

New Portable Super-Het in Week-End Bag; More Details of Bridge Circuit
 Latest Gold Cup Standing; WGY Pictured and Described; A-B-C's of Radio

Radio Digest

EVERY WEEK **Illustrated** PROGRAMS **TEN CENTS**

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

Vol. XIII

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SATURDAY, JUNE 27, 1925

No. 12

POPE TO SPEAK OVER AIR

CHARLES HUGHES TO BE HEARD AT WEAF

'AMERICAN INDEPENDENCE'
 WILL BE HIS SUBJECT

Chain of Stations to Broadcast Independence Week Address of Famous Statesman

NEW YORK.—Hon. Charles Evans Hughes, former Secretary of State during the administration of the late President Harding and President Coolidge, and President of the American Bar association, at 7 a. m., Eastern time, Tuesday, June 30, will make a special address to the audiences of WEAF and a chain of stations. Mr. Hughes has appropriately taken "The Declaration of Independence," for his subject.

These talks are broadcast under its auspices and in cooperation with the A. T. and T. company, from WEAF, WEEL, WCAE, WFI, WEAR, WGR and WWJ.

Fans will also have a chance to hear a potpourri of all Eveready programs from 8-9 p. m., Eastern time. Max Jacob's Chamber Symphony orchestra, the mixed and male quartets and many of the artists who have been featured from time to time, will repeat the outstanding parts of other Eveready Hours which have proven so popular.

For this program Stations WEEL, WFI, WCAE, WEAR, WGR, WWJ, WOC, WJAR, WCCO and WSAI, will be linked to WEAF.



ECCLESIASTIC TO BROADCAST SOON, IS HOPE

Install Radio in Church

Church Head Shows Great Interest in Plan Which Will Let Thousands Hear

ROME.—The word is going around here that the Pope may soon be heard on the air by listeners in all over Europe, for the almost unthought of idea of a papal broadcast now seems very near realization.

The Pope recently consented to Radio installations at St. Peter's in Rome for the ceremony of the canonization of St. Theresa, and has shown himself in every way interested in the use of wireless.

According to one of the Italian newspapers, the Radio installations will remain in the Vatican, so that whenever it is crowded by many thousands of people in the future, all will be able to hear the voice of the church's supreme pontiff with equal clearness. The installation will consist of two microphones, one on the great altar where the Pope celebrates mass, and the other on the papal throne where the

(Continued on page 2)

In the center is Blanche Anthony, coloratura soprano, whose beautiful voice is often heard from WEAF, where she is one of the most popular artists. Miss Anthony is also frequently heard from WHN.



Florence Long Arnoldi, coloratura soprano, frequently heard from Station WQAW, Omaha. Miss Arnoldi has been widely acclaimed by critics for her excellent voice.

Marjory Smith, concert pianist of WLW. Mrs. Smith is the wife of Fred L. Smith, the "Radio Ambassador" to Europe and director of Superstation WLW, Cincinnati.

No. 14 OFFICIAL BALLOT

Announcers' Contest

RADIO DIGEST SECOND ANNUAL GOLD CUP AWARD

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

Please credit this ballot as one vote for:

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

Signed.....

Address

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

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

6-27-25

CONSENSUS OF OPINION VOTE

Send to Radio Digest, 510 N. Dearborn Street, Chicago

To be forwarded by Radio Digest to the Department of Commerce for the attention of members of Congress.

Scratch off whichever does not apply.

1. Do you want less class B (500 watts or more power) stations?.....Yes No
2. Shall B stations be reduced to 94 in number, so that they can be accommodated satisfactorily in the "other roadways" now available for the use of broadcasting stations?.....Yes No
3. How far away, approximately, is the nearest class B station?.....mi.
4. Are you troubled by B stations heterodyning and interfering with one another?.....Yes No
5. Have you read a description of the Kintner plan?.....Yes No
6. Are you in favor of it or some similar plan which will help clear the air of the present "traffic" congestion?.....Yes No
7. Do you favor the appointment of an unbiased, non-partisan broadcasting control board for the settlement of all differences pertaining to broadcasting and the interpretation of present or future Radio legislation?.....Yes No
8. Include separately a list of five stations you like most and five you dislike most.

How many members Name
in your family?.....

Address

Are all of the same mind as yourself?..... City, County, State.....

(Check here if more blanks are desired)

6-27-25

McNAMEE GAINS ON HAY FOR TOP PLACE

MAY PASS "JUDGE" AGAIN IN GOLD CUP AWARD

Rouse Holds Third—Arln Drops—Nine More Weeks to Go Before the Finish

Graham McNamee stealthily increases his total and diminishes the distance between himself and George D. Hay, who still, in the fourteenth week of the contest, maintains his lead. Will McNamee win the Radio Digest 1925 gold cup as world's most popular announcer? He may top the "Solemn Old Judge" in a finish sprint. He passed him one week—and he may repeat.

Minor changes feature the week's voting. Nothing extraordinary has happened, but "every little bit helps."

Gene Rouse keeps third place. Lester Palmer and Eugene Konecky, brother announcers at WOAW, have withdrawn from the Gold Cup Award, saying that they wish all their support to go to Rouse. Rouse has many backers. Watch his standing. Incidentally, The Hired Hand is sticking pretty tight to fourth place.

Leaders Change About

Henry Field and H. W. Arln traded places, fifth and sixth, leaving Mr. Field fifth.

Quite the unexpected occurred when Frank S. Lane, KFRU, jumped back from oblivion and landed in tenth place. You never can tell. Some listeners must be working for Mr. Lane. Another newcomer from the ranks of the unpublished standing is O. E. Becker, WGR, who is now nested in twelfth position. Stanley Barnett dropped one place, landing eleventh.

Leo Fitzpatrick and Robert Emery traded places also, leaving Mr. Fitzpatrick on top at fourteenth. Quite a drop was experienced by Charles Erbstein who skidded from eleventh to sixteenth.

The newcomers, Becker and Lane, forced two leaders from the top sixteen; Fred Smith and Norman Brokenshire. Mr. Smith, able director-announcer for WLW, has gone to Europe on a tour as Radio ambassador. Let us hope his friends won't forget him just because he is temporarily off the air.

Is Race Between Two?

Is the race only between George Hay and Graham McNamee? Not according to last year's data, for the bonus votes at the close are more than likely to upset the best of predictions. But at any rate the contest between the two leaders of the East and West, is worthy of attention.

Nine weeks will tell the tale. In nine weeks the winner of the second annual \$5,000 solid, 14-carat gold cup will be known.

The standing of the sixteen leaders with the total number of votes accredited at the close of the week is as follows:

Position	Name and Station	Votes
1.	George D. Hay, WLS.....	13,631
2.	Graham McNamee, WEA.....	12,387
3.	Gene Rouse, WOAW.....	7,089
4.	The Hired Hand, WBAP.....	5,561
5.	Henry Field, KFN.....	5,382
6.	H. W. Arln, KDKA.....	5,175
7.	W. G. "Bill" Hay, KFKX.....	4,168
8.	Lambdin Kay, WSB.....	3,719
9.	N. Dean Cole, WHO.....	3,343
10.	Frank S. Lane, KFRU.....	3,206
11.	Stanley W. Barnett, WOC.....	3,145
12.	O. E. Becker, WGR.....	2,990
13.	Jerry Sullivan, WQJ.....	2,481
14.	Leo Fitzpatrick, WDAF.....	2,457
15.	Robert Emery, WEE.....	2,435
16.	Charles Erbstein, WTAS.....	2,331

How to Vote and Get Bonus

Don't miss a single ballot, for when these are turned into Radio Digest in a group of CONSECUTIVE numbers, extra

bonus votes are allowed the announcer for whom you are voting.

The ballots, top of page two, numbered consecutively, will appear in each issue of the Radio Digest until the close of the contest, with the August 22 number.

Each of these ballots will count for one vote when sent in separately. You can hold these ballots until you have 4 that are consecutively numbered, and when they are sent in a bonus of 8 votes will be allowed for your favorite announcer.

For each 8 consecutively numbered ballots your candidates will receive a bonus of 20 votes. For each 12 consecutively numbered ballots, 30 votes. For each 16 consecutively numbered ballots, 40 votes. For each 20 consecutively numbered ballots, 50 votes, and for each 22 consecutively numbered ballots, 60 votes bonus will be allowed.

Send nominations or ballots to the GOLD CUP AWARD EDITOR, Radio Digest, 510 N. Dearborn St., Chicago.

South Africa Blames KDKA for Big Rains

Weather Prophets Lay Bad Conditions to Broadcaster

ROODEFOORT, South Africa.—Responsibility for the unusual amount of rain this part of South Africa has been having during the last four months is laid, by some of the weather prophets, at the door of Station KDKA, world's pioneer broadcasting station of the Westinghouse Electric & Manufacturing company at Pittsburgh, Pa.

These prophets have heard the theory advanced that the rain which is said usually to follow a battle is caused by some great disturbance of the air during the cannonading at the time of the battle.

TRAIN TRANSMITTER CREATES NEW FANS

FARMERS ENTHUSIASTIC AT SIGHT OF BROADCASTER

Especially Equipped Radio and Cattle Train Arouses Great Interest in Northwest

OMAHA, Neb.—Thousands of farmers and stock breeders in the northwest were recently converted to ardent Radio fans when an eleven car train, especially equipped with a hundred watt broadcasting unit traveled through that section of the country for several weeks.

The novel idea of the broadcaster on the train originated with the McGraw company of this city. The apparatus was specially constructed and installed by them. A collapsible mast was mounted on the roof of one of the cars and electricity was drawn from the local power companies. The microphone was equipped with a long cable so it could be used anywhere on the train or in the vicinity.

Programs were broadcast each evening and were heard plainly for a distance of about 400 miles.

Train Becomes Popular

The train had only been out a day when a call was received by the Chicago and Northwestern railroad, over whose lines the train operated, from Sioux Falls, asking that the car be sent there. Then more and more calls came and the train was kept moving all the time to fulfill all the appointments.

Later the car was hitched to a special "Calf Club" train which was sent out to aid the stock breeders and spread information about fine cattle. A generator was installed on the train and at each town a program was put on the air. The result was that hundreds of farmers became interested and came to see not only the cattle, but also the station. Lectures and many other features were broadcast daily.

The experiment was successful beyond even the highest hopes of its backers, who estimate that many thousands who did not own Radio sets became interested for the first time. From the view of the stock breeding program the result was equally successful.

POPE WILL BROADCAST

(Continued from page 1)

Pope delivers the benediction, together with numerous loud speakers scattered about the church.

The installation was kept a secret, and no information was given out, until it was actually put into use. It was naturally a great surprise, therefore, to the huge congregation, who gathered on the occasion of the canonization of St. Peter's.

It is said that great difficulties had to be surmounted before the installation was actually accomplished. The secret was kept, because many would have said that it was a scandal or a profanation. One of the Vatican authorities stated that the installation of Radio at St. Peter's shows that the church, while still keeping unalterably along its great lines, is able to accept modern innovations, even in the scientific field.

The Pope is said to have consented readily to the scheme. He already owns a Radio set with which he keeps himself informed of world events, and it is believed by many that this interest will eventually lead to his consenting to broadcast his voice to the great numbers of his church, who could not possibly hear him otherwise.

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Looking Ahead

A Super For Portable and Phonograph Use will be featured in several issues beginning July 11. It contains all the power and mechanical strength of a full size parlor model, with nothing skimped for vacation use, yet may be picked up readily and taken out to the bungalow or camp. Next fall it can be placed in your upright or console phonograph and so becomes a year 'round pleasure.

And What Will McNamee Do to Hay Next Week? Will the popular voice of WEA displace the "Solemn Old Judge" from top place in the 1925 Gold Cup Award? If he makes strides this week like he did last, the WLS chief will have to hurry. Watch for the standing!

Milo Gurney's Next Tuned R.F. Article will give the data on coils and condensers for use in bridge circuits. In addition, the Digest laboratory is working on sets utilizing the improved compensation methods Mr. Gurney is showing.

WEAR, Goodyear Tire and Rubber Company, Cleveland, will be the next station featured with pictures and article. WEAR was formerly WJAX, "The Wave of Lake Erie," but was sold. And now it has a call quite appropriate for good tires, eh what?

The Charging of Storage Batteries is fully as important as the filling and cleaning. There are many angles to this work, not in the maker's instructions, that readers can learn by following Professor Moreton's next A. B. C. article. His instructions will cover both lead and Edison type units.

Newsstands Don't Always Have One Left

WHEN YOU WANT

Radio Digest

YOU WANT IT!

BE SURE OF YOUR WEEKLY COPY BY SUBSCRIBING NOW

SEND IN THE BLANK TODAY

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

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

Name

Address

CityState

NEWS BRIEFS FROM THE BROADCASTERS

WGY PUTS CIRCUS ON AIR; JOHN BLACK JOINS WHT

The Applesauce Club as "Colyum" of the Air—the Radio Doctor; Other Station News

The circus was brought to the fan's home recently when WGY, of the General Electric company, broadcast the evening performance of Spark's circus. Everything possible was done to transmit the atmosphere of the tent show and microphones were placed in the side show, in the menagerie and close to the main acts under the "big top."

SAYS RADIO WON'T OUST PRINTED PAGE

LONDON.—Dealing with the likelihood of broadcasting superseding the printed book, Major Gladstone Murray of the B. B. C. in a recent speech declared the publishers had little or nothing to fear. "Broadcasting," he declared, "is producing a new technique in language and in music, and it will in the end mean an improvement in the spoken word."

of popular dance music, Station WKRC, the Kodak Radio corporation's new 1,000-watt station at Cincinnati has set aside every Monday night from 8 to 10 o'clock and from midnight to 2 o'clock Tuesday morning, for popular dance music. This gives Radio fans four hours of "jazz" every

SALVAGER HEARS WJJD IN ALASKA

Hears Moose Station While Reclaiming Lost Airplane "Seattle" at Port Moller

MOOSEHEART, ILL.—A letter of appreciation was recently received by station WJJD here from Port Moller, Alaska, in which R. West, the man who is salvaging the wrecked "Seattle," one of the around the world flyers which was wrecked, thanked the staff for the entertainment they have given him in the isolated spot. West stated that the station was heard in the north country with great clearness and told how he enjoyed hearing the organ music from the Moose station.

Value of Two Units Shown During Storm

MINNEAPOLIS.—The value of owning two complete broadcasting units was demonstrated by the Gold Medal station, Saint Paul-Minneapolis, WCCO, on the night of June 2, when a terrific windstorm put out of commission all telephone and power lines between the Twin Cities and the Gold Medal station transmitting unit 18 miles northwest.

The Gold Medal station went off the air at 7:30 that evening. They resumed broadcasting their regular schedule the next morning, using the 500-watt transmitting station at the University of Minnesota which was the regular Gold Medal transmitter prior to the installation of their new 5,000-watt unit last spring. At that time the 500-watt set was presented to the university for experimental work, with the reservation that it could always be used by WCCO in case of need.

Hoover Will Call Fourth Conference at Washington

WASHINGTON, D. C.—Secretary of Commerce Herbert Hoover, before leaving here for a two months' vacation, recently announced that he would probably call the fourth Radio conference to convene in this city the latter part of September.

BROADCAST FOR 150 CONSECUTIVE HOURS

KHJ BREAKS ALL RECORDS DURING SHRINE CONFAB

Operate Set One Solid Week as 2,000 Artists Entertain for Western Fans

LOS ANGELES.—In celebration of Shrine week in Los Angeles, June 1 to 6, it is believed KHJ of the Los Angeles Times established a world's record for sustained broadcasting.

Imperial Potentate James Chandler, of Kansas City, put the station on the air at 6 p. m. Monday, June 1, and from that time until 12:19 a. m. the following Monday, June 8, KHJ broadcast continuously. This is a total time of 150 hours and 19 minutes on the air and sets a mark that will probably stand for some time.

During this period on the air, a much greater continuous time than any station has ever before attempted to broadcast without break, about 3,500 selections were played and sung in every conceivable manner and the 2,000 odd artists taking part rendered a quantity and variety of music that probably will not be equalled soon again. In addition, practically every one of the Shrine bands and chanters attending the conclave broadcast, many of them in the wee sma' hours of the morning.

