

Change in Single Circuit for DX Work; Latest Gold Cup Award Standings; Keeping Up Power in Your Radio Set; Programs for All Large Stations

# Radio Digest

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

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

Vol. X

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By Radio Digest Publishing Co.

SATURDAY, AUGUST 30, 1924

No. 8

## SET DEFENSE TEST DAY

### RADIO OPERATORS RECEIVE THANKS

"Men Behind the Guns" at Last Get Credit for Their Efforts

BOSTON.—The Radio public is rapidly becoming aware that gratitude is due the operating staff of Radiocasting stations, quite as much as to the artists and the announcers. They are the veritable "men behind the guns," and the fact that their personalities are concealed is the reason why the public knows so little of them.

The quality of the Radiocasts are attributable to the operators and fine volume, absence of distortion, constancy of wave length and other features making for the perfect Radiocast are due to their efforts. But in spite of their important task, the Radio public seldom acknowledges their efforts.

A Boston fan, however, has the right idea, which he expresses in a letter to Station WBZ. On a recent date, he wrote: "Thanks to the men behind the gun; for we would receive no concert only for the great way the station is handled by the operators."

This is one of the few instances in which the Radiophans congratulate the operators as well as the artists. Don't forget that no matter how good the artist is, the operators who always listen in during the concert try to make them a little better by watching the modulation.



Above is shown Gladys Kern, one of the stars in Ernie Young's Revue, who appears at Station KYW every Wednesday night. Right, Florence Hedges, from the "I'll Say She Is" company. She sang recently from Station WOB.

### LINK PLANTS IN WAR TRIAL MOBILIZATION

General Pershing to Address Nation September 12 from Score of Radiocasters

WASHINGTON.—To test the practical military strength of broadcasting stations in event of war, sixteen or more principal Radiocasters will be linked by wire on Defense Day, Friday, September 12, and will carry a message from General Pershing to what undoubtedly will be the largest Radio audience ever assembled. From coast to coast, from Texas to Alaska, millions will listen to the general tell of the first National Defense Test on the anniversary of the victory of the American army at St. Mihiel.

(Continued on page 6)



All dressed up and ready for a Spanish song and dance is Yvonne Farr, Radio soprano of Los Angeles, who appeared at Station WIP recently.

#### Listeners Pay for Program

COLUMBUS, OHIO.—A Radio audience recently paid more than \$100 for a concert program Radiocast from Station WPAL, located in this city. The money was a voluntary contribution from Radiophans for the benefit of the Columbus baby camp.

Sums ranging from 50 cents to \$25 were sent in. Among the donors were two prisoners at the Ohio penitentiary who gave one dollar each. William W. Havens, confined to sick bed, even gave a dollar.

#### Accounting Section Transferred

WASHINGTON, D. C.—The International Radio Accounting section for the past twelve years connected with the Navy department has been transferred to the department of commerce and placed under the Radio section of the bureau of navigation.

The function of the accounting section is to handle Radio accounts of messages from American vessels through foreign coastal stations.

# No. 15 OFFICIAL BALLOT

## Announcers' Contest

### RADIO DIGEST FIRST 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:

.....

## HAY, WLS LEADS IN GOLD CUP STANDING

### WITTEN, WOS CLIMBS INTO THIRD PLACE AGAIN

Seven More Announcers Added to List; Contest Closes With Next Vote; Surprises Expected

The long looked for surprises are beginning to start. A tabulation of votes last week showed George Hay, WLS, only eighteen votes ahead of his nearest competitor. This week's total shows him quite some distance ahead.

One of the biggest surprises came to the Gold Cup Editor when he opened a letter and found the name of the town where George Hay was born, and that town is called, Attica, Indiana. The folks back home are all rooting for their native son, and all the other announcers will have to go some to meet up with him.

Some Radiophans are even sending in their votes by air mail so that we can be sure and get them on time.

Another surprise this week is J. M. Witten, WOS, who has stepped right up into third place. This announcer is sending in his votes in a systematic manner, taking the advantage of the bonus that is offered for consecutive ballots.

Seventy-one on List

Seven additional announcers have climbed from obscurity into the ranks of announcers having fifty or more votes to their credit. This makes the total number in the ranks, seventy-one.

Everybody is boosting their favorite announcer, by various means besides casting votes for them. One Radiophan sent in a cartoon, and Harry Geise, pianist and song composer at WJQ, has written a song called, "How do you do," one verse of which goes:

How do you do, Jerry Sullivan,  
how do you do;  
Your Chi-ca-go sure is great  
Here's one thing sure as fate  
It's your cup and no mistake  
How do you do.

Remember only one more vote to come. All votes must be in the mail not later than September 8. Any votes arriving which have been mailed after this date will be cast out.

#### Present Standings

The following announcers have fifty or more votes to their credit:

Name	Station	Votes
George Hay	WLS	11,011
Bill Hay	KFKX	9,595
J. M. Witten	WOS	5,842
Leo Fitzpatrick	WDAP	5,817
Hired Hand	WBAP	4,588
Graham McNamee	WEAF	3,022
John Daggett	KHJ	2,710
H. W. Arlin	KDKA	2,657
Richard Haller	KGW	2,596
Fred Smith	WLW	2,411
Lambdin Kay	WSB	2,157
Jack Nelson	WGN	1,985
S. W. Barnett	WOC	1,596
Sen Kaney	WGN	1,592
Kolin Hager	WGY	1,590
H. E. Ehrhart	WDAR	1,530
E. W. Tyson	WWJ	1,478
Gene Rouse	WJAW	1,470
Major J. J. Fanning	WNAC	1,128
Miss V. A. L. Jones	KSD	1,008
Elmer Johnson	WJAX	1,002
F. W. Johnson	CHYC	960
Major Andrew White	WJZ	820
Jennings Pierce	WJB	802
J. T. Schilling	WHE	522
A. O. Coggesil	WGY	520
N. D. Cole	WHO	487
Milton Cross	WJZ	476
A. R. Herste	WTAM	462
S. L. Rochafel (Roxie)	WEAF	442
Howard Milholland	KGO	392
Joseph Sartory	WCAE	384

Harold Selyer	WHAS	384
C. R. Emery	WGI	383
N. T. Granlund	WHN	376
Henry Field	KFNF	362
Paul Johnson	WLAG	312
Otto Becker	WGR	310
Paul Reese	KFI	307
W. A. Fay	WGY	301
C. A. Entreklin	WCAH	300
F. A. Buhlert	KFJC	283
A. F. Edges	WBZ	276
Eleanor Fochler	WLAG	215
John Reilly	WJAR	212
Chas. H. Meester	WCBR	203
Johnnie Mack	WJAS	185
Paul A. Greene	WSAI	184
Wm. F. Holliday	WWJ	181
Victor Martin	WEAM	170
Chas. Erbstein	WTAS	164
C. D. Tomy	WCX	152
Morgan Eastman	KYW	151
C. A. Gaal	KUO	145

## ORCHESTRA GIVES SPECIAL CONCERT

Listeners In South of Equator Will Have Program Radiocast for Their Benefit

OAKLAND, CAL.—That Radio listeners south of the Equator, in the islands of the South Seas, New Zealand and Australia, may enjoy a better Radiocast service from KGO between 10:00 p. m. and 1:00 a. m., it was announced recently. Henry Halstead and his orchestra, playing in the Hotel St. Francis, will be heard on Monday, Tuesday, Thursday and Saturday nights.

It is winter time now south of the Equator and the best season for Radio reception. A difference of nineteen and a half hours in time between New Zealand and the United States makes it difficult for listeners south of the Equator to "log the Yanks" unless Radiocast after 10 o'clock, Pacific time. However, some reports have been received of KGO regular programs Radiocast between 8:00 and 10:00 p. m.

Henry Halstead said today that he would appear occasionally himself before the microphone and that various soloists of his orchestra are preparing special numbers to insure a continuous program for the big new audience in the South Seas.

Carl E. Hammond	KFOA	144
Wm. Ludgate	KSD	142
J. Lewis Reed	WJZ	140
R. F. Falco	PWX	139
Laligh C. Parker Jr.	KFFV	138
Walter Wilson	KYW	125
Clair Morrison	KPO	122
Don MacPhee	WAAW	98
John T. Griffin	WHAH	97
Jerry Sullivan	WQJ	95
Gilson V. Willetts	WOC	90
Joseph Nassau	WOO	62
Art Burroughs	2-LO	61
Eddie Squires	KDKH	60
John F. Patt	WDAF	56
Carl Mentzer	WHAA	54
C. W. Kirby	WWJ	53

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## Looking Ahead

**Flewelling Set with Radio Frequency.** Mr. H. A. Everest gives a hook-up and description in the next issue on how to add Radio frequency to this popular set. Here is something new you have been looking for to further amplify the set.

**Neutralizing the Super-Regenerator.** In the next article, Mr. Butterfield gives complete instructions for the wiring of the set. To follow out these instructions it will be necessary to read this article closely.

**Reflex Hook-Up Puts Tone Into Reception.** Reflexing, if properly done, gives good tone to a set. In the next number Mr. W. H. H. Knox tells how to apply the reflex principle to get the most out of it.

**Fixing Up the Radio Set.** In the next chapter of the series on A-B-C of Radio by Mr. Edelman, he will tell how to make adjustments and repairs on a set. Battery testing, checking connections, storage batteries and dry cell replacements.

**Beginning Soon in Radio Digest,** an article by the noted Radio engineer, E. T. Flewelling, on the construction of his famous set with all improvements. These constitute a radical change in Radio construction and hook-ups.

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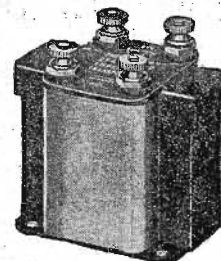
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### Crosley Trirdyn 3R3

This three tube receiver is built to give the efficiency of a five tube set. It represents the triumph of engineering in the radio field. The first tube furnishes non-readjusting, non-oscillating radio frequency amplification. The second tube is a regenerative detector and further is so coupled up as to reflex back on the first tube for one stage of audio frequency amplification. The third tube furnishes a second stage of audio frequency amplification. Thus the three great powers in radio, represented by the three "R's," Radio Frequency, Regenerative, and Reflex, give both the name and the wonderfully efficient performance to the Crosley Trirdyn 3R3.

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The Crosley Radio Corporation owns and operates broadcasting station WLW

# STATION WJAZ WILL OPEN STUDIO SOON

## OPERATING ROOM LOCATED ON OUTSKIRTS OF CITY

Portable Transmitter on Auto Truck to Find Best Locality; Will Use Call 9XN

CHICAGO.—A very unusual occurrence took place when a metropolitan Radio-casting station was recently disposed of by one of the pioneer Radio corporations in Radio-casting, because the station dominated the air to such an extent as to prevent Radio listeners within its immediate scope, from hearing any other stations.

That was not only altruistic to a marked degree, but highly significant in a Radio sense. It probably started a new era in Radio-casting. It began the movement of Radio-casting stations having their ultimate location away from the thickly populated areas of the country.

### New Station Outside City

This unexpected stroke of policy was announced by the Zenith Radio Corporation, when it sold the well known station WJAZ, then located on the Edgewater Beach hotel. Because of the uncontrollable interference caused by this station, the company decided to erect a new station far enough away from the city and its environs so as to be no longer an interference.

On the heels of this announcement, the Zenith Radio Corporation was deluged with letters from the chambers of commerce of many of the small communities in the outlying districts of Chicago. Some letters came from places two hundred miles away. So urgent were many of the invitations from these smaller towns that it was decided to conduct a series of tests to ascertain the best locality for Radio-casting and to determine at the same time the place offering the least opportunity for interference. The best working plan which suggested itself was to erect temporary Radio-casting stations in all the towns selected for test.

