:00 Silent
WWJ, Detroit, Mich	517	7:30- 8:30	7:30- 8:30		7:30-11:00	7:30- 8:30	6:00- 7:30	6:30- 7:30
Transmissions for Tax - A?	7 42 2 3			. Control	Standard 7	ima Tí	10217 cital 118	es Fastern

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

Australia and New Zealand Next, Is Amateur Ambition

HARTFORD, CONN. - Starting next month, amateur Radio operators in the United States will try to communicate with amateur operators in Australia and New Zealand. Two ten day periods, one in August and the other in September, laving been set aside.

This test is being arranged by the American Radio Relay League, in an at-

podes. Most of the transmitting will be in the vicinity of 100 meters wave length. Many American amateurs are being heard in Australia at the present time on the short waves.

Hot Springs to Take Air
HOT SPRINGS, ARK.—Millions of
people will hear about Hot Springs National Park, Arkansas for the first time this winter, when the new Radiocast located on the top of the Arlington Hotel, tempt to establish contact with the Anti-I goes on the air. It is a 500-watt station.

DE FOREST RADIO TEL. & TEL. CO., Dept. R. D. 11, JERSEY CITY, N. J.

STATIONS IN ORDER OF WAVE LENGTHS USED

Mete	rs Call	Meter	s Cali	Mete	rs Call	Mete	ers Call	Mete	rs Call	Mete	rs Call
265	KFNF	345	WCBD	370	WEBH	410	CKCD	441	wos	492	KGW
270	KQV	345	WLS	370	WGN	411	WDAF	448	WQJ	492	WEAF
278	WNAC	360	KFAF	380	WGY	411	WHB	448		500	WMC
283	WHK	360	KGU	380	WHAZ	417	WBAH	450	CKY	509	KLX
283	WTAY	360	WBT	385	WOAI	417	WLAG	455	KFOA	509	WIP
286	KFGZ	360	WCAJ	390	WJAX	423	KPO	462	WCAE	509	woo
286	$\mathbf{W}\mathbf{J}\mathbf{A}\mathbf{S}$	360	WEAY	390	WTAM	423	WBAV	469	KFI	510	CYL
286	WTAS	360	WGI	395	KHJ	423	WLW	455	WJZ	517	WCX
309	WSAI	360	$\mathbf{W}\mathbf{H}\mathbf{A}$	395	WDAR	425	CKAC	469	WCAP	517	WWJ
312	KGO	360	$\mathbf{w}_{\mathbf{H}\mathbf{N}}$	395	WFI	425	CYB	/	WRC	526	who
319	\mathbf{WGR}	360	WJAR	400	\mathbf{PWX}	429	WSB	469	7		
326	KDKA	360	WKAQ	400	WHAS	435	CKCH	476	WFAA	526	WOAW
337	WBZ	360	WOQ	405	WJY	435	NAA	484	WHAA	536	KYW
341	CHYC	360	WSY	405	WOR	440	CFCN	484	\mathbf{woc}	546	KSD

EACH COUNTRY WANTS WHAT OTHER ONE HAS

Or, It Takes Travel to Make Laws Appreciated

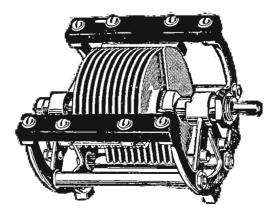
PARIS.—A peculiar situation has arisen in France and Belgium, where the papers of each country are complaining of their own regulations regarding regenerative receivers and calling attention of amateurs to the regulations of the other country, which each considers better,

In Belgium, a series of strong editorials has been written against the suppression of the regenerative single circuit, which the Belgian government is doing in no doubtful manner. The Belgians cry out that the French, the English and the Americans all have perfect freedom to experiment; so why should a little radiation be suppressed simply because it bothers a few people while it might lead to interesting results.

The French, on the other hand, call attention to the firm and intelligent manner in which the Belgian government has met a difficult and troublesome situation. They regret that the French authorities have not had the courage to act in the same manner.

In Norway, all Radio communications dealing with forest fires are given absolute priority over any other form of message whatsoever.





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WWV Announces Series of Standard Wave Signals

WASHINGTON.—WWV, the bureau of standards, will Radiocast standard wave lengths of frequencies for the calibration of receiving sets and wavemeters, and adjusting transmitters on August 5, September 5 and 22. The signals will be sent out between 11 p. m. and 12:32 a. m. after broadcasters stop for the night. On August 5, waves use by ships and pointto-point stations, will be Radiocast and on September 5, more ship wave lengths. On September 22, standard wave lengths on which Radiocasts operate will be transmitted, the range being between 200 and 545 meters.

Watch "Roxie" in Action

NEW YORK .- Pat Harrison and Cordell Hull of the Democratic National committee spent one evening of the convention in the broadcasting studio of the Capitol theater watching S. L. "Roxie" Rothafel in action.



with the first really portable, long distance receiver—fitted in a camera case with standard batteries, tube and head phones selfcontained—weighs only 4% lbs.



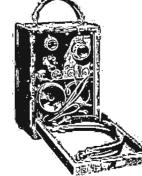
gets all local and many distant stations without aerial—the ideal receiver for home, camping or traveling.

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Without Accessories

See KODEL at your dealer's or literature.



write direct for Front View-Showing phones, antenna and ground wires fitted in ready to close.

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"Build your own" with this Kellogg No. 501 Radio Kit. At your dealers for \$43.00.

Everything complete for assembling two stages of audio frequency amplification The panel is drilled for three tuning units, which together with this No. 501 Kit will complete a radio set using your favorite hook-up, or most any other that you may desire to try.

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CHICAGO, ILL.



SPANISH NIGHT AT KDKA THURSDAY

Wednesday, July 23

Silent night for: CKAC, KFNF, KGO, WBAV, WEAO, WFAA, WFI, WGY, WIP, WMC, WOAW, WRC. CFCN, Calgary, Can. (Mountain, 440), 11-12:30 a. m., Ever Ready Battery program; Wendell Hall, popular

singer. CHYC, Montreal, Can. (Eastern, Daylight, 341), 9 p. m., Vander Haeghe trio; Frances James, soprano; Peter Vander Haeghe, cellist; Middred Page, reader; Queenie Gibson, planist; 'Jasper Park, the People's Playground among the Rockies,' H. H. Melanson; C. Taylor, planist

p. m., Mount Royal Hotel luncheon concert; 4:15,

concert.

KDKA, E. Pittsburgh, Pa. (Eastern, 326), 11:15 a. m.,
Daugherty's orchestra; 5:30 p. m., dinner concert,
Pittsburgh Athletic association orchestra; 6:30, a
night with Uncle Remus; 8, Selzman-Hagar trio.

KFI, Los Angeles, Calif. (Pacifio, 469), 6:45-8 p. m.,
detective stories; vocal concert; 8-9, Evening Herald,
Owen Fallon's Californians, dance orchestra; 9-10,
Wampus night program; 10-11, Hollywoodland Community orchestra; 11-12, Ambassador hotel Cocoanut
Grove orchestra.

munity orchestra; 11-12, Ambassador hotel Cocoanut Grove orchestra.

KFNF, Shenandoah, Ia. (Central, 266), 7:30 p. m., program, White Shrine.

KFOA, Seattle, Wash. (Pacific, 455), 8:30 p. m., recital, James Hamilton Howe, director.

KGO, Oakland, Calif. (Pacific, 312), 3 p. m., speaker, Coral L. Williams institute; 4-5:30, concert orchestra, Hotel St. Francis, Vinton La Ferrera, leader; 8, musical program.

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

GW, Portland, Ore. (Pacific, 492), 3:30 p. m., talk, Jeanetto P. Cramer; 8, concert; 10, dance music, George Olsen's Metropolitan orchestra.

Headliners of the Week

WEDNESDAY night tune in for KFI for it is Wampas night and many of your favorite screen stars will Radiocast. The fisherman is not neglected these days of summer vacations. Isaac Walton will give a talk from WJZ on "Deep Sea Angling." His talk will present vacation suggestions on the Atlantic. Camp Fire Girls should tune in for WLS and get the demonstration of Camp Fire Girls' activities.

Thursday, KDKA is presenting a program of Spanish composers for the Spanish speaking countries. Announcements will be made in both English and Spanish so that even an ordinary American may also tune in.

Let us hope Lloyd George tunes in Friday night for WCAE. It is Welsh night in this station. If there is any poet who has not heard Charles L. H. Wagner, let him tune in for WGI this same evening.

WMAQ, Chicago, and KSD, St. Louis, are still giving theater specialties Saturday nights. Why not move the Radio out on the screenedin porch and be amused without spending the evening in a hot motion picture theater.

WJZ will again Radiocast the New York Philharmonic orchestra this Sunday and WGY will relay the con-

Little folks will relieve their elders Monday night at KQV, and the announcer says that this program is especially for Radio juniors. Have you queer notions about the movies? Tune in for WGY and hear what Quinn Martin the motion picture critic of the New York World has to

The great problem before us now is what are the new "rules of the air." Prof. Floyd A. Nagler will discuss these from WHAA Tuesday.

director; 10, Mary E. Vogt, organist; 10:30, Hotel Adelphia dance oorchestra.

WOR, Newark, N. J. (Eastern, Daylight, 405), 2:30-2:45 p. m., Walter S. Ansbro, baritone; 3:30-3:45, Walter S. Ansbro; 6:15-6:55, "Music While You Dine," Baudistel's orchestra; 6:55-7, eports; 8-8:15, Gene Ingraham's orchestra; 8:30-8:45, Capt. Jcrome Hart; 9-9:15, Corby; 10-10:30, Bell Record Symphony orchestra.

9-9:15, Corby; 10-10:30, Bell Record Symphony orchestra.

WOS, Jefferson City, Mo. (Central, 440.9), 8 p. m.,
"Marketing the Apple Crop," T. J. Talbert; 8:20,
Miller County Old Time orchestra.

WQJ, Chicago, III. (Central, Daylight, 448), 3-4 p. m.,
"Doughs—Biscuits and Variations of Biscuit Dough,"
Helen Harrington Downing; "Cheese," Martha Logan;
"Draperies—How to Select and Make," Sterling
Bryant McDonald; 7-8, Mrs. Dydia Lochner, contralto;
Marion Henry, accompanist; Lilah C. Bell, reader;
10-2, Ralph Williams and His Rainbo Garden orchestra.

WRC, Washington, D. C. (Eastern, 469), 3 p. m., fashion developments of the moment, Women's Wear; 3:45, Eleanor Glynn, pianist; 3:50, current topics, Editor of the Outlook; 4, songs; 6, storles for children, Peggy Albion.

dren, Peggy Albion.

WTAM, Cleveland, Ohio (Eastern, 390), 8 p. m., program arranged by Cleveland Plain Dealer; oldtime songs and melodies; Carl Rupps's Hollenden Hotei orchestra; eolo numbers.

WTAS, Elgin, Ill. (Central, 286), 7:30-7:35 p. m., bedtime story, Ollvia; 7:35-8, Dell Lampe's Trianon ballroom orchestra; Lee Sims, pianist; 8-8:30, popular song numbers WTAS artists; 8:30-12:30, Lampe's Trianon orchestra; Lee Sims pianist.

WTAY, Oak Park, Ill. (Central, Daylight, 283), 6:45-7:45 p. m., Pat Barns, author and character of "Buck on Leave," and his company; 9-9:45, Guyon's Paradlse orchestra.

WWJ, Detroit, Mich. (Eastern, 517), 8 a. m., settlingwomen's editor; 12 n, Detroit News orchestra; 7:30, Schmeman's band; 7, Detroit News orchestra; 7:30, Schmeman's band.

Up exercises, R. J. Horton; 9:45, taik, Detroit News



Olivia Erbstein is the ten year old daughter of the owner of WTAS, Elgin. Every night at eight o'clock the little dog above the microphone and many young listeners in approve of Olivia's stories, because, being still rather young herself, she knows what to give her audience.

KHJ, Los Angeles, Calif. (Pacific, 395), 12:30-1:15
p. m., concert, the Piggly-Wiggly trlo; Fred C. MeNabb of Aggeler-Musser Seed Co.; 6-6:30, Art Hickman's concert orchestra; 6:45-7:30, children's hour,
Professor Walter Sylvester Hertzog; Victoria Loulse
Kerner, screen juvenlle; Dick Winslow, screen juvenile; bedtlme story, "Uncle John"; 8-9:30, concert,
courtesy Ray F. Chesley, Bell, Calif., Ford agent;
Zarh Myron Blekford, mandolin; 9:30-10, concert, Al
Schiller, pianist; Dr. M. F. Baumgardt, lecturer;
10-11, Art Hickman's dance orchestra.

KPO, San Francisco, Calif. (Pacific, 423), 1-2 p. m.,
Rudy Selger's Fairmont Hotel orchestra; 2:30-3:30,
Jack Falt's Entella Cafe orchestra; 4:30-5:30, Children's hour; 7-7:30, Rudy Sciger's Fairmont Hotel
orchestra; 8-11, E. Max Bradfield's versatile band;
"Your Boy and Mine, and the Smith Hughes Act."
Wm. T. Elzinga; program, Western Musical Trades
convention.

delphia.

KQV, Pittsburgh, Pa. (Eastern, Daylight, 270), 4:30-5 D. m., daily Sunset stories, Diary of Snubs, Our Dog; 8:45-9, fifteen minute song revue, Ben and Thelma Flelds; 9-10, ballads and heart songs, Elizabeth Ricder, soprano; Ernest George Scott, baritone. KSD, St. Louis, Mo. (Central, 546), 9 p. m., concert, Crow's band.

Crow's band.

KYW, Chicago, III. (Central, Daylight, 536), 11:35
a. m., table talk, Mrs. Anna J. Peterson; 6:45, children's bedtlme story; 7-7:30, dinner concert, Congress hotel; 8-8:58, Margaret Martin, soprano: John Stamford, tenor; Salile Menes, accompanist; Herble Mintz, pianist; 9:45-12:30, midnight revue; 9:10, taik, H, Archibald Harris.

PWX, Havana, Cuba (Eastern, 400), 8:30 p. m., General Staff band of the Cuban Army, Captain Molina Torros, leader.

eral Staff band of the Chban Army, Captain Molina Torros, leader.

WBAH, Minneapolis, Minn. (Central, 417), 12:30-1:30
Dick Long's trio and soloist; 7-7:30 p. m., lecture, Dr. J. W. Holland.

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

WBZ, Springfield, Mass. (Eastern, Daylight, 337), 6 p. m., dinner concert, WBZ trlo; 7:30, bedtline story for the kiddles; 7:40, WBZ trlo; Mrs. Carl Rommel, planist; Arthur S. Cann, tenor; Mrs. Eleanor Turner LaZazzera, accompanist; 9, G. F. S. Webster, whistler; Orlando Barr, accompanist; 9:30, Hutter trio, Agnes Hutter, soprano, Barbara Hutter, planist; Horace Hutter, xplophonist; 11:30, Leo Reisman and his Hotel Brunswick orchestra; 12, songs, Bill Coty, Jack Armstrong.

WCAE, Pittsburgh, Pa. (Eastern, Daylight, 462), 3

WCAE, Pittsburgh, Pa. (Eastern, Daylight, 462), 3 p. m., Fred Rosenfeld, planlst; 6:30, dinner concert, William Penn hotel; 7:30, Sunshine girl; 9:30, muslcal, Hill Top L. O. O. M. No. 151.

WCX, Detroit, Mich. (Eastern, 517), 4:15 p. m., muslcal program; 6, dinner concert; 8:30, muslcal program, direction of George Carr.

WDAF, Kansas City, Mo. (Central, 411), 3:30-4:30 p. m., the Star's Radio trio; 6-7 p. m., School of the Air, plano tuning in number on the Duo-Art; address, speaker from the Meat Council of Greater Kansas City; address, weekly health talk, ausplees Health Conservation association; chidren's story and information period; music, Carl Norberg's Plantation players, Hotel Muchiebach; 8-9:15, program arranged and presented. J. Poindexter, Mrs. Jennio Schultz, and officer solojsts.

DAR, Philadelphia, Pa. (Eastern, Daylight, 395), 11:45 a. m., dally almanac; 12:02, Stanley theater

organ recital; 12:30, Arcadia cafe concert orchestra; 2, Arcadia Cafe concert orchestra; 7:30, Dream Daddy's bedtime stories; 8, Arnold Abbott, talk; 10,

2. Arcadia Cafe concert orchestra; 7:30, Dream Daddy's bedtime stories; 8, Arnold Abbott, talk; 10, Areadia cafe dance orchestra.

WEAF, New York, N. Y. (Eastern Daylight, 492), 11-11:30 a. m., muslcal program; 11:30-11:45, young mothers' program; 4-4:15 p. m., Margaret Schilling, 4:15-4:30, Mary Kirschman, planlst; 4:30-5, children's stories; 6-7, dinner muslc, Waldorf-Astoria hotel; 7-7:15, United Synagogue of America; 7-15-7:30, Helen O'Shea, soprano; 7:30-7:45, talk, American Agriculturist; 7:45-8:15, Vic's orchestra; 8:15-8:30, Gold Dust Twins; 8:30-8:45, Artells Dickson, baritone; 9-9:15, Jordon Coben, pianist, 9:30-9:45, George A. Leach, baritone.

WEAO, Columbus, Ohio (Eastern, 360), 1:30 p. m., educational lecture, member Ohlo State university faculty; 4 p. m., health talk, member stato board of health; music, university talent.

WEBH, Chicago, III. (Central, Daylight, 370), 7:30-8:30 p. m., Marle Kelly, reader; Nick Lucas, tenor; Oriole orchestra; 9:30-10:30, Kenneth Sterling, barltone; Oriole orchestra; 11:30-12:30, Paulne Willie, soprano; Willie Green, tenor; Oriole orchestra.

WFAA, Dallas, Tex. (Central, 476), 12:30-1 p. m., music, Red Head glrl.

WFI, Philadelphia, Pa. (Eastern, Daylight, 395), 1 p. m., Meyer Duric Pallayin Stratford connect orchestra.

WFI, Philadelphia, Pa. (Eastern, Daylight, 395), 1 p.m,.

Meyer Davis Bellevuo Stratford concert orchestra; 3, Aleta Smith, soprano; Loretta Kerk, pianist; 6:30, Meyer Davis Bellevue Stratford concert orchestra. Medford Hillside, Mass. (Eastern, Daylight, 306), p. m., musicale; popular song hits, Don Ramsey,

planist.

WGR, Buffalo, N. Y. (Eastern, Daylight, 319), 12:30-1 p. m., George Albert Bouchard, organist; 6:30-7:30, dinner music; 9-11, concert, Ladies' orchestra, direction of J. P. Quinn; 11:30, Vincent Lopoz Hotel Statier dance orchestra, direction of Harold Gieser,

WHA, Madison, Wis. (Central, 360), 7:30 p. m., "Tho Child Labor Amendment," Taylor Frey.
WHAS, Louisville, Ky. (Central, 400), 4-5 p. m., Alamo Theater orchestra; Dlck Quinlan's Golden Derby orchestra; 7:30-9, concert, auspices Nicholas Bolin. WHB. Kansas City Mo. (Central, 411), 7-8 p. m., edu-

WHB. Kansas City Mo. (Central, 411), 7-8 p. m., educational talks; music.

WHN. New York. N. Y. (Eastern, Daylight, 366), 2:15-2:30 p. m., Edward B. Marks Music company; 2:30-3:15, stage of the Metropolitan theater, Brooklyn; 3:45-4:15, Original Louislana Five, Al King, leader; 4:15-4:15, joint recital, Mary Hunter, planist, Madeline Groff, soprano; 4:45-5, Wm. J. Stuart, original poems; 5-5:30, N. Y. Philharmonic trio; 6-7, alamac festivo board; 7-7:15, Roemer eport period. Thorton Fisher; 7:30-8, Roseland dance orchostra; 8-8:20, program, Union of Orthodox Jewish Congregations of America; 8:20-8:30, Agnes Macpeake, soprano; 8:30-8:45, Big Brother period; 8:45-9; Sigmund Stuckgold, barltone; 9-9:30, Metropolitan theater; 9:30-10, Chas. Strickland's Pallsodes Park orchestra; 10-10:15, Lillian Alkman, soprano; 10:15-10:30, Alfred Dulin, planist. WHO, Des Moines, Iowa (Central, 526), 7:30-9 p. m., WHO, Des Moines, Iowa (Central, 526), 7:30-9 p. m.,

Bankers Life Radio orchestra, W. L. Marsh, Stewart

Bankers Life Radio orchestra, W. L. Marsh, Stewart Dulaney, directors.

WIP, Philadelphia, Pa. (Eastern, Daylight, 509), 10
a. m., seashore gossip; 1 p. m., Karl Bonawltz, organist; 3, "What the wild waves are saying"; 3:30, Comfort's Philharmonic orchestra; 6, Frisco Serenaders dance orchestra; 7, Uncle Wip's bedtime storics.

WJZ, New York, N. Y. (Eastern, Daylight, 455), 4-4:15 p. m., Elcanor Gunn's fashion talk; 4:10-4:15, daily menu; 4:15-4:30, talk, John C. Cutting, Meat Council of New York; 4:30-5:30, Waldorf-Astorla tea music; 7-7:20, Cafe Boulevard music; 7:20-7:30, financial developments of the day; 7:30-8, Cafe Boulevard music; 8-9, Detthorn & Howard, Hawaiian guitars; 9-9:25, "The Heart of the Office," Mr. G. S. Childs, University of the alr; 9:25-10:05, Estey organ recital; 10:05-10:30, "Deep Sea Angling," Fred Fletcher, Evening World; 10:30-11:30, Billy Wynne's Greenwich Village Inn orchestra.

WKAY, San Juan, Porto Rico (Central, 360), 6-7 p. m.,

WKAY, San Juan, Porto Rico (Central, 360), 6-7 p. m.

WKAY, San Juan, Porto Rico (Central, 360), 6-7 p. m., municipal band.

WLAG, Minneapolis-St. Paul, Minn. (Central, 417), 10:45-11:15 a. m., household hints, Mrs. C. A. Kirby; 2:10-2:40 p. ni., women's hour, "Beauty," Maude Hart; 2:40-3:10, magazino reading "The Hired Man"; 7:30-8, farm lectures. "Book Review," Leonare E. Wells; 8:15-9:15, concert, Carlo Fischer, cellist; Wilma Anderson Gilman, planist; Bernard Ferguson, tenor; 9:15-9:30, business message; 11-12 p. m., dance concert Geo. Osborn's Nicollet Hotel orchestra.

WLS, Chicago, III. (Central, Daylight, 345), 1-2 p. m., music numbers, Carl Craven; 6:30, Frank Westphal orchestra; 7-10 ininutes with the "Solemn Old Judge"; 7:15, Edward H. Sickles, vocallst and planist; 7:45-8, lullaby time, Ford Rush, Glenn Rowell; 8-9, boys' and girls' hour; 8-8:15, WLS Radio tribe of Lono Scouts; 8:15-9, demonstration of campfire girls' activities at a girls' camp, Sue Waddell; 9, Mrs. S. D. Rodenberg, soprano; 9-10, "Eradication of Bovine Tuberculosis in Illinols," A. O. Peterson; 10, Apollo club, Harrlson Wild, director.

WLW, Cincinnati, Ohio (Central, Daylight, 423), 4 p. m., "Shut In" program, Duning Benevolent and Musical service, Lilliam Aldrich Thayers Settlement School of music; 8, Virginia entertalners; 8:50, "Bees," Dr. W. C. Herman; 9, Leviathan orchestra.

WMAQ, Chicago, III. (Central, Daylight, 447.5), 6 p. m., Chicago, III. (Central, Daylight, Vary, Sp. m., Edwin Swindell, organist; Mrs. John Malloy, Bernice Lucille Webor, planist.

WOC, Davenport, lowa (Central, 484), 12 m., chimes; 8 p. m., Edwin Swindell, organist; Mrs. John Malloy, Soprano.

woo. Philadelphia, Pa. (Eastern, Daylight, 509), 11
a. m., Mary E. Vogt, organist; 12:02, Wanamaker
Crystal tea room orchestra; 4:45, Mary E. Vogt,
organist; 7:30, Adelphia hotel concert orchestra, A.
Candelori, director; 9, plano recital, Harriet G. Ridiey; 9:30, WOO concert orchestra, Robert E. Golden,

Thursday, July 24

Paul, this week.

Minneapolis - St.

Silent night for: KFOA, KQV, KSD, WAAW, WBAV, WCAP, WDAR, WGR, WHO, WOO, WOR, WOS.

CKAC, Montreal, Can. (Eastern, Daylight, 425), 7 p. m., kiddies' stories in French and English; 7:30, Rex Battle and his Mount Royal Hotel concert orchestra; Nap. Dansereau, cellist; 8:30, La Presse studio entertalnment; 10:30, Mount Royal Hotel Roof Garden

dance program.

KDKA, E. Pittsburgh, Pa. (Eastern, 326), 11:15 a. m.,
Scalzo's orchestra; 5:30 p. m., dinner concert, KDKA
Little Symphony orchestra; 6:30, little Miss Merry
Heart will sing for the kiddies; 8, KDKA Little
Symphony orchestra; John Lavello, piano-accordionist;
10 concert

10, concert.

KFI, Los Angeles, Calif. (Pacific, 469), 6:45-8 p. m.,
Y. M. C. A. concert; lecture; 8-9, Ambassador Hotel
Cocoanut Grove orchestra; 9-10 Examiner, Placontia
Chamber of Commerce program; 10-11, Instrumental

concert.