"Uncle John" Daggett, director of the station, and his staff, worked night and day to put the long drawn out program on the list of KHJ's successful accomplishments.

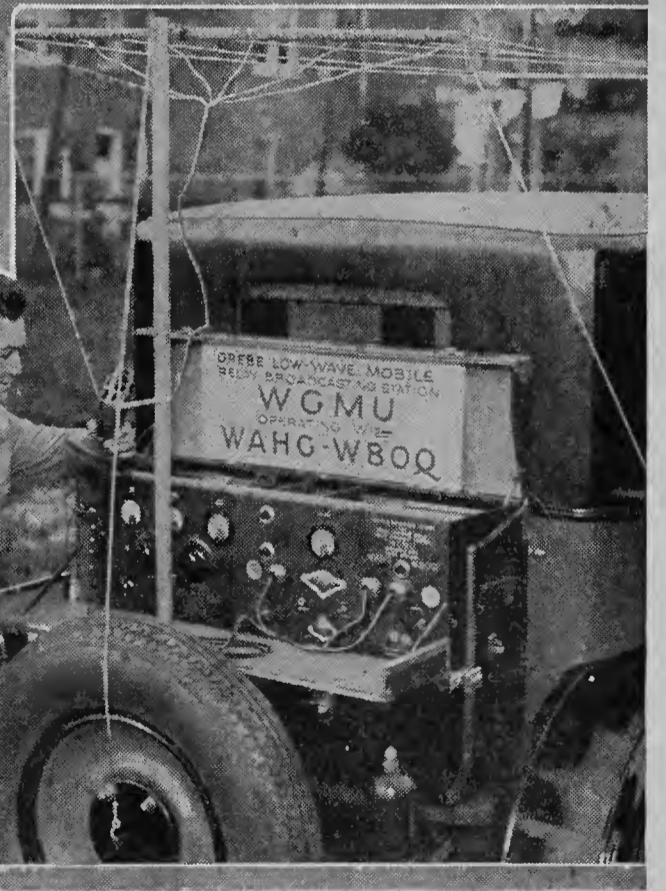
To those mechanically and electrically inclined the wonder is the manner in which KHJ's three-year-old 500-watt transmitter stood the gaff. Three shifts of operators were required and but one tube burned out.

1,356,000 Licenses in Britain

LONDON.—The number of Radio receiving licenses issued in Great Britain up to April 30, and still in force, is approximately 1,356,000. The amount of revenue collected during the first four months of 1925 is \$1,340,000



Constance Talmadge, left, gathered fame in Australia recently when her broadcast over KFI was heard there perfectly. The unique Radio-equipped automobile below is none other than WGMU, the mobile broadcaster of the A. H. Grebe company, which picks up sporting and other events and relays them on short waves to WAHG and WBOQ, the large Grebe stations. Thornton Fisher, famous Grebe sport announcer regularly uses WGMU. Tom Gibbons is at the "mike" here.



Remarkable Program Marks WGCP Opening

NEW YORK.—Another new station has opened in this city. The opening night of WGCP, as the new station is known, is one that will long be remembered by those who attended.

The station broadcasts on a wave length of 252 meters, using 500 watts. It is the old WBS, rebuilt and remodelled. The transmitting equipment is located in Newark, N. J., while the studio is in the "Clover Gardens" of the Grand Central Palace.

Many of the stage celebrities will appear before the microphone at this station. The entire personnel has been drawn from the theatrical world.

Inaugurate News Service From Three Broadcasters

NEW BRUNSWICK.—News service to ships on the high seas was recently inaugurated when the powerful broadcaster of the Radio Corporation, located here, flashed bulletins containing events of international importance to the vessels simultaneously with a station at San Francisco and another at Honolulu.

Immediate replies from a number of large liners showed that the experiment was highly successful.

It is planned to establish the service regularly. The bulletins will be flashed through the interconnected stations and picked up by the ships. They can then print the news on their bulletin boards or daily newspapers.

Monday night. By selecting a specific day on which to present the various type programs WKRC is solving problems for fans, who prefer certain types of music.

Summer Radio audiences continue to shower approval on the Radio swimming instruction broadcast each Monday evening by Frank E. Dalton, America's foremost exponent of the swimming art. A visitor to Dalton's school recently remarked that were Dalton to wear at one time all of the medals won by him in competitive events neither the ether nor the ocean's waves combined with his swimming proficiency could keep the expert afloat.

On Wednesday evening of June 17, a new feature under the auspices of the United American Lines was inaugurated at WEAf. A series of half-hour travel talks by Mr. Walter W. Allerton, the veteran lecturer who has circled the globe many times on the famous S. S. "Resolute," introduced WEAf's listeners to many of the intriguing nooks and corners of the Old World. Those who tuned in were conducted through the age-old cities of Africa, "Algiers and Cairo, the Fringe of the Sahara."

Permit Amateurs to Send Photographs Over Radio

WASHINGTON, D. C.—Until further notice amateur Radio operators may use apparatus for picture transmission connected to their regular transmitting sets under their existing licenses and on any of the wave lengths authorized for amateur use, according to an announcement just made public by Commissioner Carson of the department of commerce.

Equip Hotel Rooms

LONGVIEW, WASH.—Forty of the 240 rooms in the new Hotel Monticello, in Longview, Washington, are equipped with wall plugs for receiving sets. Guests may now order receiving sets.

Every Thursday night fans are given a real treat—Rans Sherman, president of KYW's "Applesauce Club," is at the microphone in the KYW studio, ladling huge spoonfuls of zippy frivolities to them. The Applesauce club is a Radio novelty, and is composed of Radio fans who send in comedy bits to be given over the Radio. A handsome gilt-edged membership certificate is sent to everyone who sends in a joke or poem or witty letter, that is read over the Radio. "Applesauce" is Radio's comedy page, published by the listeners in themselves, and is also a bonafide club with real membership certificates, 'n everything.

WJY is offering a very valuable service to all prospective zoo visitors in the series of talks being broadcast under the auspices of the New York Zoological society. Recently Lee S. Crandall, the curator of birds at the Bronx Zoo, told the Radio audience all about the beautiful "bird of paradise."

And now we have the Radio physician. Once a week from WGY, at Schenectady, Dr. C. W. Woodall is giving a short talk on first aid. He doesn't attempt to prescribe for individual cases but he does give advice which may be of great value in an emergency and the response from listeners indicates that his efforts are meeting with success.

Johnny Black, internationally famous composer of popular song hits, has been engaged by broadcasting station WHT, Wrigley building, Chicago, to act in the capacity of studio director. The selection of Mr. Black for this important post came only after an extensive hunt from coast to coast by the WHT officials to secure the man best fitted for this important post. Black spent seven months with Dockstader and was one of the people that made the last trip to the coast with the famous old character.

In order to enable Radio parties to know exactly when they can be assured

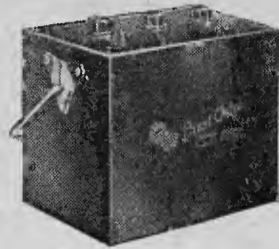
Prest-O-Lite

RADIO CHART

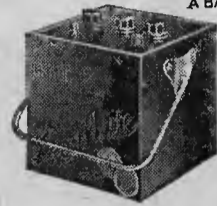
Voltage of Tubes	No. of Tubes	Type of Tubes (see foot-note)	Total Rated Amperes Drain	Recommended Prest-O-Lite "A" Batteries		Recommended Prest-O-Lite "B" Batteries		
				Order by following Types	Days between Rechargings	Set Manufacturer's Voltage	Order by following Types	
5-Volt Tubes <small>C-300 and UV-200 are interchangeable C-301A, DV.2 and UV-201A are interchangeable</small>	1	UV-200	1	69 WHR OR 67 WHR	22 16	22½-24	One 24 XRR	
	2	UV-201A	½	67 WHR	33		45-48	One 48 XRR
	2	1 UV-200 1 UV-201A	1¼	611 WHR OR 69 WHR	22 17	90-96	Two 48 XRR	
	3	UV-201A	¾	69 WHR OR 67 WHR	29 22		45-48	One 48 XRR
	3	1 UV-200 2 UV-201A	1½	611 WHR OR 69 WHR	21 14	67-72	One 24 XRR One 48 XRR	
	4	UV-201A	1	69 WHR OR 67 WHR	22 16		90-96	Two 48 LRR
	4	1 UV-200 3 UV-201A	1¾	613 RHR OR 611 WHR	22 15	45-48	One 48 LRR	
	5	UV-201A	1¼	69 WHR OR 613 RHR	17 19		67-72	One 24 LRR One 48 LRR
	5	1 UV-200 4 UV-201A	2	611 WHR OR 611 RHR	13 21	90-96	Two 48 LRR	
	6	UV-201A	1½	69 WHR OR 69 KPR	14 21		45-48	Use combinations of LRR as specified above for same voltage.
	8	UV-201A	2	69 KPR OR 67 KPR	21 15	67-72	90-96	
	For sets using current at a rate higher than 2 amperes.			2¼	69 KRL OR 67 KPR	22 13	45-48	
			2½	69 KRL OR 69 KPR	19 16	67-72		
3-Volt Tubes	1	UV-199 C-299 DV-1 DV-3	.06	One 43 MRR	100	22½-24	Use same XRR and LRR combinations as above for same voltage.	
	2		.12		50	45-48		
	3		.18	33	45-48			
	4		.24	25	67-72			
	5		.30	Two 43 MRR in Parallel	40	45-48		
	6		.36	33	67-72			
1.1-Volt Tubes	1	WD-11 WD-12 C-11 C-12 215A 215N	¼	One 23 MRR Twin	48	22½-24	Use same XRR and LRR combinations as above for same voltage.	
	2		½		23	45-48		
	3		¾	Two 23 MRR Twins in Parallel	32	45-48		
	4		1	23	67-72			
	5		1¼	Three 23 MRR Twins in Parallel	29	45-48		
	6		1½	23	67-72			

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The Prest-O-Lite Co., Inc.

69 KPR "A" BATTERY



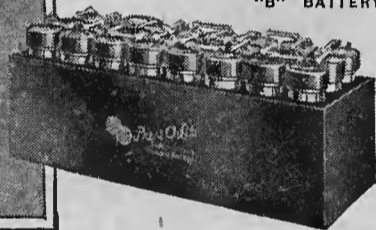
69 WHR "A" BATTERY



23 MRR TWIN "A" BATTERY



48 LRR "B" BATTERY



Write today for this free booklet

Whether you have a one-tube set or most advanced multi-tube outfit, you'll find a fund of interesting information in our booklet, "How to fit a storage battery to your set—and how to charge it."

This booklet gives you the complete Prest-O-Lite Radio Chart—technically accurate recommendations covering both "A" and "B" storage batteries for every type of set.

In addition, there is much vitally important data on battery care and upkeep—information that any radio fan will find of real value in keeping his set at its maximum efficiency. Write us at Indianapolis, Ind., for your copy right now.

How to select batteries that run your set for weeks without recharging

WHY select storage batteries by guesswork and risk getting one that requires recharging every few days? Buy wisely. Let the Prest-O-Lite Radio Chart guarantee you batteries that fit your set—of ample capacity to bring weeks of fine reception without too frequent recharging.

The above section of the master chart selects Prest-O-Lite "A" Batteries to fit all 5-volt sets. It recommends two sizes for each set, depending upon the days of service you wish between rechargings (based on the average use of your set of three hours a day). The larger capacity battery will be found more desirable unless facilities for frequent and easy recharging are provided. Consult the complete chart at your dealer's for data

on "B" Batteries and also "A" Batteries for low voltage tubes.

In every detail of construction—special structure plates, highly porous separators and superior internal design—these batteries are made to get the best out of your set. To supply the unvarying current essential to fine tuning, efficient tube operation and clear reception.

Prest-O-Lite Batteries offer you truly remarkable savings. Though standard in every respect they are priced as low as \$4.75 and up. They last for years and are all easily rechargeable. See them at your dealer's or write for our booklet, "How to fit a storage battery to your set—and how to charge it."

THE PREST-O-LITE CO., Inc., INDIANAPOLIS, IND.
New York San Francisco
In Canada: Prest-O-Lite Company of Canada, Ltd., Toronto, Ont.

Prest-O-Lite



Home of the Famous WGY Players



The four associate announcers at the famous old General Electric parent station, WGY, in Schenectady. They are, left to right, William Fay, Arthur Talbot, Rosemary Cramb, who announces woman's hour programs, and Asa O. Coggeshall.

OVERLOOKING the Mohawk river, where once glided the canoes of the warriors of the Six Nations, stand the antenna towers of WGY, the great eastern broadcasting station of the General Electric company.

From those towers the voice of WGY has gone out to every state in the Union, into Alaska, to the Argentine and to Hawaii. In May, 1924, a Johannesburg, South Africa, Radio experimenter reported that Schenectady vocalists had sung "Pinafore" to the Rand. WGY in that feat bridged a distance of 8,043 miles.

The Schenectady station first went on the air February 21, 1922.

It is ideally situated from the standpoint of transmission. Its signals reach all the thickly populated eastern states with remarkable regularity at all periods of the year. During the summer months, WGY is the source of entertainment and information for the great vacation populations in the Adirondacks, the Green mountains, the White mountains, the Catskills, the New England coast and the Laurentian mountains of Quebec. WGY ranks with the best broadcasting stations in the quality of its signal.

All three stations in the General Electric chain are operated under the management of Martin P. Rice. He has been responsible for establishing a broadcasting policy in an art which offered no precedents. Under his guidance, WGY and the other stations in the group have been conducted with dignity; he has been guided by the conviction that the privilege of reaching millions of people carries with it the responsibility of providing those millions with something worth while.

Kolin Hager, studio manager of WGY, has endeavored to build up programs that would contain something to please everyone, from the city dweller who has many forms of entertainment to choose from, to the fire warden, who maintains a lonely lookout on top of a mountain peak, or the lightship keeper bobbing off the Atlantic coast.

Popular dance music is offered, but the emphasis is placed on the better types of musical composition. News bulletins are broadcast, as well as special reports for the farmer, such as produce market quotations and weather forecasts. Various state departments use WGY to reach the ear of a great mass of people. The health department gives a weekly "health talk;" the conservation commission and the state highway department use WGY for educational talks.

With the cooperation of the faculty of Union college, educational talks have been offered on a variety of subjects; afternoon addresses of particular interest to women are given weekly. Sunday school teachers find instruction and profit in the weekly

review of the International Sunday School lesson; book lovers enjoy a weekly book review.

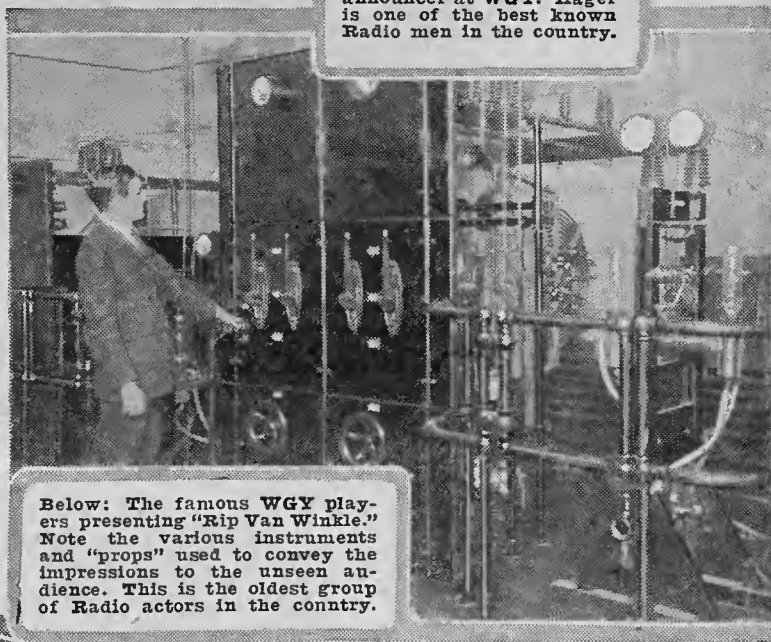
In the field of professional and amateur sport, WGY has gone farther than merely providing a brief story, giving results of contests. The station has been directly connected with the scene of some of the leading national and international sporting events, permitting the listeners to get a word picture of the event at the instant of its occurrence. The World Series baseball games were vividly presented to the listener; the international polo matches were transmitted, as were three races in which Epi-nard, the French thoroughbred, competed with the pick of the American turf; leading football games were described play by play; one or two prize fights, in which national interest was manifest, were broadcast blow by blow.