### Station Truck

The company now has in the process of construction a complete Radio-casting unit mounted on a one-ton truck. There have been portable transmitting stations for code work, but from all available information, this is the first portable Radio-casting station in history. It will be equipped with a one-hundred watt transmitter. It will have the unusual setting of a glass-enclosed truck, so that the public may witness the operation of the station wherever it is taken. It will be operated entirely from storage batteries. Part of the truck equipment will be a motor generator for recharging the batteries. The aerial will be supported above the truck by means of telescoping masts. Nothing less than gold plated antenna wire will be used—gold reduces surface resistance, and, as a result, greatly increases efficiency in an aerial of this small size.

For this series of experiments, which promises to be so intensely interesting, the call letters 9XN, intimately and long familiar to the general public, will be used. They will be remembered as the call letters that played so important a part in the Radio communication with the MacMillan Arctic Expedition.

## Construction of Farthest North Station Under Way

OTTAWA.—Erection of the farthest north Radio station in the world, to be on Herschel Island, is now under way by the Canadian government.

The island, which is only twenty miles long and five miles wide, stands 500 feet high in the Arctic ocean at the mouth of the Mackenzie river, five miles east of the international boundary line.

Messages from Herschel island are to be received in Dawson, Y. T., or Mayo, 150 miles east of Dawson, whence they are to be transmitted to Fort Simpson, which is in the southern part of the Northwest territories.

## STATION WLS KEEPS STATIC FOR MASCOT

CHICAGO.—Any person listening in to Station WLS, located in this city, and hearing a crackling noise during a program, may rest assured that it is "Static." Not the static that comes from the electrically charged atmosphere, but, from the station mascot who is known as "Static." He is a parrot who breaks into the programs just like the stuff he was named after, always at a very inopportune moment.

## WANT KPO TO HELP LOCATE WOOD LEG

SAN FRANCISCO.—When in distress nowadays, it seems that people all turn to Radio to help them out of their difficulties. W. A. Nolan of this city has appealed to the Radiocasters to help him find his wooden leg, which he says he left in an Oakland hotel a year ago as security for a bill he could not pay. The hotel bill amounted to \$14, but the leg was worth \$150.

# ANNOUNCERS' LIFE IS NOT A BED OF ROSES

## DAILY EXPERIENCES READ LIKE LATEST IN FICTION

### Between Phone Calls and Mail They Have More Trouble and Fun Than a Clown

OAKLAND, CALIF.—Not all of the thrills from Radio come to the listener in, for the announcer of a Radiocasting station gets his share also. Here are some of the daily experiences of Howard L. Milholland, known to listeners simply as "HM," studio manager and chief announcer at KGO, the General Electric Pacific coast station.

According to "HM" the busy housewife makes frequent demands. Recently a woman phoned. "My husband just lost his suitcase. His best suit, two pairs of socks and a shirt are in it. Please Radiocast at once. How much will you charge?"

Another writes, "Dear 'HM,' will you kindly play jazz music tonight as we are going to have a wedding in the family?"

During the Radiocast of a drama one evening "father" telephoned, "Please have your actors stop saying 'dar.' My little girl is listening in and she repeats everything she hears."

### Receives Many Letters

And here is a letter which is not quite clear to "HM." "My brother is away in the mountains. My cousin has just passed away, and if you Radiocast it he will hear you as he took his Radio set with him."

Then there are requests for certain kinds of programs. A California highway construction foreman, employing convicts for roadwork recently sent in a request. "Please play more classical music," he wrote. "Members of the 'grey walled fraternity' from San Quentin penitentiary here are fed up on jazz. They would like to have you play a selection from Lohengrin."

Public speakers experienced in all the arts known to the platform sometimes find themselves at a loss just what to do when they enter a Radiocasting studio.

"A nationally known expert and lecturer recently spoke at KGO," said "HM." "He was very nervous when he saw the microphone. After I had announced his subject, and after I had given him the signal to begin speaking, he turned to me with a helpless look on his face and said, 'Shall I say ladies and gentlemen?'"

## Attorney General to Start an Investigation

### Department of Justice Looking Into Alleged Radio Monopoly

WASHINGTON, D. C.—Officials of the Federal Trade commission know of the investigation which is being made by the department of justice into the alleged Radio monopoly, further than the fact that the commission transmitted to the attorney general a copy of the monopoly report made to Congress at the last session. Insofar as can be learned no further data has been transmitted to the department of justice by the commission.

The matter was opened up when it was learned, but not officially acknowledged, that the department is making an investigation of the alleged monopoly of Radio. Asked about the investigation the attorney general refused to discuss it, but he did acknowledge that the department is studying the charges of the trade commission against the Radio Corporation of America, the American Telephone and Telegraph company and several other firms.

Officials of the department of justice feel, it is understood, that the commission's findings were of a character to warrant the department in making a still further investigation of the facts.

The German insurance companies, so far as can be determined, are the only ones that now impose an extra premium for Radio antennas.

## RADIO DUET LATEST NOVELTY



Miss Frances Mayer of New York City is playing a "Radio duet." Using the piano wires as an aerial, Miss Mayer easily picks up a number of local stations and her greatest pleasure is to play her piano in accompaniment to the strains that float in from the ether. Try this on your piano some time. Foto Topics Photo.

### Famous Radio Club Disbands

PARIS.—The famous "Club of Eights" (Club des 8) of France, one of the first Radio clubs in the world and to which belonged some of the first European amateurs to start transmission, has been broken up. The charter has been returned.

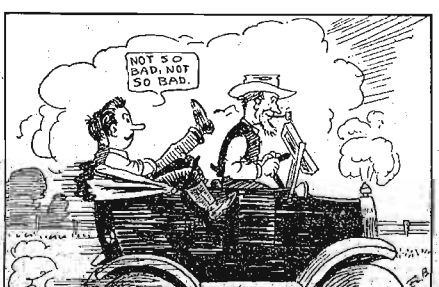
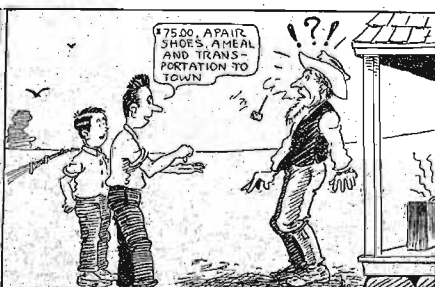
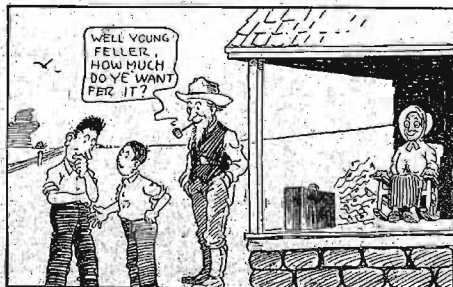
### Radio for Italian Senate

ROME.—The senate of Italy is considering the most extensive plan yet proposed for political Radio-casting. Arrangements are being made not only for a microphone on the senate floor, but also for receiving sets at the desks of the senators.

## THE ANTENNA BROTHERS

Spir L. and Lew P.

Fare Enough



# STEAMSHIP "ARCTIC" USING SHORT WAVES

WILL LISTEN IN FOR KDKA AT ETAH, GREENLAND

Carrying Special Equipment for McMillan Expedition Located 10 Degrees from North Pole

PITTSBURGH.—Recognizing the fact that the short wave signals transmitted from KDKA, world's pioneer Radiocasting station have a worldwide range and offer the only solution to dependable voice communication at immense distances, the steamship "Arctic" sailed recently from Quebec on a voyage to Etah, Greenland, carrying a full complement of special Radio equipment suitable to pick up special Radiocasts from KDKA.

The "Arctic" is carrying with it two Canadian Westinghouse special receivers, one of which is for delivery to Donald M. H. Radio operator of the McMillan expedition, somewhere along the Greenland coast, the other set is for use aboard the "Arctic." Both these sets are designed to receive special signals which will be transmitted from the new experimental station at East Pittsburgh, Pa., every Monday night from 10:30 to 11:00 Eastern standard time.

The call letters of the Arctic are "VDM" and it will operate on a wave length of 120 meters.

No more complete plans for carrying on a constant communication with the outside world were ever made by an Arctic expedition, particularly with respect to communication with the "Bowdoin," McMillan's ship, from which little has been heard in months.

## Erect Loud Speaker on City Hall Tower

Toronto Gives Public Concerts to It's Citizens

TORONTO.—A loud speaker that is truly a "loud speaker" has been installed on the 365 foot tower of Toronto's City Hall and concerts received from Radio stations in Canadian and United States cities are now Radiocast to the streets below. In this way Toronto has the distinction of being the first Canadian city

# YOUNG SOCIETY GIRL ARDENT RADIOPHAN



Miss Betty Pearce, society girl, showing a very novel type of loud speaker which was designed and built by a French engineer. The accordion pleated paper cone is the actual sound producer or diaphragm.

K. & H. Photo.

to give public concerts via Radio to its citizens.

An instrumental trio number, Radiocast from Washington, D. C., could be heard for several blocks and market quotations given out by a Chicago station were distinctly heard two blocks away.

The receiving set, a 12 tube Super-Ultradyne, was especially installed high up in the tower, just beneath Big Ben, in order to ascertain if "static" would be lessened at that height and also to see if Radiocasting in England could be heard.

The first evening's program was very successful and it was decided to repeat the concerts, and it is hoped that within a few weeks the operation of the station will become a regular feature of the city's entertainment department.

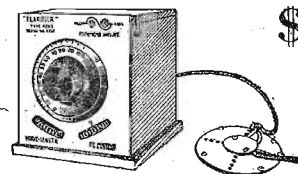
Holland, famous for her production of bulbs—both tulip and Radio—is going to have her first exposition of Radio early in September.



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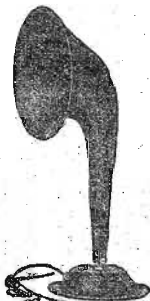
## Simply a matter of taste

Some persons are satisfied if their Loud Speaker will produce big volume. The more discriminating, however, want their radio reception to come from the Loud Speaker with all the refinements of the original broadcasting.

It is for these more refined in taste that Bristol Audiophone is particularly suited. Here quality has not been sacrificed to obtain volume, but the two have been combined in pleasing proportions.

The Audiophone is ready to use—no auxiliary batteries required to operate. There are three models to select from, including Senior \$30.00, Junior \$22.50 and Baby \$12.50.

If sufficient amplification is not available in your set to operate a Loud Speaker, a convenient unit is provided in the Bristol One-Stage Power Amplifier. When used with Loud Speakers of the better class and particularly with Bristol Audiophone, music and speech are reproduced without any distortion that the ear can detect. Any desired amplification can be had by connecting several Bristol One-Stage Power Amplifiers together.



Bristol Baby Audiophone Loud Speaker

Price \$25.00


Ask for Bulletins Nos. 3011 and AY-3017

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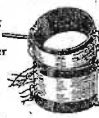
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Variable Condenser

# JACKIE COOGAN TALKS TO CHILDREN

## JACKIE TELLS KIDS OWN BEDTIME TALE

BOY MOVIE STAR VISITS UNCLE BOB AT KYW

Diminutive Cinema Favorite Concludes He Will Make Indian Out of Papa Coogan

CHICAGO.—The big fellow who entertains the little kiddies and the little fellow who entertains the grown-up kiddies teamed up recently for some entertainment from KYW, the Westinghouse station at Chicago.

The little fellow being Jackie Coogan, the big fellow being "Uncle Bob" (Walter Wilson), teller of the children's bedtime story from KYW.

Before the microphone Jackie is just as natural, and just as much Jackie, as he is before the camera. "Uncle Bob" had started the evening story when the child star, followed by three policemen, several press representatives, photographers, his father and a host of others, entered the studio.

"Hello, there, Uncle Bob," Jackie called from the door. "How about letting me finish that story?"

"Do you think you can?" inquired Uncle Bob, eyeing the very diminutive figure, attired in sailor's regalia.

### Jackie Tells Story

"Sure," responded Jackie. "Just let me show you."

And Jackie proceeded to "show him." Jackie is a juvenile master of elocution, as well as a master of emotion. The bedtime story over, the young star launched into Shylock's speech from "The Merchant of Venice." Then Uncle Bob and Jackie settled into a nice sociable chat, with the microphone open.