KGO. Oakland, Calif. (Pacific, 312), 4-5:30 p. m., concert orchestra, Hotel St. Francis, Vinton La Ferrera, conductor; 8, "Kindling," tbree-act drama, Wilda Wilson Church, director; Musaes trio.

KGW, Portland, Ore. (Pacific, 492), 3:30 p. m., children's program; 10, dance music, George Olsen's Metropolitan orchestra.

dren's program; 10, dance music, George Olsen's Metropolitan orchestra.

KHJ. Los Angeles, Calif. (Pacific, 395), 12:30-1:15, p. m., concert; 2:30-3:30, Hollywood Bowl program; sponsor, Mrs. J. J. Carter; presenting Bess Daniels, pianist; 6-6:30, Art Hlckman's concert orchestra: 6:45-7:30, chlldren's hour, Prof. Walter Sylvester Hertzog; weekly visit of Dickic Brandon, silver-sheet juvenile; bedtlme story, "Uncle John"; 8-9, concert, courtesy Platt Music Co.; 9-10, Dapiel Nelson Clark, Radio Journal, speaker; Anton Chris, steel gultar; Thorlief Olsen, baritone; 10-11, Art Hickman's dance orchestra.

KPO, San Francisco, Calif. (Pacific, 423), 1-2 p m., Rudy Seiger's Fairmont Hotel orchestra; 2:30-3:30, Junlor Musical of Alameda, Mrs. John Merrill, manager; 4:30-5:30, Rudy Sciger's Fairmont Hotel orchestra; 5:30-6:30, children's hour; 7-7:30, Rudy Sciger's Fairmont Hotel orchestra; 8-9, Theodore J. Irwin, organist: 9-10, program, Watsonville artists; 10-11 E. Max Bradfield's Versatlle band.

KQV, Pittsburgh, Pa. (Eastern, Daylight, 270), 4:30-5 p. m., dally sunset stories and diary of Suubs, our dog.

KSD, St. Louis, Mo. (Central, 546), 9 p. m., concert,

Crow's hand.

KYW, Chicago, III. (Central, Daylight, 536), 11:35
a. nl., table talk, Mrs. Anna J. Peterson; 7-7:30 p. m.,
dlnner concert, Congress hotel; 8-8:20, "Twenty Minutes of Good Reading," Rev. C. J. Pernin; 8:20-9:15,
1tuth Kuechler, soprano; Ned Santtrey, accompanist;
9:15, "Safety First," Z. C. Elkin; 10-11:30, "At

9:15, "Safety First," Z. C. Elkin; 10-11:30, "At Hone" program.

WAAW, Omaha, Nebr. (Central, 360), 8-9 p. m., talks, Rev. E. M. Brown, R. A. Smith.

WBAH, Minneapolis, Minn. (Central, 417), 12:30-1:30 p. m., Dick Long's trio and soloist; 9:30-11, orchestra, popular program

WBAV, Columbus, Ohio (Eastern, 423), 19 11, religious service, Columbus Council of church

(Countinued on page)

(Continued on page

Thornton Fisher (left) as he

talk from WHN, New York, are regular features at Statis all Radiophans. Fred B. The of the KGO Players. He will in "Kindling" to be given

HEAR PHILHARMONIC CONCERTS OF

Where to Hear Concerts

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

Wednesday: CHYC, KDKA, KFI, KFNF, KFOA, KGW, KHJ, KPO, KQV, KSD, KYW, PWX, WBZ, WCAE, WCX, WDAF, WDAF, WDAF, WEAF, WEBH, WFI, WGI, WHAA, WHAS, WHB, WHN, WHO, WJZ, WKAQ, WLAG, WLS, WLW, WMAQ, WOC, WOO, WOR, WOS, WQJ, WTAM, WTAS, WTAY, WWJ.

Thursday: CKAC, KDKA, KFI, KFNF, KGO, KGW, KHJ, KPO, KYW, WBAH, WBAP, WBZ, WCAE, WCAY, WCBD, WCX, WDAF, WEAF, WEAO, WEBH, WFAA, WFI, WGI, WGY, WHAS, WHB, WHN, WIP, WJAX, WJY, WJZ, WLAG, WLS, WLW, WMAQ, WMC, WOAW, WOC, WPAL, WQJ, WRC, WTAS, WTAY, WWJ.

Friday: KDKA, KFI, KFNF, KFOA, KFSG, KHJ, KGW, KQV, KSD, KYW, WBAH, WBAP, WBAV, WBZ, WCAE, WCAY, WCX, WDAF, WDAR, WEAF, WEBH, WFAA, WGI, WGY, WHAS, WHB, WHK, WHN, WHO, WJY, WJZ, WLAG, WLS, WMAQ, WMC, WOAW, WOC, WOO, WOS, WQJ, WTAS, WTAY, WWJ.

Saturday: CKAC, KDKA, KFI,

KFNF, KGO, KGW, KHJ, KPO, KSD, KYW, PWX, WBZ, WCAE, WDAF, WEAF, WEBH, WFAA, WGI, WGY, WHAS, WHK, WHN, WIP, WJAX, WIAZ, WLAG, WLS, WMAQ, WMC, WOAW, WOC, WOR, WQJ, WRC, WTAM, WTAS, WWJ.

Sunday: KFI, KFNF, KFSG, KHJ, KPO, WEAF, WEBH, WFAA, WGI, WGN, WGY, WHAA, WHAS, WHK, WHN, WHO, WIP, WJZ, WLS, WLW, WOAW, WOC, WOS, WQJ, WTAS, KGW, KQV, WAAW, WBAH, WBZ,

Monday: KFI, KFOA, KGO, KPO, KQV. WAAW, WBAH, WBZ, WCBD, WCX, WDAF, WDAR, WEAF, WFAA, WGY, WHAZ, WHB, WHN, WHO, WLW, WOAW, WOC, WOO, WOR, WOS, WTAM, WTAS, WWJ.

Tuesday: CKAC, KFI, KFNF, KFSG, KGO, KGW, KHJ, KPO, KSD, KYW, WBAH, WBAV, WBZ, WCX, WDAF, WEAF, WFAA, WFI, WGI, WGY, WHB, WHAA, WHAS, WJY, WJZ, WLAG, WLW, WMAQ, WMC, WOAW, WQJ, WRC, WTAS, WWJ.

Thursday, July 24

(Continued from page 9)

WBZ, Springfield, Mass. (Eastern, Daylight, 337), 6 p. m., Leo. Reisman Hotel Lenox ensemble; 6:30, songs, Bill Coty, Jack Armstrong; 6:40, Leo Reisman and his Hotel Brunswick orchestra; 7:05, "At the Tbeaters," A. L. S. Wood; 7:30, hedtime story for the kiddles; 9, Genevieve Gansouenat, soprano; Juliette Houle, accompanist; 9:30, Copley Plaza orchestra.

WCAE, Pittsburgh, Pa. (Eastern, Daylight, 462), 6:30 p. m., dinner concert, William Penn hotel; 7:30, Uncle Kaybee; 9:30, David Super, tenor; Marie Beitler, contralto; Arthur Lauterbach, violinist; Edna Woessner, planlst.

planist.

WCAY, Milwaukee, Wis. (Central, 266), 10:30 p. m., late frolic sponsored by the Boston store, Beatrice Royt, planist; Illini Screnaders.

WCBD, Zion, III. (Central, Daylight, 345), 8 p. m., mixed quartet; string quartet, Richard F. Hire, L. J. Hire, Mrs. L. J. Hire; Herman Becker; saxophone quintet, John, Richard, David, Robert and George McElroy; soprano duet, Esther and Evangeline Weidman; Mark Whiteside, baritone; M. P. Bartone, tenor; Louise Burgess, reader; Mrs. Lillis Albrant Lecch.

Lecch.

WCX, Detroit, Mich. (Eastern, 517), 4:15 p. m., musical program; 6, dinner concert; 8:30, organ recital, Edith Davey, Central M. E. church.

WDAF, Kansas City, Mo. (Central, 411), 3:30-4:30 p. m., the Star's Radio trio; 6-7 p. m., School of the Air, piano tuning in number on the Duo-Art; address, Edgar Allen Linton, second on a series of taiks on world travels; reading, Cecile Burton, from popular poems and essays; children's story and information period; music, Carl Norberg's Plantation players, Hotel Muchlebach; 11:45-1 a. m., Nighthawk frolic, the Plantation players, Hotel Muchlebach

WDAR, Philadelphia, Pa. (Eastern, Daylight, 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; 2, Arcadia cafe concert orchestra; 20, Mrs. Louis Love, talk; 4:30, Edna Finestone, pianist; 7:30, Dream Daddy's bedtlme stories.

WEAF, New York, N. Y. (Eastern, Daylight, 492), 11-

Dream Daddy's bedtline stories.

WEAF, New York, N. Y. (Eastern, Daylight, 492), 1111:30 a. m., talk, Marshak & company, 4-4:15 p. m.,
May Hughes, soprano; 4:30-5, Children's stories: 6-7,
dinner muslc, Waldorf-Astoria hotel; 7-7:30, Greater
New York Federation of churches; 7:30-8, Bud Fisher's
Happy players; 8-8:15, talk, Bank of America; 8:30-9,
Helen White, soprano; 10-11, Vincent Lopez and bis
Hotel Pennsylvania orchestra.

WEAO, Columbus, Dhio (Eastern, 360), 1:30 p. m., educational lecture, includer Ohio State university faculty; 8, University chimes; address, Robert Higgy; musical program, R. G. Gawler, violinist, Florence Clark, planist, Harry Fox, flutist, Raiph E. Pearce, cellist; Mrs. E. H. DeNune, soprano, and Jennie Grandstuff, planist.

WEBH, Chicago, III. (Central, Daylight, 370), 7:30-8:30 p. m., Helen McDonald, contralto; Orlole orchestra; 9:30-10:30, Sheridan trio; Orlole orchestra; 11:30-12:30, Ray Nobles, tenor; Arthur Todd, pianist; Orlole orchestra

WFAA, Dallas, Tex. (Central, 476), 12:30-1 p. m., 'Discharging the Duties of Citizenship,' Epps G. Knight; 8:30-9:30, string band from Krum, W. F.

Clevenger, director. WFI, Philadelphia, Pa. (Eastern, Daylight, 395), 1 p. m. Meyer Davis Bellevne Stratford concert orchestra; 3, Loretta Kerk, planist 6, Sunny Jim, the kiddles' pal; 6:30. Meyer Davis Bellevne Stratford concert orchestra; 8, John Vandershool, baritone; Loretta Kerk, pichlet.

chestra; 8, John Vandersmor, bartene, pianlst.
WGI, Medford Hillside, Mass. (Eastern, Daylight, 360), 7:30 p. m., taik, Goeffry L. Whalen; Bernice and hls bunch; 8:15, musicale.
WGR, Buffalo, N. Y. (Eastern, Daylight, 319), 12:30-1 p. m., George Albert Bouchard, organist; 6:30-7:30, dinner music.
WGY, Schenectady, N. Y. (Eastern, 380), 5:30 p. m., Stephen E. Boiselair, organist; 7:30, New York Phil-

dinner misle.

WGY, Scheneetady, N. Y. (Eastern, 380), 5:30 p. m., Stephen E. Boiselair, organist; 7:30, New York Philharinonic orchestra, Willem van Hoogstraten, conductor; 8:30, "A Few Moments with New Books," William F. Jacoh; 9, Polish musle, St. Mary's Churcholr, Stanislaw Kosinski, director; Helen Mont, pianist; Sylvia Mont, reader; Waclaw Olezewski, tenor. WHAS, Louisville, Ky. (Central, 400), 4-5 p. m., Dlck Qulnian's Golden Derby orchestra; Alamo Theater orchestra; 7:30-9, Carl Zoeller's Melodists; four-minnete digest of International Sunday-school lesson.

WHB, Kansas City, Mo. (Central, 411), 8-9:30 p. m., dance program from Indian Village Town hall, Sweeney Radio orchestra; 10:30-11:30 p. m., dance program, Sweeney Itadio orchestra.

WHN, New York, N. Y. (Eastern, Daylight, 366), 2:15-2:30 p. m., Leo Felst Music company; 2:30-3:15, Radiocasting from Metropolitan theater; 3:45-4, Alfred Dufin, planist; 6-7, alamae Festive hoard; 7:15-7:30, Hoemer sport period, Thornton Fisher; 9:15-9:30, Locw's Metropolitan theater; 9:30-10, Chas, Strickland's Palisades Park orchestra; 10-10:15, Wm. J. Stuart, poems; 10:15-10:20, Harry Hock and entertainers; 10:20-10:30, Sara V. Turits, soprano; 10:30-11:30, Roseland dance orchestra; 11:30-12, Original James Boys from the El Rey club.

WIP, Philadelphia, Pa. (Eastern, Daylight, 509), I p. m., seashore gosslp; 3, 'What the wild waves are saying,'' 3:30, Comfort's philharmonic orchestra; 8:50, Vessella's concert orchestra; 7, Uncle Wip's bedtime stories; 8, Comfort's philharmonic orchestra; 8:50, Vessella's concert band; 10, Marburger's Reading Pennsylvanians data e rejestra.

WIY, New York, N. Y. (Eastern, Daylight, 405), 7:45-8 p. m., United States Navy night, Navy Band of Virgin Islands; 8:15-8:30, "Deutsche Literatur," Prof. Zinnecker, N. Y. U.; 8:30-9, Navy Band of Virgin Islands; 9-10, Boxing bout direct from Polo Grounds, Semi-Finals, Berlenback-Satner, Finals, Carpentier-Tunney, Major J. Andrew White, announcer.

WJZ, New York, N. Y. (Eastern, Daylight, 455), 1-2 p. m., Hotel Pennsylvania luncheon music; 4-4:10, Eleanor Gunn's fashion talk; 4:10-4:15, daily menu; 4:15-4:30, "Houschold Equipment," Ethel R. Peyser; 4:30-4:45, Wallace M. Radcliffe, tenor; 4:45-5, Rita Hansun, soprano; 5-5:15, Wallace M. Radcliffe; 5:15-5:30, Rita Hansun; 7-7:20, Gotham Hotel Concert orehestra; 7:30-8, Gotham Hotel Concert orehestra; 7:30-8, Gotham Hotel Concert orehestra; 8-830, weekly French lesson; 8:30-9:45, New York Philharmonic orchestra, direct from Lewisohn Stadium; 9:45-10, Radio program by the Sun; 10:45-11:30, Hotel Majestic orchestra.

Hotel Majestic orchestra.

WLAG, Minneapolis-St. Paul, Minn. (Central, 417), 10:45-11:15 a m., household hints; 2:10-2:40 p. m., women's hour, "French Cookery," Bernice Bell; 2:40-4, matinee program; 4-4:30, magazine reading, "The Paper Doll;" dinner hour concert, Geo. Osborn's Nicollet Hotel orchestra; 7:30-8:15, farm lectures.

WLS, Chicago, III. (Central, Daylight, 345), 1-2 p. m., Carl T. Wilson, tenor; 6:30, Frank Westphal orchestra; 7:10 minutes with the "Solemn Old Judge"; 7:15, Mabel Harris Hornstein, soprano; 7:45-8, lullaby time, Ford Rush, Glenn Rowell; 10:15, 8th regimental band, Lieut. Tucker, director.

WLW, Cincinnati, Ohio (Central, Daylight, 423), 4

band, Lieut. Tucker, director.

WLW, Cincinnati, Ohio (Central, Daylight, 423), 4
p. m., Adelaide Apfel, pianist; 10, three-minute message, U. S. Civil service; Milnor Elec. Instrumental trio; 10:45, "The New Thought," Olive Vail, musical reader; 10:55, Doherty Melody boys; songs, Irene Syron; Mary Pike, pianist.

WMAQ, Chicago, III. (Central, Daylight, 447.5), 6
p. m., Chicago Theater organ; 6:30, Hotel LaSalle orchestra; 8. weekly talk, Rockwell R. Stephens; 8:15, weekly talk for Boy Scouts; 8:30, recreational talk; 9, garden talks, James H. Burdett; 9:15, Filomeni Singing society.

WMC, Memphis, Tenn. (Central, 500) 8:30 p. m., program, H. B. Wooten, director.

WOAW, Omaha, Nebr. (Central, 526), 6 p. m., dinner program, Community orchestra of Red Oak, Jowa;

community orchestra of Red Iowa 9:00, classical program, talent from Red Oak, Iowa. WDC, Davenport, Iowa (Central, 484), 12 m., chimes; 9, The Palmer School Radio orchestra; Ralph W. Fuller,

WOR, Newark, N. J. (Eastern, Daylight, 405), 2:30-2:45 p. m., Arline Felker, soprano; 2:45-3, joint program: 3:30-3:45, Arline Felker; 6:15-6:30, "Radio for the Layman," Albert E. Sonn; 6:30-7:15, "Music Wbile You Dine," Tom Cooper's Country Club orchestra; 7:20-7:30, resume of the day's sports, Newark Morning Ledger. Morning Ledger.

Morning Ledger.

WDD, Philadelphia, Pa. (Eastern, Daylight, 509), 11
a. m., Mary E. Vogt, organist; 12:02 p. m., Wanamaker Crystal tea room orchestra, Robert E. Golden,
director; 4:45, Mary E. Vogt, organist.

WQJ, Chicago, Ill. (Central, Daylight, 448), 3-4 p. m.,
"Desserts—Dainty and Refreshing," Ethel M. Lord;
"The Advantage of a Higher Education," William
J. Bogan; "Simplicity of Styles Today," Butterick
Publishing company; 7-8, Mrs. G. H. Nippert, soprano;
W. O. Berberick, violinist; Katheryn Synder, reader;
10-2, Ralph Williams and his Rainbo Garden orchestra; Floyd Carder, haritone; Axel W. Christensen,
pianologues.

10-2, Ralph Williams and his Rainbo Garden orchestra; Floyd Carder, haritone; Axel W. Christensen, pianologues.

WRC, Washington, D. C. (Eastern, 469), 6 p. m., children's hour, Peggy Albion; 7:45, talk on motoring, auspices of the American Automobile association; 8, music, Elsa Jorss, soprano; 9, dance program, Pete Macias' L'Aiglon orchestra.

WSAI, Cincinnati, Ohio (Central, Daylight, 309), 10 p. m., soprano solo, Florence Braun; reading, Blanch Willis Thompson; violin solos, Robert Badgley; barltone solo, John Drury.

WTAS, Elgin, Ill. (Central, 286), 7:30-7:35 p. m., bedtime story, Olivia; 7:35-8, Dell Lampe's Trianon ballroom orchestra; Lee Sims, planist; 8-8:30, popular song numbers, WTAS artists; 8:30-12:30, Lampe's Trianon orchestra; Lee Sims, planist.

WTAY, Oak Park, Ill. (Central, Daylight, 283), 6:45-7:45 p. m., Rose Rocca, soprano; Ben Schroeder, barltone; Maxine Schreiver, pianist; Grace Hansen, viollnist; Mildred Hansen, accompanist; 9-9:45, Slloam Knight Templer band.

WWJ, Detroit, Mich. (Eastern, 517), 8 a. in., setting-up exercless, R. J. Horton; 9:30, talk, Detroit News women's editor; 12 n., Detroit News orchestra; 3 p. m., Schemman's band; 10, Goldkette's orchestra.

Friday, July 25

Silent night for: CFCA, CKAC, KGO, KPD, WIP, WAAW, WCX, WFI, WIP, WLW, WOO, WOR, WRC. CFCA, Toronto, Can. (Eastern, Daylight, 400), 9 p. m., Canadian National Rallway's program: Ernest Schildrick, director; Braodus Farmer, violinist; talk, W. D. Robb.

CKAC, Montreal, Can. (Eastern, Daylight, 425), 1:45 p. m., Mount Royal Hotel classical program; 4:15,

p. m., Mount Royal Hotel classical program; 4:15, muslcal tea.

KDKA, E. Pittsburgh, Pa. (Eastern, 326), 11:15 a. m., Daugherty's orchestra; 5:30 p. m., Paul Fleeger, organist; 6:30, Uncle Wiggeley; 8, Pauline Rimm, soprano; trio for three flutes, Theodore Surdykowski, John Ingram, Alvin Honser.

Acollan organ rectal; (Pacific, 469), 6:45-8 p. m., Acollan organ rectal; 8-9, Exenling Herald, Grigby's orchestra; 9-10, Examiner, Viniversity of Southern California, echool of speech night; 10-11, vocal recital, pupils of Myra Belle Vickers; 11-12, Ambassador hotel Coconnit Grove orchestra. KFNF, Shenandoah, Iowa (Central, 266), 7:30 p. m.,

KFOA, Seattle, Wash. (Pacific, 455), 8:30 p. m., Elaine Larson, pianist; Marvin Wake, baritone; Elaine Larson, accompanist; banjo solos, Frank Hollock.
KGO, Oakland, Calif. (Pacific, 3!2), 3 p. m., musicale; 4-5:30, concert orchestra, Hotel St. Francis, Vinton La Ferrera, conductor.
KGW, Portland, Ore. (Pacific, 492), 3:30 p. m., women's program; 8:15, studio program, George Olsen's Metropolitan orchestra; 10:30, Hoot Owls.
KHI. Los Anneles. Calif. (Pacific, 395), 12:30-1:15 p. m. politan orchestra; 10:30, Hoot Owls.

KHJ, Los Angeles, Calif. (Pacific, 395), 12:30-1:15 p. m., concert; 2:30-3:30, Hollywood Bowl program, sponsor, Mrs. J. J. Carter, presenting, Bess Daniels, planist; 6-6:30, Art Hickman's concert orchestra; 6:45-7:30, ehildren's hour, Prof. Walter Sylvester Hertzog; weekly visit Richard Headrick, screen juvenile; bedtime story, "Uncle John"; 8-10, concert, courtesy, Margaret Coutche, composer; 10-11, Art Hickman's dance orchestra.

time story, "Uncle Jonn"; 8-10, concert, courtesy, Margaret Coutche, composer; 10-11, Art Hickman's dance orchestra.

KPO, San Francisco, Calif. (Pacific, 423), 1-2 p. m., Rudy Seiger's Fairmont Hotel orchestra; 2:30-3:30, Theodore J. Irwin, organist; 4:30-5:30, Rudy Seiger's Fairmont Hotel orchestra.

KQV, Pittsburgh, Pa. (Eastern, Daylight, 270), 4:30-5 p. m., daily sunset stories and diary of Snubs Our Dog; 9-10, "Old Time Fiddling and Dance Tunes," J. A. Campbell, fiddler; O. W. Rockenbaugh, guitarist. KSD, St. Louis, Mo. (Central, 546), 8 p. m., Silverman's orchestra concert.

KYW, Chicago, III. (Central, Daylight, 536), 11:35 a. m., table talk, Mrs. Anna J. Peterson; 6:45 p. m., children's bedtime story; 7-7:30, dinner concert, Congress hotel; 8:20-8:45, American Farm Bureau federation: "Boys' and Girls' Club Work in the Great South West," Arthur W. Large; "Among Our Neighhors," Paul A. Potter; 9-12:30, midnight revue.

WAAW, Omaha, Nebr. (Central, 360), 8:05-8:30 p. m., bridge talk, Mrs. Gny Purdy.

WBAH, Minneapolis, Minn. (Central, 417), 12:30-1:30 p. m., Dick Long's trio and soloist: 6:30-7:30 p. m.,

bridge talk, Mrs. Gny Purdy.

WBAH, Minneapolis, Minn. (Central, 417), 12:30-1:30 p. m., Dick Long's trio and soloist; 6:30-7:30 p. m., orchestra, dance program.

WBAV, Columbus, Ohio. (Eastern, 423), 12 m., Ila Lorbach Owens, pianist; 8 p. m., Instrumental program for Columbus Dispatch.

WBZ, Springfield, Mass. (Eastern, Daylight, 337), 7:05 p. m., 'The Automobile Engine,' R. J. Beaver; eurrent book review, R. A. MacDonald; 7:30, bedtime story for the kiddics; 10, Neapolitan concert company; 11, WBZ trio; Walter B. Marsh, baritone.

WCAE, Pittsburgh, Pa. (Eastern, Daylight, 462), 4:30

company; 11, WBZ trio; Walter B. Marsh, baritone, WCAE, Pittsburgh, Pa. (Eastern, Daylight, 462), 4:30 p. m., special children's program, Sunshine Girl; 6:30, dinner concert. William Penn hotel; 7:30, Uncle Kaybee; 9:30, Welsh night.
WCAY, Milwaukee, Wis. (Central, 266), 8 p. m., musical program sponsored by the Oswald Jaeger Baking company; Leon Brieb, tenor; Katherine Lauters, in hallacter. The Sun Dedgers.

ballads; The Sun Dodgers.