WGY, with other national broadcasting stations, had an important part in the presidential campaign of 1924. The Schenectady station was directly connected to the coliseum in Cleveland in which the Republican National convention was held, and in Madison Square garden in New York where the national delegates of the democratic party assembled to choose candidates. The Radio listeners in remote parts of the country who, heretofore, had only read of these

(Continued on page 7)



Above is Kolin Hager, studio manager and chief announcer at WGY. Hager is one of the best known Radio men in the country.

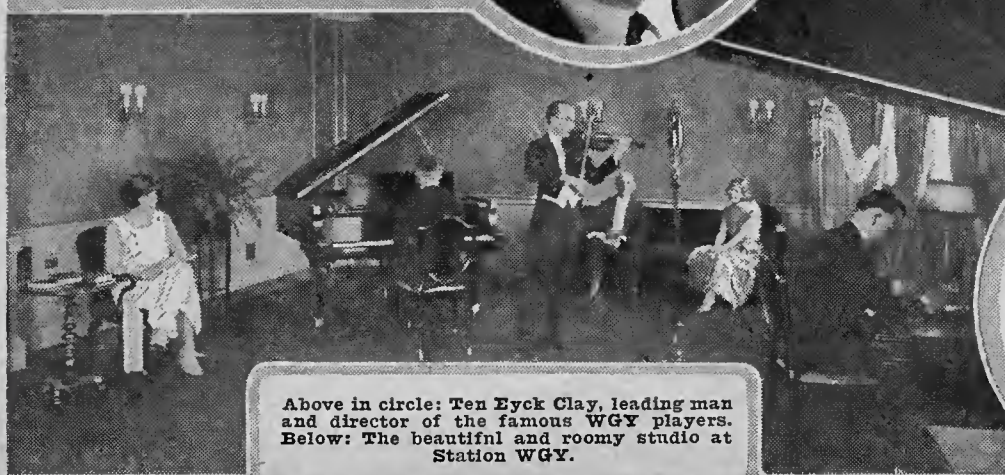


Below: The famous WGY players presenting "Rip Van Winkle." Note the various instruments and "props" used to convey the impressions to the unseen audience. This is the oldest group of Radio actors in the country.

Directly above: A general view of the powerful transmitter and operating room at WGY.



Above in circle: Ten Eyck Clay, leading man and director of the famous WGY players. Below: The beautiful and roomy studio at Station WGY.



To the left in circle, Frank Oliver, probably the best known Radio play actor in the country. Mr. Oliver, a veteran of the stage, joined the WGY players when they formed, several years ago. He is widely known for his character impersonations.

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SUPERPOWER WBBM HAS GRAND OPENING

INCREASES TO 1,500 WATTS AND ADDS NEW PICKUP

Crillon and Samovar Orchestras Now to Be Heard—Station Owned by Atlas Brothers

CHICAGO.—Breaking forth in new glory, WBBM, the Atlas Investment company station located atop the Broadmoor hotel here, has increased to 1,500 watts power from 200, has installed a new microphone pickup at the Crillon restaurant, one of Chicago's show places, and promises another pickup at the Samovar restaurant.

Both restaurants have famous orchestras.



Ralph Atlas

Coincident with the inauguration of WBBM as a superpower station, a grand formal dinner and opening party was held at the Crillon. The city's Radio notables, stage celebrities and newspaper representatives were present. Led by Ralph and Leslie Atlas, owners of the station, and Maridean Borresen, director-announcer of WBBM, the many notables did their bits.

Powerful Klieg lights threw out their white glare as news reel cameras registered the event. Throughout the evening and into the wee hours of morning the program continued. One after another the directors and artists of other Chicago stations dropped in to pay their respects as their stations signed off.

Owners Old Timers

The Atlas brothers are old timers in Radio. Starting in Lincoln, Ill., with a 10-watt station some years ago, WBBM was later moved to Chicago and increased to 200 watts power. Both young men, Ralph and Leslie, know broadcasting from start to finish. Either of them can design and build a station. And both are licensed government operators.

Though not known generally, both of the Atlas brothers keep their weather eye on WBBM's transmitter to see that it is at all times behaving properly, and keeping on the assigned wave length, 225 meters.

WBBM will continue to broadcast from the Broadmoor hotel and the downtown studio, as well as the new studio at the Crillon, and the contemplated pickup at the Samovar.



H. Leslie Atlas

WGY, AT SCHENECTADY

(Continued from page 5)

great meetings, heard the sound of the gavel, the nominating speeches, the balloting; in fact, practically everything that took place.

Station WGY has earned a reputation for variety and quality of program. Shortly after the station was opened it was seen that the Radio audience would soon tire of a repetition of vocal and instrumental numbers, even though artists of national repute were broadcasting. Accordingly, the station organized groups of entertainers, such as the WGY orchestra, the WGY Light Opera company, the WGY Symphony orchestra, the Georgia Minstrel Boys and the WGY Players.

These groups are drawn on for novelty entertainment. For example, periodically the station puts on a farmers' night program. On one occasion it was Uncle Josh Quinby's golden wedding anniversary; later, Uncle Josh had a "huskin' bee." The Georgia Minstrel Boys have given several minstrel shows and each was followed by a heavy volume of complimentary letters. The same group also produced a burlesque of the national conventions. The light opera company has offered several popular operas, including three or four of those by Gilbert and Sullivan.

Among the most popular entertainers are the WGY Players, who weekly present a drama. The organization followed an experimental production of "The Wolf." The Radio drama proved a positive success and the station was urged to continue to present the dramas.

AUSTRIANS VOTE CONCERTS FIRST

Straw Ballot in Vienna Shows Musical Programs Lead All Others in Popularity

VIENNA.—Austrian Radio enthusiasts are musically rather than politically minded according to the results of a straw ballot recently conducted by "Radiowelt," Vienna's leading Radio magazine. Also they have a sense of humor which is much stronger than their desire for sermons and this ballot can be taken as indicative of their true feelings.

Concerts scored the highest, exceeding ever the routine "Correct time" signal at noon. Racing results tailed the list. The tabulated result of the first ten first choices according to the ballot were as follows:

1. Concerts63.84
2. Time Signals63.28
3. Financial Talks58.84
4. Educational Talks57.28
5. Humor53.14
6. Talks on Radio51.92
7. Amusing Talks48.64
8. Whole Operas47.48
9. Daily News Gossip45.93
10. Whole Plays44.50

Dance music only made twelfth place on the list; and although the broadcasting of entire operas was high up, parts of operas only made seventeenth. Sport was twenty-second, political talks twenty-sixth and the last three respectively were exchange reports, sermons, and race results.

The repertoire has included plays running in New York and those which had had successful runs. Comedy, melodrama, farce and tragedy were all tried and with each production a technique distinctive from the stage presentation was built up.

By means of land wires or a portable transmitting set working on a short wave of low power, connecting church and control room, WGY has offered Sunday services from a large number of Schenectady churches, as well as from churches in Troy, Albany, Amsterdam and Gloversville.

An important development of broadcasting during the year 1924 was the interconnection of two or more broadcasting stations and the transmission of a program which originated near one of the stations in the chain. WGY participated frequently in such broadcasting, a notable instance being the broadcasting of addresses by President Coolidge and John W. Davis, on the eve of election, when twenty-three stations were wire-connected to New York and to Washington.

WGY is permanently connected by land wire to the studio of WJZ, the New York station of the Radio Corporation of America, and through WJZ with WRC in Washington. These stations frequently exchange programs. WJZ, for example, has broadcast several of the Radio dramas from WGY as well as the minstrel shows. From WJZ the Schenectady station received a series of concerts by the New York Philharmonic orchestra, Goldman's band, two or three musical comedies direct from New York theaters, and banquet speeches by nationally known men. When the round-the-world fliers were welcomed in New York, WGY transmitted a description of the approaching planes as broadcast by the pilot of an escort airplane, equipped with a low power transmitting set. The signals were picked up fifteen miles away, amplified and carried by wire to WJZ, where they were amplified again and brought by wire to the control room of WGY. Through WRC, WGY has broadcast a series of programs by U. S. Army and U. S. Marine bands.

On October 30, 1924, WGY participated in an interesting and successful experiment in Radio relay. The Schenectady and Oakland stations of the General Electric company were the first and last stations in a relay of campaign speeches delivered in New York. The addresses were brought by wire to WGY and the 380-meter wave of WGY was picked up by KDKA in Pittsburgh. KDKA rebroadcast the signal and KFXX, in Hastings, Nebraska, passed it on to KGO, which rebroadcast the speeches, originating in New York, for a period of forty-two minutes.

A large experimental station has been erected by the General Electric company just outside the city of Schenectady. This will be operated in conjunction with WGY, and another voice from the Mohawk valley will be heard afar.

Two-Way Communication to New Zealand Established

LONDON.—A. O. Simmonds, well-known experimenter living near London, has succeeded in establishing two-way daylight Radiotelegraph communication between New Zealand and Great Britain for three days in succession. This is the first time it has ever been done.

WOAI DIXIE'S FIRST 5000-WATT STATION

SAN ANTONIO, Texas.—WOAI, one of the pioneer stations of the South, has become the first superstation below the Mason and Dixon line. Recently dedicating its new transmitter, the station of the Southern Equipment company now has an available power of 5,000 watts, 1,500 of which are now being used.

The wisdom of the increase in power is confirmed. Reports coming from all parts of the country testify that WOAI is being received in the summer with the volume and clarity of winter.

Behind the scenes of the San Antonio station is J. G. Cummings, announcer and manager. Mr. Cummings has founded his success on clearness and earnestness. He announces a number that has perhaps been played from WOAI a dozen times or more, with the same spirit of freshness and enthusiasm as if it were entirely new.

Applause letters from distant points comment on his clearness of enunciation. They did not have to use their imagination to fill in slurred call letters or names of artists.

Mr. Cummings originally started announcing merely as a fill in. But the invisible audience won't let him quit, despite the fact that he has plenty to keep him busy as manager of the electrical and Radio departments of the Southern Equipment company.

Mr. Cummings never reads telegrams and never attempts to be funny, realizing his limitations. Perhaps these are as important as any of his success-building qualifications.

Protect the aerial insulator from ice by soldering a tin can to the screw eye nearest the guy wire, thus housing the insulator.



J. G. Cummings

NEW SUPERSTATION READY FOR OPENING

JEWETT 5,000-WATT OUTFIT WILL GO ON AIR JULY 1

Plant Located at Pontiac with Remote Control Studio in Detroit—Biggest in Michigan

DETROIT.—WJR, the Jewett Radio and Phonograph company's superstation at Detroit, will take its place among the leaders in the broadcasting field July 1, when it will come on the air with its inaugural program. It will be one of the latest type Western Electric 5,000-watt transmitters, the largest station in Michigan and within a radius of 200 miles of Detroit.

Embodied in this station are the year's developments in the broadcasting art. A modern transmitter building has been constructed on the grounds of the new Jewett Radio factory just within the city limits of Pontiac, Michigan. The transmitter will be connected with studios and remote control stations in Detroit a distance of 30 miles by telephone lines.

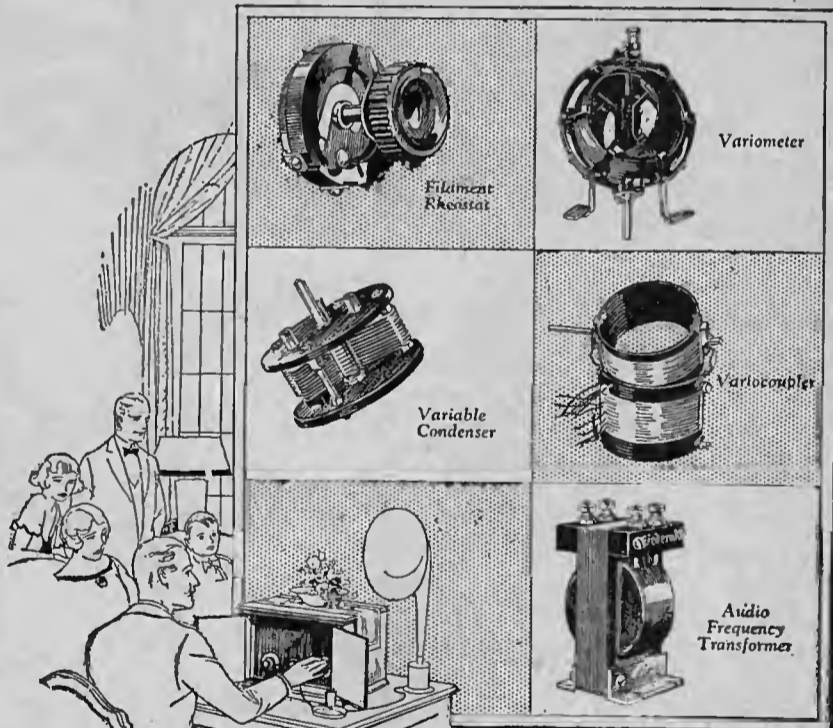
Building Beautifully Furnished

The transmitter building is on a par with the wonderful transmitter it will house. It is a beautiful tapestry brick and stone building of two stories and a basement, located on one of the highest points in the vicinity of Detroit.

While it is not the intention of those in charge of the station to do a great deal of broadcasting from other than the Detroit studios, the second floor of the transmitter building will be completely fitted up for handling concerts. The entire first floor will be given over to the transmitter proper, motor-generator and battery systems, with control rooms, and offices for the engineers and operators. The studio staff is rounding into shape.

Edward H. Jewett, president of the company which will operate, has announced the selection of Jean Goldkette as musical director. For some years he has been a leader in music in Detroit where the studio of WJR will be.

Another appointment to the WJR studio staff is W. A. Dahlberg, a member of this year's graduating class at the University of Michigan, where he was an honor debater at Ann Arbor.



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DLN" FRIDAY; PATRIOTIC MUSIC AT WBAV

iffin, soprano (left), the Radio Florence Cleveland. Her voice well she is in con- ud for programs. ese, below, who le e programs of WLW summer, and Clif- pianist, are popular at this station. (right) is one of Radio entertainers. His tenor voice, always been well heard this sum- day night at WHT. day Mr. Agard is manager of the department of the State bank



Ida May Clondy has a beautiful soprano voice which is well liked by the fans. She entertains regularly at KDKA, Pittsburgh.

Peterson's Club Alameda orchestra: 7:45-8. Kathryn Connelly, soprano; 8:15-9, Mervellian Serenaders dance music.

DANCING
(Central Time)
(Central Standard Time)
Saturday, June 27: 8, Kew, Wps; 8:05, Wip; 8:30, Ksd, Webh, Wgs, Wz; 8:35, Kpo; 9, Kfwb, Kths, Weaf, Wmbf, Wpr, Wps, Wqj, Wws; 9:15, Wncs; 9:30, Wecs, Wgs, Wgn, Wre; 10, Kfco, Koa, Kpo, Wco; 10:30, Kpo, Webh, Wmbf; 11, Kfah, Wfas, Wnc; 11:30, Wsd; 11:45, Wdad; 12, Kgo, Kgw, Khj, Knr, Koa; 1, Khj; 1:30, Khj.

Pacific Standard Time Stations
KFI, Los Angeles, Calif. (467), 5:30-6 p. m., Examiner's outline music; 6, McDaniel's nightly dolans; 6:35, editorial talk; 7-7:30, Carilo Stevenson's Hon Ton ballroom orchestra; 7:30, poets and music of Illinois; 8-9 program, Schubert string quartet; 9-10, Southern California Music company; 10-11, Examiner, Rainbo Terrace orchestra from Ventura.