Among other things, Jackie told Uncle Bob and the rest of the world about his recent experience of being adopted by the Navajo Indians.

"I think I'll get 'em to make an Indian out of my Dad, too," concluded Jackie. "Oh, could they do that?" inquired Uncle Bob.

"Dead easy," replied Jackie, glancing



at his father's sunburned countenance. "You see, Dad's pretty red-faced now." And then the flashlights boomed and Jackie joined Uncle Bob in saying, "Good night, kiddies. Sleep tight."

## Programs at Station WHN Run Nearly Entire Night

NEW YORK.—One of the hardest working stations in this city that has longer hours than any known, for miles around is, Station WHN. It begins the day at 9:30 a. m. and carries on through the day with few intermissions until midnight. The schedule calls for the station to

shut down at midnight, but they have been heard signing off long after 2 a. m. These unexpected late programs are making quite a hit with the Radiophans who wait up for them. The microphone is left open, and nothing but comedy is sent out upon the air.

The Netherlands Indies government intends to erect two new Radio stations in Sumatra, one of which will be located at Bengkalis, a free port and transfer point for that section of Sumatra.

## ARTISTS TRAVEL GREAT DISTANCE

Twelve People Come 175 Miles in Order to Radiocast Concert Program

SHENANDOAH, IOWA.—Few Radiophans who listened in to Station KFNF, located in this city, recently during a Sunday program realized the distance which the artists had to travel in order to perform before the microphone. These artists, twelve in number, drove from their home at a town called Monroe, a distance of 175 miles from this city, to put on the concert. Starting on Saturday forenoon, they arrived at Red Oak that evening and camped there, getting into Shenandoah early Sunday morning.

The Henry Field Seed company has had several programs by people who have traveled as great a distance as 80 miles, but, this trip of 175 miles is the record.

There was a large crowd of people present in the studio during the concert. All the studio would hold, so that the people who could not get in had to sit on the lawn and listen to the concert from the loud speaker which was installed in one of the windows.

## Well Known Imitator Takes Radiophans for Long Trip

NEWARK, N. J.—These members of the Radio audience whose duties prevent their inhabiting the well known, "wide and open spaces" had an opportunity to kid General Humidity recently, when Jack Cort, celebrated imitator of bird and animal sounds accosted the microphone at Station WOR.

Jack can imitate anything from an elephant to a thrush, and city dwellers who listened in had a distinct reaction of an afternoon spent in the woods.

At least, that's the way that it affected Joe Barnet, director at WOR, and Joe knows his out-of-doors, having taken a post graduate course in nature fakery, out where the subway ends, prior to assuming directorship of WOR.

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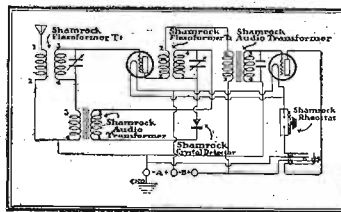
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The Sensational SHAMROCK-HARKNESS Reflex



THE Shamrock-Harkness Reflex has created a sensation among experimenters and amateurs by its amazing performance. Combines the best features of the most powerful circuits in use today. A set that you can build yourself in a half-day—and get results equal to a standard five-tube receiver.

- Operates a loud speaker.
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The astonishing performance of the Shamrock-Harkness receiver depends as much upon the use of specially designed parts and the mechanical arrangement of these parts—as upon the wonderful circuit itself. Shamrock engineers have spent months perfecting a set of these parts. The Shamrock Kit contains genuine, guaranteed Harkness parts. Avoid imitations—accept only the genuine.

Before building your set send for the book below.  
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Shamrock-Harkness Kit contains all parts to build the Shamrock-Harkness Reflex.

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I enclose 10 cents (U. S. stamps or coin) for copy of "Shamrock Radio Builder's Guide Book," which contains diagrams and complete instructions for building 10 sets at prices ranging from \$15 to \$50.

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Address \_\_\_\_\_  
Dealer's Name \_\_\_\_\_

# ENGLISH STATION IS A DECIDED SUCCESS

## CRYSTAL SETS PICK IT UP DURING EXPERIMENTS

### Built Mainly to Interest Radiophans Located on the Outskirts of British Isles

LONDON—Britain's latest high power Radiocasting station, 5XX, has been erected just outside London. Captain Eckersley, its sponsor, is satisfied that its success has justified its erection. Certainly the main requirements have been met—good quality and reliable crystal reception at 100 miles. The quality, as demonstrated by Dame Clara Butt at the first regular transmission, is certainly very good, and that 5XX has a long range is shown by reception 1,000 miles away. Londoners, of course, are not greatly impressed with the volume obtained when compared with 2LO, the central London station, but it is in other parts of the country that the full benefit is felt.

During its experimental stage it was suggested that, as the radius of efficient crystal set reception was certainly not less than 125 miles, the most economic situation for 5XX would be as near the center of England as practicable, as it would then supply the needs of the greatest number of crystal set users. Captain Eckersley, while admitting the contention that if the British Radiocasting company desired to serve the maximum number of persons it should put the high power station symmetrically in the center of the British Isles, was reluctantly forced to the conclusion that this was impossible.

"We think that the high power station is best served by a London program," he said. "If the station were in the center of England and the program were in London, the connection between studio and transmitter would have to be by overhead land line. We feel, in view of the importance of the station, that this connection would not be sufficiently reliable for everyday working. Thus, it is proposed to feed the station by underground cable, specially loaded to give no distortions. It is impossible to make this cable longer than about thirty to forty miles—consequently the position of the station is fixed near London, and its final position can only be fixed in the light of existing facilities as regards buried cable."

# SET DEFENSE TEST DAY

(Continued from page 1)

Beginning at 9:15 p. m. Eastern standard time, General Pershing and Secretary of War Weeks, located in Washington, will address the nation for at least one-half hour to show the citizens of the United States the manner in which broadcasters would be linked in case of national emergency.

### Stations and Hours of Broadcast

Unprecedented in extent by any previous linking of stations, the Defense Day Radiocast will be relayed from Washington American Telephone & Telegraph company wires to sixteen or more strategic points unnamed as yet. An official report indicates the probable line-up to include KDKA, Westinghouse at Pittsburgh, KFKX, Westinghouse at Hastings, KGO, General Electric at Oakland, WBAP, Star-Telegram at Fort Worth, WBZ, Westinghouse at Springfield, WCAP, Chesapeake & Potomac Telephone company at Washington, WDAF, Star at Kansas City, WEAJ, A.T.&T. at New York, WFAA, News and Journal at Dallas, WGR, Federal Telephone corporation at Buffalo, WGY, General Electric at Schenectady, WJAX, Union Trust at Cleveland, WLW, Crosley Radio corporation at Cincinnati, WMAQ, Daily News at Chicago, WJAR, Outlet company at Providence, WOC, Palmer School at Davenport, WOO, Wanamakers at Philadelphia, and WSB, Atlanta Journal at Atlanta.

The hour set for the beginning of the addresses, 9:15 Eastern standard time, would be 8:15 Central standard time, 7:15 Mountain standard time or 6:15 Pacific standard time. Listeners in cities using the daylight saving plan should add one hour to the time listed above.

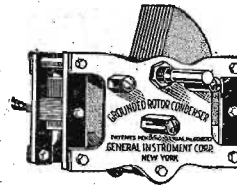
### Feat Historic from Two Angles

Not alone will the feat be historic from the point of achievement, but because General Pershing's speech will be his farewell to the armed forces, for he is soon to retire. Again, his speech will be notable in that it is but the second of its kind as he is the only ranking army officer to wear the mantle of General of the Armies, laid down by General George Washington in 1783.

While Washington's farewell reached but few ears, those of his officers and troops, the voice of the second General of the Armies will be heard in millions of homes and by many more millions of patriotic citizens due to the era of Radiocasting and land wire telephony.

# PROVEN BY TESTS!

Actual tests have proved that dielectric losses have been practically eliminated by this marvelous condenser. Greater selectivity, more distance and a remarkable increase in volume naturally follow its use.



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Type 46A 13 Plate 6	MMFD. .0003	MFD. ....	4.50
Type 46D 21 Plate 9	MMFD. .0005	MFD. ....	5.00
Type 46F 43 Plate 15	MMFD. .001	MFD. ....	5.50

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In addition to these features the current issues give you all the live news in Radio; advance Radiocasting station programs and a correct and authoritative list of all Radiocasting stations licensed. The first and last word in Radio.

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# 30 Minute A-B-C Lessons for Radio Beginners

## Chapter XXII—Making Your Own Radio Set

By P. E. Edelman

**I**N THIS series of articles the story of Radio is told in so simple a manner that the uninitiated can follow theory and practice whether or not he knows anything about electricity or its application to Radiocasting and reception. The series consists of twenty-five chapters, of which the three next will be: Chapter XXIII—Fixing Up the Radio Set. Chapter XXIV—The Radiocast Listener's Brief History. Chapter XXV—Home Radio.

**I**T IS not so much with the idea of saving expense as with the object of exercising a hobby that the average homemade Radio outfit is started. Others make outfits to have the latest to try weeks before manufacturers get production started. Then there are some who will shop around and put together a pass-

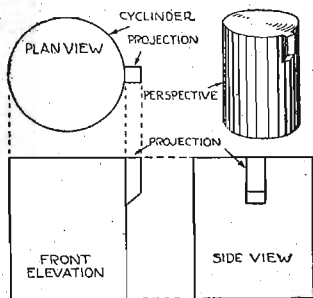


Figure 205

ably good outfit including many "five" and "ten cent" parts. Assembling today is a different proposition than in earlier days. Well designed parts are available in finished form and often come with blue prints or layouts showing exact manner of assembly.

Thousands of sets are thus built on kitchen table workshops. The tools required are a good soldering iron, preferably electric; a few assorted sheets of sandpaper, a pair of pliers, a medium sized screw driver, a small breast drill with drills, a half round file, a ruler, and a pair of dividers, or compass. When as-

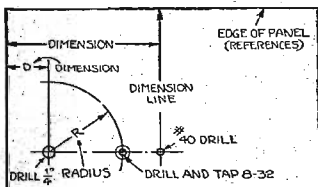


Figure 206

sembly sheets or layouts are given with sufficient details, the parts and the patience or assembly skill are all that is required.

While many understand how to read blue prints or layouts, a few pointers will help others, who do not. All that a mechanical drawing or layout aims to do is to furnish a dimensioned guide for the builder. Figure 205 illustrates the principle of projection used. Suppose you have a cylinder with a lug as shown in

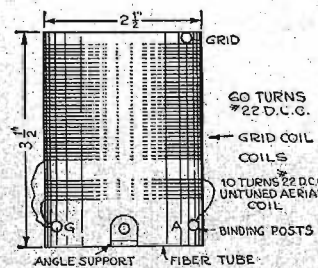


Figure 208

perspective. Looking down on the top of it, you see the plan view. This alone does not give correct idea of length, so a front elevation is drawn to show how it looks this way. A side view completes the mechanical picture, as every important feature can be dimensioned.

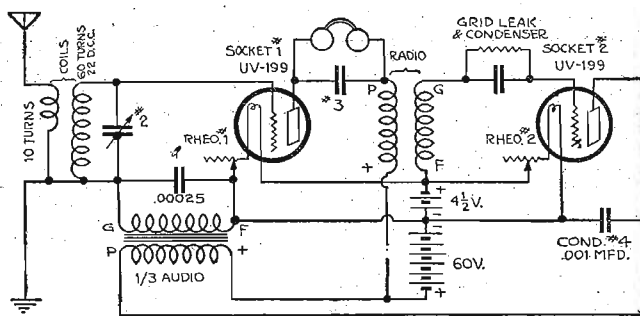


Figure 207

**Reading a Radio Panel Layout**  
Figure 206 indicates how a panel layout is dimensioned. The straight edges of the panel are taken as a reference. Center lines (dot and dash lines) locate drill holes. A full sized layout can be drawn

on paper and pasted on a panel with removable paste. Or the panel can be marked with pencil lines. A center punch is advisable for pricking drill hole points, in the panel. Any special parts other than finished

pieces will similarly be shown in a mechanical drawing or sketch, though sometimes only a diagram of the general scheme is shown, leaving this to the builder's information and skill.