WCX, Detroit, Mich. (Eastern, 517), 4:15 p. m., musical programs; 6, dinner concert; 8:30, Polish male

wdaf, Kansas City, Mo. (Central, 411), 3:30-4:30 p. m., the Star's radio trio; 6-7 p. u., school of the air, piano tuning in number on the Duo-Art; fifth of a series of piano lessons, Maudellen Littlefield; address, speaker from the Kansas City Chidren's bureau; children's information period; music, Carl Norberg's Plantation players, Hotel Muchlebach; 8-9:15 p. m.,

wDAR, Philadelphia, Pa. (Eastern, Daylight, 395), 11:45 a. m., daily almanae; 12:02 p. m., Stanley theater organ recital; 12:30, Areadia cafe concert orchestra; 2, Arcadia cafe concert orchestra; 7:30, Dream

ater organ recital; 12:30, Areadia care concert orchestra; 2, Arcadia eafe concert orchestra; 7:30, Dream Daddy's bedtime storics; 7:40, Stanley theater symphony orchestra; 8, talk; Arnold Abbott; 8:30, Walter Greenough WDAR Radio players; 10, Fry's Million Dollar Pier orchestra; Benson's dance orchestra of Chicago, direct from Atlantic City; 11:00, special features from Atlantic City control room.

WEAF, New York, N. Y. (Eastern, Daylight, 492), 11-11:30 a. iu., talk, R. A. Atkinson of New York Health Speakers' service; 4-4:15 p. m., Leta Newly Shelton, soprano; 4:30-5, children's storics; 6-7, dinner music, Waldorf-Astoria hotel; 7-7:15, Blanche Kraft Fink, soprano; 7:30-8, Boinar Cramer, planist; 8-8:15, The Happiness Boys; 8:15-8:30, "Evercady Man About Town"; 9-10, B. Fisher & company's "Astor Coffee" orchestra.

WEAD, Columbus, Ohio. (Eastern, 360), 1:30 p. m., educational lecture, member Ohio State university faculty; 4 p. m., farm talk, faculty member; music, university talent.

verslty talent.

WEBH, Chicago, III. (Central, Daylight, 370), 7:30-8:30 p.m., Marion Luthy, violinist; Orlole orchestra; 9:30-10:30, Chlcago quartet; Oriole orchestra; 11:30-12:30, Harry Davis, baritone; Howard Bonts, planist; Orlole

WFAA. Dallas, Tcx. (Central, 476), 12:30-1 p. m., talk, Dr. Robert S. Heyer; 8:30-9:30, colored Jubilee singers. WFI, Philadelphia, Pa. (Eastern, Daylight, 395), 1 p. m., Meyer Davis Bellevue Stratford concert orchestra; 3, Caroline Hoffman, planist; 6:30, Meyer Davis Bellevne Stratford concert orchestra. WGI, Medford Hillside, Mass. (Eastern, Daylight, 360), 7:30 p. m., selected verses, Charles L. H. Wagner, Radlo poet; 7:45, muslcal. WGR, Buffalo, N. Y. (Eastern, Daylight, 519), 12:30-1 p. m., George Alhert Bouchard, organist; 6:30-7:30, dinner musle; 9:10:30, concert, the Musle Shop of Niagara Falls, direction of Blanche Garrow; 10:30-11, Louis McLouth, tenor; John Gundeman, accompanist; 11:30, Vincent Lopez Hotel Statler dance orchestra, direction of Harold Gieser, WGY, Schenectady, N. Y. (Eastern, 380), 1 p. m., "The Out-of-200r, Meal"; 5:30, storles for childrin: 5:45. WFAA, Dallas, Tex. (Central, 476), 12:30-1 p. m., talk,

children's story in French, Frederic Duclert; 8,
"What Recreation in State Parks Means," Martha L.
Foland; 8:10, "A Night Off," WGY student players;
WGY orchestra; 10:30, WGY orchestra; "Vacatlon
Radio," R. H. Langley; Ollie G. Yettru, pianist;
Ernest Burleigh, cellist; Edward A. Rice, viollnist,
WHA, Madison, Wis. (Central, 360), 7:30 p. m., readings for recreation, R. M. Kelsey.
WHAS, Louisville, Ky. (Central, 400), 4-5 p. m.,
Alamo Theater orchestra; Dick Quinlan's Golden Derby
orchestra; 7:30-9, Hazel McClellan, soprano; Ione
Soete, pianist; Myer Green, violinist; George Blusinski, accompanist.

ski, accompanist.

socte, planist; Alyer Green, violinist; George Blusinski, accompanist.

WHB, Kansas City, Mo. (Central, 411), 7-8, address; vocal selections; children's readings.

WHK, Cleveland, Ohio (Eastern, 283), 9 p. m., concert program arranged by Wm. Taylor Son & company, Louis Rich and his orchestra; solo numbers.

WHN, New York, (Eastern, Daylight, 366), 2:30-3 p. m., Metropolitan theater; 3-3:15, Wright & Bessinger, singers; 3:45-4, Uncle Robert's chat with children; 6-7, alamac festive board; 7-7:15, Roemer sport period, Thornton Fisher; 9-15-9:45, Metropolitan theater; 9:45-10:15, Chas. Strickland's Palisades Park orchestra; 10:30-11:45, Roseland dance orchestra; 11:30-12, Original James Boys from the El Fey club.

WHO, Des Moines, lowa (Central, 526), 7:30-9 p. m., Mui Phl Epstlon National Music sorority, Omega chapter, Drake university.

WIP, Philadelphia, Pa. (Eastern, Daylight, 509), 10 a. m., seashore gossip; 3 p. m., "What the wild waves are saying"; 3:30, Comfort's philharmonic orchestra; 6, Jordan Lewis dance orchestra; 7, Uncle Wip's bedtime

Jordan Lewis dance orchestra; 7, Uncle Wip's bedtime

stories.

WJY, New York, N. Y. (Eastern, Daylight, 405), 7:30-8:15 p. m., Leonard Nelson's Knlckerbocker Grill orchestra; 8:15-10, Plantation night.

WJZ, New York, N. Y. (Eastern, Daylight, 455), 1-2 p. m., Hotel Ambassador trio; 4-4:10, fashion talk, Eleanor Gunn; 4:10-4:15, daily menu; 4:15-4:30, arts and decorations; 4:30-5:30, Hotel Astor organ recital; 7-7:20, Ernic Golden's McAlpine Roof orchestra; 7:20-7:30, financial developments of the day; 7:30-8, Ernic Golden's McAlpine Roof orchestra; 8-8:15, Looseleaf Current topics, Dr. William H. Allen; 8-15-8:30, "Election of President and Responsible Party Government," Prof. Swenson, New York university; 8:30-

Golden's McAlpine Roof orchestra; 8-8:15, Looseleaf Current topics, Dr. William H. Allen; 8-15-8:30, "Election of President and Responsible Party Government," Prof. Swenson, New York university; 8:30-9:30, Wanamaker concert; 9:30-10:30, Frank Bannlster revue; 10:30-11:30, Harold Stern's Hotel Belleclair Towers orchestra.

WLAG, Minneapolis-St. Paul, Minn. (Central, 417), 10:45-11:15 a. m., household hints: 2:10-2:40 p. m., women's club hour, "Giving the Stranger a Helping Hand," Laura Mims; 2:40-3:10, magazine reading, "Shocks of Doon" and "Defeat of the City," O. Henry: 7:30-8 p. m., farm lectures, "Problems of a St. Paul Grower," Chas. Hoffman; 8:15-10, band concert, direct from Phalen Park, St. Paul, Minn., A. L. Snyder's band; 9 p. m., business message; 11-12, dance program, Geo. Osborn's Nicollet Hotel orchestra.

WLS, Chicago, Ill. (Central, Daylight, 345), 1-2 p. m., three troubadours of the staff of WLS; George Havens, baritone; "Book Farmer," G. C. Biggar; 6:30-11, 6:30, Frank Westphal orchestra: 7, 10 minutes with the "Solemn Old Judge"; 7:15, Harry L. Kohler, barltone; 7:45-8, lullahy time, Ford Rush, Glenn Rowell; 8, University male quartet; 9, string music, Mildred, Bernice and Helen Elliott; 9-10, "Outlook of Sheep and Wool Industry," Gilbert Gusler; "Concrete on the Farm," Prof. K. J. T. Eckblaw; 10, American conservatory quartet, Harry Juffaker, director, WMAQ, Chicago, Ill. (Central, Daylight, 447.5), 6 p. m., Chlcago Theater organ; 6:30, Hotel LaSalle orhestra; 8, nature study club talk, Barnett Harris; 8:15, weekly wide-awake club program, Mrs. Frances M. Ford; 9:15, Jane Symons, contralto.

WMC, Memphis, Tenn. (Central, 500), 8:30 p. m., Britling's orchestra: 11, Bob Miller's Steamer Idlewild orchestra.

WOAW, Omaha, Nebr. (Central, 526), 6 p. m., story hour, Doris Caire Secord, daughter of "Uncle Ross" of World-Herald; 6:30, dinner program, Pat's Melody boys of Lake Manawa; program arranged, Frank Bucklingham, auspices of Chlcago, Burlington & Quincy R. R. company.

R. R. company.

WOC, Davenport, Iowa (Central, 484), 12 m., chimes;

8 p. m., A. M. Rawls, baritone; Milton Vaughn, tenor;

E. L. Stread, humorous storles; Elcanor Farley-

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WEAL WHA! WLW WOQ, Tuesc $\begin{array}{ccc} \mathrm{KGO}, & \mathrm{I} \\ \mathrm{W} & \mathrm{E} & \mathrm{A} \end{array}$ WHN, WLW, WOJ, V

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players. Walte ough' players Night players.

BOTH WJZ AND WGY ON SUNDAY



W00, Philadelphia, Pa. (Eastern, Daylight, 509), 11
a. m., Mary E. Vogt, organist; 12:02 p. m., Wanamaker Crystal Tea Room orchestra, Robert E. Golden,
director; 4:45, Mary E. Vogt, organist; 7:30, Havana
Casino dance orchestra; 8:30, J. W. C. I. military
band; 9:30, Harriet G. Ridley, pianist; 10, Havana
Casino dance orchestra.
W0R, Newark, N. J. (Eastern, Daylight, 405), 2:30-2:45
p. m., Tom Banks' Colonial Inn orchestra; 3:45-4, Tom
Banks' Colonial Inn orchestra; 6:15-6:30, Agnes Leonard; 6:30-6:45, Man in the Moon stories; 7-7:15,
Brean and Tobias; 7:20-7:30, resume of the day's
sports.

WDS, Jefferson City, Mo. (Central, 440.9), 8 p. m., "Fried Dried Pench Pie and Other Pies," Jewell Mayes; address, George A. Pickens; music, Kiwanis

lub. QJ, Chicago, III. (Central, Daylight, 448), 3-4 p. m. "Hot Weather Desserts," Helen Harrington Downing, "Summer Camps," Catherine Whitney Curtis; 7-8, Frederick Agard, tenor; talk, Ernest Dettmar; Edna Benson, coloratura soprano; 10-2, Ralph Williams and his Rainbo Garden orchestra; Paul Laugher, tenor; Harry Geise, pinist.

(RC, Washington, D. C. (Eastern, 469), 3 p. m., fashion developments of the moment, Women's Wear

fashion developments of the moment, Women's Wear; 3:10, Arthur McCormick, baritone; 3:20, "Beauty and Personality," Elsie Pierce; 3:25, current topics, Editor of the Review of Reviews; 3:35, Ethel Grant, pianist; 4, songs; 6, stories and songs for children, Peggy Albion, Mary F. Glenn.

WTAS, Elgin, III. (Central, 286), 7:30-7:35 p. m., bedtime story, Oliva; 7:35-8, Dell Lampe's Trianon ballroom orchestra; Lee Sims, pianist; 8-8:30, popular song numbers, WTAS artists; 8:30-12:30, Lampe's Trianon orchestra; Lee Sims, planist.

WTAY, Oak Park, III. (Central, Daylight, 283), 6:45-7:45 p. m., Bessie Brochon Sonnon, soprano; Sandy Meek, tenor; Prof. Gara Guly, salophone soloist; bedtime story, Glenn Bruce; 9-9:45, Guyon's Paradise band.

WWJ, Detroit, Mich. (Eastern, 517), 8 a. m., setting-up exercises, R. J. Horton; 9:30, talk, Detroit News woman's editor; 12 m., Detroit News orchestra; 3 p. m., Schmeman's band; 7, Detroit News orchestra; 7:30, Schmeman's band;

Saturday, July 26

Silent night for: KFOA, KPO. KQV, WAAW, WBAV, WCX, WDAF, WDAR, WI, WGR, WHO, WIP, WLW, WDO, WOS, WWJ.

CKAC, Montreal, Can. (Eastern, Dayight, 425), 7 p. m., kiddles' stories in French and English; 7:30, Rex Battle and his Mount Royal Hotel concert orchestra; 8:30, speelal concert; 10:30, Joseph C. Smith and his Mount Royal Hotel dance orchestra.

KDKA, E. Pittsburgh, Pa. (Eastern, 326), 5:30 p. m., dinner concert, Westinghouse band; 6:30, Boots and his hrothers; 6:45, last minute helps to teachers, Carmon C. Johnson; 8, Westinghouse hand.

KFI, Los Angeles, Calif. (Pacific, 469), 6:45-8 p. m., Hennessy's Paramount players; 8-9, vocal program, Norman Kloch, bass; 9-10, Examiner, Fullerson program; 10-11, popular song concert; 11-12, Ambassador Hotel Cocoanut Grove orchestra.

Hotel Cocoanut Grove orchestra.

Hotel Cocoanut Grove orchestra.

KFNF, Shenandoah, Iowa (Central, 266), 7:30 p. m., concert, Henry Fleid Seed company.

KGO, Oakland, Calif. (Pacific, 312), 4-5:30 p. m., concert orchestra, Hotel St. Francis; 8, program, Camp Curry, Yosemile National park; Carol Weston, violinist; Edith Benjamin, soprano; Marion Provost, pianist; "The History of the Fire Fall," Don Tresidder; Glenn Hood, character songs; Arion tric; Irwin Johnson, baritone; Hawallan selections, Prof. John Kelllan, G. Deloro, Virgil M. Holden; "Hongkong, Canton and Manila," J. E. Barnes; harmonica selections, John T. Brown; French horn selos, Edwin Bergenholtz; Mrs. Herbert Avery, planist; 10-1, Henry Halstead's Hotel St. Francis dence orchestra.

KGW, Portland, Ore. (Pacific, 492), 3 p. m., children's musical program; 10, dance music, George Olsen's Metropolitan orchestra.

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

trio.
KSD, St. Louis, Mo. (Central, 546), 8 p. m., Missouri
Theater orchestra and specialties. Missouri theater.
KYW, Chicago, III. (Central, Daylight, 536), 11:35
a. m., table talk, Mirs. Anna J. Peterson; 7-7:30
p. m., dinner concert, Congress hotel; 8-8:58, Herbie
Mintz, pianist; Miss Lightfoot, soprano; 9, talk,
Vivette Gorman; 9:05, Youth's Companion; 9:20, musicale.

cale.

PWX, Havana, Cuba (Eastern, 400), 8:30 p. m., concert, employees of the Cuban Telephone company.

WBAH, Minneapolis, Minn. (Central, 417), 12:30-1:30 p. m., children's vaudeville; 7-7:30 p. m., council of churches.

WBAV, Columbus, Dhio (Eastern, 423), 12 m., Ila Lorbach Owens, planist

WBAV, Columbus, Dhio (Eastern, 423), 12 m., Ila Lorbach Owens, pianist.
WBZ, Springfield, Mass. (Eastern, Daylight, 337), 6 p. m., Schrafft's string quintet; 6:30, Leo Reisman and his Hotel Brunswick orchestra; 7:10, Leo Reisman's Hotel Lenox ensemble; 7:30, bedtime story for the kiddies; 7:40, Hotel Kimhall trio; 9, Elisa Worthley, soprano; George E. Dwight, baritone; Mabel Bennett, pianist.
WCAE, Pittsburgh, Pa. (Eastern, Daylight, 462), 3 p. m., Prof. Otto Kalteis, pianist; 6:30, dinner concert, William Penn hotel; 7:45, Lew Kennedy, baritone; Irene Setzler, pianist; 9:30, Ted Newlin's Orchestra.

chestra. WCX, Detroit, Mich. (Eastern, 517), 4:15 p. m., musical

program; 6, dinner concert.

WDAF, Kansas City, Mo. (Central, 411), 3:30-4:30
p. m., the Star's Radio orchestra; 6-7 p. m., School
of the Air, piano number on the Duo-Art; address,
speaker from the editorial staff of the Star; children's

speaker from the editorial staff of the Star; children's story and information period; music, Carl Norberg's Plantation players, Hotel Muehlebach; 11:45 p. m.-1 a. m., Nighthawk frolic, Charles Dornberger's orchestra, K. C. A. C. roof garden; the Plantation players, Hotel Muehlehach.

WEAF. New York, N. Y. (Eastern, Daylight, 492), 4-5 p. m., Elmer Grosso and his Versatile orchestra; 6-7, dinner, Waldorf-Astoria hotel; 7-7:30, Jeannette Johnson and orchestra; 7:45-8, Rudolph John Stemler, hass baritone; 8-8:15, talk on health, Christine R. Kefauver; 8:15-8:30, Daisy Krey, contralto; 10-11, Vlncent Lopez and his Hotel Pennsylvania orchestra. WEAD, Columbus, Ohio (Eastern, 360), 1:30 p. m., educational lecture, member Ohio State university educational lecture, member Ohio State university

WEBH, Chicago, III. (Central, Daylight, 370), 7:30-8:30 WEBH, Chicago, III. (Central, Daylight, 370), 7:30-8:30 p. m., Roschary Hughes, soprano; story, William H. Hunt; Oriole orchestra; 9:30-10:30, Marie Kelly, reader; Sandy Meek, tenor; Oriole orchestra; 11:30-12:30, Langdon brothers, steel guitarists; Paul Locker, tenor; Nick Lucas, vocalist; Oriole orchestra.

WFAA, Dallas, Tex. (Central, 476), 12:30-1 p. m., "The Value of Idealizing," Rev. Frederick Conpal; 3:30-4, music; 8:30-9:30, entertainment, faculty representatives, North Texas State Teachers college; 11-12, Adolphus Hotel orchestra.

WGI. Medford Hillside. Mass. (Eastern. Daylight, 360).

sentatives, North Texas State Teachers' college; 11-12, Adolphus Hotel orchestra.

WGI, Medford Hillside, Mass. (Eastern, Daylight, 360), 7:30 p. m., talk, David M. Cheney; musicale.

WGR, Buffalo, N. Y. (Eastern, Daylight, 319), 12:30-1 p. m., George Albert Bouchard, organist.

WGY, Schenectady, N. Y. (Eastern, 380), 7:15 p. m., concert of Johann Strauss music, Goldman's band, Edwin Franko Goldman, director; Waino Kauppi, cornetist; 9:30, dance music, Joseph A. Chickene and his Clover club orchestra; songs, Frank Davis.

WHAS, Louisville, Ky. (Central, 400), 4-5 p. m., Dick Quinlan's Golden Derby orchestra; Alamo Theater orchestra; 7:30-9, concert, Opal Armstrong, director.

WHN, New York, (Eastern, Daylight, 366), 12-1 p. m., Radio Shack; 2:30-3:15, Mctropolitan theater; 3:45-4:15, Tom Banks and his orchestra; 4:15-4:45, Ellen Montague Cross concert company; 5-5:30, Jimmy Flynn, tenor; 8:15-8:30, Big Brother period; 8:30-9, Ellen Montague Cross concert company; 9-9:30, Loew's Mctropolitan theater; 9:45-10, Fitzpatrick brothers; 11:30-12, Jimmy Clarke and his entertalners.

WIP, Philadelphia, Pa. (Eastern, Daylight, 509), 10 a. m., seashore gossip; 1 p. m., Karl Bonawitz, organist; 3, "What the wild waves are saying," 3:30, Confort's Philharmonic orchestra; 6, Kentucky Serenader's dance orchestra; 7, Uncle Wip's bedtime stories; 8, Comfort's Philharmonie orchestra; 8:50, Vessella's concert band; 10, Bob Lehman's dance orchestra from Steel Pier, Atlantic City; 11, Karl Bonawitz, organist.

WJZ, New York, N. Y. (Eastern, Daylight, 455), 1-2

chestra from Steel Pler, Atlantic City; 11, Karl Bonawitz, organist.

WJZ, New York, N. Y. (Eastern, Daylight, 455), 1-2
p. m., Hotel Vanderbilt orchestra; 4-4:30, Frank Cromin, tenor; 4:30-5:30, Roger Wolf's Biltmore tea room orchestra; 7-7:55, Waldorf-Astoria orchestra; 7:55-8:10, "The Radio Franks," Wright & Bessinger; 8:10-8:15, Time Pop Questlon game; 8:45-9:30, Paragon Novelly trio; 9:30-10:30, sport talk, Fred Fletcher, Evening World; 10:30-11:30, Specht's Club Lido Venice

Evening World; 10:30-11:30, Specit's Chin Lino veince orchestra.

WLAG, Minneapolis-St. Paul, Minn. (Central, 417), 7:30-8 p. m., business miessage; 8:15-10 p. m., municipal concert, direct from Lake Harriet, Minneapolis, Minn., direction of Englehert Roengen; 11:12 p. m., dance program, Geo. Osborn's Nicollet Hotel orchestra.

WLS, Chicago, III. (Central, Daylight, 345), 8-1 a. m., national barn dance; Elne Hoosler four; violin and

Where to Hear Talks

TALKS, instructive, serious, humorous and even frivolous, are broadcast daily and below are listed the stations.

Wednesday: KFOA, KGO, KYW, WBAH, KPO, KQV, WAAW, WBAH, WBZ, WCX, WDAF, WDAR, WEAF, WGY, WHA, WHA, WHA, WJZ, WLAG, WLS, WLW, WMAQ, WOS.

Thursday: CKAC, KYW, WAAW, WBZ, WCAE, WDAF, WFAF, WGI, WGY, WHAS, WHB, WHN, WIP, WJAX, WJY, WJZ, WLAG, WLS, WLW, WMAQ, WOR, WRC.

Friday: CKY, KYW, WAAW, WBAV, WBZ, WDAF, WDAR, WEAF, WGI, WGY, WHA, WHB, WHN,

WJZ, WLAG, WLS, WLW, WMAQ, WOS.

Saturday: KDKA, PWX, WBAH, WBAP, WDAF, WFI, WGI, WJZ, WOAW, WRC.

Monday: KGO. WBZ, WDAF, WDAR, WFAA, WGR, WGY, WHN, WLAG, WLW, WQJ, WOS.

Tuesday: KFSG, KGO, KYW, WAAW, WCAE, WDAF, WEAF, WFAA, WGI, WGY, WHAA, WHAS, WJY, WJZ, WLAG, WMAQ, WRC.

mouth harp, Barngrover and Rose; old-time fiddlers, Frank Hart, M. J. Delchanty, William McCormick. WMAQ, Chicago, III. (Central, Daylight, 447.5), 6:30 p. m., Hotel LaSalle orchestra; 8, band concert, Chicago Daily News band; 9, weekly Balaban & Katz

p. m., Hotel Lasalle orchestra; 8, ball concert, Chicago Daily News band; 9, weekly Balaban & Katz Chicago theater.

WMC, Memphis, Tenn. (Central, 500), 8:30 p. m., St. John's Male quartet.

WOAW, Dmaha. Nebr. (Central, 526), 6 p. m., dinner program, Park's sextette of Greenwood, Nebr.; program, auspices of Omaha Printing company.

WOC, Davenport, lowa (Central, 484), 12 m., chimcs; 9 p. m., the Palmer School Radio orchestra; Ralph W. Fuller, baritone.

WOO, Philadelphia, Pa. (Eastern, Daylight, 509), 11 a. m., Mary E. Vogt, organist; 4:45 p. m., Mary E. Vogt, organist.

WOR, Newark, N. 1. (Eastern, Daylight, 405), 2:30-2:45 p. m., William F. Hirschmann, baritone; 2:45-3, Lena Newmark, soprano; 3:30-3:45, William F. Hirschmann; 3:45-4, Lena Newmark; 6:15-6:30, Ernie Krickett's Cinderella orchestra; 7:20-7:30, resume of the day's sports; 8-8:15, Sterling Mixed quartet; 8:30-8:45, Hosrof-Bagraduni, tenor; 9:15-9:30, Hosrof-Bagraduni; 9:30-9:45, Sterling Mixed quartet; 10-10:30, Manhattan screnaders.

WOL Chicago, Ill. (Central, Daylight, 448), 3-4 p. m.,

nosrol-agradum, tellor, 3-13-3.0, 1836 Jagradum, 18

numbers.
WTAS, Elgin, III. (Central, 286), 7:30-7:35 p. m., bedtime story, Olivia; 7:35-8, Dell Lampe's Trianon
ballroom orchestra; Lee Sims, pianist; 8-8:30, popular
song numbers; 8:30-12:30, Lampe's Trianon orchestra;
Lee Sims, pianist.
WWJ, Detroit, Mich. (Eastern, 517), 8 a. m., setting-up
exercises, R. J. Horton; 9:30, talk, Detroit News
woman's editor; 12 m., Detroit News orchestra; 3 p. m.,
Schmeman's hand; 7:30, Schmeman's band.

Sunday, July 27

Silent night for: CKAC, KFOA, KGO, KQV, KSD, WAAW, WBAH, WDAF, WDAR, WGR, WOO, WRC, WTAY, WWJ.

KFI, Los Angeles, Calif. (Pacific, 469), 10-10:45 a. m., L. A. church federation service; 4-5 p. m., secular concert; 6:45-8, instrumental concert; 8-9, Ambassador Hotel concert orchestra; 9-10, Examiner, Kentucky Colonel's dance orchestra; 10-11, dance orchestra.