Friday, July 3
Friday, silent night for: AT9, CHNC, CKAC, KFAE, KFOA, KGO, KLD, PWX, WBBB, WBAV, WCAE, WEGW, WFB, WGBS, WHAZ, WJY, WKAQ, WKRC, WLW, WMAK, WOI, WOR, WRC, WREO, WSAI, WSUI, WTAM.
Atlantic or Eastern Daylight Saving Time Stations
WAHG, Richmond Hill, N. Y. (319.5), 7:30-7:45 p. m., sports talk, Thornton Fisher; 7:45-8, popular songs, Joe Noel and Fred Burton; 8-8:15, Emily Hanson, contralto; 8:15-8:30, M. Lambertini, cellist; 8:30-8:45, Frank Ochs, tenor; 8:45-9, Joe Noel and Fred Burton; 9-9:15, Emily Hanson; 9:15-9:30, M. Lambertini; 9:30-9:45, Frank Ochs; 10-10:15, dance music; 11:05-11:30, dance music.

WEEI, Boston, Mass. (476), 7:15 p. m., baseball; 7:30-9, musicale; 9-10, Ipana Tooth paste concert.

WHT, Deerfield, Ill. (399.8), 7 p. m., Bryce Talbot, baritone; Genevieve Barry Burnham, soprano; Deao Bemick; 7:30, Kitchen Klanser Klanses; Al Carney, organist; 7:45, "The Importance of Being Earnest," comedy; WGY players; 9-30, patriotic program, WGY orchestra; Ana O. Cozzeghall, tenor; "The Higher Patriotism," William Widdemer.

Index to Classical Concerts

Tabulated below is a time table of the stations giving classical concerts this week. Stations are divided into the four different standard times in use. The hours are given in the kind of time in use at each listed station. By using this table as an index and referring to the complete programs below, full information will be obtained.

Classical
Atlantic or Eastern Daylight Saving Time Stations
Saturday, June 27: 6, WEAF; 6:30, WCAE; 7, WEAF; 7:05, WJAR; 7:30, CKAC, WLIT, WOO; 7:50, WEAF; 8, WBBR, WIP, WJZ, WMCA; 8:02, WJZ; 8:15, WCAE, WEAF, WMCA; 8:30, WNYC; 8:30, CKAC, WCAE, WGBS; 8:45, WEAF; 8:50, WIP; 9, WHAR; 9:15, WJZ; 10, WGBS.
Sunday, June 28: 6, WCAU, WOO; 6:30, WCAE; 7, WCAU; 8, WJZ; 8:15, WJY; 9, WBBR, WGBS, WHAR, WJZ, WNYC; 9:15, WEAF, WJAR; 9:20, WEEI; 9:30, WGBS; 10, WBBR, WNYC; 11, WHAR.
Monday, June 29: 6:05, WIP; 6:30, WCAE; 7, WJZ; 7:15, WEAF; 7:30, WOO; 8, WBBR, WGR, WOO; 8:15, WNYC; 8:30, CHNC, WCAE, WEAF, WJZ, WMAK, WOO; 8:40, WBBR; 9, WCAE, WGR, WHAR, WMCA; 9:30, WAHG, WLIT; 9:45, WOR; 10, WEAF, WEEI, WOO; 11, WCAE, WHN.
Tuesday, June 30: 6, WEAF; 6:30, WCAE; 7, WEAF; 7:30, CKAC, WCAU, WEAF, WGBS, WOO; 8:10, WJZ; 8:15, WEEI, WGBS, WNYC; 8:30, CKAC, WCAE, WCAU, WEAF, WEEI, WFI; 12, WHN.
Wednesday, July 1: 6, WEAF; 6:05, WIP; 6:30, WCAE; 7:30, WEAF, WJAR, WOO; 7:45, WAHG; 8, WAHG, WEAF, WEEI, WMCA, WNYC, WOO; 8:15, WNYC; 8:30, WAHG, WCAE, WEEI, WLIT; 8:45, WCAU; 9, WAHG, WCAE, WEAF, WEEI, WGR; 9:15, WNYC; 9:30, WJZ, WLIT, WNYC; 9:45, WAHG; 10, WEAF, WOO, WGR; 10:15, WOR.
Thursday, July 2: 6, WEAF; 6:30, WCAE, WGBS, WGR; 7:15, WGBS; 7:30, WCAU, WHAR, WJY, WOO; 8, WBBR, WCAE, WEAF, WEEI, WFI, WGR, WIP; 8:10, WJZ; 8:15, WEEI, WGBS, WNYC; 8:30, WCAU, WJZ; 8:50, WBBR; 8:45, WIP; 9, CKAC, WCAE, WEEI, WFI, WGBS, WGR, WHAR, WIP, WJAR; 9:30, WMCA; 10, WCAE, WGR, WJZ.
Friday, July 3: 6, WEAF; 6:05, WIP; 6:30, WCAE; 7:30, WEAF, WJY, WOO; 7:45, WEEI; 7:50, WNYC; 8, WEEI, WJAR, WOO; 8:15, WNYC; 8:30, WCAE, WEEI, WNYC; 8:45, WLIT, WNYC; 9, WEAF, WGR, WHAR, WJAR, WJY, WMCA, WOO; 9:15, WJZ; 9:30, WEAF; 10, WGR, WNYC, WOO; 10:15, WEAF; 10:30, WOO; 11, WHAR.
Eastern Standard or Central Daylight Saving Time Stations
Saturday, June 27: 6, KYW, WCX, WLW, WMBB, WQJ; 7:30, PWX, WLW, WMBB, WQJ; 7:30, KYW, WBB; 7:35, KYW; 8, KYW, WORD, WSAI; 8:30, KYW, WGN; 8:45, KDKA; 9, WMAQ; 9:15, WSAI; 9:30, WORD.
Sunday, June 28: 6, WIBO; 6:30, WGY, WMBF; 6:45, WORD; 7, WBCN, WEAR, WEBH, WKAQ, WIBO; 7:30, WLS; 8, WBZ, WEAR, WEBH, WLS, WQJ; 8:30, WBZ, WGY, WLW; 9, WEAR, WGN, WQJ; 10, WKRC.
Monday, June 29: 6, WBZ, WCX, WMAQ, WWJ; 6:30, WGN, WMBF; 6:35, WGY; 7, WCX, WEAR, WKAQ, WLW, WSAI, WVIC; 8, WBZ, WWJ; 8:15, WHAZ, WLW; 8:30, WBZ, WCX; 8:45, KDKA, WBZ, WORD; 9, WBZ; 9:15, WBZ, WLW; 9:30, WLW; 10, WSAI.
Tuesday, June 30: 6, KYW, WBZ, WCX, WIBO, WMAQ, WWJ; 6:30, WGN, WLS, WMBF; 6:35, WGY; 6:40, WGY; 6:45, WSAI; 7, WEAR, WGS, WHT, WLW, WMBB, WVIC, WJZ; 7:10, WGY, WRC; 7:30, WBZ, WEBH, WGN; 7:40, WVIC; 7:50, WVIC; 8, KYW, WEAR, WLS, WLW, WSAI; 8:10, WGY; 8:15, WLW; 8:30, WGN, WVIC; 8:45, KDKA; 9, WLW, WSAI, WORD; 9:15, WMAQ; 10, WEAR, WRC; 10:30, KDKA; 11, WRC.
Wednesday, July 1: 6, KYW, WBZ, WCX, WIBO, WMAQ, WWJ; 6:30, WGN, WLS, WMBF; 7, WBCN, WCX, WEAR, WHT, WKAQ, WLW, WMBB; WQJ; 7:15, WLS; 7:30, WLS, Chicago, Ill. (344.6), 6:30 p. m., Ralph Emerson, organist; Martha Melor, contralto; 7:15, Rex's Cornhuskers; 7:45, lullaby time; 8, classical program, Marguerite Enrie, contralto; George Marston, baritone; David Handenbrake, pianist; Jesse M. Olin, accompanist; 8:25, Bosseau concert four, mixed quartet; 8:45, WLS theater; 9, farm program, string music; Brook Colby, violinist; 10, Cornhuskers' orchestra; 10:10, Czech-Slovak Sokol Union, "The Bartered Bride"; 11:10-11:30, Cornhuskers' orchestra.
WMAQ, Chicago, Ill. (447.5), 6 p. m., organ recital; 6:25, Family Aitar tongue; 6:35, Jack Chapman's orchestra; 8, Jack Chapman's orchestra; 8:30, patriotic program; 9:30, Jack Chapman's orchestra.
WMBB, Chicago, Ill. (250), 7-8:30 p. m., Trianon ensemble; Marie Cnroso, Hazel's O'Neil, John S. Everett, Bernard Senescu, The Handeler, John S. Everett, Clyde Hager, Phyllis Harries, Lindsay McPhall; Armin F. Hand and the Woodlawn theater orchestra.
WMBF, Miami Beach, Fla. (384.4), 8:30-7 p. m., Fleetwood Radio orchestra; 7-7:30, Fleetwood Radio orchestra; 10-12, dance music, Fleetwood Radio orchestra.
WORD, Batavia, Ill. (275), 8:30 p. m., Uncle Dan's study club; 9, I. B. S. A. orchestra; E A Slack, director.
WQI, Chicago, Ill. (447.5), 7-8 p. m., Ralph Williams and his Rainbo Garden concert orchestra; Maude Shapiro, soprano; Lyric soprano; Lou Reed, violinist; A. Armstrong, pianist; 10-11 a. m., Ralph Williams and his Rainbo Garden Skylarks; West Brothers; Lauretta Giles, soprano; Clyde Kern, soprano; Paul Small, tenor; artists; 1-2, Gliner hour, Little Skylarks; WRC, Washington, D. C. (468.5), 2 p. m., Washington-Boston baseball game.
WTAS, Elgin, Ill. (302.8), 8-10:30 p. m., Joe Rudolph and the Boss's Own orchestra; Frank Morris, Polly Willis, John Post, Eddie Cavanaugh and others.
WWJ, Detroit, Mich. (352.7), 6 p. m., dinner concert; 8, Detroit News orchestra; 9, Orange Blossom's orchestra.
Central Standard Time Stations
CKY, Winnipeg, Can. (384.4), 8:30 p. m., studio program.
KFAB, Lincoln, Nebr. (240), 7:30-9:30 p. m., Grant Shunway, violinist; Wilhelmno Schmidt, soprano; (Continued on page 14)

An Evening at Home with the Listener In

STATIONS IN ORDER OF WAVE LENGTHS USED

(FOR PACIFIC TIME)

Table with 5 columns: Meters Call, Call, Meters Call, Call, Meters Call. Lists various radio stations and their frequencies.

Main broadcast schedule table with columns for Call, Met., Saturday, Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Mat., and Call. Contains detailed time slots for numerous stations.

INSTRUCTIONS FOR USE OF TABLES

The "Evening at Home with the Listener In" table is not difficult to understand and use. It is this fact that makes it so popular with the readers of Radio Digest...

For listeners whose standard of time is not shown here, the following instructions should be remembered:

Listeners using Mountain time: Use table for Pacific time but add one hour to every figure given. Can also use Central time table by subtracting one hour from every figure given.

Listeners using Eastern daylight saving, or Atlantic time: Use Eastern time table by adding one hour to every figure given.

Listeners using Central daylight saving time: Use Eastern time table. No changes are necessary.

The periods given in the "Evening at Home" tables are only representative of each station's evening sign-on and sign-off hours, and on Sunday, the late afternoon sign-on and sign-off. If a station has an intermittent rather than continuous program, the table cannot show this.

Above is given a list of all stations in the "Evening at Home" tables, arranged in order of the wave lengths used (or supposed to be used) by the stations. This arrangement provides a handy index for the other tables.

The "Evening at Home" tables are corrected every week. The number of changes often run as high as thirty per cent of the whole. Keep the "Evening at Home" tables from the current issue at the side of your receiver.

The material and form of the tables are entirely original with Radio Digest and are protected by copyright. Reproduction of whole or part without permission is denied, and such infringements will be prosecuted.

Friday, July 3

(Continued from page 13)

Gonolove Harmer Dart, pianist; Otto Kuunp, baritone; Herman Decker, baritone. KFOM, Beaumont, Tex. (315.6), 8-10:30 p. m., Roney band.

KNFN, Shenandoah, Ia. (266), 7:30 p. m. concert, Christian Endeavor, Braddysville, Esther McKee, director.

KSD, St. Louis, Mo. (545.1), 7:30 p. m. Billie Bolles, pianist; Tommy Von Achen, vocalist; S. program.

KTHS, Hot Springs National Park, Ark. (374.8), 9:15-9:25 p. m., sport review; 9:25, classical and ballad selections, New Arlington hotel orchestra.

KYW, Chicago, Ill. (536), 6-8:30 p. m., Congress hotel; 7-7:30, special program; 9-11:30, midnight revue; Paul Whiteman's Collegians; Albert Hay Malotte, organist.

WBAP, Fort Worth, Tex. (475.9), 7:30 p. m., music; 9:30, Captain Bonnet and his old time fiddlers.

WCDO, Minneapolis-St. Paul, Minn. (416.4), 6 p. m., baseball scores; 6:15, dinner concert; 7:45, medical talk; 8, Gordon Cooke ensemble; 9:05, musical program.

WOAF, Kansas City, Mo. (365.6), 6-7 p. m., piano tuning-in number; literary talk, H. Clay Harey; address, Kansas City children's bureau; Tell-Me-a-Story; Lady; Plantation players; 8:10, popular program; 11:35-11, Merry Old Chief, Plantation players; Charles Dornberger's Kansas City Athletic club orchestra.

WFAA, Dallas, Tex. (475.9), 6:30-7:30 p. m., Carl D. Green and his violin orchestra; 8:30-9:30, Belcanto quartet.

WHAS, Louisville, Ky. (399.8), 7:30-9 p. m., one hour concert, auspices Mrs. Emory Nold Henderson, contractor; Jackson-Snepp-Jackson trio.

WHO, Des Moines, Iowa (526), 7:30-9 p. m., "The Citizens' Military Training Camp," Capt. Edwards; Simpson Conservatory of Music; 11-12, Barrett-Phillips Melod-Blug orchestra.

WMC, Memphis, Tenn. (499.7), 7:30 p. m., radio talk; 8:30, Irving's Cateria Novelty orchestra; 11, Bob Miller and his Idlewild orchestra.

WOAN, Lawrenceburg, Tenn. (282.8), 9 p. m., Vaughan Radio orchestra; male quartets.

WOAW, Omaha, Neb. (526), 6 p. m., music review; Hester Bronson Copper; 8:25, baseball; 6:30, orchestra; 7:10, sport talk; Ivan L. Gaddis; 9, program, auspices Chicago, Burlington & Quincy Railroad company.

WOG, Davenport, Iowa. (483.6), 8-9 p. m., musical program, Rotary quartet.

WSB, Atlanta, Ga. (428.3), 5-6 p. m., bedtime story, Bonnie Barnhardt; 8-9, John McCreidino, Scotch bass; 10:45, entertainment.

program; 7:30-8, baseball scores; 9:10:30, Sherman, Clay and company studio concert; 10:30-12, Hoot Ows.

KHJ, Los Angeles, Calif. (405.2), 5:30-6 p. m., Lalgh-ton's Aredo cafeteria orchestra, Jack Cromshaw, leader; 8-8:30, Art Hickman's Billmore hotel concert orchestra, Edward Fitzpatrick, director; 6:30-7:30, little stables American history, Prof. Walter Sylvester Hertzog, Uncle John and the Radio kiddies; 8-10, feature program arranged and presented by J. Howard Johnson, Radio impresario; 10-11, Art Hickman's Billmore hotel dance orchestra, Earl Burnett, leader.

KMX, Hollywood, Calif. (386.9), 5:30-6:15 p. m., Wur-litz pipe organ studio; Sid Ziff's sports talk; 6:15, travel talk, W. E. Alder; 6:30-7:30, program, Beverly-ridge company; 7:30, musical gems hall hour, Eastern Outfitting company; 8-9, West Coast theaters; 9-10, Order of the Optomistic Dunut, Davis Perfection Bread company; 10-11, June Pursell singing popular songs, Ron Wilson, pianist; 11-12, Abe Lyman's Coconut Grove dance orchestra, from Ambassador hotel.

KPO, San Francisco, Calif. (428.3), 6:15-7 p. m., Loew's Warfield theater; 7-7:30, Palace hotel concert orchestra; 8-10, patriotic program, U. S. Army band; 10-11, Palace hotel dance orchestra.