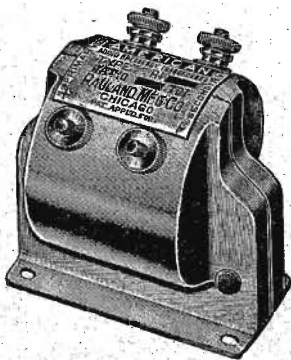
Rare bus bar wiring is preferable as then each wire connector has to be well spaced so as not to touch others. The general principle is to use short connections, with any bends neatly made at right angles. Where two wires must pass it is advisable to do this at right angles to each other where feasible. The Radio frequency carrying wires should be spaced at least 1/2 inch apart, and special care should be taken to have all connections to the grid or grid circuit well insulated and spaced from the others. Watch the grid connections carefully.

Where only a circuit diagram is available, the first thing to do is to redraw it so that the wiring will be as simple as possible. Then make a list of parts required. From the parts, you can determine which standard size of panel will be suitable. A panel can be polished with fine sandpaper to remove scratches.

It is not advisable to support all parts on the back of a panel alone as this set-

(Continued on page 16)

# Growth



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AN EVENING AT HOME WITH THE LISTENER IN (SEE INSTRUCTIONS FOR USE BELOW)

Table with columns: Station and City, Msk., Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday. Lists various radio stations and their broadcast times.

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

"Roxy" Goes on Vacation

NEW YORK.—S. L. Rothafel, "Roxy" known to Radio enthusiasts as "betty," packed bag and baggage and left New York bound for St. Jovite, Quebec, in the Laurentian mountains. Needless to say, he has taken a Radio set with him, which is a special built super-heterodyne.

Radio and Drinks for Bathers

BERLIN.—A floating Radio set for bathing parties has been devised in Germany and has become very popular during the recent hot weather. Part of the popularity may be due to the fact that beer is served on the same float that carries the Radio set.

Coto advertisement for a detector and one stage on panel. Includes Coto logo, product description, and contact information for Coto-Coil Co. in Providence, R.I.

Guaranteed Nation-Wide Reception on Three Tubes

Advertisement for 'The New De Luxe Ambassador' radio. Features a tuning dial diagram and text describing its features and performance.

This set completes two months building and disassembling 104 sets for this now unique success. With genuine Litzendracht wire entirely rewinding the incomparable genuine Ambassador coil I have created a 3-circuit design without equal for quality, and priced so that the whole world may buy.

Never Before in Radio a Success Like This

The Radio Shack is the first to discover the ideal use in this country of Litzendracht wire. With its old the new "De Luxe Ambassador" achieves the modern ultimate of what both rank amateur and ardent expert have sought.

Advertisement for Radio Shack accessories. Lists various items like tubes, condensers, and mounting brackets with prices. Includes a price tag of \$25.95 and the slogan 'C.O.D. Send No Money'.

Advertisement for Radio Shack featuring a photograph of a radio set and text describing the company's service and guarantee.

Be First in Your Town—Send Your Order Now

Large advertisement for 'The Radio Shack' in New York City, featuring the company name in large letters and contact information.

Order form for Radio Shack. Includes fields for name, address, and a coupon for a free circular. Text: 'Mark X here ONLY if you want a circular. Set \$25.95.' and 'Ship me C. O. D., subject to your WRITTEN Money-Back Guarantee, the goods for which I have marked X in the proper square (or squares). I will pay postman on delivery.'



# STRIBLING-BERLINBACK GO AT WSB

Wednesday, August 27

Silent night for: CKAC, KGO, WFAA, WFI, WGV, WIP, WJAZ, WRC, WSAI.

CKAC, Montreal, Can. (Eastern, Daylight, 423), 1:45 p. m., musical concert, Royal Hotel.

CNRM, Montreal, Can. (Eastern, Daylight, 341), 9 p. m., concert of R. M. S. "Alma"; Charles E. Spillio, violinist; E. Bruck, pianist; Mildred Page, singer; E. Carlin, saxophonist.

CNRD, Ottawa, Can. (Eastern, Daylight, 435), 8 p. m., Chateau Laurier hotel; Orpheus singers; Chateau Laurier string quartet; Hughes Johnson, pianist; Harry A. Underwood, tenor.

KDKA, E. Pittsburgh, Pa. (Eastern, 326), 11:15 a. m., Daugherty's orchestra; 3:30, Gregorio Sciala's orchestra; 6:30, children's party, Richard the Kidder; 7:15, literary program, Marjory Stewart; 8, Ruby Dunn McCurdy, conductor; Mrs. B. Zesty, reader; Earl C. McCurdy, pianist; William M. Brennan, tenor; Josephine Critland, violinist.

KFI, Los Angeles, Calif. (Pacific, 469), 6:45-7:30 p. m., detective stories; vocal concert; 7:30-8, "Mama" Simons and Crosby Sisters; 8-9, Evening Herald, Frank Carr's orchestra; 9-10, Examiner program; 11-12, Ambassador hotel; Conant Grove orchestra.

KFN, Shenandoah, Ia. (Central, 266), 7:30 p. m., music.

KFOA, Seattle, Wash. (Pacific, 455), 8:30 p. m., musical program.

KFSG, Los Angeles, Calif. (Pacific, 278), 2:30-4:30 p. m., divine healing; 4:30-5:30, Grace studio concert.

KGO, Oakland, Calif. (Pacific, 312), 9 p. m., speaker, Vera L. Williams Institute; 8:30-9, 9:30-10, 10:30-11, 11:30-12, 12:30-1:15 p. m., concert, The Oaks Tavern orchestra; Fred C. McNabb, speaker; 6-8:30, Art Hickman's concert orchestra, direction, Edward Fitzpatrick; 9:30-7:30, children's program, "American History," Prof. Walter Sylvester Herzog; Dick Winslow, screen juvenile bedtime story; Uncle John; 8-9:30, concert, courtesy, Fiat Music company, direction, Edwin Lester; 9:30-10, Dr. Marc E. Baumgardt; the Filipino string orchestra, courtesy, Blue Bird Cafeteria; 10-11, Art Hickman's dance orchestra, director, Earl Burnett.

KLK, Oakland, Calif. (Pacific, 509), 8-10:30 p. m., studio program, presenting Biuletto; Wendell Hall.

KPO, San Francisco, Calif. (Pacific, 423), 1-2 p. m., Rudy Selger's Fairmont hotel orchestra; 2:30-3:30, Garry Pliener's Amphibians; 4:30-5:30, Rudy Selger's Fairmont hotel orchestra; 5:30-6:30, children's hour stories, Eric Bremer of KPO; 7-7:30, Rudy Selger's Fairmont hotel orchestra; 8-10, Charles Smith, conductor; Mrs. Charles E. Ker, accompanist; Charles E. Ker, soloist.

KSD, St. Louis, Mo. (Central, 546), 8 p. m., Silverman's orchestra.

KYW, Chicago, Ill. (Central, Daylight, 336), 6:45 p. m., children's story; Uncle Bob; 7-7:30, dinner concert, Congress hotel; 7:30-8, program, KYW's studios; 8-8:30, International College of music; 9:15-12:30, midnight revue.

PWA, Havana, Cuba (Eastern, 400), 8:30 p. m., General staff band, Cuban Army, Captain Jose Molina Torres, conductor.

WBAY, Columbus, Ohio (Eastern, 423), 12 m., Ha Lebach Owens, pianist.

WBER, New York City, N. Y. (Eastern, Daylight, 273), 8 p. m., instrumental selections; 8:15, songs; 8:45, instrumental selections.

WBZ, Springfield, Mass. (Eastern, Daylight, 337), 7:30 p. m., bedtime story for kiddies; 7:40, Lenox E. Birkin, baritone; Mildred J. Chaplin, accompanist; 8, singer solo; 11:30, Leo Nelson and his Hotel Brunswick orchestra; songs, Bill Coyle, Jack Armstrong.

WCAE, Pittsburgh, Pa. (Eastern, Daylight, 462), 8 p. m., Fred Rosenfeld, pianist; 6:30, dinner concert, William Penn hotel; 7:30, Sunlight club; 9:30, music.

WCAR, Washington, D. C. (Eastern, Standard, 460), 7:30-8 p. m., open air concert; 8-8:45, Broadway trio; 8:45-9:15, band; 9:15-10, music.

WCAV, Milwaukee, Wis. (Central, 266), 6:30 p. m., musical program, sponsored by the Boston Street Florence Proj., soprano; Teddie Corralan, accompanist.

## Headliners of the Week

**T**HIS week will be a week of varieties. Programs will tickle the palates of the most particular of Radiophans. On Wednesday night at Station WHE, the pibroch will call to the front Jack Bordie, the Harry Lauder of the A. E. F. At WSB, the fistic knights of the resined ring and roped arena, Young Stribling and Paul Berlinback, will battle for honors.

They are going to spring a surprise at CKAC, Thursday night in the form of a special entertainment, consisting of music and songs. Any fans listening in to KDKA on this night will hear the far famed "Little Symphony Concert." This will be a treat for the music lovers.

"The Elements of Human Personality," will be a talk with a punch on Friday evening from Station WGL. People interested in poultry, will be delighted with the talk on, "Parasites and Diseases of the Poultry Flock," which will go on the air from WLS, the farmers' station.

From the icy steppes of far off Russia to the studio of WEAF is a

long jump, but the Eight Russian Volga Singers will entertain this station's large audience on Saturday night. While this is going on, Freda Sankers Raganumfins, will perform before the microphone at WSAI.

Two wonderful programs are scheduled for Sunday evening when the Metropolitan theater broadcasts from KFI, and when Comforts Philharmonic orchestra plays at WIP.

Rig doings at WLW, when the Zoological Gardens All-Star Frolic cut capers on Monday night. Everyone is welcome, and the only admission fee is to be able to listen in on a Radio set. A resume of the day's sport will be the feature on the program of Station WOR.

What do you want? An organ recital or some "jazz"? You can have them both on Tuesday evening. The Detroit News orchestra will broadcast from WWJ, and the family can dance to the latest dance music. If you care for something more subdued, tune in WOO, and hear the organ recital which will carry you back to your childhood days.

2. Arcadia cafe concert orchestra: "Care of Children," Mrs. Louis Love; 7:30, Drexel Dadd's bedtime stories; 8, Arnold Abbot's "Conversation Corner"; 9:30, talks, "Miss America" and "Miss Philadelphia"; 10, Arcadia cafe dance orchestra.

WEAF, New York City, (Eastern, Daylight, 492), 11-12 a. m., pianist; 1-5 p. m., instrumental trio; 6-10, dinner concert.

WEAO, Columbus, Ohio (Eastern, 380), 1:30 p. m., educational lecture, member Ohio State university faculty; 4, four talk, faculty member; music, university artists.

WECH, Chicago, Ill. (Central, Daylight, 370), 7:30-8:30 p. m., Louise Perlman, violinist; Orkide orchestra; 9:30-10:30, Drury Lenington, tenor; Marie Kelly, reader; steel guitar duet; London brothers; Orkide orchestra; 11:30-12:30, Paul Locker, tenor; steel guitar duet; London brothers; Orkide orchestra.

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

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

Richard Hendricks (lower left), juvenile screen star, is well-known to Pacific coast youngsters who have been listening to him for the past year from KHF, Los Angeles. He will appear on the Friday evening program, August 29.



Mary Toomey puts all the little Texas children to sleep every night with her bedtime stories from WFAA, Dallas. If you want snappy dance tunes, get KFO, San Francisco and the versatile band of Archie E. Max Bradford (right) is the justly proud leader.

WHD, Des Moines, Ia. (Central, 523), 7:30-9 p. m., The Bankers Life Radio orchestra.