KFNF, Shenandoah, Iowa (Central, 266), 3 p. m., religious services; 6:30, sacred song service.

KGW, Portland, Ore. (Pacific, 492), 6 p. m., church services, Dr. O. C. Wright.

KHJ, Los Angeles, Calif. (Pacific, 395). 10 a. m., ser-

KGW, Portland, Ure. (Pacific, 492), 6 p. m., church services, Dr. O. C. Wright.
KHJ, Los Angeles, Calif. (Pacific, 395), 10 a. m., sermon in KHJ studio; 10:30-12:30 noon, organ recital and service from First M. E. church; Ahthur Blakeley, organist, Rev. E. E. Helms, pastor; 6:30-7 p. m., Art Hickman's concert orchestra; 7-7:30, organ recital from First M. E. church, Arthur Blakley, organist; 8-10, De Luxe concert.

RPO, San Francisco, Calif. (Pacific, 423), II-12 m., undenominational and non-sectarian church services, Dr. W. S. Mathews, speaker; Mme. Madge DeWitt, dramatic soprano; Theodore J. Irwin, organist; 8:30-10 p. m., Rudy Seiger's Fairmon Hotel orchestra.

RYW, Chicago, Ill. (Central, Daylight, 536), 10 a. m., St. Chrysostom's Episcopal church, Rev. Norman Hutton; 1:30 p. m., studio chapel service, Rev. Gardner MacWhorter.

ton; 1:30 p. m., studio enaper service, rev. Gardier MacWhorter.

WCX, Detroit, Mich. (Eastern, 517), 10:30 a. m., services, Central M. E. church; Hudson quartets.

WDAF, Kansas City, Mo. (Central, 411), 4-5 p. m., program Radiocast, the Newman theater.

WDAR, Philadelphia, Pa. (Eastern, Daylight, 395), 3 p. m., Reading Railway Shopmen's band.

WEAF, New York, N. Y. (Eastern, Daylight, 492), 5-5:30 p. m., talk, Columbia university; 7:20-9:15, Capitol theater; 9:15-10:15, Skinner organ recital.

WERH Chicago. III. (Central, Daylight, 370), 7-9

Capitol theater; 9:15-10:15, Skinner organ rectal.

WEBH, Chicago, III. (Central, Daylight, 370), 7-9
p. m., Dorothy Blum, soprano; Marion Leonard,
violinist; Robert Scanlan, pianist; Oriole orchestra.

WFAA, Dallas, Tex. (Central, 476), 6-7 p. m., Radio
Bible class, Dr. William M. Anderson; 9-9:45,
sacred song recital, First Mehtodist church, Dr.
Robert A. Hunt, pastor; 9:45-11, City Temple Pres-

wfl, Philadelphia, Pa. (Eastern, Daylight, 395), 10 a. m., services, Arch Street Presbyterian church. WGl, Medford Hillside, Mass. (Eastern, Daylight, 360), 5 p. m., "Adventure hour," Youth's Companion; musicale, Elmer F. Orne; talk, auspices of the Greater Boston Federation of churches, Rev. Geo. A. A.

Lawson Lawson.

WGR, Buffalo, N. Y. (Eastern, Daylight, 319), 3-4
p. m., vesper service; 4-5, Robert Munn, organist.

WGY, Schenectady, N. Y. (Eastern, 380), 9:30 a. m.,
services, First Presbyterian church, Rev. James R.
Swain, pastor; 7:30, New York Philharmonic orchestra,

Swain, pastor; 7:30, New York Philharmonic orchestra, Fritz Reiner, conductor.

WHAA, lowa City, lowa (Central, 484), 9-9:30 p. m., familiar hymns, Anna Meyer, soprano.

WHB, Kansas City, Mo. (Central, 411), 11 a. m.-12:30 p. m., services, Linwood Boulevard Christian church, Dr. Burris Jenkins, pastor; 8-9:30 p. m., services, Oak Park Christian church, Rev. L. E. Larkin, minister.

minister. WHK, Cleveland, Ohio (Eastern, 283), 8 p. m., con-

minister.

WHK, Cleveland, Ohio (Eastern, 283), 8 p. m., concert program; solo numbers.

WHN, New York, N. Y. (Eastern, Daylight, 366), 3-4 p. in., Loew's Metropolitan theater; 9:30-10, Loew's Metropolitan theater; 10-11, Paul Specht's Post Lodge orchestra, Larchmont, N. Y.

WHO, Des Moines, Iowa (Central, 526), 5-6 p. m., St. Augustine's choir, Mrs. Frank P. Flynn, director; 7:30-9:30, the Bankers Life Radio orchestra.

WIP, Philadelphia, Pa. (Eastern, Daylight, 509), 11 a. m., services, Holy Trinity chapel; 9:30, special Sunday evening Atlantic City concert.

WIZ, New York, N. Y. (Eastern, Daylight, 455), 9-10 a. m., children's hour; 8:30-10:15; New York Philharmonic orchestra, direct from Lewisohn Stadium.

WLAG, Minneapolis-St. Paul, Minn. (Central, 417), 10:20-12 m., Plymouth Congregational church; 4:15-5:40 p. m., House of Hope Presbyterian church service; 7:45-9; service, Central Lutheran church. 7:45-9; service, Central Lutheran church, WLS, Chicago, III. (Central, Daylight, 345), 6:30-8 p. m., choir of Christ church,

WLW, Cincinnati, Ohio (Central, Daylight, 423), 9:30 a. m., school, Editorial Staff of Sunday school publications, Methodist Book concern; 11, services, Church of the Covenant, Dr. Frank Stevenson; 9 p. m., Western and Southern orchestra, Erwin Bellstedt.

WMC, Memphis, Tenn. (Central, 500), 8:30-11 p. m., musical entertainment.

WDAW, Omaha, Nebr., (Central, 526), 9 a. m., Radio chapel service, conducted by Rev. R. R. Brown of the Omaha Gospel Tabernacle and minister of the Sunday Morning Radio congregation; 9 p. m., musical chapel service, Walnut Hill Methodist church, Rev. C. N. Dawson, pastor.

WOC, Davenport, Jowa (Central, 484), 9 a. m. sacred.

chapet service, Wainut Hill Methodist church, Rev. C. N. Dawson, pastor.

WOC, Davenport, lowa (Central, 484), 9 a. m., sacred chimes concert; 1:30 p. m., The Palmer School Radio orchestra; 8, church service, "A Bible Talk," Rev. T. M. Olson; 9:30, The Palmer School Radio orchestra; John McGreevy, baritone; Emil Hass, reader.

WOO, Philadelphia, Pa. (Eastern, Daylight, 509), 10 a. m., services Bethany Temple; 2:30, Sunday school, Bethany Temple; 3:15, Clarence Bawden, organist.

WDS, Jefferson City, Mo. (Central, 440.9), 8 p. m., Union open air religious services; music, Missouri State Prison band.

WQ1, Chicago, III. (Central, Daylight, 448), 8 p. m., Ralph Williams and his Rainbo Garden orchestra; Helen Glenn, 12-year-old saxophone player and planist; musicale, Jenkins School of music; Leroy Trauger, baritone; Edith Phillips Heller, planist; Alice Lippen, soprano; E. R. Whiting, baritone; Edith Phillips Heller, pianist; Mary Nuber, soprano; E. R. Whiting, baritone; Ed. Cincinnati Ohio (Central Daylight, 200), p.

baritone.

WSAI, Cincinnati, Ohio (Central, Daylight, 309), 8 p. m., chimes concert.

WTAS, Elgin, Ill. (Central, 286), 2:30-5 p. m., Dell Lampe's Trianon orchestra; Hawaiian melodies, William Anderson, Orpha Twingstrand; 8:30-12:30, Lampe's Trianon orchestra.

WWI, Detroit, Mich. (Eastern, 517), 4 p. m., Schme-man's band; 5, Detroit News orchestra; 7:30, services, St. Paul's Episcopal cathedral.

Monday, July 28

Silent night for: CKAC, KFNF, KGW, KYW, WEBH, WFI, WGI, WGR, WHAS, WIP, WLS, WMAQ, WOR, WOS, WQJ, WRC, WTAY.

CKAC, Montreal, Can. (Eastern, Daylight, 425), 1:45 p. m., Mount Royal Hotel luncheon concert; 4:15, The dansant.

KFI, Los Angeles, Calif. (Pacific, 469), 8-9 p. m., Evening Herald, Radioland dance orchestra; 9-10, Examiner, vocal and instrumental concert; 10-11, Ambussador Hotel Cocoanut Grove orchestra.

KFOA, Seattle, Wash. (Pacific, 455), 8:30 p. m., program, Seattle Chamber of commerce.

KGO, Dakland, Calif. (Pacific, 312), 3 p. m., studio musical program; 4-5:30, Henry Halstead's Hotel St. Francis dance orchestra; 8, educational program.

KGW, Portland, Ore. (Pacific, 492), 3:30 p. m., literary program, Portland Library association.

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

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

KPO, San Francisco, Calif. (Pacific, 423), 1-2 p. m., Rudy Seiger's Fairmon Hotel orchestra; 2:30-3:30, program, Dorothea Clarissa, pianist director; 4:30-5:30, Rudy Seiger's Fairmont Hotel orchestra; 5:30-6:30, children's hour stories, Big Brother; 7-7:30, Rudy Seiger's Fairmont Hotel orchestra; 8-9, Theodore J. Irwin, organist; 9-10, Western Union night; 10-11, E. Max Bradfield's Versatile band.

KQV, Pittsburgh, Pa. (Eastern, Daylight, 270), 4:30-5 p. m., daily sunset stories and diary of Snubs our dog; 8:45-9, fifteen minute song revue. Ben and Thelma Fields; 9-10, program of juveniles; Ruth Jean Stoner, planist; Alice Long, soprano; Junia Ingram, Junior 'Volunteer;' Hebrew folk and prayer songs, Harry Katz.

Katz.

WAAW, Omaha, Nebr. (Central, 360), 8:30 p. m., Symphonic dance orchestra, C. E. Bduechert.

WBAH, Minneapolis, Minn. (Central, 417), 12:30-1:30 p. m., Dick Long's Trio and soloist; 9:30-11:30 p. m., concert, Gertrude O'Neill Ganley, reader; Lueille Frankman Murphy, pianist; Dick Long, violinist; Gilbert Stinson, saxaphonist; Carl Bach, pianist.

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

WCAY, Milwaukee, Wis. (Central, 266), 8 p. m., musical program sponsored by the Holeproof Hosiery company; the McCue trio, saxaphone, piano, and xylophone; Michael Swedish, baritone; golf talk, Charles Martin; Hazel Cullen, violinist; Cecclia Cullen, pianist.

Cullen, planist.

WCBD, Zion, Ill. (Central, Daylight, 345), 8 p. m.,
Chester S. Bagg, baritone; Dorothy Bull, soprano;
Ralph Bull, tenor; Mary Ross, planist; Mrs. Mabel

Gustafson, render, Mary Ross, planist; Mrs. Mabel Gustafson, render.

WCX, Detroit, Mich. (Eastern, 517), 4:15 p. m., musical program; 6, dinner concert; 7, musical program; Frank Kain and Eastern Star Cafe orchestra; Katherine

Kain and Lastern Star Cafe orchestra; Katherine Vassean, pianist.

WDAF, Kansas City, Mo. (Central, 411), 3:30-4:30 p. m., the Star's Radlo trio; 5-5:30 p. m., weekly Boy Scout program presented by the Kansas City council; 6-7, School of the Air, plano number on the Duo-Art; address, Clay Harvey, fourth of a series of talks on education; address, speaker from the University of Kansas City; children's story and information period; music, Carl Northerg's Plantation players, Hotel Muchlebach; 8-9:15, WDAF minstrels with the Star's Radio orchestra; 11:45 p. m.-1 a. m., Nighthawk frolic, the Plantation players, Hotel Muchlebach.

bach.

WDAR. Philadelphia, Pa. (Eastern, Daylight, 395),
11:45 a. m., daily almanae; 12:02 p. m., Stanley
theater organ recital; 12:30, Arcadia Cafe concert
orchestra; 2, Arcadia Cafe concert orchestra; 4:30,
Edna Finestone, planist; 7:30, Dream Daddy's bedtime stories; 8, Travelogue; 10, Arcadia Cafe dance
dance orchestra.

dance orchestra.

WEAF, New York, N. Y. (Eastern, Daylight, 492),
4-4:15 p. m., Helen V. Ryan, vlolinist; 5-5:50,
women's program, United Synagogue of America; 5:30-6, Sara Hammond, soprano; 6-7, dinner music, Waldorf-Astoria hotel; 7:30-7:45, Phillip Steele, baritone; 7:45-9:30, l'enn. Mutual Life Insurance company; 9:30-10, U. S. Marine band; 10-10:30, Natlonal

pany; 9:30-10, U. S. Marine band; 10-10:30, National Carbon company.

WEAO, Columbus, Ohio (Eastern, 360), 1:30 p. m., educational lecture, member Ohio State university faculty.

WFAA, Dallas, Tex. (Central, 476), 12:30-1 p. m., address, Capt. S. C. Khe; 8:30-9:30, Charles Roessler, zither soloist; W. W. Maebeth, harmonica expert.

WFI, Philadelphia, Pa. (Eastern, Daylight, 395), 1 p. m., Meyer Dayls Bellevue Stratford concert orchestra; 3, Loretta Kerk, planist; Harold Simonds, baritone; 6:30, Meyer Dayls Bellevue Stratford concert orchestra. orchestra

wgr. Buffalo, N. Y. (Eastern, Daylight I p. m., George Albert Bouchard, (Continued on page 1

HEAR PHILHARMONIC CONCERTS ON BOTH WJZ AND WGY ON SUNDAY

Where to Hear Concerts

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

Thursday, July 24

Saturday, July 26

Where to Hear Talks

TALKS; instructive, serious, humorous and even frivolous, are broadcast daily and below are listed the stations,

Monday, July 28

448), S p. m., rden orchestra; cr and pianist; Leroy Trauger; Alice Lippen, Edith Phillips E. R. Whiting,

rlight, 309), 8 -5 p. m., Dell melodies, Will--12:30, Lampe's

p. m., Schme-7:30, services,

18

KYW, WEBH, WLS, WMAQ,

ght, 425), 1:45 concert; 4:15,

)), 8-9 p. m., stra; 9-10, Ex-t; 10-11, Am-'a. :30 p. m., pro-

p. m., studio ead's Hotel St. l program. 30 p. m., liter-tion. 95), 12:30-1:15

(3), 1-2 p. m., tra; 2:30-3:30, setor; 4:30-5:30, stra; 5:30-6:30, tra-; 5:30-6:30, tra-; 7-7:30, Rudy 19, Theodore J. a night; 10-11,

ht, 270), 4:30-ry of Snubs our Ben and Thelma th Jean Stoner, Ingram, Junier a songs, Harry

:30 p. m., Symso p. m., sym-ert. 417), 12:30-1:30 :30-11:30 p. m., reader; Lucille Long, violinist; ich, pianist. 3), 12 m., Ila

66), 8 p. m., oleproof Hosiery ne, piano, and ne; golf talk, olinist; Cecelia

345), 8 p. m., Bull, soprano; ist; Mrs. Mabel

5 p. m., musical program; Frank stra; Katherine

411), 3:30-4:30
b p. m., weekly
ne Kansas City
number on the
rth of a series
eaker from the
s story and inerg's Plantation
VDAF ministrels
p. m.-1 a. m.,
s, Hotel Muchle-

Daylight, 395), p. m., Stanley dia Cafe concert cert orchestra: 4:30, p. 30, Dream Daddy's bed-ie; 10, Arcadia Cafe dance

WEAF, New York, N. Y. (Eastern, Daylight, 492), 4-4:15 p. m., Helen V. Ryan, violinist; 5-5:30, women's program, United Synagogue of America; 5:30-6, Sara Hammond, soprano; 6-7, dinuer musle, Waldorf-Astoria hotel; 7:30-7:45, Phillip Steele, barttone; 7:45-9:30, Penn, Mutual Life Insurance company; 9:30-10, U. S. Marine band; 10-10:30, National Carbon, company

pany: 9:30-10, U. S. Marine band; 10-10:30, National Carbon company.

WEAD, Columbus, Ohio (Eastern, 360), 1:30 n. m., educational lecture, member Ohio State university faculty.

WFAA, Dallas, Tex. (Central, 476), 12:30-1 p. m., address, Capt. S. C. Klic: 8:30-9:30. Charles Roessler, zither soloist; W. W. Macbeth, harmonica expert.

WFI, Philadelphia, Pa. (Eastern, Daylight, 395), I p. m., Meyer Dayls Bellevic Stratford concert orchestra; 3, Loretta Kerk, planist; Harold Simonds, barltone; 6:30, Meyer Dayls Bellevic Stratford concert orchestra.

WGR, Buffalo, N. Y. (Eastern, Daylight.

1 p. m., George Albert Bouchard, (Continued on page 1

Hennessy's Paramount players; 8-9, vocal program, Norman Kloch, bass; 9-10, Examiner, Fullerson program; 10-11, popular song concert; 11-12, Ambassador

Norman Mocn, bass; 9-10. Examiner, Fullerson program; 10-11, popular song concert; 11-12, Ambassador Hotel Cucoanut Grove orchestra.

KFNF, Shenandoah, Iowa (Central, 266), 7:30 p. m., concert, Henry Field Sced company.

KGD, Dakland, Calil. (Pacific, 312), 4-5:30 p. m., concert orchestra, Hotel St. Francis; 8, program, Camp Curry, Yoscinlte National park; Carol Weston, violinist; Edith Benjamin, soprano; Marion Provost, pianist; "The History of the Fire Fall," Don Treslidder; Gleim Hood, character songs; Arion trio; Irwin Johnson, baritone; Hawalian selections, Prof. John Kelilaa, G. Deloro, Virgil M. Holden; "Hongkong, Canton and Manlia," J. E. Barnes; harmonica selections, John T. Brown; French horn salos, Edwin Bergenholtz; Mrs. Herbert Avery, planist; 10-1, Henry Halstead's Hotel St. Francis dance orchestra.

KGW, Portland, Dre. (Pacific, 492), 3 p. in., children's musical program; 10, dance music, George Olsen's Metropolitan orchestra.

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

Comfort's Philharmonic orchestra; 6, Kentucky Ser-enader's dance orchestra; 7, Uncle Wip's bedtime stories; 8, Comfort's Philharmonic orchestra; 8:50, Vessella's concert band; 10, Bob Lehman's dance or-chestra from Steel Pier, Atlantic City; 11, Karl Bonavitz organist.

ehestra from Steel Pier, Atlantie City; 11, 1861; Bonawitz, organist.

WJZ, New York, N. Y. (Eastern, Daylight, 455), 1-2 p. m., Hotel Vanderbilt orchestra; 4-4:30, Frank Cromin, tenor; 4:30-5:30, Roger Wolf's Biltmore tea room orchestra; 7-7:55, Waldorf-Astoria orchestra; 7:55-8:10, "The Radio Franks." Wright & Bessinger; 8:10-8:15, Time Pop Question game; 8:45-9:30, Paragon Novelty trio; 9:30-10:30, sport talk, Fred Pictcher, Evening World; 10:30-11:30, Specht's Club Lido Venice orchestra.

Evening World; 10:30-11:30, Speeht's Club Lide Venice orchestra.

WLAG, Minneapolis-St. Paul, Minn. (Central, 417), 7:30-8 p. m., business message; 8:15-10 p. m., niunicipal concert, direct from Lake Harriet, Minneapolis, Minn., direction of Engichert Roengen; 11-12 p. m., dance program, Geo. Osborn's Nicollet Hotel orchestra.

WLS, Chicago, Ill. (Central, Daylight, 345), 8-1 a. m., national barn dance; Blue Hoosler four; violin and

minister.

WHK, Cleveland, Ohio (Eastern, 283), 8 p. m., concert program; solo numbers.

WHN, New York, N. Y. (Eastern, Daylight, 366), 3-4 p. m., Loew's Metropolitan theater; 9:30-10, Loew's Metropolitan theater; 10-11, Paul Specht's Post Lodgo orchestra, Larchmont, N. Y.

WHD, Des Moines, Iowa (Central, 526), 5-6 p. m., St. Augustine's choir, Mrs. Frank P. Flynn, director; 7:30-9:30, the Bankers Life Radlo orchestra.

WIP, Philadelphia, Pa. (Eastern, Daylight, 509), 11 a. m., services, Holy 'Trinity chapel; 9:30, special Sunday evening Atlantic City concert.

WJZ, New York, N. Y. (Eastern, Daylight, 455), 9-10 a. m., children's hour; 8:30-10:15. New York Philharmonic orchestra, direct from Lewisohn Stadium.

WLAG, Minneapolis-St. Paul, Minn. (Central, 417), 10:20-12 m., Plymouth Congregational church; 4:15-5:40 p. m., House of Hope Presbyterlan church service; 7:45-9. service, Central Lutheran church.

WLS, Chicago, Ill. (Central, Daylight, 345), 6:30-8 p. m., choir of Christ church.

Monday, July 28

(Continued from page 11)

7:30, dinner music; 9-11, concert, Wheat Ice Cream company, P. Arlow Matthews, director; 11:30, Vineent Lopez Hotel Statler dance orchestra, direction of Marchel Class.

company, P. Arlow Matthews, director; 11:30, Vineent Lopez Hotel Statler dance orchestra, direction of Harold Gleser.

WGY, Schenectady, N. Y. (Eastern, 380), 1 p. m., "Hints for the Home Maker:" 7:15, "Why Be a Farmer,' Enos Lee; 7:30, "Town and County Fairs," It. H. Wheeler; 7:45, WGY orchestra; Edward A. Riee, violinist; "Movie Notions," Quinn Martin; Olide G. Yettru, pianist.

WHAZ, Troy N. Y. (Eastern, 380), 9 p. m., Robert A. Geiger, baritone; J. Frank Canfield, violinist; Ceorge A. Geiger, pianist; Isarel Merwitz, reader; 10, Columbus: Social Cluh Italian band.

WHB, Kansas City, Mo. (Central, 411), 7-8 p. m., dance program, Frank R. Marks orchestra.

WHN, New York, N. Y. (Eastern, Daylight, 366), 2:15-2.30 p. m., Jimmy Clarke and his entertainers; 3:45-4, Unele Robert's chat with children; 4-4:15, Leon Stein, barltone; 5-5:30, Leonard Partridge's Mayflower orchestra; 6-7, alaniac festive board; 7-7:15, Roemer sport period, Thornton Fisher; 7:30-8, Roseiand danco orchestra; 8-8:30, People's popular concert, conducted by Mareia Schupac; 8:30-8:45, Vincent Lane, tenor; 8:45-9, blg brother period; 9-9:30, Palisades Park dance orchestra; 10-11, Jack Shack Radiocasting direct from Radio Shack.

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

In-11, Jack Shack Radiocasting direct from Radio Shack.

WHO. Des Moines, Iowa (Central, 526), 7:30-9 p. m., Emma Louise Anderson, violinist; Kathryn Fletcher, ceilist; Marguerlte Davis, pianist.

WIP, Philadelphia, Pa (Eastern, Daylight, 509), 10 a. m., seashore kossip; 3, "What the wild waves are saying," 3:30, Comforts philharmonic orchestra; 7, Unele Wlp's hedtlmo stories.

WLAG, Minneapolis-St. Paul, Minn. (Central, 417), 10:45-11:15 a. m., household hints; 2:10-2:30 p. m., women's hour, "Dressmaking," Mme. Myrtle Saperston; 2:40-4, matinee musical; 4-4:30, magazine reading; dinner hour cencert, Geo. Osborn's Nicollet Hotel orchestra; 7:30-8:15, farm lectures, "Hollow Bullding Tile;" d. Cermak.

WLW, Cincinnati, Ohio (Central, Daylight, 423), 4 p. m., opera taik; 8, grand opera, Cincinnati summer opera season, Ralph Lyford, director; Alvin Roehr's Music makers.

WMAQ, Chicago, III. (Central, Daylight, 447.5), 6

WMAQ, Chicago, III. (Central, Daylight, 447.5), 6 p. m., Chicago Theater organ; 6:30, Hotel LaSaile or-chestra.

chestra.
WMC, Memphis, Tenn. (Central, 500), 8:30 p. m., program, George W. Hughes, director.
WOAW, Omaha, Nebr. (Central, 526), 6 p. m., popular half-hour; 6:30, dinner program, itandall's Royal orchestra; 9, dance program, Bob Lee's Imperial Jazz

chestra; 9, dance program, Bob Lee's Imperial Jazzband.

WOC. Davenport, Iowa (Central, 484), 12 u., chimes; 8 p. nl., musical program; 10, musical program.

WOO. Philadelphia, Pa. (Eastern, Daylight, 509), 11 a. nl., Mary E. Vogt, organist; 12:02 p. ml., Wananuaker Crystal tea room oredestra; 5:45, Mary E. Vogt, organist; 7:30, Hotel Adelphia concert orchestra; 8, 1'hiladelphia Bureau of Health talk: 9, WOO concert orchestra, Robert E. Golden, director; 10, Hotel Adelphia dance orchestra, A. Candelori, director.

WOR. Newark, N. J. (Eastern, Daylight, 405), 2:30-4 p. ml., music, talks; 6:15-7:15, Elite orchestra; 7:15-7:30, sports, S-8:15, swimming lesson; 8:30-8:45, "Hollywood" McCosher; 9-10, Carolinians dance orchestra; 10-11, WOR Monday nighters.