WEED, 475.9, 8:30-10:00; WFAA, 475.9, 8:30-10:00; WFBH, 272.6, 7:30-10:00; WFI, 394.5, 2:00-3:45; WGPC, 252, 2:00-3:00; WGBS, 315.6, 2:00-3:00; WGES, 250, 7:30-11:00; WGN, 370.2, 3:30-8:30; WGR, 319, 8:00-9:00; WGY, 379.5, 6:00-9:00.

SUPERPOWER WLW TO EXPERIMENT AS 8XAL

Crosley Station to Explore 200-1,000 Meter Band

CINCINNATI.—The Crosley Radio corporation's superpower station, WLW, is now listed by the department of commerce as an experimental station, this in addition to its regular broadcast license which permits the use of five-kilowatt transmission. The experimental call letters 8XAL will be heard as the occasion requires.

This new license permits the Crosley station to conduct experiments for the development of the science of Radio communication or the apparatus pertaining thereto. This will permit experiments with wave lengths between 200 and 1,000 meters and during the hours before 11:30 in the morning and after 12:00 midnight, local standard time.

Experiments will also be conducted in the transmission of short waves. The call letters are the same, 8XAL, and transmission will be between 52.6 and 54.5.

Patients Hear Conference

SALT LAKE CITY, Utah.—Patients at the Latter Day Saints' hospital here heard the great semi-annual conference of the church in the tabernacle during Saturday, Sunday and Monday. Receiving sets were installed in different parts of the building and all the convalescents and nurses were given the privilege of listening in.

Bishop Offers Radio Prayer

LONDON.—The Bishop of London has suggested the following prayer as an intercession: "That God may inspire and guide the efforts of His church to direct and use in His service the great modern inventions; more especially the moving picture and Radio."

Radio Digest

PROGRAMS
Illustrated

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Radio and World Peace

SUCH is the title of an article prepared by Edgar H. Twamley, of the Palmer School of Chiropractic station, WOC. Mr. Twamley makes an interesting survey of the effect which Radio may have in creating world harmony, in making various peoples understand one another and one another's viewpoints.

Mr. Twamley reproduces an article which appeared not long ago in this publication, calling attention to the proposal of the League of Nations to install a \$10,000,000 giant broadcasting station, capable of encircling the globe and reaching every Radio listener in the world.

Transportation and communication do undoubtedly create better understanding between people. They tend to unite a country, to make it think as one. Perhaps international broadcasting may tend to unite the world, to make the nations think as one.

But before going further with this dream, let us not forget that Radio can be used for subtle and evil propaganda just as easily as it can for good. The League of Nations station, were it to attempt to point out the deficiencies of some outlaw country, might soon find very strong competition from that country's stations, which being "patriotic" would prove to the people that the league was doing a great injustice, and that the only thing left to do would be start a war.

And so we have it. Newspapers have been known to start many wars, which otherwise might never have been fought. Settlements might have been effected. But selfish interests behind those newspapers preferred to start a war. Perhaps they owned steel stock, or perhaps they owned mines in the enemy country.

Or perhaps these newspapers were deluded and conscientiously thought that a war, costly in blood and money, was the best thing.

And what if broadcasting stations had selfish interests?

We hold great belief in the future of broadcasting, but we have a habit of looking at all sides of a question before getting overly optimistic. For instance, suppose the League of Nations station were to broadcast a history of the world war, just to give the listeners of the world a better understanding of the tragedy, its causes and the parts each nation played.

Now let us go further and suppose that the league tries to tell the truth, and so attempts to compromise a story from whole cloth, by taking patches here and there from the German, French, English, Russian, Italian and American versions of the war.

We would like to listen in to that broadcast. We are afraid that it would break up the league, or else the various countries would start competitive broadcasting of their own versions—as the only true ones.

We are rather dubious if the league project would work out in actuality as well as if does on paper. A little more thought and consideration of the matter before it becomes a reality might forestall a lot of later difficulties.

British vs. U. S. Broadcasts

GREAT Britain now has an estimated ten million listeners, based upon three million actually paid receiving licenses. The responsibility of the administration of an adequate broadcasting service is therefore obvious. Britain serves its listeners well.

Britain's broadcasting system is not organized or conducted for the profit of the broadcasters. No kind of advertising is permitted.

Furthermore, the British Broadcasting company does not consider it its duty to give the public what it wants. On the contrary, it is following the idea that its duty is to give the public what it should have.

The British subjects didn't like this policy at first. Now it would be difficult to make them believe that it is not the best in the world.

Sometimes we wonder if the United States Broadcasting system, if we may call it that, is comparable with the British. The chaos, advertisements, cheap artists and tawdry material often heard from the majority of our stations brings this question to mind with much force.

RADIO INDI-GEST

When the Form Fell Off of the Stone CROSLY SUPER--XJ

poles.
thing needed except the
loud speaker, and every-
Price to include headset
Armstrong patent.
without infringing the
get loud speaker volume
sets of 5 and 6 tubes to
Some widely advertised
plification yet discovered
effective method of am
circuit; which is the most
Uses the regenerative
This 4-tube model
With A battery \$125.00.

LEAVELL'S SULTAN

(From a Sultan, Wash., newspaper)

And that, ladies and gentlemen (step up a little closer so's not to block the sidewalk), explains why the widely advertised plification yet discovered prevents it from infringing the get loud speaker volume. The little lithographed boxes there contain the Armstrong patent poles. What am I bid?

Heard on the Commuters' Special

First Radio Fan—I hear Herbie Mintz has insured his hands for \$20,000.

Second Ditto—Sure! How's a fellow going to direct a broadcasting station if he can't talk? | RAY DE OWE.
(From "Hit or Miss" in Chicago Daily News).

We just heaved a poem in the wastebasket. It was all about snow blowing over the waste lands of Wyoming or Medicine Hat or some other place, and icy winds howling around the gables, and gents walking around on snowshoes and a fellow sitting in his isolated hut and listening to the Ice King snort while he listened to Radio music.

When it's a hundred and forty-nine in the shade,
And we're melting away into grease;
Why tell us about some guy at the Pole,
Who shivers and freezes in peace.

The Book of Rayjo

An account written by the hand of The Third Trombone Player upon golden condenser plates. Translated by aid of two crystals, Galena and Silicon.

1. And it came to pass that my neighbor took unto himself a regenerative single circuit.
 2. And it came to pass that he sat therewith until the small hours of the night.
 3. And it came to pass that he unduly increased the regeneration.
 4. And it came to pass that the ether roundabout was filled with wailing and howling like unto that of evil spirits.
 5. And it came to pass that I, The Third Trombone Player, of goodly parents, was listening in to Elgini, the land of the Erbsteinites.
 6. And it came to pass that the howling and wailing filled my ear, yea to the exclusion of the voice of Erbstein, the son of Shem.
 7. And it came to pass that the spirit commanded me, the son of Wotan, to gather the brethren into the Rayjo Danite Band.
 8. And it came to pass that the aerial of neighbor referred to in paragraph 1 was found lying in the gutter and the wailing ceased.
 9. And it came to pass that there was exceeding rejoicing in the land and the people proclaimed "Hail to the Prophet. It musta been the Indians."
 10. Thus saith the lord, "Mark well thy hand on Dial 2 that thou dost not become an abomination unto the righteous and the Rayjo Danite Band get thee and thy aerial."
- To properly conclude this we will all arise and sing a hymn.

THE THIRD TROMBONE PLAYER.

Modern Miracles

First Fan—Our servant the other day dropped a tea tray and we picked up China.

Second Fan—That's nothing. My neighbor, a Scotsman, sat on his tube set and heard Glasgow!

The Legal Listener

"Every owner of a receiving set in Germany must have a license before he can legally listen in."—(News note.)

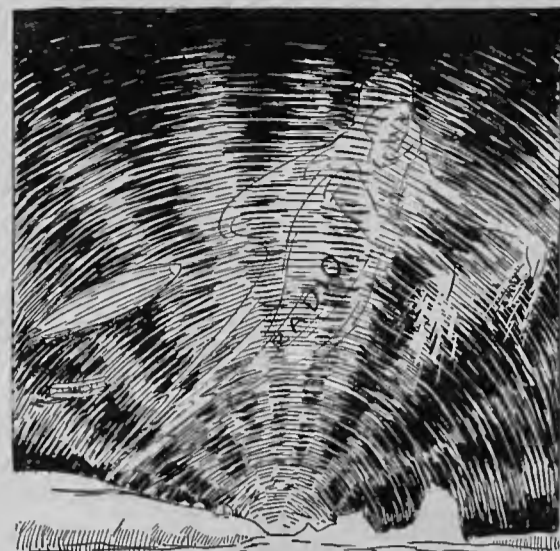
For fifteen months Herr Heinerich Schmaltz
Had hid his insidious sin:
He had no license and couldn't, you see,
Do legal listening in.

But with only his conscience for his guide,
His duty clearly he saw:
So he got him a permit and now all is well,
And he listens according to law.

SIR PUMPERNICKEL.

When a man in Germany wants to listen in, cross the street, summon the chiroprapist, take the dachshund for a walk, or change the wiring on his set he gets out the book of rules and informs himself on the legal way to do it, according to travelers. Even the construction of sauerkraut is provided for in the municipal building code.

Radio to Search Arctic



AL-BROWN

Condensed

BY DIELECTRIC

We have Station WOO, in Philadelphia, to thank for an excellent musical program, the like of which is all too seldom heard. Don't forget it was presented on an evening when the mercury was climbing right out of the top of the thermometer, too. The grand organ in the Wanamaker store in the City of Brotherly Love is no doubt one of the finest in this country and that, together with their symphony orchestra, was sufficient to guarantee a splendid concert—which it was!

WSAI, Mason, Ohio, is equipped to reach out to most every receiving set within a considerable radius of the broadcasting station in spite of Old Man Static. I wish to commend them on having so good a stringed quartet as entertained there recently, and of course, that second anniversary and dedication program of a night's duration was something else to stimulate comment. Best wishes for the future.

Another of those looked for concerts from the United States Marine band found some of us tuned to WCAP, Washington, while balancing ice-caps atop our craniums. I still wish other musical organizations could master the style in which these Marines render The Star Spangled Banner. If they did so, it would add dignity to the national air.

Even the short time in which the Little Symphony orchestra has entertained from WEAH has brought to that body of musicians a hearing large and cordial. It is in the most capable hands, so far as leadership is concerned, and the players seem to be artists of no mean ability and musical education. While a recent program was of a classical nature it assuredly appealed to thousands of listeners.

For a popular program, one had but to tune to WEEI during the course of the evening when the DeLancy Cleveland program was transmitted. Piano, vocal and varied instrumentation served as medium for putting these numbers across the ether. No doubt there were letters of appreciation received at the studio following this program.

KDKA entertained one evening with operatic excerpts played by their little symphony players. Most of the numbers were interesting and of course given with the usual meticulous care characteristic of this musical unit. Their progress has been followed faithfully by DIELECTRIC and at no point has evidence of faltering appeared.

Chicago usually has no difficulty in reaching to the eastern portions of the country, but word has come to the writer of several instances by owners of capable receiving sets in the East who find it impossible to tune in WEBH with volume or clarity. I have found much cause for eulogy of this station and regret to learn of anyone failing to hear either Mr. Boniel or the program he so sagaciously chooses for our delectation.

By giving a gentle twist to the dials I brought in WTAM, the Willard station, while eight high school pupils displayed their prowess with violin and bow. It is pleasant to record for the Radio audience who usually listen to this Cleveland station, but didn't, that these young players were quite capable in the rendition of Saint-Saens' "The Swan" and other numbers.

Recent Advances in Tuned R.F. Amplification

Part V — Tricks in Wiring; Bridge Details

By Milo Gurney

THE value of Wheatstone bridge circuits as they pertain to Radio is enhanced when one realizes that, through taking advantage of this principle, it is possible to produce not only a one way repeater in which the action is always forward and much like the functioning of Radio's most marvelous device, viz., the much maligned crystal, but also one that is in no manner influenced by the internal resistance of the tube, nor is the amplification factor of the tube disturbed, except as grid current may flow. It is also of unusual interest to realize that compensation or neutralization may be secured, which is entirely independent of wave length. This is a condition not possible with circuits of the neutrodyne class, wherein compensation is at a given frequency. Experimenters therefore are offered a new avenue complete with alluring possibility in these bridge balancing schemes from which the most astounding results are possible.

Wiring Little Understood

In the construction of any receiver, and particularly those of the tuned transformer type, altogether too little understanding of basic wiring essentials appear as prominent, not only among amateurs but also manufacturers, as is evidenced by the overly beautiful wiring jobs we see. Handsome, yes, well proportioned and soldered, but woefully inefficient, as they are usually bubbling over with radio frequency shorts or loops. It is not sufficient that we merely follow the old truth of keeping grid leads short and well away from plate leads and at right angles to them, but we must follow them on beyond to the terminal points with this same watchful care, ever remembering that while all of our grid and plate currents up to the output of the detector is of the order of radio frequency, beyond and into the audio portion of our circuit we must not grow careless as some radio frequency is still present.

A pretty good safety rule to follow in wiring your tuned radio frequency receiver is to make hearty subservient to efficiency, forgetting entirely parallel wiring and a multiplicity of acute angles.

The more efficient method of wiring is known as cabling, an example being the visual shown in figure 31. This is the

CABLE ASSEMBLY

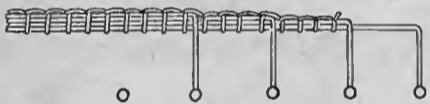


Figure 31

reproduction of a finished and laced cable ready for hook-up to its respective terminal.

About Wiring

This cable may be composed of spaghetti covered wire or wires with other insulating mediums. They should include all wiring carrying direct current, such as A and B battery leads and should be continuous from source of supply to their respective terminals. I mean by this that you should entirely eliminate the usual practice of soldering taps onto your B plate supply leads, simply because they are of the same voltage supply running to more than one tube. The proper, and much more efficient method, is (in the case of the same voltage being required for the plates of two tubes) to run separate feed wires from the B battery binding post supply to the plate circuit terminal and to form such leads into a cable which would also include your A or filament supply wiring.

Do not attempt to neglect the A battery leads, feeling that because they appear so harmless no damage can be accomplished by them. To the contrary, I venture the opinion that the big trouble in two-thirds of the so-called Neutrodyne or other receivers using tuned radio frequency transformers, wherein trouble is experienced in securing a desired value of neutralization, irrespective of whether they are factory built or home constructed, lies in the fact that the spacing or general location of the A battery supply wiring has not been given any consideration by the designer or wireman.

How Trouble Forms

Too often you will find the positive and negative A battery leads run, or are wired in, some distance apart or have overly liberal spacing between them. Visualize then, if you will, that these leads are connected to, and through, the filament of each tube. Or we might express it, as in multiple series with each other and their supply, thus forming several actual closed loops, each quite capable of producing a value of magnetic coupling between coils that materially hinders success in your attempt at securing satisfactory compensation.

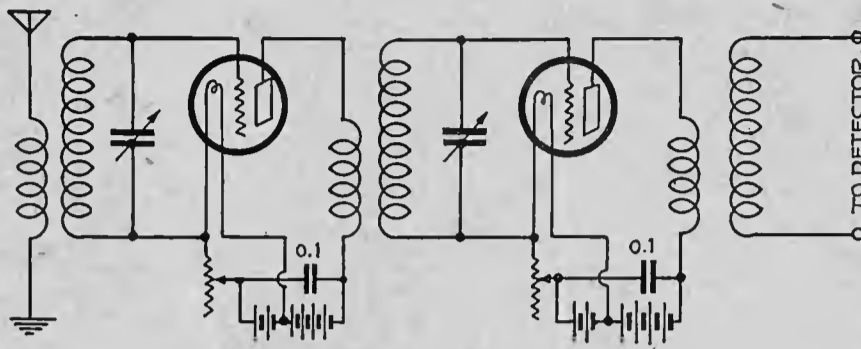


Figure 32

Obviously such loops cannot be totally controlled as they are inherent in the scheme of tube filament heating and its resultant electron emission. Yet their control, to a point wherein these loops become negligible, is easily secured if you will but run these filament supply leads close together and cable them without any attempt toward maintaining them as true parallels.