WIP, Philadelphia, Pa. (Eastern, Daylight, 503), 10 a. m., musical concert; 10:10, Bernard MacFadden's health talk; 3 p. m., "What the wild wares are saying"; 3:30, Comfort's Philharmonic orchestra, Katherine Michon, contralto; C. Sponocchini, trombone soloist; 4, Bob Lennan's dance orchestra; 6:30, Little Ellings dance orchestra; 7, Theie Wip's bedtime stories.

WJAZ, Providence, R. I. (Eastern, Daylight, 360), 10 a. m., lounge hits; 1:05 p. m., studio program; 7:30, musical program.

WJZ, New York City, (Eastern, Daylight, 448), 1 p. m., Hotel Astor trio; 7, Cafe Boulevard ensemble; 8:15, pianist; 8:30, violinist; 8:45, pianist; 9, Sara Tenover, violinist; 9:40, pianist; 10, talk; 10:30, Greenwich Village Jazz orchestra.

WMAO, San Juan, P. R. (Central, 500), 6-8 p. m., municipal band.

WLS, Chicago, Ill. (Central, Daylight, 345), 1-2 p. m., Estella Webster, soprano; "How to Cull Para Hens," H. L. Kemper; "How Some Farmers Meet Competition," Earl Price; 2:30, Ralph Emerson, organist; 7, Hill, Hirsch and Goray; "The Three Musketeers"; 7:15, Samuel Madia, phenomenal baritone-soprano; 7:35, Hubert Huss, Ford Rush, Glenn Rowell; 8, juvenile hour, "Boys and Girls' Hour"; 8-10, "Breeding for Zeas on the General Farm," M. L. Kemper; talk, "Lawrence the Farmer's Questions," Earl Price; Blanche Robinson, pianist; 10, Mayors trio; 10:30, Ford Rush, Glenn Rowell; 10:50, Hotel Sherman College Jazz orchestra.

WLW, Cincinnati, Ohio (Central, Daylight, 423), 9 p. m., Virginia center; soloist; solos and imitations, Donald Bain; 9:15, original compositions, H. H. Walker.

WMAA, Chicago, Ill. (Central, Daylight, 447.5), 6 p. m., Chicago theater organ; 6:30, stories for children, Katherine Walker; 9, talk, Chicago charities; 9:15, Ozzie Williamson, tenor.

WMH, Cincinnati, Ohio (Central, Daylight, 399), 8:30 p. m., tubular music program; 9-11, Dearing's Jazz orchestra.

WOC, Davenport, Iowa (Central, 431), 13 m., 8-9 p. m., Ercen Swindell, organist; Edwin H. Ball, tenor.

WOD, Philadelphia, Pa. (Eastern, Daylight, 509), 11 a. m., organ recital; 12:30, Wamamiter crystal tea room orchestra; 3:45, organ recital; 7:30, A. Candelari



and his roof garden orchestra from Hotel Adelphia; 2:15, Horriat G. Ridley, organist; 3, WOO orchestra; Robert E. Golden, director; 10, A. Candelari's dance orchestra.

WOS, Jefferson City, Mo. (Central, 440.9), 8 p. m., "Wheat Production in Missouri," W. C. Eberidge; 9:10, Ollie Hine string trio.

WUJ, Chicago, Ill. (Central, Daylight, 448), 3-4 p. m., talks; 7-8, soprano, musical readings, songs; 10-2, orchestra; Scotch tenor, harmony singers.

WOR, Newark, N. J. (Eastern, Daylight, 405), 2:30-3:45 p. m., popular program, George Perry, tenor, Russel Blumstein, piano accompanist; recital, Janet P. Hall; contralto; 6:15-6:45, Donald's Olympic Park orchestra; resume of day's sports; 8-8:45, Gene Magdalen and his orchestra; 8:45-9:30, Marcello Graf, dramatic soprano; 10:30-11, Manhattan serenaders.

WRC, Washington, D. C. (Eastern, Daylight, 469), 9:10 p. m., song recital; 9:45, piano recital; 4, song recital; 6, children's stories.

WSB, Atlanta, Ga. (Central, 429), 8 p. m., report of boxing bout; 11:30, string ensemble.

WTAM, Cleveland, Ohio (Eastern, 390), 8 p. m., open air concert arranged by Cleveland Plain Dealer; Cleveland concert band, Walter Lorenz, director; Mrs. Mary Kettlemann, soprano; Harner Garcia Smythe, baritone; A. and J. Hendry, C. Baker, trumpet trio; soloist; Albert Clarke, trombone soloist; S. Florio, euphonium soloist; Three Goltman brothers, saxophone; symphony, concert; Community string; direction Harper Garcia Smythe.

WTAY, Oak Park, Ill. (Central, Daylight, 283), 9:15-7:45 p. m., musical program; 9-11:15, orchestra.

WWJ, Detroit, Mich. (Eastern, 517), 8 a. m., setting-up exercises; R. J. Horton; 9:30, talk, women's editor, Detroit News; 12:10, Detroit News orchestra; 3 p. m., Schenman's band; 7, Detroit News orchestra; 7:30, Schenman's band.

Thursday, August 28

Silent night for: KSD, WDAK, WHD, WJAZ, WOO, WOP, WOS.

CKAC, Montreal, Can. (Eastern, Daylight, 423), 7 p. m., kiddie stories in French and English; 7:30, M. Royal hotel special concert; 8:30, special entertainment; 10-10:30, dance program.

KDKA, E. Pittsburgh, Pa. (Eastern, 326), 11:15 a. m., Seal's orchestra; 5:30 p. m., KDKA Little Symphony orchestra; 8, KDKA Little Symphony orchestra, Victor Staudek, conductor; Mrs. Gertrude S. King, soprano; 10, concert.

KFI, Los Angeles, Calif. (Pacific, 469), 6:45-8 p. m., Y. M. C. A., lecture; Bon Ton orchestra; 8-8, Ambassador.

(Continued on Page 10)

p. m., Meyer Davis Bellevue Stratford concert orchestra; 3, Chicago train market reports; 5:05, Sol Zabel and his Rose Tree theater dance orchestra; 6:30, Meyer Davis Bellevue Stratford concert orchestra.

WCI, Medford Hillside, Mass. (Eastern, Daylight, 360), 8 p. m., popular song hits, Don Ramsey.

WGR, Buffalo, N. Y. (Eastern, Daylight, 319), 12:30-1 p. m., Gertra Albert, Bonhard, organist; 6:30-7:30, dinner music; 9-10:30, variety program, Argo Musical club; 10:30-11, concert, Chicomani studios, direction of Gertrude Hutchinson; 11:30, supper-dance music, Vincent Lopez Hotel Statler dance orchestra, Harold Glaser, director.

WGV, Schenectady, N. Y. (Eastern, Standard, 368), 9 p. m., Adventure story; silent night.

WHAAR, Iowa City, Ia. (Central, 484), 12:30-1 p. m.,

orchestral selections, Charles Sullivan, Mrs. Charles Sullivan, May Deltos.

WHAS, Louisville, Ky. (Central, 460), 4:3 p. m., Altona theater orchestra; 7:30-9, K. & I. Terminal Railroad orchestra, J. Clark Martin.

WHS, Kansas City, Mo. (Central, 411), 7-8 p. m., soprano solo, Nina McCombs; address on astronomy, Dr. E. G. Davis; vocal solos, Jack Bordie, the Harry Lauder of the A. E. F.

WHN, New York City, (Eastern, Daylight, 360), 8:15 p. m., Al Hart & company; 2:30, Harry Hock and entertainers; 2:45, Louisiana Day; 3:45, tenor; 4, impersonator; 4:15, dramatic soprano; 4:30, concert baritone; 4:45, readings; 5, pianologue; 5:15, singer; 6:30, dialogue concert; 7:30, orchestra; 8, violin; 8:45, 2-act comedy; music; 9-9:30, dance orchestra; 9, p. m.,





Tuesday, September 2

(Continued from page 11)

WIP, Philadelphia, Pa. (Eastern, Daylight, 509), 10 a. m., seasonal radio; 10:10, Bruno Minerva's health talks; 1:05 p. m., Karl Bonowitz, organist; 3:45, What the wind waves are saying; 5:50, Comfort's Pittsburgh orchestra; 6:05, Ehrenkeller's concert orchestra; 7: Uncle Wip's bedtime stories; 8: Comfort's Pittsburgh orchestra; 8:50, Venezia's concert band.

WJAX, Cleveland, Ohio (Eastern, 300), 7:30 p. m., program arranged by Cleveland News-Leader; 8: G. Johnson, bedtime story; Don Palmer, Radio fall extravaganza; Joe Smith, Aladdin Club orchestra; solo numbers, popular entertainers.

WLV, Cincinnati, Ohio (Central, Daylight, 423), 10 p. m., Hanna Cummins Recording orchestra; 10:30, hot-down dance music, Uncle Jake Rutz's Pumbala piano orchestra, Norton Boston, caller; 11:30, Cummins orchestra; 11:30, Pumbala piano orchestra; 11:30, Gishler Steinberg orchestra.

WMAQ, Chicago, Ill. (Central, Daylight, 447-5), 6 p. m., Chicago theater organ; 6:30, Hotel LaSalle orchestra; 8: Harry Hansen's literary editor; 8:30, travel talk, Clara E. Lammitt; 9: U. S. Civil Service talk; 9:15, Lyon & Healy program.

WOD, Philadelphia, Pa. (Eastern, Daylight, 509), 11 a. m., organ recital; 12:30 p. m., Wanamaker's vocal solo concert; Robert Golden, director; 4:45, organ recital.

WRN, Newark, N. J. (Eastern, Daylight, 405), 2:30-3:30 p. m., humorous talk by Horace Buttemorth, "The Greatest Thing in the World"; recital, Gertrude Davis Samuels, pianist; 6:15-7:30, Halsey Miller; Men in the Moon; resume of day's sports.

WQJ, Chicago, Ill. (Central, Daylight, 448), 11-12 a. m., lectures; 2-4, talks; 7-9, dinner concert; tenor, Gianini; 10-2, Juaine orchestra; tenor.

WRC, Washington, D. C. (Eastern, Daylight, 469), 6 p. m., children's talk; 8, political talk; 9:30, piano recital; 9, political talk; 9:35, concert.

WSAI, Cincinnati, Ohio (Central, Daylight, 399), 7 p. m., Hotel Ohio orchestra; Robert M. Viscardi, director; 7:30, chimes concert; 8, Gibson orchestra; 9, instrumental and vocal solos.

WSB, Atlanta, Ga. (Central, 429), 8 p. m., band; 10:45, ballroom.

WTAY, Oak Park, Ill. (Central, Daylight, 283), 6:45-7:45 p. m., bedtime story, tenor, orchestra.

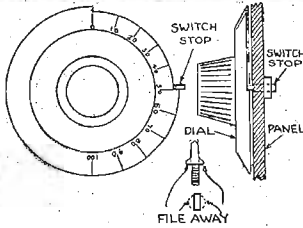
WWJ, Detroit, Mich. (Eastern, 517), 9:30 a. m., talk, women's editor, Detroit News; 9:45, Fred Shov, pianist and speaker; 13 m., Detroit News orchestra; 3, Schumann's band; 8:30, Schumann's band.

Increasing Volume

Many owners of receivers have heard of the beneficial effect of connecting a condenser across the secondary of an audio frequency transformer. Doing this clears the signals considerably, but at the same time it cuts the volume to a great extent. There is one good point about such a procedure, though that is not realized. It allows the audio frequency side of the circuit to stand much more current flow than would be possible were it not used. Therefore, when connecting a condenser across the transformer always place more plate voltage in the circuit of the tube which has the condenser in it. An extra 22.5-volt block will usually bring the volume up to the necessary point, and the clarity will be improved considerably. The larger the condenser used the greater the reduction in volume will be.