WOS, Jefferson City, Mo. (Central, 440.9), 8 p. m., "Survey Brings Out Soil Facts," "The American Date Industry," Colonel Arthur T. Nelson; 8:20, music.

musie.
WQJ, Chicago, Ill. (Central, Daylight, 448), 3-4 p. m.,
"Pie Crust Easy to Make and Easy to Digest." Helen
Harrington Downing; "Talk on Personality and
Clothes," Anne Prang Knehans.

Harrington Downing; "Talk on Personality and Clothes," Anne Prang Knehans.

WRC, Washington, D. C. (Eastern, 469), 3 p. m., fashion developments of the moment, Women's Wear; 3:25, current topics, Editor of the International Interpreter; 3:35, piano; 3:50, "What Women Are Doing Today," Mrs. William Atherton Du Puy; 4:10, book review, auspices of the League of American Penwomen; 6, stories for children, Peggy Albion.

WSAI, Cincinnati, Ohio (Central, Daylight, 309), 10 p. m., special concert, Royal Garden orchestra.

WTAM, Cleveland, Ohio (Eastern, 390), 8 p. m., concert program; solo numbers.

WTAS, Elgin, Ill. (Central, 286), 7:15 p.m., Lee Sims, organist; songs, Mary Jaync; Albert Maiotto, composer; Lucky Wilbur, song writer; songs, Egbert Van Alstyno, Clem Dacy; 8-8:30, WTAS orchestra 8:30-8:45, trio, Hill, Hirsh, Gorney; 8:45-9, WTAS orchestra 9-9:30, William Anderson, Orpha Twingstrand; Walter Donovan; Carmi Romane; 9:30-10, WTAS orchestra; 10-11, request numbers, Lee Sims; oid-fashloned medley, Hill, Hirsh, Gorney; songs, Mary Jayne, Betty Holmes; WTAS orchestra.

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

Tuesday, July 29

Silent night for: KFOA, KFSG, KOV, KYW, WAAW, WDAR, WEAO, WFI, WOC, WOO, WOR, WRC. CKAC, Montreat, Can. (Eastern, Daylight, 425), 7 p. m., kiddies' stories in French and Englisb; 7:30, Mount Royal Hotel Main Dining room; 8:30, varieties from the Mount Royal roof garden.

KFI, Los Angeles, Calif. (Pacific, 469), 6:45-8 p. m., Aeotian organ recitat; 8-9, Ambassador hotel Cocoanut Grove orehestra; 9-10, Examiner, vocal and instrumental concert; 10-11, concert.

KFNF, Shcnandoah, Iowa (Central, 266), 7:30 p. m., Tingley, Iowa band.

KGO, Oakland, Calif. (Pacific, 312), 4-5:30 p. m., concert orchestra of the Hotel St. Frances; 8, Arion trio; KGO mixed quartet; Claire Harsha Upshur, soprano; Mary G. Richards, contralto; Gwynfi Jones, tenor; Hawailan melodles, Josepb Lario, Jack Andrade; Richard Lungren, bass; vaudeville sketch, Boruck and Tarieton; Joyce Holloway Barthelson, planist; Margaret Avery, cellist; 10-1, Henry Halstead's Hotel St, Francis dance orchestra.

KGW, Portland, Ore. (Pacific, 492), 3:30 p. m., children's program; 8, George Webber and his orchestra.

BUILT

KHI, Los Angeles, Calif. (Pacific, 395), 12:30-1:15 p. m., concert; 2:30-3:30, Hollywood Bowi program, sponsor, Mrs. J. J. Carter; presenting Bess Daniels, planist; 6-6:30, Art Hickman's concert orchestra; 6:45-7:30, chiidren's hour, Prof. Walter Syivester Hertzog; weekiy visit of Queen Titan and Sandman; bedtime story, "Uncie Join;" 8-10, de iuxe concert; 10-11, Art Hickman's dance orchestra.

KPO, San Francisco, Calif (Pacific, 423), 1-2 p. m., itudy Seiger's Fairmont Hotel orchestra; 2:30-3:30, Theodore J. Irwin, organist; 4:30-5:30, Itudy Seiger's Fairmont Hotel orchestra; 5:30-6:30, chiidren's hour stories, Big Brother of KPO; 8-9, Scotch program; 9-10, Robert Romani, Australian baritone; 10-11, E. Max Bradfield's Versatile band.

KYW, Chicago, III. (Ceniral, Daylight, 536), 11:35 a. m., table talk, Mrs. Anna J. Peterson; 6:45 p. m., chiidren's bodtime story; 7-7:30, dinner concert, Congress hotel; 8:20-8:45, American Farm Bureau fedoration: "Picnics that are Different," Mary Hale Martin; "Among Our Neighbors," W. E. D. Rummel; 8:45-9:30, Anne Ritchie, soprano; Sallle Mankes, pianls; Frank Sturtevant and his Chanticicer orchestra; saxophone trio, Sturtevant, Law, Froehlick; 10-11:30, "At Home" program.

WBAH, Minneapolis, Minn. (Central, 417), 12:30-1:30

phone trio, Sturtevant, Law, Froehlick; 10-11:30, "At Home" program.

WBAH, Minneapolis, Minn. (Central, 417), 12:30-1:30 p. m., Dick Long's Trio and soloist; 7-7:30 p. m., musical, Minneapolis Boy Scouts.

WBAV, Columbus, Ohio (Eastern, 423), 12 m., Iia Lorbaeh Owens, pianist; 8 p. m., WBAV orchestra, Frances Handlbeau, director.

WCAY, Milwaukee, Wis. (Central, 266), 10:30 p. m., late program, Puritan Harmony quartette and soloists; Harms String quartette.

WCX, Detroit, Mich. (Eastern, 517), 4:15 p m., musical program; 6, dinner concert; 10, Red Appie club.

WDAF, Kansas City, Mo. (Central, 411), 3:30-4:30 p. m., the Star's Radio trio; 5-3:30, weekly chiid talent program; 6-7, School of the Air, piano number on the Duo-Art; address, sixth of a series of plano lessons, Maudellen Littlefield; address, Cierin Zumwaft, M. A.; children's story and information period; music, Cari Norberg's Plantation players, Hotel Muehlebach.

WDAR, Philadelphia, Pa. (Eastern, Daylight, 395), 11:45 a. m., daily almanae; 12:02 p. m., Stanley theater organ recital; 12:30, Areadia Cafe dance orchestra; 2, Arcadia Cafe dance orebestra; Edna Finestone, planist; 7:30, Dream Daddy's bedtime stories.

WEAF, New York, N. Y. (Eastern, Daylight, 492), 11-

Finestone, pianist; 7:30, Dream Daddy's bedtime stories.

EAF, New York, N. Y. (Eastern, Daylight, 492), 1111:45 a. m, Board of Education; 11:15-11:30, motion picture forecast, Adele Woodard; 5-5:30 p. m., children's program; 6-7, dinner music, Waldorf-Astoria hotei; 7:15-7:30, Lifii Maurer Offen, soprano; 8-8:15, James R. Caffrey, baritone 9-10, Greystone hotei.

WEAO, Columbus, Ohio (Eastern, 360), 1:30 p. m., educational lecture, member Ohio State university faculty.

WFAA, Dallas, Tex. (Central, 476), 12:30-1 p. m., address, DeWitt McMurray; 8:30-9:30, orchestra recital, talent Van Aistyne, Ray A. Nunnallee, director; 11-12, Mrs. Margaret Fifer and her orchestra.

WGR, Buffalo, N. Y. (Eastern, Daylight, 319), 12:30-1 p. m., George Aibert Bouchard, organist; 6:30-7:30,

WGR, Buffalo, N. Y. (Eastern, Daylight, 319), 12:30-1 p. m., George Albert Bouchard, organist; 6:30-7:30, dinner music. WGY, Schenectady, N. Y. (Eastern, 380), 1 p. m., 'The Easy Meal for Hot Weather;' 6, dinner music, Joseph A. Chickene and his Clover elub orchestra; 7:30, New York Philharmonie orchestra, Ernest Reiner, conductor; 10:15, Stepheu E. Boiselair, organist WHAA, Iowa City, Iowa (Central, 484), 8 p. m., joint recital, Mrs. C. L. Robbins, pianist; Anna Pierce, soprano.
WHB, Kansas City, Mo. (Central, 411), 8-9:30 p. m., old time square dance music, Woodies Quadrille orchestra; 10:30-11:30, dance music, Frank R. Marks orchestra

old time square dance musie, Woodies Quadrille orehestra; 10:30-11:30, dance musie, Frank R. Marks orchestra

WHN, New York, N. Y. (Eastern, Daylight, 366), 5-5:30 p. m., Original St. Louis Rytbm Kings, Louis Maisto, leader; 6-7, alamac festive board; 9:30-10:15, Chas. Strickland'a Palisades Park orchestra; 10:30-11, Bertram J. Goodman orchestra.

WIP, Philadelphia, Pa. (Eastern, Daylight, 509), 10 a. m., seashore gossip; 3, "What the wild waves are saying," 3:30, Comfort's Philharmonic orchestra; 7, Uncle Wip's bedtime stories; 8, Comfort's Philharmonie orchestra; 9, Murphy's Steel Pier minstrels; 10, Marburger's Pennsylvania dance orchestra.

WIAX, Cleveland, Ohio (Eastern, 390), 7:30 p. m., program arranged by Cieveiand News-Leader; E. G. Johnson, bedtime story; Don Palmer, Radio talk eartoon; Joe Smith-Martha Lee club dance orchestra; Sidney Carter Johnson, soprano; Mrs. H. H. Blackburn, pianist; solo specialties.

WLAG, Minneapolis- St. Paul, Minn. (Central, 417), 10:45-11:15 a. m., household hints; 2:10-2:40 p. m., women's hour, "World Co-operation in 1924," Mrs. A. J. McGuire; 2:40-3:10, magazine reading; dinner hour eoncert, Geo. Osborns Nicoliet Hotel orchestra; 7:30-8:15 p. m., farm lectures, address, member of Minnesota County Fair Association

WLW, Cincinnati, Ohio (Central, Daylight, 423), 10 p. m., program, Bellonby Furniture company; Corinne Fuller, planist; Mary Elizabeth Waiiaee, violinist; Northern Kentucky male quartet; Robert Bellonby, saxophonist; Fred Knauer, baritone; 11:55, Chubb-Stelnberg orchestra.

berg orchestra.

WMAQ, Chicago, III. (Central, Daylight, 447.5), 6
p. m., Chicago Theater organ; 6:30, Hotel LaSalle orchestra; 8, Harry Hansen; 8:40, French lesson; 9, taik, United States civil service commission; 9:15,

orchestra; 8, Harry Hansen; 8:40, French lesson; 9, taik. United States civil service commission; 9:15, music.

WMC. Memphis, Tenn. (Central, 500), 8:30 p. m., program; 11, midnight frolic.

WOAW, Omaha, Nehr. (Central, 526), 5 p. m., address, H. V. Kaltenborn, associate editor of the Brooklyn Eagle; 6, popular half-hour; 6:30, dinner program, Russ Townsend's orchestra; 9, program, First Christian ehureh orchestra, Joseph F. Woolery, director.

WOO, Philadelphia, Pa. (Eastern, Daylight, 509), 11 a. m., Mary E. Vogt, organist; 12:02 p. m., Wanamaker crystal tea room orchestra; Robert E. Golden, director; 4:45, Mary E. Vogt, organist.

WOR, Newark, N. J. (Eastern, Daylight, 405), 2:30-4 p. m., music, taiks; 6:15-6:30, Halsey Miller's orchestra; 6:30-7, Man in the Moon stories; 7-7:15, Halsey Miller and his orchestra; 7:20-7:30, sports.

WQJ, Chicago, Ill. (Central, Daylight, 448), 3-4 p. m., book reviews, Rev. Fred Harrison; "Various Classes of Lighting," Curtis Lighting company; "Care of the Infant," Dr. Edward W. Westiand; 7-8, Tony Coreoran, tenor; Margaret Garrity, pianist; "Past, Present, and Future of Chicago Real Estate;" 10-2, Raiph Williams, and his Rainbo Garden orchestra; "How to Get Better Reception, Harry J. Marx; Harry Geise, pianist; Paul Lougher, tenor; Nubs Alian, contralto.

WRC, Washington, D. C. (Eastern, 469), 6 p. m., ehildren's hour, Peggy Albion; 8, music; 9:15, concert, trio from Irving Boernstein's Wardman Park hotel orebestra.

RADIO ENGINEERS

Many Advantages

Lincoln Collapsible Loops offer many advantages, appreciated by Radio Engineers and Radio enthusiasts.

Wave length range with 23 plate condenser is 160 to 600 meters.

H. F. Resistance at 400 meters—only 7

Wire is stranded, flexible and of great tensile strength and high conductivity. Inductance .2 millihenry.

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Lincoln Radio Corporation

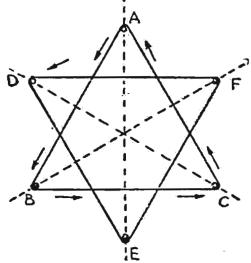
Chicago, Illinois

FOR THOSE WHO DEMAND THE BEST Great selectivity-no static-quality reception

director; 7:30, chimes concort; 8 p. m., Gibson orchestra; 9 p. in., musical program,
WTAS, Elgin, III. (Central, 286), 7:30.7:35 p. m.,
bedtime story, Oiivia; 7:30.8, orchestra; 8-3:30, popular song numbers; 8:30.12:30, Lampe's Trianon orchestra; Lee Sius, planist.
WWJ, Detroit, Mich. (Eastern, 517), 8 a. m., setting-up exercises, 1t. J. Horton; 9:30, talk, Detroit News woman's editor; 9:45, Fred Shaw, planist and songster; 12 n., Detroit News orchestra 3 p. m., Schmeman's band; 8, Detroit News orchestra.

Star-Shaped Coil Winding

While experimenting with a ccrtain hook-up, the writer needed a fixed inductance of 50 turns of wire, wound on a 3-inch tube. Not having a tube at hand, the coil was wound as follows: On a board about 6 inches square, two triangles were drawn, to form a star; the sides



of the angles were 3 inches long. At the apex of each triangle a nail was driven securely into the board, and this was used as a form for the winding.

The wire was twisted a few times around A and brought over and around the outside of B, then around C, and up to A, and then to D. This is approximately equal to one turn on a 3-inch tube. The winding continues on the second triangle in the same manner as on the first: From D to E, to F, to D, and then to B, etc., until the 50 turns were

A thin coat of colodium was applied to the coil and allowed to dry, after which the nails were removed and a drop of sealing wax put on the beginning and ending of the winding to hold them in place. This made a very neat appearing coil, very convenient to tap and of much lower distributed capacity than if wound on a 3-inch tube .- J. F. Reiners, Springfield, Mass.

Warning to Save Tubes

For the lasting benefit of your readers, the following word of advice recently in your columns should be placed on your first page continuously, under such a head as "Beware," and to include some valuable hints and warnings from time to time, such as this:

"Never leave the high-tension battery

Look at this эet

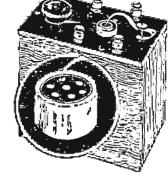
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All for



Here's a splendid crystal set-clear and plenty of volume up to 600 meters. In this set, as a special offer, is included the New Miller-B-Metal Semi-Fixed Crystal which alone retails for \$1.00. A highly polished bakelite disc which can be rotated over the entire crystal is a noticeable feature of the Miller Semi-Fixed Crystal. With this new crystal you set your catwhisker and enjoy the concert—no adjusting necessary.

Miller Guarantee back of every one, of course. Send money order or we will ship C. O. D.

JOBBERS—DEALERS

These sets sell like hot-cakes. Put them in your window and watch business pick up. Place your order now.

The A. H. Miller Radio Co. 1222 20th Street, Detroit, Mich.

A. H. MILLER, President Originator of B-Metal Formula

WSAL Cincinnati, Ohio (Central, Daylight, 309), 7 leads near the filament leads when they n. m., Hotel Gibson orcbestra, Robert M. Visconti, director; 7:30, chinnes concept; 8 p. m., Gibson orchestration of the contract will result in the humping out of the tube." are disconnected, as contact will result in the burning out of the tube.'

A tenderfoot myself and owner of a 3-tube reflex set, I had always supposed that that if I did not disturb the B battery connections, or go inside the box with a screw driver, I was pretty safe not to blow out my tubes. I learned my mistake when, having discontinued my storage A battery for use elsewhere, I later attempted to connect it to the set. The three tubes died out the instant I turned on the rheostat.

This leads me to suggest a second warning to be given to amateur and professional manufacturers of Radio sets-not to use one binding post for common use for both A and B batteries, as to one pole of each. The ruination of my tubes must have been caused by my hitching up the wrong A lead to the post which both batteries had to share on the panel. I was obsessed with a notion I had gathered in looking over the diagram of a small set I had put together, that A - and B - were always tied together any way in a circuit, and that they should share the one common hitching post on the reflex set panel. with the results above mentioned.—E. Logan, West Point, N. Y.

Radio Batteries -they last longer

Conspicuous for vitality and endurance -the right batteries by test and proof for every radio use.

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30 Minute A-B-C Lessons for Radio Beginners

Chapter XVIII, Part II—Hero Circuits of Radio

By P. E. Edelman

IN THIS series of articles the story of Radio is told in so simple a manner that the uninitiated can follow theory and practice whether or not he knows anything about electricity or its application to broadcasting and reception. The series consists of twenty-five chapters, of which the five next will be:

Chapter XIX-What is Doing in Complicated Circuits.

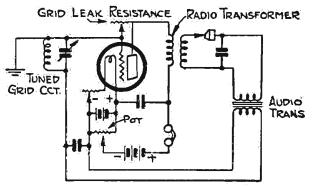
Chapter XX—How Far Can I Hear? Chapter XXI-Choosing a Radio out-Chapter XXII—Making Your Own

Chapter XXIII—Fixing Up the Radio

N FIGURE 177 the Radio output is rectified by a detector and put into the grid circuit as an audio current. Another reflex circuit is shown by Figure

178. Such circuits can be made to give nearly the equivalent of one stage Radio plus one stage audio amplification added to a detector. Link Circuits

Link circuits are not much used in

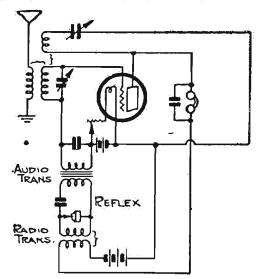


REFLEX (PHANTOM INPUT) Figure 177

broadcast reception but the principle is shown in Figure 179. This will lessen tendency of oscillating receivers to re- the amount of regeneration may be inradiate energy and also affords desirable creased.

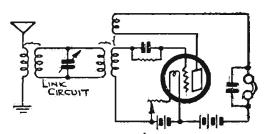
Super One-Tube Circuits

can be used on one tube. Familiar examples are indicated by Figures 180 and



REFLEX WITH REGENERATION (LATOUR RE-DESIGN) Figure 178

181. In such circuits, a self oscillating circuit is set up in the tube to modify the grid potential to permit using regeneration beyond the point which otherwise would not be feasible. Such circuits are effective when carefully adjusted. The principle of operation is diagrammed by Figure 182. An initial grid potential variation is maintained so that



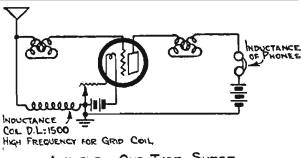
"LINK CIRCUIT (REGENERATIVE) Figure 179

Possible One Tube Circuits

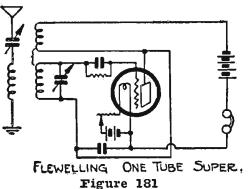
One tube can do any of the following Another class of circuits aims to in- and so combinations are possible. A dia-

crease the amount of regeneration which gram of possibilities is indicated by potential, and plate voltage must be em-Figure 183.

- 1. Amplification, Radio.
- 2. Amplification, audio. 3 Self oscillation.
- 4. Heterodyning.
- 5. Detecting.
- 6. Reflexing, Radio or regeneration.
- 7. Reflexing, audio.
- 8. Reflexing of heterodyned frequency output.
- 9. Phase adjusting.
- 10. Super-regeneration.



AUTOPLEX ONE TUBE SUPER Figure 180



To utilize more than one principle, the

Plain type:

43-plate \$3.00 at dealers

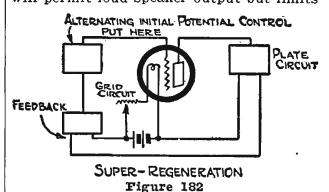
3-plate 5-plate

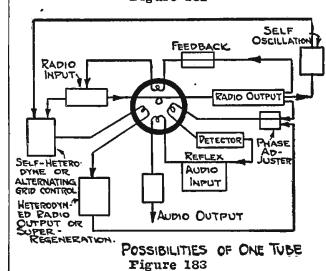
13-plate

17-plate

23-plate

ployed. In general, to get loud volume from one tube, the initial plate voltage must be raised so that five to ten milliamperes plate current can flow. This will permit loud speaker output but limits





what else can be done at the same time. Complex circuits become difficult to

(What is Doing in Complicated Circuits, proper initial operating conditions, grid will follow in this series .- Editor's note.)

\$4.00

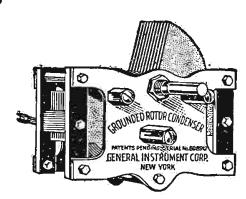
13-plate

23-plate \$4.50

43-plate \$5.50

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Radio Digest

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Vol. X

Chicago, Saturday, July 26, 1924

Back to Home Life

No More is the Home a Place to Eat and Sleep

ONDITIONS in the times of our fathers seem to Gavor home life. There was less for entertainment and the people were willing to spend much time in working on their home places, then in the hours of leisure they enjoyed home amusements, and the children settled down with the old folks and enjoyed games and reading and homemade music.

Then came a period when shows and entertainments and club life of all kinds were offered much more generally. These chances for amusement drew people away from their homes, until one's house became for many folks merely a shelter to sleep in and a place for "eats."

Now a new force is affecting life, and that is the invention of Radio apparatus. A great many people formerly were not content to remain at home, are now finding great pleasure at home in pursuit of this fascinating diversion.

Some of these are not satisfied now away from home, as they want to get back to their Radio instruments, and find what new things the marvelous currents of the air have to tell them. All tastes are satisfied. The grown-ups hear the business news and the political addresses, the people who love rythm and melody listen to songs and dance orchestras, those who want serious amusements have classical concerts and fine oratory.

Many a boy who formerly was not satisfied to settle down under the evening lamp, is now happy in his home life, as he tries to see over how great a distance he can make his instruments effective, or listens to the abundant material offered to interest the young crowd. This invention ought to make conditions somewhat easier for the parents of restless youngsters.

Sunday and Radio Increased Desire to go to Church

ONE of the evidences that Radio is fast becoming more than a toy is the way in which religious organizations are taking it up. The churches were at first dubious about it. They figured that once the residents of the farms got Radio sets they would stay at home on Sunday listening to the "big" preachers in the large cities instead of attending their own houses of worship. But instead Radio seems to have increased the desire to go to church. Perhaps this may be for the reason that the sets are not perfected and a fellow needs so much more religion and patience while listening in on one of them. But, for the fact that they are bringing church services to hundreds of invalids and to shut-ins throughout the country, to people not physically able to go to church, is a great thing in Radio's favor. Some of the largest churches are now spending hundreds of dollars yearly to get sermons to those who cannot leave their homes and beds. This alone entitles Radio to be classed as another modern God-send.

Summer's Deficiency

Do Not Expect Too Much in Warm Weather

TT IS not always possible to have excellent Radio I reception during the summer, the best long distance records come in the winter. Loud signals are infrequent and electrical disturbances are naturally more common and they interfere occasionally with concerts, particularly those received from distant points. A reasonable attitude will help the listener here. He should remember that he cannot expect every act in even the best vaudeville performance to be tremendously amusing and just what he wants, nor can he expect the weather each day to be clear and pleasant.

Similarly he must not expect every day to be just right for long distance Radio reception. Now and them a summer storm may interfere with both Radio and picnics. The listener should become acquainted with his local stations and enjoy them during the summer and be satisfied with the long distant records he has made, or will make, in the winter. In other ords, he should get the best there is in Radio during Il seasons, and above all he should be reasonable.

RADIO INDI-GEST



No, Thank Gawd!! By 5XV

MR. SMYTHE was evidently ill or badly distracted. For several days his appetite had been almost dead and the most careful and appetizing preparation of his favorite dainties, failed to attract him. She wouldn't ask him about it, however, because she was not a nagging wife; he hated nagging women. About the seventh day she began to suffer terribly and found that even her favorite chocolate creams failed to please her.

Mrs. Smythe talked this over with some of her friends who would merely shake their head. When her back was turned, they would glance commiseratingly at her and point expressively at wires suspended in the air from various neighborhood structures.

But this could not continue forever for Mr. Smythe had reached the breaking point. She was so curious that she was nearly prostrated. The tenth evening, luckily, Mr. S., after a bite to eat and looking extremely downcast, started to speak.

'My dear," he started. "Yes?" she questioned breathlessly (if that is possible.)

"My dear, I hate to tell you, knowing you have seen this occurrence before and that therefore you will realize more keenly what it means . . . " he paused and looked around as if looking for something and then continued: "My dear,—er—ah—well I may as well tell you: the

business has failed and I am a bankrupt." "Oh!" gasped Mrs. S. before she fainted, "Is that all? I was so afraid you had taken up Radio." And she carelessly swallowed a bon-bon as she "passed out."