Another Feature

Still one other feature concerning over coupling effects in circuits using tuned radio frequency transformers is the capacity due to the inclusion of apparatus which is common in these stages carrying radio frequency. It usually presents itself as a lumped capacity in the leads to the B battery and it holds as of importance, that even though such battery leads are short they have sufficient self inductance to cause coupling which is objectionable.

In general, the usual procedure used to overcome such coupling is to short circuit the radio frequency currents of the plate circuits with a fixed condenser of the order of 0.1 or larger. Such shunts are placed where most convenient with respect to their attachment from plate supply to minus A. A much more efficient method, however, is to use a fixed condenser of the value given for each of the radio frequency transformers and to connect such condensers as close as possible to the terminal of the primary of each coil and the minus A, bearing in mind that the leads from the condensers should be as short as possible.

By-Passing Currents

This application of condensers causes effectual short circuiting or by-passing of radio frequency currents which otherwise would travel along the B battery leads. (See figure 32.) One should not expect the ideal in either compensation or be lead to believe that his particular receiver positively does not reradiate. All advertising claims to the contrary and notwithstanding.

In support of this glaring statement, which may be disputed, I quote in part from one of our leading engineers: "In general, any receiver must of necessity be a radiating device. Any pick-up system, whether it be an antenna or loop, cannot receive a signal without the reradiation of a portion of such signal. These two reciprocal characteristics always occur together in nature, and on this basis alone, all receiving equipment must be considered reradiating."

Sets Must Reradiate

This means then that any receiver which will generate or regenerate, or is capable of oscillation, will, in a greater or lesser degree, reradiate, though not of a value to cause annoyance to one's neighbors. Hence the desirability of Wheatstone bridge circuits as paramount to many other methods of compensation control is evident, because of the possible exactitude of their compensation and consequent minimum of reradiation.

The question may arise in the experimenter's mind as to whether it is possible

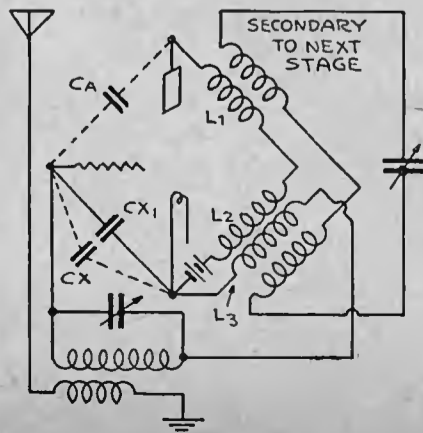


Figure 33

to design a capacitive and inductive bridge circuit in which the output is not independent of the bridge, but rather is a part of it. Such an arrangement is not only possible but also practical, and it is of interest to note that a bridge circuit structure using this idea is now in the patent office and forms the schematic of a circuit which will be marketed by several concerns this coming season. (See figure 33.)

The Bridge

Here the grid to plate inherent capacity C_a is one arm of the bridge, while also the grid to filament capacity C_x , with its replacement C_{x1} forms the other arm, the divided inductance L_1 and L_2 forming the third and fourth arm. The purpose of the placement of the coil L_3 , which is unity coupled to L_2 , is to keep the plate battery voltage negative to the grid. The input low potential is of the same alternating current value as the point R of the output L_1 and L_2 . Hull, in his description of a true one-way repeater, to be attached to the input of a standard receiver, used this circuit. We may expect that its application in each stage of a tuned radio frequency compensated receiver will prove as a valued contribution to Radio receptors.

To again digress from my discussion of the subject, experimenters must realize that each of the bridge circuits shown is devoid of actual ground connections.

Such grounds as are used are confined to the primary feeding the input, yet considerable attention is given by designers relative to the ground or low alternating current potential.

The Dalet Circuit

In an earlier article I promised a modification of Dalet, the French engineer's circuit, which is a true bridge as modified. It is interesting as the reversed feed back is inductive and in a subtractive position at the low potential of the input rather than the high as used in the Minor

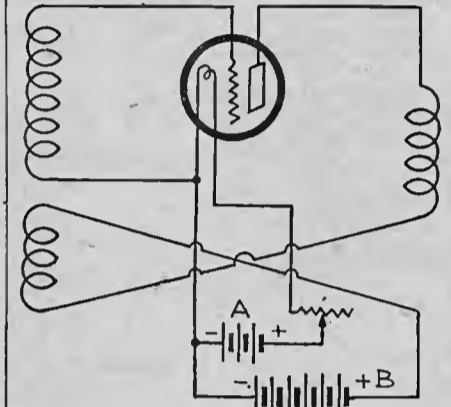


Figure 34

superdyne and therefore much easier stabilized or balanced.

Both the input and a second stage are shown, though no construction data is furnished. I understand such information is to follow shortly in a series of articles by Radio Digest engineers. Figure 34 pictures the circuit as an additional magnetic coupling in reversed order to the lumped coupling between plate and grid. The connections to this coil are reversed as in the Superdyne, but in series with, and connected between, the output of the plate coil and the plus B plate battery. This permits the usual by-passing or short circuiting of the radio frequency (Continued on page 22)

Getting Concerts WHOLE



Cabinet Model "C" \$30

It soon dawns on the owner of a Bristol Speaker that he is listening in on entire concerts.

That roving disposition to tune in every station on the map is due, much more than is generally supposed, to a yearning for really sweet music.

One reason radio music does not always sound sweet is that certain of the tones are out of tune.

Coming through a Bristol Speaker, all the tones are evenly in tune. The result is an arresting sweetness that "invites" you to stay through a concert to the end.

BRISTOL AUDIOPHONE Loud Speaker

For \$25 and \$30 you can get a Bristol Speaker; and there are others as low as \$12.50. Ask your dealer to send one out. Write us for Folder No. AY-3022, telling why the Bristol is such a delight to the ear.

THE BRISTOL COMPANY, WATERBURY, CONN.

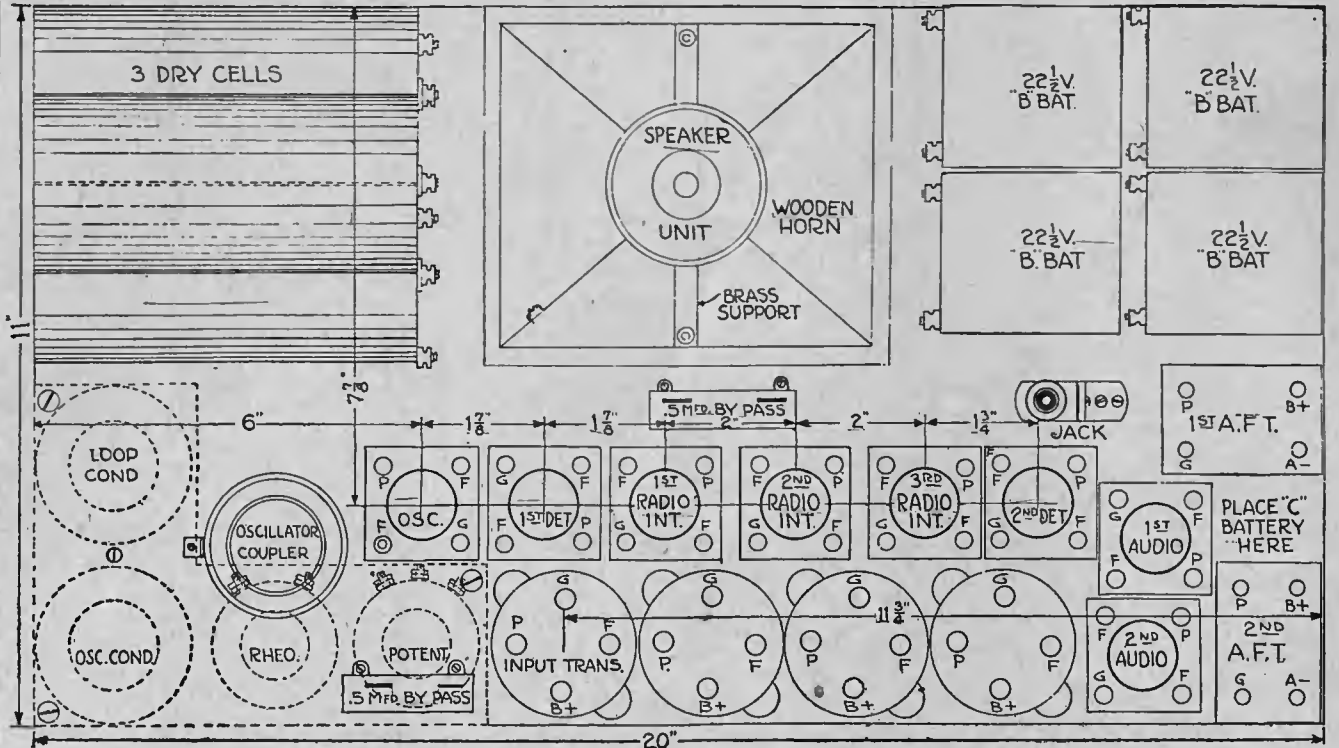


A Portable Super in 22-Inch Week-End Bag

Construction Details in Two Parts—Part I

By Harry A. Nickerson

LIST OF PARTS	
2	Variable condensers, .0005 mfd.....\$ 6.00 to \$14.00
1	Super-heterodyne kit..... 10.00 to 30.00
8	Small base 199 sockets..... 6.00 to 8.00
1	Potentiometer, 400-ohm..... 1.25 to 2.50
1	Rheostat, 6-ohm..... 1.30 to 2.00
2	By-pass condensers, .5 mfd..... 1.80
1	Fixed mica condenser, .005 mfd..... .60
2	Fixed mica condensers, .002 mfd..... .40
1	Fixed mica condenser, .0005 mfd..... .35
2	Fixed mica condensers, .00025 mfd. with grid leak clips.... .90
1	Semi-variable filter condenser, .0005 mfd..... 1.00
2	Grid leaks, 4 to 7 megohms..... 1.00
1	Double circuit jack..... 1.00
1	Suit case, 12"x26"x8" outside..... 8.00 to 15.00
	Miscellaneous nuts, bolts, wire, etc..... 5.00
Total cost.....\$43.30 to \$83.50	



Baseboard layout—showing where and how to mount the various parts.

A SUPER-HETERODYNE set operating a self-contained loud speaker and completely assembled in a "week-end" suit case is quite a stunt, is it not? Such a truly portable receiver is the subject of this article. Even the loop aerial fits inside the cover of the case. So portable is it that one can tune in a broadcast station, close the cover of the suit case, carry the case along the street, again open the cover and hear the same station.

A matter of vital importance to the average fan is that of expense. How much will it cost to build the set? The kit used by the writer in the construction consists of four intermediate transformers with oscillator coupler and costs just \$10. By shopping around a very little, the writer was able to procure all the parts listed, including batteries, but not tubes, for about \$43. This means the complete parts for an eight-tube set.

May Vary Parts

While the set was actually designed for the use of such parts as are shown in the photographs, it is probable that such apparatus as sockets and fixed condensers may be of some other good make, provided their size is not too great. Even the intermediate transformers and the oscillator coupler may be of other reliable make. If other parts than those chosen by the writer are used, some slight experimenting may be required to make the set function at maximum efficiency, but not very much.

Tubes of the UV-199 or C-299 type may be used throughout. The UV-201A cannot be used in this model because of space limitations and battery requirements.

First, a general idea of the completed receiver: Looking at it as one would open a suit case with the cover up and the large compartment down, in the top or cover is a small loop aerial. In the bottom of the case is a complete Radio set, A and B batteries and loud speaker at the rear, audio transformers and C battery at the right, oscillator coupler and control panel at the left, tube sockets at the middle and intermediate transformers at the front. All the apparatus except, of course, the loop, is firmly fastened to the baseboard (see photos), which in turn is fastened to the case.

It is evident that care must be taken to fasten everything firmly in place or jolting the set about will cause trouble. This receiver must be able to stand the "shake" test from the start.

A Proper Suit Case

The first consideration is to make sure that the suit case is of such a size that the baseboard used will drop into the opening opposite the suit case cover. A standard size of suit case has been listed. If some other size is used, make sure that the baseboard is not made too large to fit into it. It must also be borne in mind that the depth of the case limits the height of the instruments and wiring of the set since the set is placed inside the suit case.

The simplest and cheapest method will

be found to be that of following the directions and specifications as closely as possible. The cost of a suit case of the size suggested is, or should be, not more than that of a cabinet of the same relative quality. A case without much metal used in its construction should be chosen. At some stage in the building, it will probably be found desirable to remove the cloth lining of the case and shellac the case inside, giving it several coats. This

renders the case more solid and also permits use to be made of the full inside area. Shellacking the baseboard is also advised. This gives a better appearance and tends to waterproof it.

Construction may proceed as follows:

(Continued on page 20)



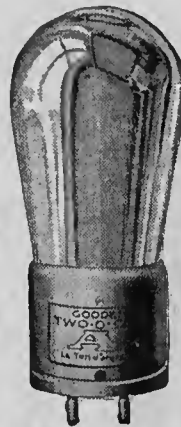
View of completed receiver, looking down into opened case.

The "Goode" Two-o-One

A

Le Ton d'argent

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Owensboro (Dept. A) Kentucky

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EXCEPTIONALLY long life, low cost per charge, no expensive bulbs to replace, and the short time necessary to fully charge A or B batteries, combine to make the France Super-Charger the truly economical battery charger.

The France Multi-Duty Super-Charger sets a new standard in battery charging. 2, 4, 6 or 8 volt Radio "A" or Auto batteries are quickly charged at a 5 to 7 ampere rate, which tapers as the battery is charged. It also charges up to 120 volts of "B" battery IN SERIES, at varying rates as desired, without attachments—a remarkable achievement.

Now is the time to put your batteries in order. Write for name of nearest dealer. Price, \$22.00; West of the Rockies, \$23.00.

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A. B. C. Course in Radio Fundamentals

Chapter XIV—The Care of Storage Batteries

By David Penn Moreton

THE operation of the lead storage battery was fully described in the previous installment, and a brief description of the Edison storage battery will be given in this installment before discussing the care of storage batteries in general.

In the Edison storage battery the active materials are oxides of nickel and iron, respectively, in the positive and negative plates, and the electrolyte is a solution of caustic potash in water. The retaining vessels for these cells are usually made from sheet steel, their walls being corrugated to add strength with a minimum of weight. The completed can is nickel-plated, which protects the steel from rust and at the same time adds greatly to its appearance.

The Plates

Each positive plate consists of a grid of nickel-plated steel holding a number of small steel tubes. The tubes are made of very thin sheet steel, perforated and nickel-plated. Each tube is encircled by a number of rings which serve as hoops and prevent the tube expanding and thereby cause a better contact to be maintained between the metal wall of the tube and the active material which the tube contains. The active material in the tubes is interspersed with thin layers of pure metallic nickel in the form of leaves or flakes, which is made by a special electrochemical process.

Each negative plate consists of a nickel-plated steel grid which supports a number of flat rectangular pockets. The pockets are made from thin nickel-plated steel, finely perforated.

Each pocket is filled with an oxide of iron very similar to what is called iron rust. The rectangular pockets are pressed into the grid under high pressure so that there is a good electrical contact between them.

Hanging and Insulation

The positive and negative plates are hung alternately on two connecting rods, the positive plates being connected to one rod and the negative plates to the other rod. Specially shaped lugs extend upward from the connecting rods and form the terminals of the cells. There is always one more negative plate in the Edison cell than there is positive, just as there is in the lead cell which results in both of the outside plates being negative. Special insulators are used to separate the plates and prevent them coming into contact with the metal containing vessel.