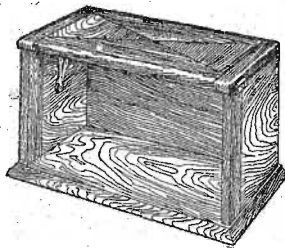
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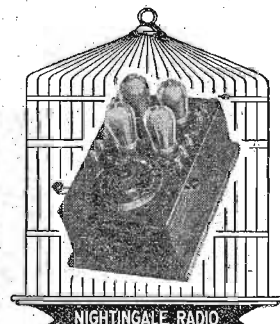
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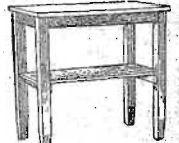


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# Neutralizing the Super-Regenerator Circuit

## Part II—The Panel and Baseboard Layout

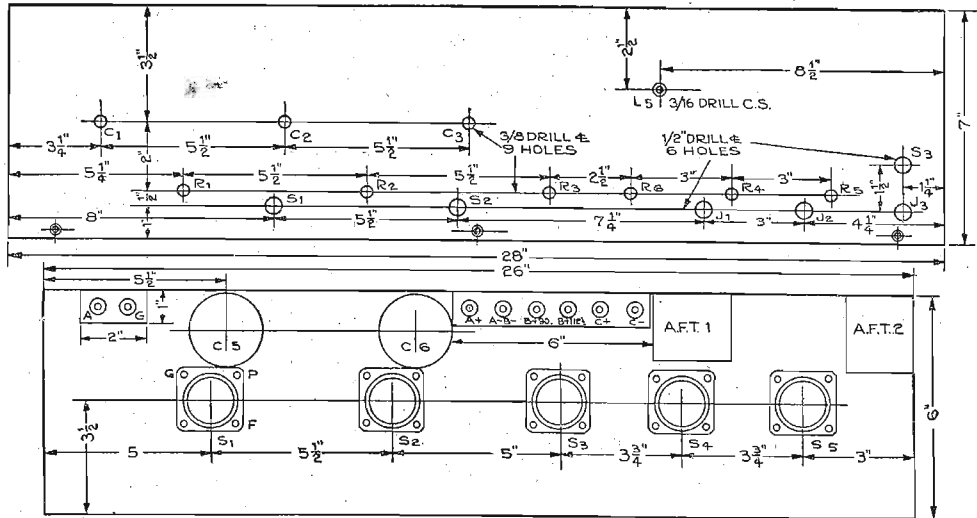
By C. E. Butterfield

**A**FTER a week of thoroughly digesting the neutralized super, spread before the view of the Radiophan for the first time last week, the prospective builder should now be primed to dig in and produce a set that the writer believes will give him all the satisfaction that can be found in any receiver, and maybe a little more.

Assembly of the neutralized-super closely follows that used in the straight neutrodyne, except that in the layout, presented here, the panel has dimensions of 7 by 28 inches, 2 inches longer than that used in the other five tube sets. However, if the builder desires, he can slightly crowd the instruments and make them fit very satisfactorily on a 26 inch panel. A baseboard of light durable wood that will not warp is needed. It should be of 1/2-inch material and measure 6 by 26 inches, or 2 inches shorter than the panel. By the joining of the panel to the baseboard at right angles, the finished set can be operated during the preliminary tests without first fastening in the cabinet.

### The Panel Layout

Note should be taken of the fact that in the panel layout only holes for the condenser, rheostat and grid leak shafts are shown. This was done because instruments made by different manufacturers have various methods of fastening to the panel. The holes indicated, 1/8 inch, will permit sufficient play for the shaft so as not to cause it to bind. If mechanical verniers are used on the condensers, holes should also be provided for them. Holes for the three A battery switches are 1/2 inch in diameter, or just large enough to squeeze in the protruding part of a push-pull switch. While three switches are shown, none is necessary, as a separate rheostat controls each tube. However, they were included to facilitate in the operation and to eliminate filament control jacks, which complicate the wiring somewhat. The rheostats could be cut to two, but as each tube varies slightly as to proper filament temperature the five are included. The jack holes also should be just large enough to clear the jack bushings. Indications are not given for holes for the screws to be used in fastening on the baseboard, as they can be placed to the satisfaction of the builder. The 1250 turn honeycomb coil should be mounted flat against the panel, a countersunk hole (3/16-inch L 5) being indicated in the diagram. In this way the coil is kept out of the magnetic fields of both the radio and audio transformers. Any method that suggests itself to the builder will be satisfactory in the mounting. The plan used in the original "super-neut." was this: Two pieces of bakelite were cut, 1/2 inch wide. One was just long enough to fit across the center of the inside of



the honeycomb coil. The other was long enough to lap over 1/2 inch on each side. These were held together with two small pieces of wood, the length of which is the thickness of the coil, less the thickness of the short piece of bakelite. The wood blocks are screwed to the bakelite strips, holes being bored in them to pass the screws.

The coil is then slipped onto this frame, and the shortest length placed against the panel. A hole should be bored in the center of the short bakelite strip to pass a flat head machine screw. The coil can then be easily fastened to the panel.

If the proper four-to-one air core transformers are purchased they can be easily mounted at the rear of each tuning condenser with the connection posts pointing toward the baseboard. The honeycomb type coils now to be found on the market provide a frame for mounting. These should be removed and a hole placed at the edge of the tubing on the coils large enough to fit onto a binding post found on the back of most condensers. The transformers must be mounted at 45 degree angles to prevent interstage coupling, as in the neutrodyne.

### Negative Feedback Coil

The fifty turn negative feedback coil

will be found to fit nicely inside the detector input transformer. This coil should be flush with the edge of the bakelite tube of the transformer. The simplest method of fixing the negative coil in position is that of making the negative coil holder from sheet brass or aluminum. This should be cut into a strip 1/8 inch wide and about 3 1/2 inches long. A 3/8-inch hole is cut near each end. The strip is then bent in the shape of a U with rigid angle bends, each leg to be slightly over 1 inch in length.

The feedback coil is then fastened to one leg by cutting a hole in the center of one side of the coil. A small bolt should be used for this purpose, care being taken not to scrape off an insulation. The other leg is then bolted to a hole bored near the edge of the transformer. If the coil does not fit exactly the holder should be rebent so that the edges of both the feedback coil and the transformer line up. The leg holding the feedback coil should be on the inside of

(Continued on page 18)

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## Wonders Yet to Come

**It Is Not Impossible to Transmit Power by Radio**  
ESSENTIALLY, of course, Radio communication is no more mysterious and wonderful than telegraphy or telephony. The track of these mystic impulses which carry thought through space more rapidly than sound travels cannot be traced with the eye, as the telegraph wire along which the electric current passes can be traced with the eye, but the one phenomenon is no more inscrutable than the other for that reason.

At the same time the discovery of Radio communication has awakened, for the time, a fresh sense of wonder and has deeply impressed the imagination of the world. It represents one of the most remarkable and thrilling, as well as promising, achievements of the human intelligence, although it can hardly surpass some of the feats of astronomy and of pure mathematics at a demonstration of the power of man's intellect.

But it is becoming more evident as the time passes that the discovery of Radio communication has opened up new fields of research and that even more remarkable accomplishments are to come. Some of the scientists say that before long power generated at a central plant and delivered into the crust of the earth can be utilized over vast distances by Radio by those who have the key. Trains, automobiles, aircraft, machinery, lighting systems will be operated in this way and great strides have already been made in this direction. Only recently impulses by Radio were sent around a circuit several times by an initial propulsion connecting New York and Tokio, Japan, a total distance exceeding the entire circumference of the globe.

The universe is a vast reservoir of wonders needing only to be tapped. Its forces, resident in matter and distributed about throughout space are at man's disposal when he discovers the key. Invention and discovery have a boundless field, and the human progress in the realm of mechanical control of nature is limited only by the capacity of the intelligence of the race. The last wonder of Radio will be the perfecting of a means of communication with other planets, if there are those within our system which have inhabitants of a high order of intelligence who have made similar or greater progress in the mastery of mechanics. That is a dream which is as fascinating as it is fantastic. But is anything which science proposes fantastic? Certainly it is in no sense contrary to reason to assume that in a universe so vast that the planet on which we live is a mere speck of matter, floating like a note in a sunbeam, there are other worlds endowed with life and other intelligence like ourselves in reason and imagination, or far superior in intellectual power to the inhabitants of the earth.

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**Various Kinds of Enjoyment for the Enthusiast**  
THE noticeable increase in the number of Radio set owners in the country is said to be principally due to the fact that Radiophans generally are realizing there can be no fundamental or revolutionary changes in Radio sufficient to cause interference with their hobby, though there may be changes in styles and types of sets.

There is so much novelty and joy in the building of one's own Radio sets, so much fascination in the making and remaking of them and putting them together in different kinds of circuits that equally as much pleasure and enjoyment is obtained from experimentation as from listening in on programs. Then, too, the thrill of a lifetime comes when an enthusiastic amateur produces better results with his own set than are produced with the ready-made ones. Radio development is constantly on the move.

Radio has become practically indispensable to our social and commercial life. It brings to the home the lecturer, the prima donna, the concert hall, the church and a great variety of exciting and exhilarating entertainment. It gives to business a stimulating effect. It excites both activity and competition. And it is a source of great revenue. That would insure its permanency if nothing else did.

## RADIO INDI-GEST

### Cut Yourself a Piece of Cake

Fellow Scribers: It was our good fortune, after a trip of several hundred miles, to be in the DIGEST office recently and to meet the Powers that be. Space forbids elaboration, but 'tis a fohle bunch; Program Lady charming and Artist Lady classy, but in danger of becoming "stuck up." Rubber cement IS messy, you know. So seriously is our kolumn regarded by Indi that his co-workers tell us he weeps when contribs fail to come in. The waste basket beside his desk yawned hungrily, we observed. No office cat in sight; evidently Indi never feels the need of one on which to vent his spleen.—so you see, fellows, we DO fill a genuine need.  
—Was guest at their weekly bench party; didn't have to wait for published invite. Nothing like being on the ground when things happen! MAMA HAYMES.  
P. S. Soozzee, N. B! Indi is good looking and not married, either. I'm going back!!

### Mary Had

Dear Indi: I will now annoy you with my latest release, entitled "MARY HAD."

Mary had a neutrodyne,  
It pulled in all the flights:  
One day she pulled in CICERO  
And blew out all the lights.

Mary had a radio set,  
Its tubes burned clear and bright:  
One day she used the 110  
There'll be no concert tonight.

Mary had a ribbon aerial,  
My Gawd how it did flutter:  
One day the wind blew good and strong  
And now it's in the gutter.

Mary had a storage batt,  
It was built to last a year:  
One day her brother put in yeast  
And the dern thing's giving beer.

Mary had a loud speaker grand,  
It sure did take the cake:  
One day she tuned in 10,000 volts,\*  
And friends came to her wake.

\*Aerial crossed power line.—Lintoype man.

Mary had a one tube set,  
She was lucky to get Local:  
She now is getting out of town  
Wotnel will rhyme with Local!

Hoping this will not be shown the alienists.  
THE THIRD TROMBONE PLAYER.

### Mrs. Partington Speaks Out

Dear Indi: Mrs. Partington says she wants someone to learn her the Code, so she can listen to some of that too, but she thinks the Relaid League is harder to belong to than the Epworth League, for she has already found out that Radio is the only educated science where you have to be a licensed professional expert before you can be an amateur so as you can get the right to pay for, and build, operating sets to stay up and operate late at night for nothing, or mostly for D. X. and she has heard that this old D. X. is mighty poor pay too. She says its a mystery to her how Mr. Macaroni come to think up



Wireless in the first place. SINGING OFF.

### Attention Soozzee! What Say Ye?

Dear Indi: Tell Soozzee that if he's a he I ain't interested but if she's a she I mean if he's a she then she should know Ima he and I'm, if not interested, at least open to conviction. Teller to send her picture because I haven't seen a funnypaper since Sunday anyhow or tellim to GTH. I'm a little thin man, 6 foot three tall and 275 lbs. weight, with grey hair and my nickname is Red. I have a tanned complexion in a marvelous number of spots and I have small feet; I can't obtain a larger size shoe than 12 without special order so I go barefoot. I'm very intelligent, having been put out of school because they couldn't grade my papers: they could find no eplher less than zero; I think I still owe interest in radio and put Marconi back to stringing spaghetti: he's strung the rest of us long enough. And, oh yes, tell Soozzee I might like to meet her (not him), object alimony. S'lons.