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

Heinrich Schmearkase, 24 Gottmituns avenue, has just finished his 8 Crystal Super Set. Congratulations

Since WLS has taken the air, the Sears-Roebuck Catalogue has become one of the most popular Books

Gottlieb Hasenblick, 33 Homebrew street, has traded in his Super Nixo-Dyne for a rattling good crystal

Sydney Stein, 13 Blusenblosenhosen street, has made enough money from building Radio sets that he bought himself a store set yesterday. Atta boy, Syd. THE THIRD TROMBONE PLAYER.

This Is Leap Year; Reverse Your English

Dear Indi: Count me in with the Radio Workers of the World once more. DAMTHA low summer fares. Sir Arthur of Monrovia has returned to the Coast! Honestly, Indi, California knights are wonderful but the guy who said they were all cool never went flivvering on the River Road with Sir Arthur! I gotta stop and rub the rust off the antenna.

Don't broadcast this yet, Indi, but if Sir Arthur stays away too long, I shall consider applications for a substitute. Do you think 5XV or SIGNING OFF might send in theirs?

Mrs. Partington Speaks Out

Dear Indi: Mizz Partington says she seen it in her old home town paper where a big wind storm right recent did a lot of damages to some of her old neighbors. The electric lights, telephones and telegraphs was put out of service bad; the only way to get any place was by Radio, and all these icelated folks was able to bring in on their sets was the noise of McAdough's nomination, with one of his brass bands playing "Ther'll be a Hot Time in the Old Town Tonight" and other classical selections like

She says the poor victims should have some big and

liberal contributions sent to them for going through so much suffcrin', like when the Japs had their big earthquake and fire, some time back, and most all the other people give them gifts, for, she says, its terrible when misfortunes multiply that way, like when these people had survived one big wind, and then had to get caught in another one right off, even if they did SIGNING OFF. get it by Radio.

Secretary Hoover will not hold his third Radio conference till September. Yessirree, that'll be a lot better time to get front page stories in the paper.

Advantages, Etc., of Radio Parties

Dear Indi: One good thing about a Radio party is that you are not obliged to spread the cats. About the time eats should come on, the guests are getting up excuses to beat it without offending the host. I've heard 500 people in a metropolitan theater laugh themselves to a frazzle over a silly joke that made my the hicks are not in the sticks. W. P. B.

Watchful Waiting



Condensed By DIELECTRIC

So various are the expressions of opinion concerning the proper routine to be followed by announcers that one hesitates to say "Radio audiences prefer so and so," and yet we venture to assert that the great bulk of listeners in desire announcement of the station's call immediately following a number—not three or five minutes later. I doubt criticism is aimed so much at announcers who give their call infrequently, as at those who allow long waits between announcements or numbers on their programs. Let's see who wins the Gold Cup next September.

To anyone located where they may hear two-way conversations between airplanes and shore stations an interesting feature of Radiophony is assured. That immense giant dirigible Shenandoah flew over the city of Buffalo, N. Y., where Station WGR is located and the two of them made some pleasing contributions to the matter on the ether. Fort Hancock talked to a ship off the Atlantic coast and seemed pleased to know from the latter that its wave length (close to that of WOR) met with no interference. These sidelights on the "regulars" add to the sport.

Where receiving sets—crystal or otherwise—have enabled folks to listen to music as sent out on the air, a taste for good or mediocre compositions has been the result. Some of us already had our taste developed, but others had not been privileged to choose as they had not heard all classes of musical composition. But no effort had been put forth to train elementary pupils in learning to play an instrument before WDAF put into practice its plan whereby listeners may receive instruction in piano playing. This may be hard on your neighbors, but go to it!

Some of the Radiocast stations have made enviable reputations among the millions of listeners in as producers of drama, a form of entertainment not easily adapted to the requirements of Radio. During the past winter months at least one station in the east has devoted a great deal of attention to this particular feature and that is WGY. Radarios will be presented this summer from that station, though the WGY Players have concluded their season with a comedy, "Cappy Ricks." The Radario will no doubt improve with use. It is certainly a fixture.

When you stop to consider the great advance in Radiocast programs, both as to character and delivery, since we first listened in to speech and music, it seems remarkable to have progressed so far. Yet indications point to our moving ahead still faster in the coming months and approaching nearer and nearer to ideal Radiocast technique. The new General Electric station under way in Denver will have several improvements worthy of notice, among which are duplicate studios to enable artists to follow each other without delay except for announcer's statements, and means of varying the reverberation period. Important items.

You may not see so many references to practical application of Radio as once appeared, nevertheless, experiments are constantly in progress to find new avenues in which this medium may be utilized. In quite a number of cities the police departments have accepted the aid of Radio as of great benefit in apprehending criminals and quickly directing the movements of police officers. Birmingham offers another possible practical application of Radiocasting to business enterprise. In this case it contemplates equipping the taxis with receiving sets and the central office with transmitting ability to reach any taxi at Radio party curl their lips in contempt. Evidently all any time. Passengers could be entertained while in transit also.

England's New Unidyne Radio Receiver

Part III-Radio Frequency Hook-Up

By Harry J. Marx

T MAY seem funny but the moment any new circuit appears, there is an immediate response in the form of numerous letters requesting the circuit with more tubes added. Naturally this has not been the case "over here" in the case of the Unidyne because of the tube problem, but the English inventors appear to have anticipated the demand from their fans by promptly giving details of a circuit employing a stage of Radio frequency amplification in conjunction with the detector. This circuit used in conjunction with a stage or two of audio frequency amplification as shown in Figure three of last weeks article, should prove to be a popular all-around hook-up.

As might be anticipated, English fans refuse to give up regenerative features even when Radio frequency is employed, so we have the tickler from the plate circuit of the detector tube, inductively coupled to the antenna coil as shown in Figure 5.

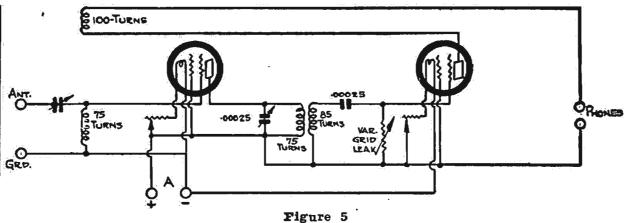
Details of the Circuit

The series condenser in antenna circuit is a variable with vernier (.0005 mfd. capacity). The antenna inductance has 75 turns and the tickler 100 turns. These can be honeycomb or spider web coils. Even a variocoupler with the proper number of turns will be suitable.

In the Radio frequency transformer, the following suggested construction is offered. The primary should be made of 75 turns of number 22 double cotton covered wire wound in a single layer on a 1% inch diameter tubing. The secondary has 85 turns of the same size wire on a 2 inch tube. The primary is then fastened inside of the secondary. Both windings should run in the same direction. The plate and grid connections should be made at opposing ends of the two windings.

Rather than the grid circuit, the primary is tuned by means of a .00025 variable condenser. A .00025 mfd. fixed grid condenser is used. The detector circuit has the usual variable grid leak.

The inventors lay particular stress on the fact that this grid leak must be of



high quality. It's resistance range should to the negative filament. The inner grid be from 500,000 ohms to 5 megohms. This as usual is conneced to the positive filavariation should be reasonably uniform. ment lead in both tubes. In the detector Many so called variable grid leaks fail circuit, the grid return is to the positive to do this entirely-further, their range seldom covers the limits specified.

filament terminal.

In this circuit, the grid return of the to be optional in as much as no positive first or Radio frequency amplifier tube is instructions covering same are offered.

Radio Becomes New Weather Forecaster

Your Radio set is a good weather forecaster, and as soon as you come to understand it, you will be able to predict atmospheric conditions with remarkable accuracy.

With experience it is quite an easy matter actually to predict the forthcoming weather by carefully noting the type of the static signals heard in the telephones due to unwelcome Radio waves of atmospheric origin." Thunderstorms, of course, produce the worst form of interference. They make their presence known by "clicks" and "cracks" in the telephone. These static disturbances are a source of great annoyance to Radio

engineers who are ever endeavoring to design circuits and devices to overcome these malicious oscillations.

Those who possess crystal detectors with their receivers will notice that during atmospheric disturbances of this nature the resulting static "clicks" will paralyze the crystal and will necessitate exploring of a fresh sensitive point with the usual "cats whisker."

Squalls before and during their throes of violence will produce a low rushing sound in the telephones, increasing in intensity to a crescendo as the storm is generally accompanied by a heavy Societies of Johannesburg, for a Radiostatic or electrical charge on the antenna, casting station to be installed in that city.

so that it is quite possible to obtain sparks of considerable dimensions between the aerial and the earth. It is of further interest to note that the direction of incoming squalls can be located by means of the Radio direction finder, static signals having a marked direction along the path of the squall.

Snowstorms produce a similar disturbance in the telephones as that due to squalls, although the intensity of these static signals are not so strong and do not impair reception to the same extent. Wind storms will frequently affect a tube receiver in such a manner as to bring about a continuous alteration of the tuning of the installation, causing signals to fade. Then again, there may be a tendency for the circuit to commence oscillating at an audible frequency. These effects are noticed when the lead-in wire from the aerial is brought down the side of the house, the wind causing the same to swing The use of a phone condenser appears to and from the wall, bringing about an altered capacity.

In the Sahara and other points on the globe where the phenomena of sand storms are a local occurance, Radio receivers are likely to be seriously hampered by these meteorological outbusts. The small particles of sand, during their hurtling through the air on the wings of the wind, become highly charged with frictional electricity which in turn is passed on to any aerial which happens to be in its path. The result is a heavy rushing sound in the telephones and intermittent "clicks."

Although not actually granted the government of South Africa has finally definitely promised a Radiocasting license to reaches its maximum. This phenomenon the Associated Scientific and Technical

CARTER

Portable Jack



\$1.50 Make your loud speaker

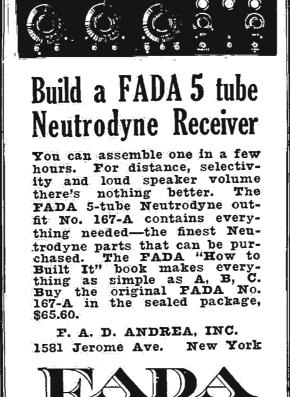
portable by using a Carter Portable Jack for extending to other rooms, out on the porch or garden. Take one with you on your vacation.

Any dealer can supply



EUVEODYN

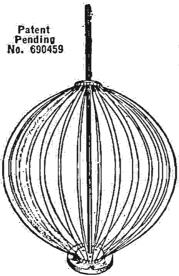
CLOSED



THE LAST WORD IN AERIALS

The Greatest Improvement in Radio Within the Past Year

Here it is at last—the very thing you have been looking for—a Non-Directional Aerial that can be used anywhere and on all makes of receiving sets. No longer is it necessary to string unsightly wires or be bothered with cumbersome aerials that pick up only from certain directions. THE PORTABLE GLOBE AERIAL, as the name indicates, is not only portable but collapsible, ornamental and, above all, mechanically perfect, bringing in messages no matter where from or how far away.



OPEN

It is the Only Aerial That is Non-**Directional**

Quick installation is another feature. It can be installed and used on the roof, hung out of the window, or in any room at home, at the office, in hospitals, on trains or ships, or out in the woods and summer camp, especially adapted for tourists. In its operation it is more selective and tunes much sharper and clearer with less static. The Portable Globe is the only Aerial to use in congested cities and crowded apartments where usually the interference is great, but which interference with the Globe is entirely eliminated. It is made of the finest Phosphor Bronze Spring wire with the Duco water and weather-proof finish_attractive as well as serviceable—a wonderful value, featured at a price within the range of everyone.

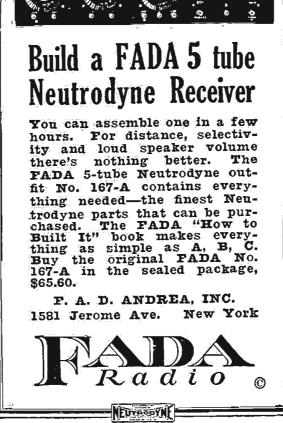
Order Today-Satisfaction Guaranteed Send in your order now. Be among the first to show your friends the latest and greatest improvement in Radio.

Send money 1000 Parcel post preorder or will paid to your ship C. O. D.

The Portable Globe Aerial Co.

1602 Locust Street, St. Louis, Mo.

"An Attractive Proposition to Jobbors and Dealers Who Order in Quantities."







Wave Length

The Reader's View

"Dream Daddy" Was Our First Music Advertiser

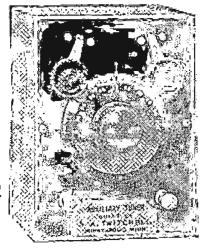
It occurs to me that there is one very serious mistake being made by the music publishers-entirely apart from any reference to the so-called music trust which has come under recent castigation—and that is their failure to advertise their music through the channels of the Radio magazines. It is almost certain that any zealous Radiophan will read from two to four Radlo magazines. He frequently reads them while seated before the Radio between Radio numbers from a favorite station. He hears an attractive melody and wonders where he could procure a copy of the music. Local music stores generally carry on their shelves what they please, not what the purchaser has recently heard. In small towns at least it is like pulling teeth to get either the sheet



Patents Pending Better Than a

Wave Trap Improved Model

A **TWITCHELL AUXILIARY** TUNER



connected to your instrument will positively eliminate all local interference and enable you to bring in distant stotions at any time. They are in successful use within 400 feet of large

broadcasting stations. They also enable you to receive on longer wave length than you can get without it.

All Goods Prepaid

S. A. TWITCHELL 1925 Western Ave. MINNEAPOLIS, MINN.

Weeks of delay accompany the effort and patience and the desire is lost. Even though the music dealer is obliging, the customer is unable to give him the name of the firm publishing the music. If the record and sheet music men would advertise their music in the Radio magazines-not broadcast it, saying, for example, "'Dream Daddy'-published by etc.—price—this song has been sung from stations so and so, etc."-I am very certain their sales would advance exceedingly and even the music dealers would profit by the customers being able to tell him where to get the music. For a year and a half I have waited to secure certain selections which I have heard and liked. At present there are a dozen or more I should very much like to possess. I have tried to secure phonograph records in half a dozen small towns within Ford range without avail. There seems to be no other way to get desirable player rolls, Of inductances

Pfanstiehl Reinartz

mahogany cabinet...

1 Precision Coil.

Amplex Grid Denser.

1 Pacent Single Jack
2 American Transformers.
1 Amsco Switch Lever.

3 Melco Sockets. 1 Pacent Double Jack.

KIT PRICE.....

Condenser

1 Bradleyleak.

SPECIAL

Drilled Panel, extra..

Web Coils with mechanism for supremely sensitive adjustment

Pfanstiehl Tuning Unit, consisting of 2 Spider

At all good dealers or direct

on receipt of purchase price

PFANSTIEHL RADIO SERVICE CO. Highland Park, Ill.

S. HAMMER RADIO CO.

303 Atkins Ave., Brooklyn N. Y.

These Are GENUINE Complete Parts

TUBE COCKADAY

4 CIRCUIT RECEIVER

TUBE COCKADAY

4 CIRCUIT TUNER

ohms.

Panel.

2 Amsco 26-Pl. Cond. 2 Dubilier .00025 Flxed 2 Amsco Rheostats, 20

Wired complete in Mahogany Cabinet

1 .0005 Dubliler 1 Pr. Como Dup. P. P.

Transformers
1 Panel, 1x12
1 Sub Panel, 3x21/4

| 1 Amsco Rheostat.

7 Switch Points.
2 Switch Stops.
1 Dubilier .0005.

1 Baseboard. Wire, Diagram, Etc.

\$35.00

<u>......</u>\$53.00

Bradleyohm.

phonograph records, and sheet music be- first evening I tuned in the following sta-fore the public than to follow up the tions: WEAN, WJAR, WSAD, WBZ, WHN, music or the phonograph records desired. broadcast with advertising in the papers WDAR, WCAE, WDAP, WSB, WOS, WJAZ, the Radio receiver people read. Start a and WGR. The next evening in addition campaign and go after the music publish- to the local stations we heard WGY, WHN, ers for advertising, but please, oh please, KDKA, WBZ, WDAR, WSB, WDAP, and do not include this advertising with the broadcasting.—W. C. Mongold, Fayette,

Lighthouse Keeper's Set

After following the diagram for the Lighthouse Keeper's set, as published in Radio Digest on March 1st, upon completion of the set I tried it out and it started right out to deliver the goods. I am so very much pleased with this set that I feel that I owe it to you to tell you what good luck I am having with it.

I am using a WD-11 tube, a 24 plate variable condenser, vernier type, 6 ohm rheostat, and a .00025 mica receiving condenser with 3 megohn grid leak. The

THE PERFECT GRID LEAK

\$1.85 Condenser Bradleyleak

Working Range 1/4 to 10 Megohms

This remarkable grid leak has leaped to prominence within three months, and is pronounced by leading radio engineers, such as Crosley, Kennedy, Cockaday, Flewelling, and others, as the most perfect of grid leaks. It is not a cheap makeshift. It is the best that has ever been made. Try one, to-night, and be convinced.



290 Greenfield Ave., Milwaukee, Wis. Mfrs. of Universal Bradleystat



For a limited time *only*, and to introduce this new and superior Storage "B" Radio Battery to the Public, we are selling it for \$4.00. Regular Retail Price is \$6.00. You save \$2.00 by ordering NOW. A finer battery cannot be built than the

World Storage "B" Battery

To ten million homes with Radio Sets—and to count-less millions of prospective buyers—this WORLD Stor-age "B" Battery brings a new conception of battery economy and performance. Here is a battery that pays for Itself in a few weeks—will last for years and can be recharged at a negligible cost. And you save \$2.00 by sending the coupon now.

A SUPERIOR BATTERY Equipped With Solid Rubber Case

The Solid Rubber One-Piece Container is an Exclusive Feature with the WORLD Storage "B" Battery. An insurance against breakage, acid and leakage. Has heavy duty 2 1-8 in. x 1 in. x 1-4 in. plates and plenty of acid circulation. Extra beavy glass jars allow ready observation of charge and prevent leakage and seepage of current. It holds its charge, while idle, at constant voltage.

you will find this battery a boon to long distance reception. It does away with a great many noises so often blamed on "static." Clip and mail the coupon today.

SEND NO MONEY

Just fill out the coupon below and we will ship day order is received. EXTRA OFFER: 4 batteries in series (96 volts), \$15.00. Pay Expressman after examining batteries. 5 per cent discount for cash in full with order. Send the coupon NOW and save \$2.00.

WORLD BATTERY COMPANY Makers of the famous World Radio
"A" Storage Battery

1219 S. Wabash Ave., Dept. 76, Chicago, Ill. This Coupon Is Worth \$2.00

Clip and Mail It NOW!

Name.....



RADIO By Mail

OUR NEW CATALOGUE

Is the most complete list of RADIO SETS and PARTS ever published and contains hundreds of articles which are used dally and are not sold by many firms. BE CONVINCED

Send 4c for your copy to-day and let us prove it,

AMPLEX "Grid-densers"

AMSCO 26-Plate vernler cond...........

Bradley-Ohm (No. 10, No. 23 or No. 50).......

again the next time WJAR, WEAN, WSAD,

WGY, KDKA, WBZ, WTAM, WSAI, WCAD, CKAC, WJAZ, WSB, and WDAP.

a month and as soon as we migrate to our

summer cottage down Narragansett Bay

this set goes too. Even as I write this

my wife interrupts me to come and listen

to a male chorus at station CKCH sing

"Annie Laurie," at 10:20 p. m.-Wilmarth

H. Colwell, 5 Lexington Ave., Providence,

We have been using this set now about

COMO duplex audio transformers (per palr)..... 9.29

ERLA REFLEX PARTS

HAMMARLUND CONDENSERS
Plain, 11-Plt., \$3.78 23-Plt., \$4.19 43-Plt., \$5.04
Vernier, 11-Plt., \$4.62 23-Plt., \$5.04 43-Plt., \$5.88

Prices F.O.B. St. Louis, Mo., Cash or C.O.D. SIMPLEX RADIO SALES CO. 1808 Lafayette Ave. Dept. D ST. LOUIS, MD.

Save at Modell's Some of Our Many Bargains

LOOP AERIAL

D76. Can be assembled by anyone in five minutes; all wood parts, wire and binding posts included, complete, 69c

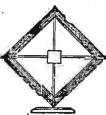




PLATE CIRCIUT "B" BATTERIES



were sold before.







America's Greatest Radio Retailers *191 FULTON *71 CDRTLANDT BRODKLYN
Cor. Church Near Washington **81 Flatbush Ave.
*14 CHURCH ST, 15 Whitehalf St. Post Radio Elec.
Cor. Cortl. Cor. Stone St. Corp.
(**Dpen Sat: Ev'gs) **241 W. 42d St. (**Dpen Ev'g)
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Worksman Radio Service THE ACCENT IS ON SERVICE NEW YORK 14-16 Vesey St. 1 Panel, 7x24 2 Amsco Swith Levers
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1 .00025 Dubilier **VARIOCOUPLERS** 1 Amsco 6 Ohm Rheostat 3 Amsco 20 Ohm Rheostats
2 Amplex Grid Densers
1 Durham Var. Grid Leak
1 Amsco 400 Ohm Potentiometer

1 Swltch Points
4 Swltch Stops, Wire, etc.
LIST PRICE\$72.45 Haynes Circult (with diagram)......... 7.00 Ambassador Coil (with diagram)........ VARIOMETERS \$3.50 Workrite \$2.95 5.00 Pathc Moulded 2.25 2.85 3.50 Fisher, Large CONDENSERS

\$2.00 R. C. 11 plate 2.25 R. C. 23 plate 2.75 R. C. 43 plate VERNIER CONDENSERS \$4.00 R. C. 23 plate \$2.25 5.00 R. C. 43 plate \$2.95

PHONES \$18.00 DR. SEIBT IMPORTED "SUPER \$6.90 \$12.00 N. & K., Imported.....\$6.90

The above items are just a few of our numerous attractive priced articles, which are contained in our BULLETIN DF RAD!D PARTS. Gladly sent to you upon request. We are headquarters for "Radion" and "Bakelite Dilecto" Panels. The best panel material available. Mail orders promptly attended to. Will ship C. O. D. unless remittance accompanies order.

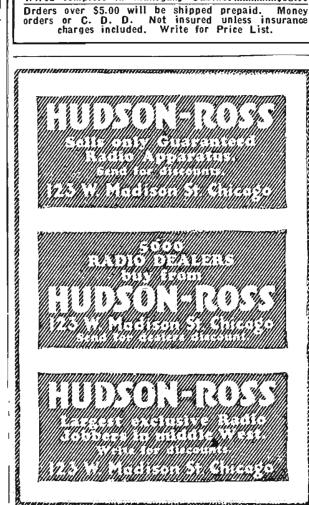


TRI-JACK is a dustproof, solderless, super-compact jack with practically zero capacity—the greatest im-provement in jacks so far. Solid bakelite! It costs only \$1.25.

TRI-COIL Radio Frequency Transformer has done wonders in the one tube reflex circuit. Sells for \$2. Write for the PREE construction booklet.

BROOKLYN METAL STAMPING Corp. 718 Atlantic Ave., Brooklyn, N.Y.





New Flewelling Super Portable Set

Loop Made by Winding Wire Around Cabinet

Using the diagram shown a set can be built very cheaply and is quite efficient. This set has a very good range as I have picked up long distance on a loop antenna

WORKSHOP KINKS EARN A DOLLAR-

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

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

consisting of eight turns of number 20 dcc. on a 21/2-foot frame.

The hook-up is self-explanatory, but if, after it has been hooked up and the tube turned on, it fails to oscillate, which may be told by the squeals or frequency whistle peculiar to the super sets, change the connections to the plate coil.

L1 is the loop antenna, which may be wound around the cabinet for a portable set or it may be an ordinary loop as described before. L2 and L3 are honeycomb coils of 75 and 50 turns. Spider web coils of 35 and 25 turns may be used instead. It is best to have these coils variable but it is not absolutely neces-

C1 is a variable condenser of .00025 mfd. or 11 plate capacity. C2 is a fixed condenser of .012 to .5 mfd. C3 is a variable grid leak and condenser. C4 is a variable condenser of .0005 mfd. While this condenser is not absolutely necessary it is a great aid for sharp tuning. A WD-

Buy your Keystone Arrestor today—install it according to instructions supplied, and forget about lightning. Made of Bakelite—weather-proof. No vacuum to lose. Approved by Underwriters. At all Dealers, \$1.50.

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Manufacturers of over a million Lightning Arrestors

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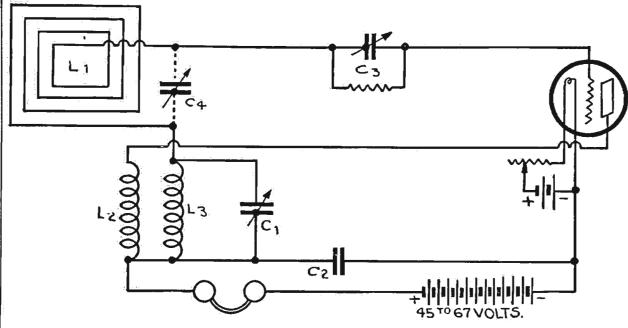


The Dubilier Duratran

The radio-frequency transformer that amplifies uniformly over all broadcasting wave lengths. Made to satisfy the man who knows radio.