How It Charges

On the first charge of the Edison storage battery we start with the oxide of iron FeO, in the negative, green nickel hydrate in the positive, and potassium hydrate, KOH, in solution. The charging of the cell reduces the iron oxide to metallic iron, and converts the nickel hydrate to very high oxide, NiO₂, black in color. On discharge, the metallic iron goes back to iron oxide and the high nickel oxide goes back to a lower oxide, but not of its original form of green hydrate. On each cycle of charge and discharge, the negative plate changes to metallic iron and on discharge to iron

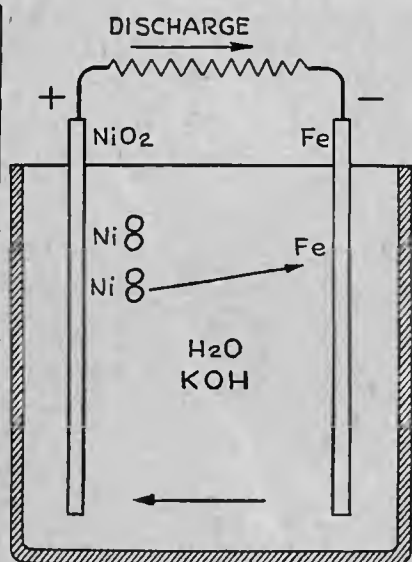


Figure 62

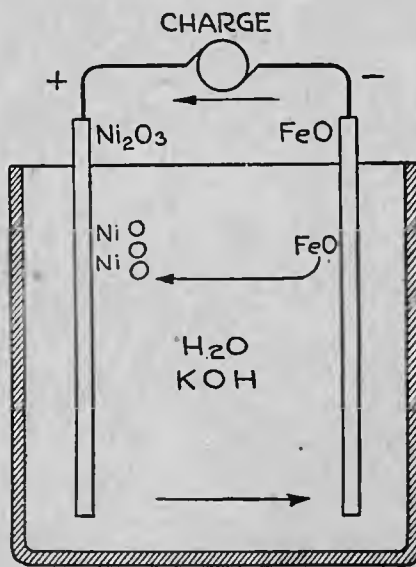


Figure 63

oxide, while the positive changes to high nickel oxide and on discharge to a lower oxide. The potassium hydrate is decomposed on both charge and discharge and the chemical actions taking place at the surface of the plates are brought about by its elements. An amount of potassium hydrate equal to that decomposed is always reformed at one of the plates by a secondary chemical action, and consequently there is none of it lost and hence its density remains constant.

The result of charging, therefore, is a transference of oxygen from the iron to the nickel plate, and that of discharging is a transference back again. For this reason the Edison cell is sometimes called the oxygen lift cell. The chemical actions taking place in the Edison cell on discharge are shown in figure 62 and on charge in figure 63.

The small Edison cells used for B batteries are usually composed of two plates, one positive and one negative, and these plates are placed in a glass container.

Care of the Lead Storage Battery

The following suggestions will be helpful in taking care of your lead storage batteries and if carried out you will get a great deal better service from them than you will get if they are neglected.

- (a) Always use a pure electrolyte.
- (b) Never allow the surface of the electrolyte to fall below the upper edge of the plates.
- (c) Always maintain the specific gravity at the value specified by the manufacturers.
- (d) Keep the cells well cleaned, never allow the sediment to rise until it is in contact with the lower edges of the plates.
- (e) Keep the separators in place so that there is no chances of the plates coming in contact with each other and shorting the cell.

(f) Keep the battery well insulated by placing the entire battery or groups of cells in trays supported on insulators.

(g) Inspect all of the cells occasionally for leaks in the containing vessel and have any cracked or broken jars repaired or replaced immediately.

(h) Always charge the battery as soon as possible after discharge.

(i) Never overcharge the battery or after the plates begin to gas freely, unless the plates become sulphated.

(j) Never allow the battery to discharge below 1.75 volts when discharged at the normal rate, and 1.65 volts when discharged at the one-hour rate.

(k) Watch the plates for signs of sulphation and if any sulphate appears give the battery a long overcharge at a low rate.

(l) Always try to keep the temperature of the battery below 110 degrees Fahrenheit.

(m) Don't allow the battery to stand for an indefinite period without charging it as there will always be some internal discharge taking place.

(n) Keep the terminals of the battery clean and use vaseline on them after they are thoroughly cleaned if they tend to corrode.

(o) Don't allow your battery to be subjected to low temperatures while it is in a discharged or partly discharged condition as the electrolyte will freeze and very seriously injure the plates.

Battery Troubles

The following troubles are perhaps the most common ones encountered in the use of a storage battery: (a) loss of capacity, (b) loss of voltage, (c) corrosion of plates, (d) buckling of plates, (e) shedding of active material.

The loss of capacity (a) may be due to any one or a combination of many causes, the principal ones of which are as follows: (a) sulphation of the plates, (b) loss of active material from the plates, (c) loss of electrolyte, (d) sulphate or corrosion between grid and active.

The plates of a storage battery in normal operation become sulphated material. When the battery is discharged and this sulphate is converted into lead, lead oxide, and sulphuric acid when the battery is charged. If the battery is allowed to stand with the plates covered with sulphate, the sulphate becomes crystallized and it is practically impossible to remove this sulphate by charging the battery. The battery should be charged at as high a rate as possible without causing the temperature of the battery to exceed 110 degrees Fahrenheit until the plates gas freely, then reduce the rate to the normal eight-hour rate and continue until the plates again begin to gas. Then reduce the charge to one-half the eight-hour

(Continued on page 20)

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Judging from my experience your Antennae is indispensable for people situated as I am, and I am more than pleased with it.

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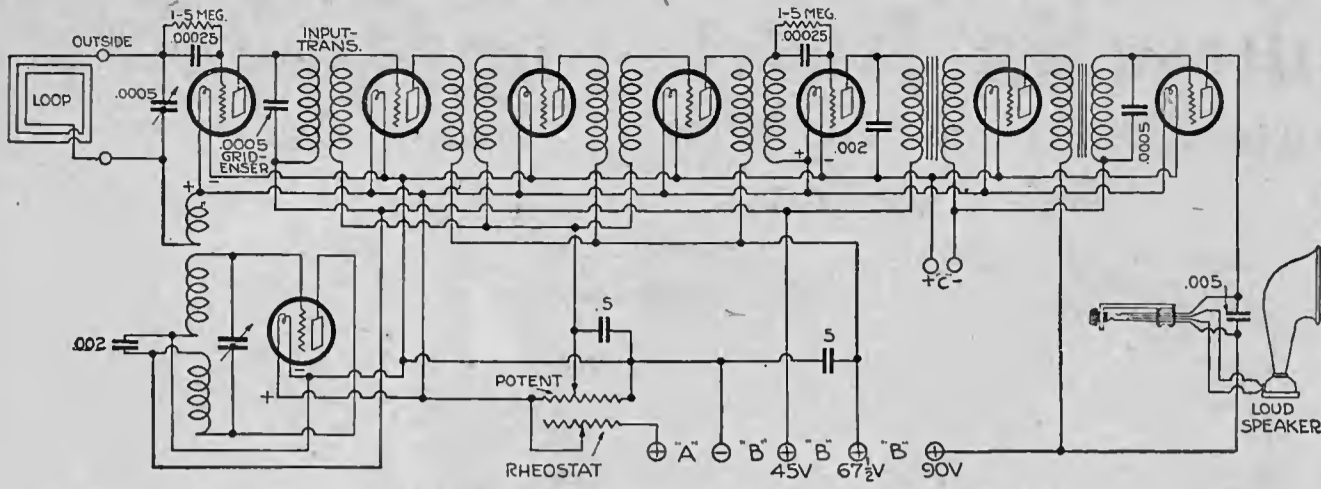
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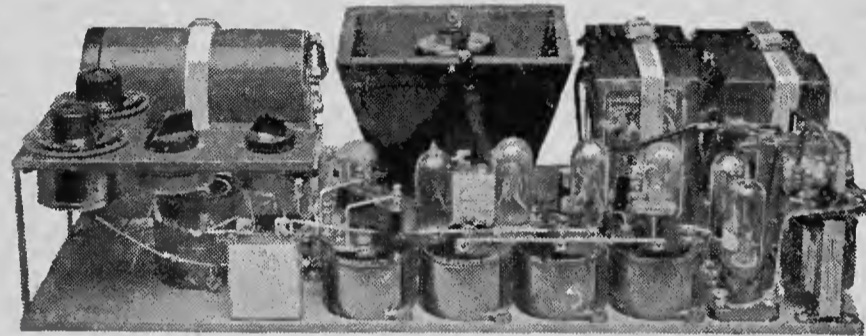


Wiring diagram for eight tube super-heterodyne in week-end bag.

PORTABLE SUPER-HET

(Continued from page 18)

Lay the various parts on the baseboard, referring to the various photos and "Base-board Layout" to determine locations. This will give an idea of the appearance of the completed set, and indicates the amount of space to be allotted the various pieces of apparatus. Screw down all the sockets, taking care that the location of



Side view of completed, mounted and wired set, ready to put in case.

the binding posts is exactly as shown on the baseboard layout. The secret of the compactness and efficiency of this receiver is in the layout of these sockets and the intermediate transformers, so be sure to follow the layout very closely.

A great deal of time may be saved by fastening soldering lugs on the binding posts of sockets, etc., prior to mounting them on the baseboard. This applies especially to the sockets. In any event, prior to mounting sockets, see that every socket screw and bolt is firmly tightened. As an additional precaution, the heads of the machine screws may be soldered to the socket springs underneath. One loose contact may make a lot of trouble in a super-heterodyne, and is one of the most frequent causes of noisy reception.

The Transformer Mounting

Mount the four intermediate transformers as shown in the illustrations. Wire the grid leads of sockets 3, 4 and 5 (counting from the oscillator coupler or left side of the baseboard) to their proper terminals on the intermediate transformers. Wire up sockets so far as convenient at this time, to each other and to the intermediate transformers, placing the wires as far apart as possible, as shown in the photos and following the hook-up diagram. If extra long lugs, called "solderless lugs," be used on the filament binding posts of the sockets, a continuous piece of bus bar may be employed to connect them.

Mount the oscillator coupler, as shown

in photos, with rotor uppermost, and binding posts turned toward the intermediate transformers. A small right angle brass bracket screwed to the baseboard and to one side of the coupler (at the side of the coupler away from the transformers) is a ready means of mounting. Wire the B plus and grid return posts of the intermediate transformers.

Near the oscillator coupler at the left front end of the baseboard, mount and

number of times before all of the sulphate is removed.

Battery Losses

The loss of active material is usually due to the plates not being worked under normal conditions; if this is not the case, the plates are poorly designed. This loss is due usually to a rapid charge and discharge, sulphation, and long continued overcharge.

The loss of electrolyte due to evaporation may cause the surface of the liquid to fall below the upper edge of the plates. The remedy is obvious, more liquid, water or acid, depending upon the density of the electrolyte in the cell.

Sometimes sulphate or corrosion forms between the grid and the active material which greatly increases the resistance of the cell and at the same time decreases the area of the active material exposed to the action of the electrolyte. The active material may shrink away from the grid, especially in the negative plate, which will result in a higher resistance being offered by the cell. Due to the contraction of the material the small pores are closed and the surface of the active material noticeably reduced.

wire in a .5 mfd. fixed condenser. Also near the .5 mfd. condenser, wire in a .002 mfd. condenser. Keep in mind that the level of the .002 mfd. fixed condenser and wiring near it must be kept low enough so that a "control panel" carrying the two variable condensers, a rheostat and potentiometer may later be mounted above this level, and clear the suit case with cover down, above them. The depth of the variable condenser used is approximately 2 1/4 inches from the top of the dial to the base of the condenser, including the thickness of the control panel.

(The conclusion of how to build this unique portable super-heterodyne set will be published next week. In it Mr. Nicker-son will tell about the loud speaker, the final mounting and how the set is tuned and operated.—Editor's Note.)

A. B. C. RADIO COURSE

(Continued from page 19)

rate and continue until the plates gas. Now give the battery a partial discharge and recharge as just described. This cycle of operations may have to be repeated a

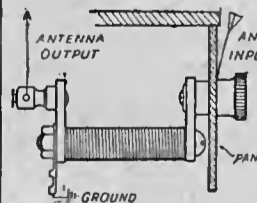
OLD MAN STATIC "KILLED" AT LAST

Statchoke Has Startled the Radio World — Sent Direct to Radio Fans on 10 Days' Free Trial

What is claimed to be one of the greatest modern improvements in Radio, through reduction of static and clearer, long distance and better quality of reception is announced for a new imported unit which is easily connected to any set.

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Owing to the limited number of Statchoke units available for American use this season, the distributors have set aside 25,000 units for distribution direct to radio fans for only \$2.50 each on 10 days free trial. Send no money—just your name and address to Radio Dept., Imperial Laboratories, 9589 Coca Cola Bldg., Kansas City, Mo., and the Statchoke will be sent you by insured mail. Use it for 10 days with the distinct understanding that if it does not do everything claimed for it, return it in good condition and even this special price will be refunded. Write today and enjoy "Summer Radio," as this offer is fully guaranteed and you do not risk a cent.



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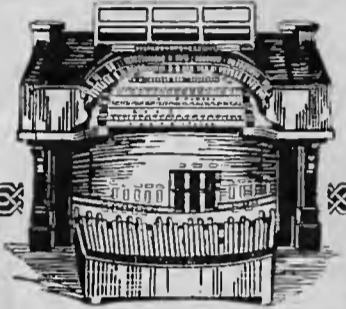
ADDRESS

CITY

The causes of loss in voltage (b) are the same as those resulting in a loss of capacity and the treatment of the cell for the two conditions are identical. If the separators in the cell are defective the positive and negative plates may make electrical contact and short the cell. While this short exists it will be impossible to charge the cell and the plates will remain in a completely discharged condition. They will become badly sulphated.

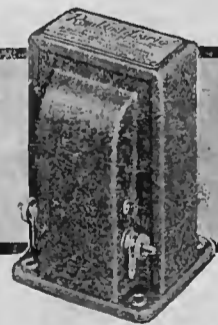
The corrosion of the plates (c) is usually due to the presence of some injurious impurities in the electrolyte and the only remedy is to change the electrolyte.

Any condition of operation of the cell which will result in an unequal chemical action over the surface of the plates will result in an unequal expansion of the active material and hence a tendency for the plates to expand (d) more in some spots than others. These stresses which are set up in the plates relieve themselves by changing the form of the plates. Buckled plates can in some cases be straightened out, but it is a job which (Continued on page 21)



Majestic Roll of the Mighty Organ

Mighty tones from the depths of the noblest of musical instruments do not tax the resources of Rauland-Lyric. Accurately designed for faultless amplification, this instrument faithfully transmits all organ tones—those of the piccolo stop as well as those of the open diapason.



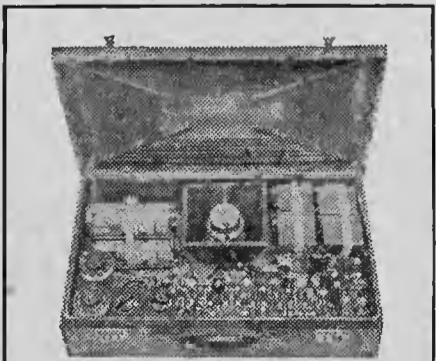
Rauland-Lyric is a laboratory-grade audio transformer designed especially for music lovers. The price is nine dollars. Descriptive circular with amplification curve will be mailed on request.

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Picking Batteries for Your Portable

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THE portable set season is coming on and thousands of young hopefuls will soon be seen on trains and steamers having compact receiving sets as one of their most important burdens.

WORKSHOP KINKS EARN A DOLLAR—

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

RADIO KINKS DEPARTMENT
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in the hope of being able to pick delightful Radio programs out of the ether as vacation time entertainment. And probably thousands of them will repeat the mistakes of last season and forget that sets, like many other things, must have fuel sufficient to meet their requirements or else they cease functioning entirely.