### Solve for "X"

Dear Indi: This afternoon's Times-Star (Cincinnati) repeats a map of radio stations from a "Phillie" paper and says: "The distances of these stations have been computed from Philadelphia, which is 455 miles from Cincinnati. Adding or subtracting this distance will give the figures for the other cities." Applying this to WCX, which is 412 miles from Philadelphia, I find that I am 53 miles nearer Detroit than to my own home town. Oughtn't I to get WCX on a crystal, or what have you? Ain't radio puzzling? LOW LOSS.

### So That's What the Trouble Is!

Dear Indi: After a long study I think I have found out why we have more noise (static) in summer than winter. I don't want to mention any names but there is a fellow that makes "tin Lizies" so cheap that he has sold over 10,000,000 of them.  
After they are a few months old, they all make their share of noise, and when you figure that 10,000,000 are all running all at once, what can we have but noise? IN. S. ULATION.

## Teaching the Public



## Condensed

By DIELECTRIC

There are provisions made on some passenger trains to allow all who wish to listen to Radio concerts as they are picked up en route, though the receiving set installed on the Broadway Limited at New York recently was not intended for general use. This neutrodyne set was in care of K. H. Stark, prominent Radio engineer whose purpose it was to gather information concerning areas known as "dead," the intensity of various Radiocasting stations throughout the country, and any other data which may be considered useful to science. A two-wire aerial was used strung along the roof of the coach to catch whatever the ether held as the party moved toward Chicago. These tests are exceedingly valuable, as they add practical pointers to fans whose perplexities heretofore tended to discourage.

These days of terrific heat are not conducive to extended observations on any subject, nor are they apt to make readers more eager to scan each line in a paper—even a Radio sheet. So what I have to say may be skipped over entirely (without injuring my feelings), but in case some of you may glance this way I shall proceed. Just let your mind run back two years, or only one, to the summer months and recall your attempts to break through static to catch a sound or two from a Radiocast station. It isn't difficult to bring to mind the disgust you felt with all things Radio. You may have tried for one of those prize fights on a night when Old Man Static was doing his derndest! What is the condition now? Any of the powerful stations can blare right through crackling and spluttering, at least with sufficient frequency so you lose very little of any program. You don't neglect the set nowadays—and shouldn't.

It seems the British are concerned with the matter and style of plays adaptable to Radiocast purposes and have offered a prize of over two hundred dollars for the best Radario submitted to the British Radiocasting company by a contestant of any nationality. In addition to the prize money, the winner may receive two guineas per performance for all the time it is "on the air" after the expiration of a year. You may feel sceptical of any Radario holding the ether for twelve months, but if it is good, such a thing is quite possible. You may at last try it.

The work of civilian Radio experts in the laboratories of our army camps is of considerable consequence, though often lacking public recognition. These are men engaged in the Radio laboratory of the largest Signal Corps camp in the country (Camp Alfred Vail, N. J.) whose efforts along lines of research are of great value to the science, and they are civilians, yet we fans are ignorant of the work done by them. One of the latest to join the force at Camp Vail is Prof. C. M. Jansky of the University of Minnesota. His appointment is as Assistant Consulting Radio engineer and will entail research work in both Radiophony and telegraphy.

I feel pleased to substitute eulogy for caustic criticism whenever that becomes possible; not merely for the sake of harmony but because it denotes progress. In the case of Station WFI, Strawbridge and Clothier, Philadelphia, Pa., my honest regard for that station was anything but complimentary up to quite recently. The owners have changed the entire transmitting paraphernalia until it has become one of the finest modulated in the entire United States. To listen to orchestra music from WFI is to listen to ORCHESTRA music with the nuance, timbre en semble, etc., preserved lifelike. A French horn is just that—now.

# Keeping Up the Power in Your Radio Set

## Batteries Require Most Attention

By Eric E. Leibner

**T**HE upkeep of the Radio set is most essential to continue operation of the receiver on a satisfactory basis. The receiver will be just as efficient a year from the day you purchased or built it if the following rules of maintenance are observed.

Radio is no different than an auto; it must have attention if the high standard of its first performance is to be regular. If it goes unattended for any length of time the quality of the reception will begin to deteriorate until it finally refuses to function. There are very few wearing parts on a receiver and they are very easily kept in prime condition. It is not a matter for an engineer and takes no special training—it is just an application of healthy common sense.

### A Battery Needs Most Care

The element of the receiving combination that needs the most care is the storage or A battery. To start with, the life of the charge is of first importance. All batteries have a certain number of ampere hours stored in them, which constitute their actual usefulness. They are rated all the way from 40 ampere hours up to 120 for ordinary Radio service. The greater the number of ampere hours, the longer the life of the charge will be.

Never permit a storage battery to become more than half discharged. When the hydrometer test of each cell shows that it is down to half charge, or reads 1200, it is time to have the battery put on charge. A battery is fully charged when the hydrometer reading is 1300; or when the voltmeter test shows each cell to have a potential of 2.5 volts. If you have recharging equipment read carefully the instructions that go with it before starting to charge the battery.

### Carefully Examine Cells

The cells should be carefully examined every two weeks for evaporation of the electrolyte. If the solution is below the top of the plates, replenish it with distilled water. Never use anything but distilled water which can be obtained from any drug store or garage. Do not fill the cell to overflowing; the level should be about  $\frac{1}{8}$  to  $\frac{1}{4}$  inch above the plates. Never add acid to the solution and don't go probing down in the cell with a screw-driver, as damage to the plates is more than likely to result.

When recharging the battery be sure to remove the caps, to permit a free escape of gases generated. When the battery is bubbling freely it is a sign that the battery is being charged.

When putting the battery away always make sure that it is fully charged and avoid the sulphation of the plates and utter ruin of the battery, which is the result of the reaction of the electrolyte on the plates when the battery is run down.

Most of the Radio batteries sold today carry a guarantee of about 18 months. The actual life of the battery is usually more than double the guarantee. These are just a few hints in the upkeep of the A battery.

### B Battery

The B battery is used to supply a high voltage to the plate of a vacuum tube. Although this voltage is high, the current is very small, the value being much less

than one ampere. Therefore a B battery will not run down as quickly as the A battery, which is used to light the tubes. At present two types of B batteries are on the market; one is the dry cell battery and the other is the storage battery. The dry cell battery, when run down, will have to be discarded, while with the storage battery it is only necessary to recharge it.

The batteries are made with two standard ratings, 22½ and 45 volts. When using a detector tube the smaller battery is sufficient to supply the plate voltage required, which is usually between 16 and 22½ volts. For an amplifier, a voltage of 45 volts and above is necessary. Higher voltages than 45 volts are obtained by connecting two or more batteries in series until the desired voltage is reached.

B batteries are made up of several small cells connected in series. Each cell is a small battery, independent of the rest, but connected to the others. The cell consists of a zinc container filled with a powder soaked with a chemical solution. Inserted in the solution is a small carbon electrode. The carbon is the positive terminal and the zinc container forms the negative terminal. After the cells have been connected together to form the desired voltage they are placed in a large container and then an insulating compound is poured over them to hold the group in place.

There are several ways of telling when the dry cell B battery has fallen below normal. Crackling noises will be heard in the telephones, the volume of the signals falls below par, the filament has to be burned brighter than usual and the grid will not oscillate. When these signs appear it is time to throw away the battery and procure a new one. Do not allow the batteries to stand near a radiator or heat of any kind. Heat quickens the chemical action in the battery and makes it deteriorate much faster.

### Storage B Battery

One of the most desirable forms of B battery is the storage battery. Two types are obtainable, the lead battery and the alkaline battery, both of which are very serviceable and will last for a period of years. The latter is not an acid battery and will be ruined if acid is poured into it.

A hydrometer is used to test the condition of charge in these batteries. A voltmeter connected across each cell is better. It requires about 15 hours of charging to bring the charge up to normal again and an overcharge will not cause any harm. Do not allow any of the acid or alkaline to run on anything, because chemical action will destroy the article. Do not allow the acid to reach your hands. The acid in the lead battery is sulphuric and the alkaline in the Edison battery is caustic soda.

Tubes wear out, but they do not need the attention required by the batteries. Some tubes will last for a year or more,

while others will go bad after a few months. They grow more and more feeble, until the signals fail to pass through them. This is evidenced by a gradual increase in the amount of current needed to operate them efficiently. Do not subject the tubes to more than their rated voltages and you will avoid most of the troubles that folks run into with tubes. Give the Radio set the same amount of consideration you would give your car and you will have first class Radio reception.

## Drilling Holes in Glass to Make Cabinet Panels

Drilling glass is a tedious job to say the least, although there are two methods in which it may be done. The first is by allowing hydrofluoric acid to "eat" its way through, and the second is the old-fashioned method of drilling with carbundum and turpentine.

In both cases the panel, after being cut to size, must be spotted with a glass-cutting tool for location of holes. Taking up the acid method first, some hydrofluoric acid must be obtained from the druggist, and great care must be used in its handling. It is sold in wooden or wax bottles; glass cannot be used as it will eat its way through. Next make a small mound of clay directly on the spot which is to be drilled and with a pencil make a small opening at the top the exact size of the hole it is desired to drill. A small quantity of the acid is now placed in this crater-like opening and allowed to stand, the length of time required, of course, depends upon the size of the hole and the thickness of the glass. If the glass is heavy it will be necessary to renew the acid, as it becomes weaker as it eats its way into the glass.

When using the drilling method, patience is surely a virtue; without it, cracked panels will be the reward. The materials required are a hand drill, a three-cornered file, and a small quantity of carbundum, and some turpentine, which can be obtained at any paint supply house.

The very tip end is broken off the three-cornered file, and the remaining length, which should not be longer than 3 inches,

is clamped in the hand drill and used the same as if drilling hard rubber. A light pressure is used and fairly high speed. Frequent applications can be made from the file point to that of a piece of pointed carbundum fastened in the same manner in the drill. As the drilling proceeds the pressure used must become lighter and lighter, as the glass is naturally weakened at the point of drilling. It is suggested that the constructor try drilling a hole or two in some scrap glass to get the "knack," before attempting the job on the glass it is desired to drill.—Eric E. Leibner, St. Louis, Mo.

## Pierced Diaphragm for Telephone

A modification for telephones is suggested by a French amateur, to bring about greater purity of tone. It is a good plan, he says, to pierce the vibrating diaphragm with a little hole—about one-tenth inch in diameter. By this, he claims, one gains a precision and clarity of tone not to be had otherwise. The idea has been applied both in wire telephony and in Radio, in both cases with great success.



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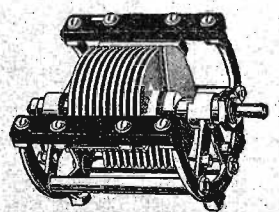
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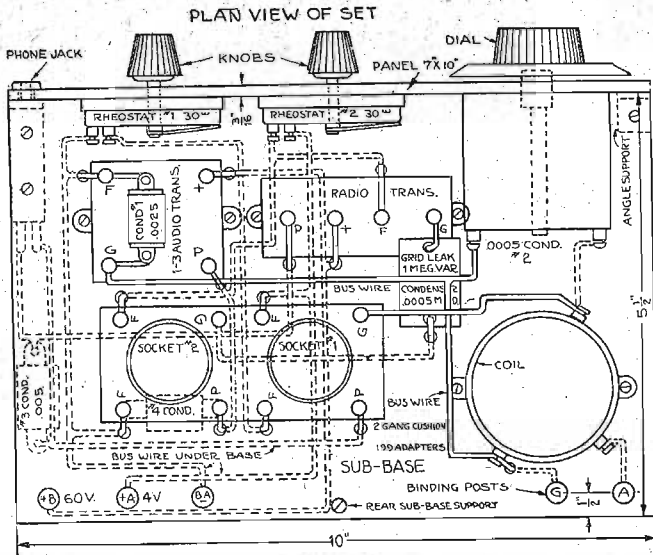


Figure 209

### THIRTY-MINUTE A-B-C

(Continued from page 7)

dom makes a convenient and neat layout. Sometimes a wood back base is used but a sub-base assembly is preferable. Then the parts can be mounted on a supporting base at the rear of the panel, while the filament circuit wiring, etc., can be carried underneath the sub-base. In checking the wiring, the beginner should have a colored pencil to trace off the diagram as the wiring progresses, and check connections from time to time. A telephone receiver in series with a battery can be used to connect various portions of the circuit completed to test through for connections, short circuits, or open connections.