DUBILIER CONDENSER AND RADIO CORP 43 West Fourth Street, New York

LONG DISTANCE ONE-TUBE CIRCUIT



12 vacuum tube was used by the author but the type UV-199 would probably be preferred for a portable set.

There is very little to say regarding the operation of this set. With the set operating at the high pitched whistle vary the grid leak until the whistle is almost inaudible and then turn the condenser C1. If there is anything in the air it will come in.

This set is really simpler to build and operate than a common regenerative set. As to the volume a station 25 miles away comes in so loud that the signals are plainly audible with the phones lying on the table.-Lee H. Bolen, Hamilton, Mon-

Simple One-Tube Hook-Up

With the hook-up shown I have obtained better reception than any person in my neighborhood. The coil is wound with number 24 dcc. wire. The condensers are

> **MAGNATRON** MAGNATRON DC-199 knows no superior among dry cell tubes. Whether as detector or as am-

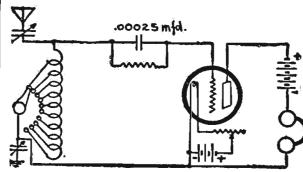
plifier, it will give better results in your set. It and the MAGNATRON DC-

201A are unquali-fiedly indorsed by

Your dealer has these tubes. They

list at \$5.

11-plates each. Both are quite important in this hook-up. I have an aerial 30 feet



above the ground and have heard from 35 to 40 distant stations.—Harold Beardslee, St. Louis, Mo.

A speck of dust is sufficient to cause the whole set to stop working if it happens to get in the right place.

Tube for Tube-the
Tube for Tube-the
Most Powerful Circuits
Write for
Ever Built. Write 16

Ever Built. Williams No. 16 Electrical Research Laboratories

Flectrical Research Laboratories

Flectrical Research Laboratories

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CONNEWEY ELECTRIC LABORATORIES 309 Fifth Avenue NEW YORK CITY

Crystals w n of **Ouality** Trade Mark Reg. U. S. Patent Office.

The B-METAL Loud Talking Crystal was the first really standard crystal offered under a reliable "complete satisfaction guarantee," and it sprang into immediate popularity, remaining at present in its third season, the best seller of any standard priced and quality crystal.

B-METAL has kept pace with developments and has constantly been improved by the use of purer base materials, scientific treatment, and more care in inspecting and testing. The quality has gone up 100% and the price is still 50 cents. No premlums are offcred to sell B-METAL, nor can Genuine B-METAL Crystals be bought at less than standard price.

price.

If your dealer cannot supply you, send to us. We will send one only to anyone writing us and agreeing to pay promptly it satisfied.

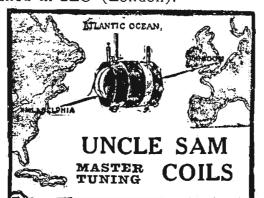
We want every Radio owner to know what B-METAL Crystals are. Write

Dealers and Jobbers please get our proposition



PHILADELPHIA TO LONDON

Quoting from front page of Philadelphia Inquirer, December 26th, 1923: "At about 10:57 o'clock Mr. tuned in 2LO (London).'



Brings in Stations You Never Heard Before

Ask your dealer or send self-addressed stamped envelope for wiring diagrams and panel layouts of circuits in which the wonderful Uncle Sam Coil can be used.

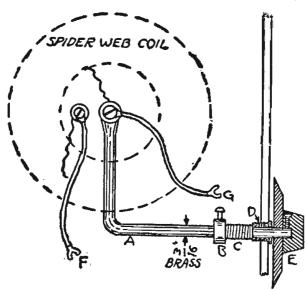
Price \$5.50

UNCLE SAM ELECTRIC CO. 217 E. 6th St. PLAINFIELD, N. J.

Panel Mounting Shaft For a Spider Web Coil

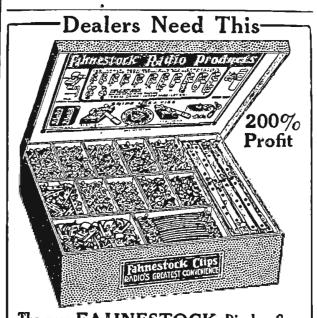
Procure a brass rod A 71/4 inches long and 3/16 inch in diameter and bend it at a point 4 inches from one end to an angle of 90 degrees, as shown in the illustration. Flatten the short end to about 1/16-inch thick and drill a 3/16-inch hole through the flattened part.

Procure a collar with a set screw B.



a spring C and a brass bushing D. Drill a 1/4-inch hole in the panel and insert the bushing, put on the dial, tighten the tension spring and it is ready for use.

It is best to mount the stator coil on the end of the cabinet with the tickler coil next to it. I have a set in which I use two of these coils, and it may be used on three coils as well .- George Sherwood, St. Paul, Minn.



money order or check accompanies order. Subsequent orders at regular price of \$20.00.

contents Retail for \$51.50

Refills will be supplied at the regular 100 lot prices, shown in catalogue, which comes with case, less discount shown on enclosed sheet. Send check or money order, today.

FAHNESTOCK ELEC. CO. LONG ISLAND CITY NEW YORK



It will pay you to keep your eye on PREMIER this season. There will be some new surprises that will make you "Sit up and take notice." PREMIER PARTS will be very much heard from and talked about so keep "tuned in." Send for latest Bulletin No. 94!

Ask your dealer

Premier Electric Company

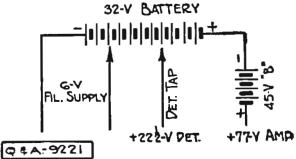
3810 Ravenswood Ave. CHICAGO

Ouestions and Answers

Delco System

(9221) TRS, Maumee, Ohio.

using a tap from the standard storage capacity they equal will be of great interbattery cells of a Delco light of a Willys-Lite farm lighting plant for A or B battery? Can you give me the benefit of some one's experience?



A-The direct current from a farm lighting system can be used for tube supply by tapping at three cells for filament and at least a thirty-two-volt unit for the plate. To obtain higher voltage a dry cell B battery can be placed in series. We are presenting a diagram showing a method of making connection.

Condenser Capacities

(06339) W. A. M., San Antonio, Texas. I am a regular subscriber of Radio Digest and keep a complete file on hand, and, due to the fact that most hook-ups mark the variable condensers by capacities. such as .0005, .00025, etc., I am at a loss to find out correctly through Radio dealers

PATENTS Procured. Send sketch or model today for examination, prompt report and advice. No charge for preliminary advice. Write for free Booklets "How to Obtain a Patent" and "Invention and Industry" and blank form on which to disclose your idea. Highest references. Promptness assured. Clarence A. O'Brien, Registered Patent Lawyer, 2002 Security Bank Building. Directly across the street from Patent Office. Washington, D. C.

FREE

Attractive Radio Catalogue

Just write your address. You need not include

NOVICK RADIO CO. 1522 Charlotte St. Bronx, New York City

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Neutrodyne, regenerative and reflex combined in one single receiver.

You find this in the Shamrock-Harkness set. Send 10 cents for booklet.

SHAMROCK MANUFACTURING CO. Dept. 22-A, Market St. Newark, N. J.



KKK KKKK KKKK

514-Page RADIO Handbook Only \$1

Just off the press. The greatest book on Radio ever written. 514 pages. Compiled by Harry F. Dart, E.E., formerly with the Western Electric Co., and U. S. Army Instructor of Radio. Technically edited by F. H. Doane. Filled with sound, practical, tested information for every radio fan, from beginner to hard-boiled owl. Send \$1 to-day, and get this 514-page I. C. S. Radio Handbook before you spend another Handbook before you spend another cent on parts. Money back if not satisfied. 50,000 already sold.

Mail the Coupon To-day

International Correspondence Schools Box 8279-K. Scranton, Penna.

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

equal. I am sure that a complete list of So far as you know, has any one tried all sizes of variable condensers and the est to myself and readers in general.

A.—Capacity of variable condensers are as follows: Eleven plates, .00025 mfd.; seventeen plates, .00035 mfd.; twenty-three plates, .0005 mfd., and forty-three plates,

The above are more or less standard, but with different plate areas the capacity changes.

Electrolytic Rectifier

(8629) WFC, Bristol, Conn. In the Radio Digest of week, ending March 15, 1924, you printed how to make an Electrolytic Rectlfier. I made one just as described, but it does not work. One of the jars gets hot and the solution becomes milky. The aluminum and lead rods are % inch diameter and 6½ inches

SELL Coal in Carload Lots. Side or main line. Experience Unnecessary. Earn week's pay in an hour. Liberal drawing account arrangement. WASHINGTON COAL COMPANY, 945 Coal Exchange Building, Chicago.

RADIO CHART and CLOCK DEVICE

Know the time to tune in for all distant stations. Shows the time to tune in for all distant stations, shows the time in all parts of the Globe. Is useful to all Radio Fans, instructive and educational. Complete instruction furnished. Limited number only.

50 cents while they last. Send No Stamps.

RADIO CHART & CLOCK DEVICE Dept. M, 7154 Emerald Ave. Chicago, Ill.

S. & H. "B" BATTERY-

"Will Keep Your Set Alive" Is "NOISELESS," increases volume and range with maximum clearness. Made of the finest material to give extra service. Are not two days old when they're sent to you.

22½ V. Variable. Large M'd'm Small \$1.80 \$1.60 \$1.00

45 V. Varlabie. Large Medium Small \$3.60 \$2.75 45 V. Varlable. Large Medium Small \$3.60 \$2.75

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What About It?

Isn't it about time to stop experimenting with multiple control circuits and build one that, combining ease of assembly and operation, loudness, clarity and selectivity of signals, as well as beautiful appearance, is excelled by none?

THE ELGIN SUPER-REINARTZ RADIO RECEIVING SETS

Embodies all the advantages of the well known Eigin Reinartz (the set which was largely sponsible for the popularity of this wonderful circuit) and many others. It is much louder, more selective, requires no storage battery, and can be used with excellent results on a short or loop aerial.

It has brought in 2LO England, and California stations two thousand miles from Elgin, clearly and without interference on a loud speaker with only one tube, and that while our powerful local station was broadcasting three miles away.

Could you ask for more.

Send 2-cent stamp for circular giving one, two and three bulb hook-ups of this remarkable circuit.

ELGIN RADIO SUPPLY CO. 207 East Chicago Street ELGIN, ILLINOIS



just how many plates these capacities long. You would oblige me very much ber of turns of wire to be used on the if you will tell me my trouble?

will in all probability boil, but that will not effect the charger adversely, nor pre- a VT-2. vent its functioning.

Hartley Circuits

(8510) LTL, Selma, Ala. Referring to a Radio Digest dated June 30, 1923, I am taking the privilege of asklng the following questions: Will you please give me the contents of the various Instruments of the "Grid Tickler" and 'Hartley" circuits shown under question 3651? I especially want to know the num-

"CRYSTAL Sets Tested 600 Miles." You can now get a genuine Lambert Long Distance Crystal Radio Set for only \$4.98. Particulars free. Leon Lambert, 501 Volutsia, Wichita, Kansas.

Panel Shielding After Your Set Is Finished

A liquid metal; cuts out body capacity, brings in music clear and sweet. Done in 5 minutes. One can will shield 5 or more sets; 50c per can. Also a liquid spaghetti can be put on after set is finished, fine for insulating the base board, 50c per can. Post

WALKER MANUFACTURING CO. 247 Scott St.

Bankrupt Stock

Cunningham Regenerative one tube long range sets \$9.00 Each Formerly sold at \$32.50

No Circulars. Order from This Ad. This set with tube, phones, all batter-

Prepaid while they last.

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Dealers and Agents write for Special Discount Mail Orders Solicited and Promptly Attended to

WD-11, WD-12, Our Specialties

WD-11\$2.50	DV-6A\$2.50
WD-12 2.50	UV-199 2.50
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UV-201 2.50	UV-201A 2.5Q
C-300 2.50	C-301A 2.50
C-301 2.50	Marconi 2.50
DV-6 2.50	Moorhead 2.50
DV-1 2.50	6 V. Plain Det 2.50
DV-2 2.50	6 V. Plain Amp 2.50
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H. & H. RADIO COMPANY P. O. Box 22-A

Clinton Hill Station NEWARK, N. J.

E3/E3/E3/E3/E3/E3/E3/E3/ The New STAR Type E. Detector

For Crystal or Reflex Sets Price



We offer the STAR TYPE E Detector which Is covered by

which is covered by our guarantee of complete satisfaction and is soid at the LOW-EST PRICE of any RELIABLE DEmade and is set with one of our very best rectifying materials. It is made so that in case of necessity it may be adjusted and while it is not especially designed for reflex sets many excellent reports of performance on these many excellent reports of performance on these sets have been received.

THE TYPE E DETECTOR IS THE BEST BUY IN THE CRYSTAL MARKET TODAY and will be sent subject to exchange for any other item we make.

DEALERS send to-day for our FALL CAT-ALOGUE NOW READY, and get all set for the big season ahead.

DETROIT - MICHIGAN

two coils so as to be able to get to 200 A .- The action encountered is normal. meters. I wish to use a .0005 mfd. vari-The solution gets milky and the water able condenser in the secondary of the grid tickler circuit. I am going to use

A.-A standard CW inductance is indicated. To tune to 200 meters it will be necessary to employ a wave meter.

The tickler coil is a variometer rotor with about ten turns of number 10 wire, mounted at the ground end of CW in-

Don't You Get

Tired of only hearing LOCAL stations on your Crystal Set? There's music on your aerial every night from stations far away. If you want to hear it without buying a tube set. WRITE ME TODAY eet, WRITE ME TODAY.

LEON LAMBERT

501 South Volutsia Wichita, Kansas

Super Heterodyne

Attractive Discounts Bransloo Kit No. R. 100, Complete, \$36.50 Contains-3 Intermediate R. F. Transformers,

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Complete Stock of FADA Kits and Sets 128 Page Catalog No. L25 FREE

AMERICAN RADIO MFG. CO. Oept. V, 6 West 14th St. Kansas City, Mo.

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RED-HEADS" are guaranteed radio phones.
You run no risk when you buy them. Money back if, after 7 days' trial, you're not satisfied that they're the best receivers on the market at the price. Why not act right now and get a pair? It'll mean getting the maximum from broadcasting from the day you



The new 1924 Model F The new "Red-Head" Jr. \$6.50 Per Pair Complete

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A 24-Volt "B" Storage Battery positively given FREE with each purchase of a WORLD "A"
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5 per cent discount for cash in full with order.

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Te be seid retail for \$6.00. It is the only battery of its kind
equipped with selid rubber case—and insurance agaiest acid
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offer NOW. (To those whe prefer it, we will send FREE a
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Radiophone Broadcasting Stations

Corrected Every Week-Part IV

FIND MISTAKES AND YOU'LL GET DOLLAR

NE DOLLAR will be paid to the Radiophan resuler of Radio Digest submitting the most errors in any one station's listing in the Directory of Radiophone Stations, which appears in five parts, serially continuously, on page 19. Letters must reach Radio Digest's office not later than one week from date of issue corrected. Readers are not limited to correcting one station, but such corrections must be verified by the stations themselves, and NOT by comparison to other socalled accurate broadcasting directories or lists. Turn in corrections for as many stations as you can find—if you can find errors! Use separate sheet of paper for each station submitted and place name and address on each sheet. In case of tie, duplicate awards will

(The following schedules completes the alphabetical atton data list, Part 111 of which was given last

week.)

WKBF, Providence, R. 1. 286 meters. 500 watts.

Dutee W. Flint, Inc. Slogan, "Quality First." Mon, 5-6 pm, children's hour. Thurs, 7:30-8:30 pm. Sun, 6-7:10 pm, organ. Every other Tues, 8:30-10:30 pm. Eastern daylight saving.

WKY, Oklahoma City, Okla. 360 meters. 100 watts. WKY Radio Shop. Mon, 9-10:30 pm. Thurs, 9:30-11 pm, concert. Daily ex Sun, 7-7:30, sports. Sun, 11 am, 7 pm, church service. Central, WLAG, Minneapolis and St. Paul, Minn. 417 meters. 500 watts. Cutting & Wash. Radio Corp. Slogan, "The Twin City Radio Central in the Land of Ten Thousand Lakes." Daily ex Sun, 9:30 am, 9:40, 10, 10:30, 10:45, 11:30, 2 pm, 2:30, 4, 6, 7:30, 9:15, markets, lectures, music; 5:30-6 pm, children's program. Mon, Thurs, 2:40 pm, matinee. Mon, Tues, Thurs, 6:15-7 pm, music. Wed, Fri, Sat, 8:15-9:15 pm, music; 11-12:30, dances. Sat, 11-12:30 am, music. Sun, 10:30 am, 4:15 pm, 6:30, 7:45, church services. Central.

music. Sun, 10:30 am, 4:15 pm, 6:30, 7:45, church services. Central.

WLAH, Syracuse, N. Y. 234 meters. 100 watts. Samuel Woodworth. No regular shedule.

WLAL, Tulsa, Okla. 360 meters. 100 watts. Naylor Elec. Co. Wed, Fri, 8 pm, music. Sun, 11 am, 7:30 pm, church services. Central.

WLAP, Louisville, Ky. 360 meters. 20 watts. W. V. Jordon. Tues, Fri, 9:20-10 pm. Central daylight

WLAQ, Kalamazoo, Mich. 283 meters. 10 watts. Arthur E. Schilling. Daily ex Sun, 11:30-12:30 pm. Thurs, 10:30-12:30 pm. Sun, 2:30-5 pm. Central Daylight

Saving.
WLAV, Pensacola, Fla. 254 meters. 20 watts. Elec.
Shop, Inc. Daily Mon, Tues, Fri, 8-9 pm, music,
entertainment. Central.
WLAW, New York, N. Y. 360 meters, 500 watts. New

entertainment. Central.

WLAW, New York, N. Y. 360 meters, 500 watts. New York Police Dept.

WLAX, Greeneastle, 1nd. 231 meters. 10 watts. Green-castle Community Broadcasting Station. (Putnam Elec. Co.). Tues, 7:30 pm; Thurs, 7:30. Sun, 7:45 pm, church services, Central.

WLB, Minneapolis, Minn. 360 meters. 5 watts. U. of Minn. Dept. of Elec. Eng.

WLBL, Stevens Point, Wis. 278 meters. 500 watts. Wisconsin Dept. of Markets. Slogan, "Wisconsin, Land of Beautiful Lakes." Daily ex Sun, 8:45 am, 9:45, 10:45, 11:45, 12:30 pm, 1:45, markets; 2, news. Wed, 8 pm, music. Central.

WLS, Chicago, 111. 345 meters. 500 watts. Sears, Roebuck & Co. Dally ex Sun, 1-2 pm, farm program. Tues, Thurs, 6:30-1 am. Wed, Fri, 6:30-11 pm. Sat, 8-12 midnight, barn dance. Sun, 6:30-8 pm. Central daylight saving.

WLW, Clucinnati, O. 423 meters. 500 watts. Crosley Radio Corp. Daily ex Sun, 10:30 am, 1:30 pm; daily ex Sat, Sun, 3, 4, reports. Mon, Wed, 8-10 pm, entertainment. Tues, Thurs 10-12 pm, music. Sun, 9:30 am, S. S. services; 11, 7:45 pm, church services; 8:15, orchestra. Central daylight saving.

WMAC, Cazenovia, N. Y. 261 meters. 200 watts. C. B. Meredith. No definite schedule.

WMAF, Dartmouth, Mass. 360 meters. 500 watts. Round Hills Radio Corp. Slogan, "The Voice from 'Way Down East.'" Temporarily discontinued.

WMAH, Lincoln, Neb. 254 meters. 100 watts. General Supply Co. Club, "Lincoln Hoot Owls." Mon, Thurs, 8 pm. Sat, 12, midnite owl program, music. Central. WMAK, Lockport, N. Y. 273 meters. 500 watts. Norton Labs. Off the air for the summer.

WMAL, Trenton, N. J. 236 meters. 50 watts. Norton Labs. Off the air for the summer.

WMAL, Trenton, N. J. 236 meters. 50 watts. Trenton Hdwe. Co. Slogan, "The Home of Good Music." Mon, Thursday, 7:30-9 pm, music, lecture, Eastern daylight saving.

Thursday, 7:30-9 pm, music, lecture. Eastern daylight WMAN, Columbus, O. 260 meters. 100 watts. First Baptist church. Sun, 10:30-12 m, 7:30-9 pm, church

WMAN, Columbus, O. 260 meters. 100 watts. First Baptist church. Sun, 10:30-12 m, 7:30-9 pm, church services. Eastern.

WMAQ, Chicago, 111. 448 meters. 500 watts. The Chicago Daily News. Mon, Tues, Thurs, 4-5 pm. Daily ex Sun, 2:30-3 pm. 6-7. Daily ex Sun, Mon, 8-10 pm. Central daylight saving.

WMAV, Auhurn, Ala. 254 meters. 500 watts. Alabama Polytechnic Institue. Closing for the summer.

WMAY, St. Louis, M. 280 meters. 100 watts. Kingshighway Presbyterian church. Slogan, "May Every By-Way Hear Kingshighway." Sun, 11 am, 7:30 pm. Central.

Central.
WMAZ, Macon Ga. 261 meters. 100 watts. Mercer

wMAZ, Macon Ga. 261 meters. 100 watts, Mercer university. Off the air for aummer.

WMC, Memphis, Tenn. 500 meters. 500 watts. The Commercial Appeal. Slogan, "Station WMC, Memphis."
"Down in Dixie." Club, "Midnight Frolic." Daily ex Sun, 9:45 am, 12:30-1:30, weather, markets, music. Daily ex Sun, Wed, 8:30 pm, program. Tues, Fri, 11 pm. Midnight frolic. Sun, 11 am, church service. Central.

WMM Cincinnati Ohio, 309 meters, 500 watts. Atna-

Central.

WMH, Cincinnati, Ohio. 309 meters. 500 watts. Ainsworth-Gates Radio Co. Hotel Alms. Slogan, "The Station on the Hill." Wed, Thurs, 8-10 pm. Sat, 10-12 pm. Sun, 10 am, 12:30 pm. Central daylight

WMU, Washington, D. C. 261 meters. 100 watts. Doubleday-Hill Elec Co.
WNAC, Boston, Mass. 278 meters. 100 watts. Shepard

WNAC, Boston, Mass. 278 meters. 100 watts. Shepard Stores. Daily ex Sun, 1-2 pm, 4-5, 6:30-7:30, 8-10. Mon, Wed, Fri, 6-8 pm. Sun, 11-12 m, church servlces; 3-4 pm, concert; 7:30-9:30, church and concert. Eastern daylight saving.
WNAO, Norman, Okla. 360 meters. 100 watts. Univ. of Okla. Closed for the summer.
WNAL, Omaha, Neb. 266 meters. 100 watts. R. J. Rock-

WOAE, Fremont, Neb. 280 meters. 20 watts. Midland College.
WOAF, Tyler, Tex. 360 meters. 10 watts. The Tyler Commercial College. Daily ex Sat, Sun, 12 m, weather, markets; 12:40 pm, concert; 4:25, sports; 8 pm, weather, sports codes; 10:15, U.S. Navy press. Sun, 11 am, 7:30 pm, church services. Central.
WOAG, Belvidere, 1ll. 273 meters. 200 watts. Apollo Theater. Closed for the summer.
WOAH, Charleston, S. C. 360 meters. 10 watts. Palmetto Radio Corp. Mon, Thurs, Sat, Sun, 10 pm-1 am, music. Eastern.

metto Radio Corp. Mon, Thurs, Sat, Sun, 10 pm-1 am, music: Eastern.

WOAI, San Antonio, Tex. 385 meters. 500 watts. Southern Equlp. Co. (Eevening News-Express.) Daily ex Sun, 10:30 am, 12:15 pm, 3, markets; 7, sports, markets. Tues, 9:30-10:30 pm, Thurs, 7:30-8:30 pm, music; Sun, 11 am, church service; 9:30-10:30 pm, music. Central.

WOAN, Lawrenceburg, Tenn. 360 meters. 200 watts. James D. Vaughan, Daily ex Sat, Sun, 8:30-9:30 pm. Eastern.

music; Sun, 11 am, church service; 9:30-10:30 pm, music. Central.

WOAN, Lawrenceburg, Tenn. 360 meters. 200 watts. James D. Vaughan. Daily ex Sat, Sun, 8:30-9:30 pm. Eastern.

WOAO, Mishawaka, Ind. 360 meters. 50 watts. Lyradion Mfg. Co. Irregular schedule.

WOAP, Kalamazoo, Mich. 283 meters. 50 watts. Kalamazoo College. Slogan, "The Oldest College in Michgan." Tues, 7-8:30 pm. Central.

WOAT, Wilmington, Del. 360 meters. 100 watts. Boyd Martell Hamp. Temporarily discontinued.

WOAV, Erie, Pa. 242 meters. 50 watts. Pennsylvania Natlonal Guard. Slogan, "Wayne Rangers. Club, Neversleep Club." Tues, 8:30 pm. Thurs, 8 pm. Sun, 9:30 pm. unsic. Sun, 1-4 am, Milkman's mathee. Sun, 10:30 am, 7:45 pm, church services. Eastern.