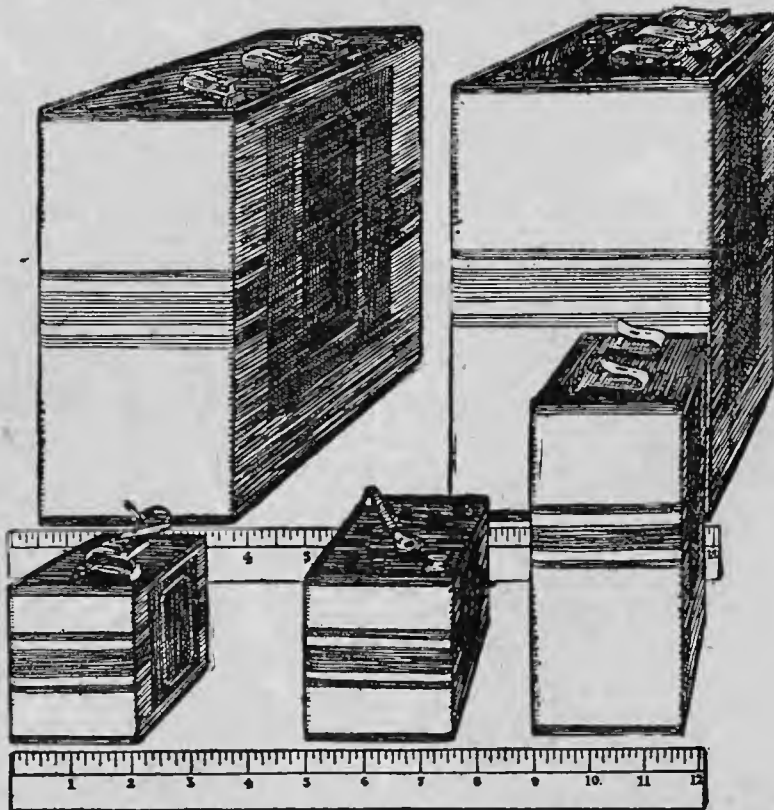
A Radio set at summer hangalow or mountain camp or by the seaside is an ideal form of entertainment. But there is nothing quite so irritating as the failure of a portable set, carried at some inconvenience to the ideal vacation spot, because of battery or tube failure. Usually no one is to blame for failure but the owner, because he takes with him small inadequate B batteries. Batteries of a given size can give only so much energy before their usefulness is ended, and portable sets usually require as much, and sometimes, more current than the permanent set at home.

Battery Size Important

The B battery is a storhouse of chemicals which are consumed as they set up an electrical current. When no current flows, chemical action practically ceases. The number of hours a B battery will deliver a given current therefore depends upon the quantity of chemicals in the battery. Consequently the size of a battery places a definite limit upon its useful life. At home there is no hesitation in buying heavy duty batteries which often make renewals unnecessary at intervals more frequent than six or even nine months. But the portable set must take its place with much other vacation equipment and consequently, the smaller and lighter the battery, the more welcome it is as an item of baggage. Hence larger sizes, though often necessary to last through the summer, are not always taken on the trip.

A comparison of the volume of the various sizes of B batteries on the market does not begin to indicate the extra life gained by using larger batteries. The larger the battery, the greater the amount of chemical material in it and hence the more electricity can be obtained from it; therefore volume aids in forming a conception of their relative capacity of batteries of different sizes. But remember, it does not take into account the gain in

RELATIVE SIZES OF B BATTERIES



The extra small, small and medium size dry B batteries are shown in the front row, while the large and heavy duty are in the background.

recuperative power or reserve energy in the battery, for a battery five times the volume of another battery may give as much as ten times the life of the smaller one under the same conditions of use.

Various Battery Sizes

The smallest B battery, dates back to military days. It was designed for use in portable trench and aircraft Radio sets, where economy and long life had to be entirely disregarded in the interest of lightness and compactness. Its dimensions are 2 1/32" x 2 1/8" x 3 3/4" giving it a volume of 17.5 cubic inches.

The next battery in size is known as the "small," being 2 1/8" x 2 3/4" x 4 1/2", in dimensions, giving it a volume of 63 per cent larger than its smaller companion. Even this is a very small battery, when compared with the powerful and lasting heavy duty B battery which has about eight times its current capacity.

Next in line is the "intermediate" 22 1/2-volt B battery, having dimensions of 2 3/4" x 3 3/4" x 5 5/8". Its volume is 19 per cent of that of the heavy duty in size. This battery is a better purchase than the very small size battery, being nearly three times as large, but compared with the types as usually used in permanent installations, it is still a small battery.

The large size cells used in the larger batteries are bigger than those in the "very small," "small" and "intermediate" sizes. Consequently they will give considerably longer life and greater dependability for vacation service.

Mode of Selection

We could continue in the same manner and show that the next larger size of battery—the heavy duty—is superior for

portable service because of its long life, dependability and economy, but its bulk and weight make it unsuitable for portable use. The selection of the best battery for your purpose is simply a matter of compromise with economy, dependability and long life on the one hand and com-

compactness and light weight on the other. If the battery compartments of your portable are small, you gain convenience in handling at the expense of shorter life and greater operating cost per hour. Selecting the best battery for your portable is consequently a matter of deciding which is the largest battery you can conveniently carry.—Edgar H. Felix.

A. B. C. RADIO COURSE

(Continued from page 20)

should be taken care of by an experienced battery man.

When the active material on the plates drops off (e) more rapidly than it should—which is always indicated by the rapid accumulation of sediment in the bottom of the container—the cell should be worked at a lower rate of discharge and care should be used in charging to see that it is not overcharged.

The Edison storage battery can stand more abuse without seriously injuring it than the lead battery can stand. It is not advisable, however, to purposely neglect an Edison battery, but on the contrary you should try and carry out the instructions supplied by the manufacturer in taking care of it if you expect to get the best service and results.

(The next installment by Professor Moreton will be devoted to the charging of storage batteries.—Editor's Note.)

Care in Placing Tubes

When you place the tubes in the sockets, be careful how you handle them. Many tubes have been injured by rough usage. The tube will not stand the rough treatment given them by many fans. The tips are sometimes broken and thus make poor contacts. Do not take the tubes out of the sockets any more than is absolutely necessary.

Soldering Tips

Keep fingers away from all parts to be soldered, as a touch of oil from the skin is sufficient to prevent the solder from taking a firm hold. Scrape, file or sandpaper the parts until they are shiny. Expose the metal to the open.

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on the phones—with certainty and regularity—on the Crosley one-tube 50. The radio which told the world that the MacMillan North Pole expedition was safe and sound. The radio that kept communication open to Leonard Weeks at Minot, N. D., when all other receivers failed.

There is nothing better than the Crosley 50 for the radio beginner.

There is nothing to excel it in value; unless it be the larger Crosley sets.

Stations always come in at the same place.

For sale by good dealers everywhere. Other models priced from the two tube 51, at \$18.50, to the Tridyn Special with sloping panel, at \$65. All Crosley Radios are licensed under Armstrong Regenerative U. S. Patent No. 1,113,149. Prices quoted are without accessories.

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THORDARSON
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Standard on the majority of quality sets

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pep up your set with good tubes

FOR the portable set—or for any set that is to be operated from dry batteries—you can't beat the MAGNATRON DC-199. This is the little tube with the big voice! It is made with either the large or the miniature base; it will fit any set.

The Magnatron DC-199 (large or miniature base) and the Magnatron DC-201A sell for only \$3 each at your dealer's.

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MAGNATRONS

Questions and Answers

Underground Aerial Trouble

(13931) JJB, Browerville, Minn.
I recently installed an underground aerial such as you have described in Radio Digest, but it does not work. I will give you a description. Kind of soil, clay with stones; condition, moist; length of wire (in ground), 75 feet; size, No. 14; insulation, rubber covered and in non-metallic loom; depth, 18 to 28 inches; direction, 21 ft. east; lead-in, Duplex No. 14 lead covered (one wire lead-in and other as ground); length of lead-in, 11 ft.

All connections are firmly soldered and insulated. There is no short circuit as I thoroughly tested it.

My only reason for its failure is the trouble with lead covered cable. One day I had 18 feet laying on the floor, and when I hooked the wires to the set it worked but when I grounded the lead covering all was gone, even with the large aerial connected to it.

A.—In our opinion 75 feet of high tension cable is not enough. From personal experience we find that 200 feet on a four foot cross is much better. The lead-in should connect to a .0005 mfd. variable condenser which can be adjusted to best position and then left alone.

In many cases it is preferable to omit the lead covered wire as lead-in and continue the cable right up to the variable condenser. One point about your installation we know is wrong and that is that you cannot use the other wire of your Duplex lead covered lead-in as the ground connection.

Goodrich Set Troubles

(13895) OK, Danville, Ind.
I noticed the diagram of the Goodrich set published in a recent copy of Radio Digest and have gone to quite a little time and expense building same with very poor results. The set operates without R.F. stage with very little volume but clear. We have checked and rechecked several times and are unable to get any results, therefore decided an error must have been made in the diagram. Please mail us diagram at our expense or information explaining R.F. stage more fully.

A.—We regret to note that your Goodrich receiver is not working as it should. There was a typographical error in the third column just below the illustration relative to the connections for the variable condenser across the secondary of the antenna coupler. The diagram itself was correct as was the data regarding the construction of the units.

The rotor plates of the variable condenser across the first coupler do not connect to the filament circuit, however, as may be seen from the diagram. The center tap on the first coupler secondary goes to the filament circuit but the rotor of the variable condenser connects to one end of that secondary and to the feedback condenser.

Superdyne Data

(13780) WGF, White Castle, La.
Please advise the number of turns for each coil of a superdyne, using number 28 sec. wire. I fixed a variable condenser of 43 plates into two separate stators, each of 11 plates which gives me the value of two separate condensers of .00035 each and wish to use this.

A.—We have your letter of the 15th. We must advise that two condensers on one shaft are not practical in the Superdyne receiver as the rotor of the second one does not connect to the filament circuit. Our May 24th issue, 1924, contains full data on the construction of a superdyne.

We can rejuvenate Cunningham 301A and 299 and Radiotrons 201A and 199 tubes if the filament lights. Cost Fifty cents. Tubes returned C. O. D. Gambier Electric Co., Gambier, Ohio.

PATENTS

Time counts in applying for patents. Don't risk delay in protecting your ideas. Send sketch or model for instructions or write for FREE book, "How to Obtain a Patent" and "Record of Invention" form. No charge for information on how to proceed. Communications strictly confidential. Prompt, careful, efficient service. Clarence A. O'Brien, Registered Patent Attorney, 2009 E Security Bank Bldg. (directly across street from Patent office), Washington, D. C.

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WHOLESALE AND RETAIL

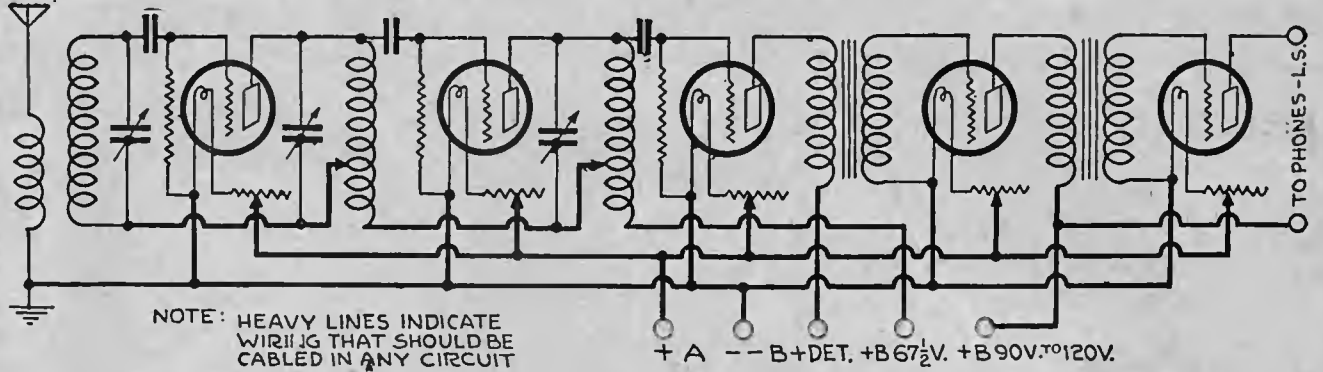


Figure 35

TUNED R.F. ADVANCES

(Continued from page 17)

currents in the plate circuit. In operation, the reactive voltage of the plate, in place of assisting the lumped capacity coupling C_1 between plate and grid, directly opposes it. With well constructed receivers, wherein the operator appreciates the value of individual coupling control toward securing exceptionally successful compensation at each wave length, this arrangement will prove very interesting.

The Tuned Plate Method

Let me now offer to those of my readers who are not exactly friendly with transformer coupled circuits, but do delight in experimenting with those known as tuned plate methods, a new idea which is the brain child of a prominent English engineer by the name of Cowper. This embodies not only a Wheatstone balancing scheme but also eliminates transformer coupling, using a tuned plate circuit instead. (See figure 35.) Incidentally, tuned plate circuits which are so designed as to furnish a satisfactory oscillation control, represent pretty close to the last word in effective maximum value of amplification as it is possible through tuning the plate to resonance with the grid to theoretically secure equal amplification irrespective of wave length. You may expect to see this circuit take its position well up in front in this season's offerings.

Complete Circuit Shown

The complete circuit, without construction values, is shown, not only to show its novelty but also as an example indicating such circuit as should be cabled in any Radio receiving circuit. Radio Digest in later articles will, no doubt, give a series of "How to Build" articles based upon two or three of the new developments shown, and because of the unusual method used in securing compensation and its simplicity, I shall urge them to include this and the circuit I will give next week in their construction series.

The "Neutrogrid"

Cowper's scheme is, or should be, known as a neutral grid method and I would like with his permission to name it the "neutrogrid." The theory of the circuit is that, if, within the tube, the grid was mounted exactly midway between the plate and filament, by running the grid

return to a point exactly at the center of the plate inductance, the grid would remain neutral without regard to any oscillations which might occur in the plate inductance. A balance would be established. This would be interesting if true. Unfortunately tube manufacture has not reached the stage whereby the grid element is exactly centered in its relation to the plate and filament.

However, in order to compensate for such grid elements as were not exactly centered between plate and filament, an inductance comprising twelve turns is added to the plate circuit, placing it in series with the plus B output of the plate inductance and the plus B terminal of the B battery. This may or may not be in inductive relation to the plate coil, though it must be conductively coupled to it.

The Grid Leak

Next, the grid return which normally goes to ground minus A, is returned to the junction of the plate inductance and the twelve turn stabilizing coil. A .00025 mfd. fixed condenser is placed in the grid input while a $1\frac{1}{2}$ to 3 megohm grid leak is shunted from the grid to minus A as shown. While it is indicated that the grid return should go to this junction, tubes may be found which will create the necessity of some experiment before the correct number of stabilizing turns are found. It is well, before adding an additional twelve turns to your standard tuned plate inductance, to first determine whether they are needed.

The most satisfactory method to use is that of fastening a pin to the grid return and inserting its pointed end through the insulation and in contact with one turn at a time of the output end of the plate inductance, thus determining whether a balance may be had without the use of added turns. This adjustment is not in the least critical and, once found, may be made permanent for each stage. It may be said with full credit to this circuit that this method of compensation does not affect or reduce the efficiency of the radio

frequency stages, as no artificial damping is inserted.

Full negative grid bias may be used, while its selectivity and sensitivity will please the chap who insists that distance lends enchantment. One must consider well the type of tuner used. Aperiodic fixed primaries will please one fan while a loose coupler with an antenna tuning condenser will satisfy the other.

It is also a question of whether you live here or there. Here, where six to twelve stations are trying to reach Australia nightly, and each within a six-mile radius of you, or there, where you have the whole wide world and no station closer than twenty-five miles. I only caution extreme loose coupling with this circuit, whether your antenna coil be aperiodic or otherwise. But the usual constructional care regarding magnetic and capacitive coupling must be exercised. The axiom I used in my Miloplex circuit series still holds good, viz., "Verily I say unto you; keep thy leads short, that thy distance may be greater."

(The sixth article, which appears next week, contains full data on the construction of a tuned R.F. set of the Wheatstone bridge type. The tone experimenter is admitted to a new field of work that is endless in its variations—and possibilities. —Editor's Note.)

Reverse Tickler Leads

When using tickler regeneration, approaching the tickler coil to the secondary will increase signal strength only when the tickler is connected in the correct direction. If increasing the coupling decreases the strength of the signals, the leads to the tickler should be reversed.

An attempt is to be made shortly to relay the cries of sea birds from an island in the Firth of Forth, Scotland.

The neck of an old bottle makes a good insulator when running wire through a board.

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