WOAW, Omaha, Neb. 526 meters. 500 watts. Woodmen of the World. Slogan, "Gateway to the West and to the East." Mon, Tues, Thurs, Fri, Sat, 6-7:30 pm, 9-11, concert. Sun, 9-11 am, 9-11 pm. Central.

WOAX, Trenton, N. J. 240 meters. 500 watts. F. J. Wolff. Mon, 9:15-11 pm, orchestra. Daily 11 am, 12:15 pm, weather. Eastern.

WOC, Davenport, 1a. 484 meters. 500 watts. Palmer School of Chiropractic. Slogan, "Where the West Begins and the State Where the Tall Corn Grows." Daily ex Sun; Tues night; 9 am, markets; 10 am, household hints; 10:55, time; 11, weather; 12 m, chimes; 1 pm, markets; (Sat, 11:15), 5:45, chimes, ex Wed, 6:30. Sandman; 6:50, scores, weather. Mon, 10 pm, concert. Thurs, Sat, 9 pm, orchestra. Mon, Wed, Fri, 8 pm, music. Sun, 9 am, chimes; 1:30 pm, orchestra; 7:30, reports; 8, church services; 9:30, concert. Tues night, silent. Central.

WOI, Ames, 1a. 360 meters, 500 watts. John Wanamaker. Daily ex Sun, 9 am, 9:45, 10:15, market, weather reports; 12:45 pm, granket, weather, educational talks; 9:30, weather, music. Central.

WOI, Kanssa City, Mo. 360 meters, 500 watts. John Wanamaker. Daily ex Sun, 11 am, organ recital; weather; 12:55, time; 12-1 pm, concert; 4:43 pm, organ recital; veather. Mon. Fri, 7:30-11 pm, music, concert. Sun, 7:30-8:30 pm, Sunday school; 3:45, organ; alternat

WPAJ, New Haven, Conn. 268 meters. 100 watts. Doolittle Radio Corp.

WPAK, Fargo, N. D. 283 meters. 50 watts. N. D. Agricultural College. Off the air for the summer.

WPAL, Columbus, O. 286 meters. 500 watts. Avery & Loeb Elec. Co. Wed, 8-10 pm. Eastern.

WPAM, Topeka, Kans. 360 meters. 100 watts. Auerbach & Guettel. Daily ex Sun, 1 pm, markets; Wed, 9:30-10:30 pm. Sat, 8-9 pm, music. Central.

WPAR, Beloit, Kans. 230 meters. 10 watts. Ward Battery & Radlo Co. Thurs, 7:30 pm. Sun, 8 am, 11 pm. Central.

WPAT, El Paso, Tex. 360 meters. 20 watts. St. Patrick's Cathedral. Temporarily discontinued.

WPAU, Moorhead, Minn. 286 meters. 10 watts. Concordia College.

PAZ, Charleston, W. Va. 273 meters. 20 watts. West Virginia Radio Sales Corp. Mon, Wed, Fri, 8-9 pm.

Eastern.

WQAA, Parkesburg, Pa. 360 meters. 500 watts. Horace
A. Beale, Jr. Temporarily discontinued.

WQAC, Amarillo, Tex. 234 meters. 100 watts. E. B.
Gish. Irregular schedule.

WQAE, Springfield, Vt. 275 meters. 50 watts. Moore
Radio News Station. Slogan, "Among the Green Hills
of Vermont." Sat. 7:30-8 pm, 11-1 am. Sun, 8:409:30 pm, address. Eastern.

WOAF, Sandusky O. 240 meters. 5 watts. Sandusky

WQAF, Sandusky, O. 240 meters. 5 watts. Sandusky Register. Daily, 10:30 pm, weather. Eastern.

WQAL, Mattoon, 111. 258 meters. 10 watts. Coles County Tel. & Telg. Co. Slogan, 'The Buckle on the Corn Belt.' Wed, Sat, 9-10 pm, music, lecthe Corn Belt." Wed, Sat, 9-10 pm, most, ture; Sun afternoon, special program. Central.

WQAM, Miami, Fla. 283 meters. 100 watts. Electrical Equip Co. Slogan, "It is Always June in Miami." The Most Southern Radiocasting Station in U. S. Daily as Sun. 12 m. weather, news, music. Wed, Daily ex Sun, 12 m, weather, news, music. Wed, 9-11 pm, orchestra. Sun, 9-11 pm, music. Tues, Sat, 7 am, physical culture instructions. First Sun of each month, 8-9 pm, music. Eastern.

WQAN, Scranton, Pa. 280 meters. 100 watts. Scranton Times. Slogan, "The Volce of the Anthracite." Dally ex Sun, 12:30-1 pm, 4-4:30, 7:30-8, news, reports, music. Tues, Fri, 8 pm, entertainment. Eastern.

WQAO, New York City, N. Y. 360 meters. 100 watts. Calvary Baptist Church. Off the air for a month.

WQAQ, Abilene, Tex. 360 meters. 100 watts, West
Texas Radlo Co. Abilene Dally Reporter. Slogan,
"The Capital of West Texas." Tues, Thurs, Fri,
8-9 pm. Sun, am, pm, church services. Central.

well. Slogan, "The Pioneer Broadcasting Station of Omaha."
WNAP, Springfield, O. 275 meters, 100 watts, Wittenberg College, Off the air for the summer.
WNAR, Butler, Mo. 23I meters, 20 watts, C. C. Rhodes, Fri, 9 pm, Sun, 11 am, 7:30 pm. Central.
WNAT, Philadelphia, Pa. 360 meters, 100 watts. Lenning Bros. Co. Irregular schedule. Eastern.
WNAV, Knoxville, Tenn. 236 meters, 500 watts. People's Tel, & Telg, Co. Temporarily discontinued.
WNAX, Yankton, S. D. 244 meters, 100 watts. Dakota Radio Apparatus Co. Daily, 11:30 am, reports, 4:30 pm, reports, music. Wed, Sat, 9-10 pm, music. Central.
WNYC, New York, N. Y. 526 meters. 100 watts. Dakota Radio Apparatus Co. Daily, 11:30 am, reports, wed, Sat, 9-10 pm, music. Central.
WNYC, New York, N. Y. 526 meters. So watts. Page Organ Co. (H. P. Maus). Mon, Wed, Fri, Sat, 8:30-9:30 pm, orchestra. Central.
WOAE, Fremont, Neb. 280 meters. 20 watts. Midland College.
WOAE, Tyler, Tex. 360 meters. 10 watts. The Tyler
WARS, Lowell, Mass. 266 meters. 100 watts. Prince-Daily ex Sun, 10:45-11 am, 2:30-3 pm, music. Central.
WOAE, Fri, 6-1, 1248 meters. 100 watts. Radio Equipment Co. Mon, Wed, Fri, 7:15-8 pm. Central.
WAL, Peoria, Ill. 248 meters. 500 watts. Calumct Baking Co.—Rainbo gardens, Daily ex Sun, 3-4 pm, WTAY, Gale Meters, WTAY, Streator, Ill. 231 meters. WTAY, Oak Park, 111. 283 meters. Sun, serio, pm, music. Central.
WNAK, Yankton, S. D. 244 meters. 100 watts. Dakota Radio Station.
WARA, Houston, Tex. 360 meters. 200 watts. Radio Club, Inc. Mon, Thurs, Sun, 9 pm. Central.
WARA, Houston, Tex. 360 meters. 10 watts. Calumct Baking Co.—Rainbo gardens, Daily ex Sun, Mon, 7-8 pm, 10-2 am, music. Sun, 8-10 pm, music. Central woman's hour. Daily ex Sun, Mon, 7-8 pm, 10-2 am, music. Sun, 8-10 pm, music. Central woman's hour. Daily ex Sun, Mon, 7-8 pm, 10-2 am, music. Sun, 8-10 pm, music. Central woman's hour. Daily ex Sun, Mon, 7-8 pm, 10-2 am, music. Sun, 8-10 pm, music. Central woman's hour. Daily ex Sun, Mon, 7-8 pm, 10-2 am, music. Sun, 8-10 pm, music. Central woman's hour. Da

Central.

WRAF, La Porte, Ind. 224 meters. 10 watts. Radio Club, Inc. Mon, Thurs, Sun, 9 pm. Central.

WRAH, Providence, R. 1. 231 meters. 15 watts. Stanley N. Read. Sun, 4:30-6 pm. Eastern.

WRAL, St. Croix Falls, Wls. 248 meters. 100 watts. Northern States Power Co. Mon, 8:30-10:30 pm. Tues, 9-10:30 pm. Central.

WRAM, Galesburg, 111, 244 meters. 100 watts. Lomhard College. Occasional programs during the summer.

WRAN, Waterloo, 1a. 236 meters. 10 watts. Blackhawk Elec. Co. Slogan, "We Radiate all news." Daily ex Sun, 5-5:30 pm. Central.

WRAO, St. Louis. Mo. 360 meters. 10 watts. St. Louis

Sun, 5-5:30 pm. Central.

WRAO, St. Louis, Mo. 360 meters. 10 watts. St. Louis Radio Service Co. Mon, 7:30-9 pm, dance music. Sun, 3:30-5 pm, music. Central.

WRAV, Yellow Springs, O. 242 meters. 100 watts. Antioch College. Wed, 8 pm. Tburs, 10:30 pm. Sun, 7 pm. Central

Antioch College, Wed, 8 pm. Tours, 10.50 pm. Sci., 7 pm. Central.

WRAW, Reading, Pa. 238 meters. 40 watts. Avenue Radio Shop. Closed during summer.

WRAX, Gloucester City, N. J. 268 meters. 100 watts. Flexon's Garage. Mon, Wed, Fri evenings, program.

WRAY, Scranton, Pa. 280 meters. 10 watts. Radio Sales Corp. Mon, Wed, Sat, Sun, 8:30-10 pm, concert. Eastern.

Flexon's Garage. Mon, Wed, Fri evenings, program.

WRAY, Scranton, Pa. 280 meters. 10 watts. Radio Sales Corp. Mon, Wed, Sat, Sun, 8:30-10 pm, concert. Eastern.

WRBC, Valparaiso, Ind. 278 meters. 500 watts. Immanuel Lutheran Church. Slogan, "World Redeemed by Christ." Mon, 8-9 pm, program. Sun, 10:30 am, church service. Central.

WRC, Washington, D. C., 469 meters. 500 watts. Radio Corp'n of America. Daily ex Sun, 5:15 pm, code practice; 6 pm, chlldren's hour. Mon, Wed, Fri, 3-6:30 pm, music. Tues, Thurs, Sat, 5:15-11 pm, music. Eastern.

WRK, Hamilton, O. 360 meters. 200 watts. Doron Bros. Elec. Co. Slogan, "The Oldest Station in Existence." Fri, 8:15 pm, music, lecture. Sun, 10:15 am, 7:30 pm, church services. Central.

WRL, Schenectady, N. Y. 360 meters. 500 watts. Union College Radio club. Closed during the summer.

WRM, Urbana, Ill. 360 meters. 500 watts. Univ. of Ill. Closed during the summer.

WRM, Dallas, Tex. 360 meters. 30 watts. Clty of Dallas. Daily ex Sun, 11:30-12:30 pm, weather; 2:45-3:30 sports, markets, news; music. Sun, 11 am, 7:30 pm, church service. Central.

WRW, Tarrytown, N. Y. 273 meters. 300 watts. Tarrytown Radio Rescarch Laboratory. Slogan, "Everything in Radlo." Dally, 9pm, police reports; Mon, Wed, Thurs, Sat, Sun, 7-8 pm. Mon, Tues, Wed, Fri, Sat, 9-11:30 pm. Thurs, 8-9:10 pm, 10:30-11:30. Sun, 8-9 pm, service. 9-9:10. police reports, 10:30-11:30, concert. Eastern daylight saving.

WSAB, Cape Girardeau, Mo. 360 meters. 100 watts. Southeast Mo. State Teachers College. Mon, Wed, 3:30 pm, lecture; 9, concerts. Central.

WSAB, Cape Girardeau, Mo. 360 meters. 100 watts. Southeast Mo. State Teachers College, Mon, Wed, 3:30 pm, lecture; 9, concerts. Central.

WSAC, Clemson College, S. C. 360 meers. 500 watts. Clemson Agri. College. Closed during the summer. WSAO, Proidence, R. I. 261 meters. 100 watts, Fosters-Jewelers. Closed during the summer. WSAI Cinclnnati, O. 309 meters. 500 watts. United States Playing Card Co. Mon, 10-12 m. Tues, 7-10 pm. Thurs, 10-12 m. Sat, 8-10; 12-1:45 am. Sun, 3-4 pm. Central Daylight Saving.

WSAJ, Grove City. Pa. 258 meters. 250 watts. Grove City College. College activities. Wed, 7:30-9 pm, muslc. Fri, basket hall. Eastern.

WSAN, Allentown, Pa. 229 meters. 50 watts. Allentown Radio Club. Tues, Thurs, 8 pm. Eastern.

WSAP, New York, N. Y. 263 meters. 250 watts. Clty Temple. Thurs, 8-9:30 pm. Sat, 10:45-12 m. Sun, 7:30-9:30 pm. Eastern.

WSAR, Fall River, Mass. 254 meters. 100 watts. Doughty & Welch Elect. Co., Inc. Daily ex Sun, 12-1 pm. Mon, Thurs, 6-7 pm. Wed, 8-10 pm. Sun, 4:30-6 pm. Eastern Daylight Saving.

WSAT, Plainview, Tex. 268 meters. 20 watts. Camp Marienfeld.

WSAV, Houston, Tex. 360 meters. 100 watts. Clifford W. Vick Radio Construction Co.

ex Sun, 12-1 pm, music, weather; 2:30, reports; 3 pm, haseball; 5, orchestra; 5:30, bedtime story; 8-9, concert (ex Wed); 10:45-12, concert. Sun, 10:45-12:15 pm, 5-6, 7:30-9:15, church services. Central.

WSL, Utica, N. Y. 273 meters. 100 watts. J. & M. Elec. Co. Dally ex Sat, Sun, 11-11:30 am, 5-6 pm, music, news. Mon, Wed, Sat, 8-9 pm. Sun, 10:30-12 m. 7:30-9 pm. Church services. Eastern.

WSY, Birmingham, Ala. 360 meters. 500 watts. Alabama Power Co. Sun, 11 am, 8 pm, church services. Central.

Central.

WTAB, Fall River, Mass. 266 meters. 100 watts. Fall River Daily Herald. Tues, Thurs, 8-10 pm. Sat, 9-11 pm. Eastern daylight saving.

WTAC, Johnstown, Pa. 275 meters. 150 watts. Penn. Traffic Co. Daily ex Sun, 4 pm. Tues, Thurs, 7:30 pm. Eastern.

WTAF, New Orleans, La. 268 meters. 10 watts. Louis J. Gallo. Slogan, "The Bayou Station." Daily, 6:45-7 pm, police, haseball, weather. Tues, Sat, 9-10:30 pm; Thurs, 10:30-11:30 pm; Sun, 10-12 midnight, revue. Central night, revue. Central WTAG, Providence, R. 1. 258 meters. 10 watts. Kern

Music Co.

WTAJ, Portland, Me. 236 meters. 20 wat
Radio Shop. Irregular schedule in summer. 236 meters. 20 watts. The WTAL, Toledo, Ohlo. 252 meters. 10 watta. Toledo Radio & Elec. Co. Slogan, "The Gateway to the Sea," Tues, Thurs, Sat, 8 pm. Sat, 12 mldnight, "Frolic of the Frogs." Eastern.

WTAM, Cleveland, Ohio. 390 meters. 1,000 watts. Willard Storage Battery Co. Slogan, "The Voice from the Storage Battery." Daily ex Sun, 6-7:30 pm, dinner concert; baseball, news. Mon, 8-10 pm, concert. Wed, 8-11 pm, concert. Sat, 9-12 midnight, dance music. Eastern.

WTAP, Cambridge, 111. 242 meters 100 watts. Cambridge Radio & Elec. Co. Tues, Sat, 12:15-1:15 pm, 9:30-10:15. Central.

WTAR, Norfolk, Va. 280 meters. 100 watts. S. H. Van Gorden & Son. Dally ex Sun, 10:30 am, 12:15 pm, 6:15, weather, markets. Fri, Sun, 8 pm. Central.
WTAR, Norfolk, Va. 280 meters. 100 watts. Rellance Electric Co. Tuea, Sat, 7:30 pm, markets; 8, music. Eastern.

WTAS, Elgin, III. 286 meters. 500 watts. Chas. E. Erbstein. Slogan, "Willie, Tommie, Annie and Sammle." Daily, 2-5 pm, baseball; 8:15-12 mld., music. Frl, 12:30-1:30 pm, organ. Sun, 2:30-5 pm, music. CentraL

WTAT, Boston, Mass. 246 meters, 100 watts, Ruegg Elec. Illuminating Co. (Portable Station).
WTAU, Tecumseh, Neh. 212 meters. 10 watts. Ruegg Battery & Elec. Co. Tues, 8:30 pm. Central.
WTAW, College Station, Tex. 280 meters. 250 watts. Agricultural and Mechanical College of Tex. Closed during the summer.
WTAX, Streator, 111. 231 meters. 50 watts. Williams Hardware Co. Mon, 6:30-7:30 pm, dinner concert. Central

WTAY, Oak Park, 111. 283 meters. 500 watts. Oak Leaves. 6:45-7:45 pm; 9-9:45. Central daylight

Leaves. 6:45-7:45 pm; 9-9:45. Central daylight saving.

WTAZ, Lambertville, N. J. 283 meters. 15 watts. Thomas J. McGuire. Mon, 8-10 pm, music. Eastern Daylight Saving.

WTG, Manhattan, Kan. 273 meters. 50 watts. Kan. State Agri. College. Closed during the summer. WTL, Chicago, 111. 268 meters. 10 watts. H. G. Saal Co.

WTL, Chicago, 111. 268 meters. 10 watts. H. G. Saal Co.

WWAB, Trenton, N. J. 226 meters. 50 watts. Hoenlg, Swern & Co. Closed during the summer.

WWAC, Waco, Tex. 360 meters. 100 watts. Sanger Bros. Temporarily discontinued.

WWAO, Philadelphia, Pa. 360 meters. 100 watts. Wright & Wright, Inc. Mon, 8 pm. Thurs, 8:30 pm. Eastern Daylight Saving.

WWAE, Joliet 111. 227 meters. 500 watts. Alamo Dance Hall. L. J. Crowley. Wed, Sat, Sun, 8:30-12 midnight, orchestra. Central.

WWAO Houghton, Mich. 244 meters. 250 watts. Michigan College of Mines. Daily ex. Sun, 12 m, news, markets. Mon, Fri, 8 pm, talks, music. College sports. Central.

WWI, Dearborn, Mich. 273 meters. 250 watts. Ford Motor Co. Wed. 8-10 pm, music, lectures. Eastern. WWI, Detroit, Mich. 517 meters. 500 watts. The Detroit News. Daily ex Sun, 8-8:30 am, setting up exercises; 9:30-9:45, household hints; 9:45-10:25, health talks; 10:25-10:30, weather; 11:55-12, time; 12:05-12:45 pm, music; 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.

WWL, New Orleans, La. 280 meters. 100 watts. Alberto S.

ola Univ. 2AB, Havana, Cuha. 240 meters. 20 watts. Alberto S.

de Bustamante.

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 period; 7-10:30, concert. Sun, 5:30 pm, 8:30-10:30. Greenwich Mean wich Mean.

2BX. Havana, Cuba. 250 meters. Frederick W. Borton.

2BY, Havana, Cuba. 260 meters. 200 watts. Frederick

W. Borton.

2CX, Havana, Cuba. 320 meters. 20 watts. Frederick
W. Borton. 20W, Havana, Cuba. 300 meters. 100 watts. Pedro Zayas.

2FC, Willouby, Australia. 1,000 meters. 5,000 watts.
Farmer & Co., Ltd.

2HC, Havana, Cuha. 275 meters. 500 watts. Heraldo de Cuba.

2HS, Havana, Cuba. 180 meters. 20 watts. Julio

210, Havana, Cuha. 150 meters. 10 watts. Paul Perez Falcon. 2KO, Havana, Cuba. 350 meters. 100 watts. E. Sauchez

2KO, Havana, Cuba. 350 meters. 100 watts. E. Sauchez de Fuentes.

2KP, Havana, Cuba. 200 meters. 10 watts. Alvaro Daza.

2LC, Havana, Cuba. 250 meters. 30 watts. Luis Casas.

2LO, London, Eng. 365 meters. 1,500 watts. British Broadcasting Co. Daily 4-11 pm. G. M. S.

2MG, Havana, Cuba. 280 meters. 20 watts. Manuel G. Salas. Daily ex. Sun, 3-4 pm, music. Evening program.

program. 2MN. Havana, Cuba. 270 meters 300 watts. Fausto Simon.

20 K, Havana, Cuba. 360 meters. 100 watts. Mario Gareta Velez.

20 L, Havana, Cuba. 290 meters. 10 watts. Oscar Collado.

2TW, Havana, Cuba. 230 meters. 20 watts. Roberto E. Ramīrez. 2WW, Havana, Cuha. 210 meters. 20 watts. Amadeo

WSAU, Chesham, N. H. 229 meters. 10 watts. Camp Marienfeld.
WSAV, Houston, Tex. 360 meters. 100 watts. Clifford W. Vick Radio Construction Co.
WSAZ, Pomeroy, Ohio. 258 meters, 50 watts. Chase Elec. Shop. Daily ex Sun, 5:30 pm, weather. Tues, Thurs, Sat, 5 pm, music. Central.
WSB, Atlanta, Ga. 429 meters. 500 watts. Atlanta Journal. Slogan "The Voice of the South." Daily ex Sun, 12-1 pm, music, weather; 2:30, reports; 3 pm, haseball; 5, orchestra; 5:30, bedtime story; 8-9, concert (ex Wed); 10:45-12, concert. Sun, 10:45-12:15 wsl., Utica N. West, Atlanta Sun, Services wsl., 10:45-12:15 wsl., 10:45-12

Co. Daily ex Sun, 8-11, concert.

5WA, Cardiff, Wales. 353 meters. British Broadcasting

6AZ. Cienfuegos, Cuba. 200 meters. 10 watts. Valentin 6BM, Bournemouth, Eng. 385 meters. British Broadcasting co. 6BY, Bournemouth, Eng. 385 meters. 100 watts. Jose

Ganduxe.

6CX, Cienfuegos, Cuba.

T. Figueroa.

6DW, Cienfuegos, Cuba.

225 meters.

100 watts.

Antonio
T. Figueroa.

6DW, Cienfuegos, Cuba.

225 meters.

10 watts.

Terry.
6EV, Cabarien, Cuha. 225 meters. 20 watts. Maria Josefa Alvares. Daily, 10:30 pm.
6FL, Sheffield, Eng. 303 meters. British Broadcasting Co.
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, 10:30 pm, music. Wed, Thurs, Sat, 6:30 pm, music. Sat, 12 midnight, dance music. Eastern. 6XJ, Tuinucu, Cuha. 275 meters. 100 watts. Frank H.

Jones. 7AZ, Camaguey, Cuha. 225 meters. 10 watts. Pedro Nogueras.
7BY, Camaguey, Cuha. 350 meters. 500 watts. Salvador Rionda Rionda.
75R, Elia, Cuba. 309 meters. 250 watts. Salvador C.
Riondo. Slogan, "Cuba, the Land of Sunshine. Sugar
and Tohacco." Mon, Tues, Thurs, 9 pm. Eastern.
8AZ, Sautiago, Cuba. 240 meters. 20 watts. Alfredo

Brooks. 8BY, Santiago, Cuba. 250 meters. 100 watts. Alberto 80W, Santiago, Cuba. 275 meters. 15 watts. Pedro C. Andux. Daily, 4:30-8:30 pm, 10:30-12. 8EV. Santiago, Cuba. 180 meters. 75 watts. Eduardo Mateos. 8FU, Santiago, Cuba. 225 meters. 15 watts. Andres Vinet.

8GT, Santiago, Cuba. 260 meters. 50 watts. Juan F. Chibas. (This completes the alphabetical station data list. Part V, consisting of a complete state, city index of stations, will appear next week.

Short Lead to Grid and Plate

Under no circumstances should the output and input circuits of an amplifier be coupled together even in the feeblest manner. It is best to use short leads and keep them apart as far as possible. When long leads are unavoidable they can be shielded somewhat by running them in a-grounded, flexible, metallic casing. It

the grid lead of the previous tube.

Coupling between adjacent tubes can be reduced by placing each tube in a shielded chamber and grounding the metal shield. This applies especially to Radio frequency amplification. A convenient method of constructing this shielded chamber is to use a strip of copper screen about four inches in width and long is very important that the plate and grid enough to go around the circumference leads to the various tubes be kept as of the tube socket without touching any

of one tube will not be coupled back to of a cylinder and solder the ends of the coupling between tubes is done away screen together. This forms a cylindrical with. This will be too expensive a proposhield which will just fit over the tube sition for the average amateur and it is and socket. The shield is grounded by making a connection to the filament lead which is connected to ground. The other leads to the tube socket will have to be insulated so that they are not allowed to come in contact with the screen.

short as possible so that the plate leads connections. Roll the screen in the form tube, for in this manner a means of held rigidly in their places.

only recommended where a number of tubes are used in a more advanced circuit where extreme precautions must be taken to prevent feedback of energy between circuits.

All batteries should have as low a re-Whenever possible separate plate and sistance as possible. All connections filament batteries should be used for each should be soldered of course, and all leads