#### Soldering

In soldering connections, a common fault is to "cold solder" joints. It is necessary to have the parts to be soldered clean and to use a well tinned hot iron, so that the solder flows and can hold the joined parts together. Do not use excess solder nor hold the iron so that drippings can drop on other parts of the wiring. Carefully wipe all joints with a rag to remove the excess flux, when the joint is

### NEUTRALIZING SUPER

(Continued from page 13)

the coil and that of the transformer on the outside.

This method of assembly gives a fixed negative feedback coil, adjustment of which is unnecessary, if the two do not fit to suit the builder, the easiest way is to "cut and try" until they do. Before mounting the feedback coil 3 turns should be taken off the secondary of the R. F. coil, as mentioned in the previous article. Note should be made of the fact that the Radio frequency transformer coils should be kept at least 5 inches apart to prevent any possible feedback action in the pre-detector amplifying stages.

(Next week Mr. Butterfield will give complete instructions for wiring this set, soldering hints and how to test the various circuits as you go along.—Editor's Note.)

completed. In soldering condensers, be careful not to over heat the terminals, as the tinfol may melt away in the condenser.

A good way to wire is to follow the methods observed in the best makes of commercial assembled sets. In following a printed instruction sheet, the exact parts specified may not be available, so it is well to note variations therefrom before marking drill holes.

Assemblies are sometimes made on wood bases, or tube boards but most outfits will be carried on or back of panels for use in cabinets. There are standard sizes, such as 7 by 18 inches, 7 by 12 inches, etc., which can be had all finished to size for use with standard sized cabinets. Two principal materials are hard rubber and bakelite fibre, and care must be taken in

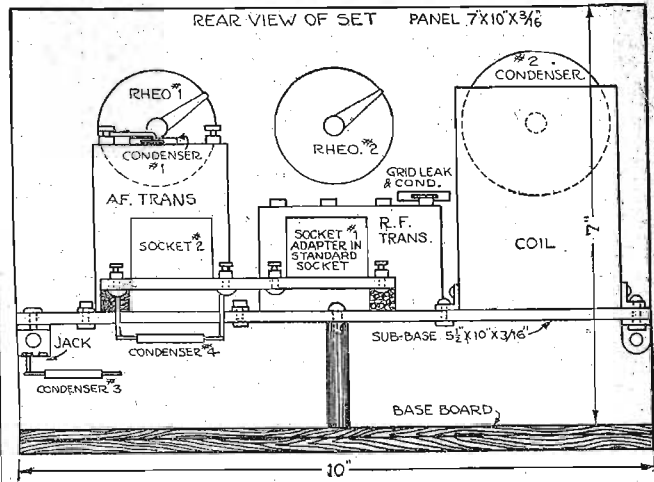


Figure 210

drilling not to "split through" as the hole is near the end of the bore.

#### Keep Tube Socket Clear

The tube socket should be mounted so that no connecting wires are likely to be touched when inserting the vacuum tube. Inductance coils should not be mounted too close to other parts, or over condensers. The general principle to follow is to keep separate circuits apart and insulated from each other. If you are building an outfit for the first time, it is advisable to tackle one for which the layout and instructions are rather complete instead of attempting to follow just a circuit diagram. One reason why so many homemade machines work nicely is that they are built as copies of carefully planned models.

Figures 207, 208, 209, 210 show, in

form which should now be clear, an example, "How to build a two tube reflex set."

(The next part of Mr. Edelman's series will be a comprehensive outline in adjustments and repairs, battery testing, tube testing and checking connections, Storage batteries and dry cell replacements.—Editor's Note.)



# Change in Single Circuit for DX Work

## Addition of Hard Tube Makes a Sensitive Set

The owner of a two tube single-circuit receiver may, by the addition of a hard tube, transform his set into a very sensitive and quiet DX receiver. The circuit

### 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, 50¢ rejected copy may be returned. The work must be entirely original, not copied.

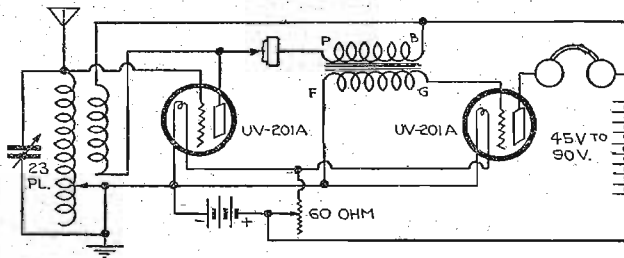
RADIO KINKS DEPARTMENT,  
Radio Digest,  
510 North Dearborn St., Chicago

is not at all susceptible to static and programs come in it which could not be heard satisfactorily on any two tube set. The changes are slight. The grid leak and condenser are removed, a crystal detector is added and the antenna condenser is connected in parallel. This combination was hit upon while experimenting with Radio frequency.

The circuit is shown herewith. A 13-plate condenser is optional across the rotor of the variocoupler. The leads to the rotor should be reversed if no signals are heard. Honeycomb coils may be substituted for the variocoupler. In a year and a half of continuous experimenting I have never made a set to equal this one. Benjamin Chew, Atlantic City, N. J.

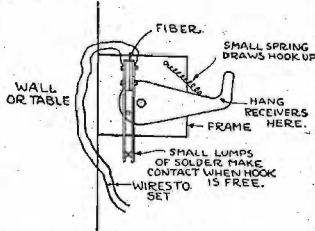
Many a set can be made to work wonderfully by reversing the tickler on plate variometer in the regenerative set.

## CRYSTAL DETECTOR IN RECEIVER



### Automatic Battery Switch

I have a receiving set and use a peanut tube but for some time I have noticed that my reception was getting weaker and weaker all the time until I decided to try a new A battery and then I really



knew the difference. I have always been careful to turn the rheostat off as far as it would go but it seems that a leak developed and became a constant drain on the A battery. It was either a case of buying new dry batteries often or devising some safeguard and I finally hit on

the idea shown in the illustration which has solved the problem for me. It also keeps the phones in place and they are not injured by a drop on the floor.

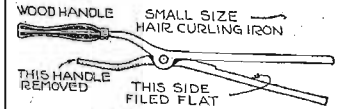
The illustration is self explanatory. The device consists of two brass strips which are insulated at one end where the connection is broken in one line where it comes from the battery. The opposite ends of the strips have lumps of solder for contact points. The hook for hanging the phones has a pin which comes between the strips. It is obvious that when the phones are taken down for use the current will be turned on the set automatically.—R. J. Hueke, Portland, Oregon.

### Battery Abuse

A wire placed from one terminal of a battery to the other gives the current a path without resistance and is what is called a short circuit. This is harmful to any battery, and if the wire is left on for more than a fraction of a second it may ruin the battery. Such heavy current discharging from a storage battery may cause enough heat to warp the plates, which practically means the end of the battery.

## Curling Iron Made Into Bus Wire Holding Tool

A small size hair-curling iron may be used for holding bus wire in close places while soldering. One handle is removed and the upper side of the round piece is



filed flat. It is quite evident how handy such a tool can be for the many close places where joints are to be soldered about a receiving set.—Dallas Lanning, Gilmore, Ohio.

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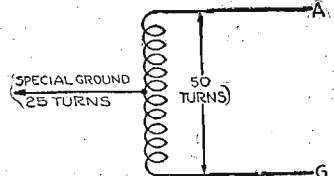
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# Questions and Answers

**Eliminates Power Line Buzz**  
(9607) JR. Chicago, Ill.  
In reply to Questions and Answers in the July 12 issue (9713) MR. St. Paul, Fla., the reader asked how to eliminate power line buzz or hum from his receivers.



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wire, and tap on the twenty-fifth turn. Connect across ground and aerial, then tune in station. After you get it in, change set ground to twenty-fifth tap or turn and the hum is gone.—Andrew Kostelnik, Jr., Louisville, Ky.

**Tube Efficiency**  
(9608) A.J. Newark, N. J.  
How can I get volume with my neodyne for use with loud speaker this summer? It is very dim now. How do you tell when tubes have served their useful life, and yet they still light?

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Acme R3, R4, R2, A2.....3.55  
**REFLEX SUPER PARTS**  
3 Intermediate, 1 Tuned Stage Transformer and Coupling Units.....\$16.90  
**HARKNESS REFLEX**  
All Parts Necessary.....\$25.00  
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2806a Locust St. ST. LOUIS, MO.  
Write for Agent's Confidential Price List. Always include Parcel. Post.

A.—An additional stage of audio frequency amplification, either transformer or push-pull method, will afford sufficient volume to operate a loud speaker if your neodyne circuit is functioning normally. The effectiveness of tubes can be determined only by comparison with those of known normal condition unless subjected to laboratory testing apparatus.

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The new 1924 Model F "The new Red-Head" Jr. \$6.50 Per Pair Complete \$5.00 Per Pair Complete  
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**THE NEWMAN-STERN COMPANY**  
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**Microphonic Tubes**  
(9106) OJB, Cleveland, Ohio.  
Please tell me what makes a set ring in the phones when I touch any part of the set or the table on which it rests?  
A.—The ringing in phones is due to vibration and can be overcome by mounting cabinet on soft rubber sponges and employing cushion sockets in the circuit.

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Isn't it about time to stop experimenting with multiple control circuits and build one that, combining ease of assembly and operation, loudness, clarity and selectivity of signals, as well as beautiful appearance, is excelled by none?  
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Embodies all the advantages of the well known Elgin Rechartz line set which was largely responsible for the popularity of this wonderful circuit and many others. It is much louder, more selective, requires no storage battery, and can be used with excellent results on a short or local aerial.  
It has brought in 210 England, and California stations two thousand miles from Elgin, clearly and without interference on a local speaker with only one tube, and that, while our powerful local station was broadcasting three miles away.  
Could you ask for more?  
Send 2-cent stamp for circular giving one, two and three tube setups of this remarkable circuit.  
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207 East Chicago Street ELGIN, ILLINOIS

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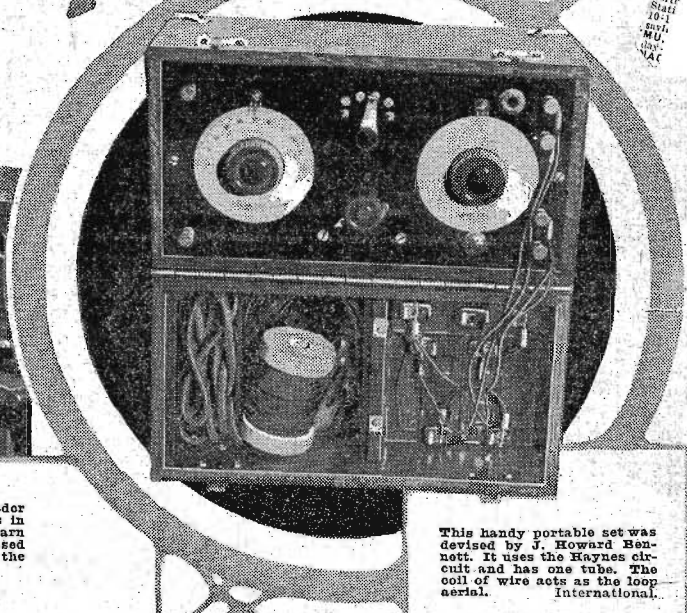


# Radio Illustrated

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S.M.A.C.



Mitzie Muffin, a social leader among Seattle chows, tunes in on her private Radio to learn why dog biscuits have increased in price and the reason for the shortage of rice.



This handy portable set was devised by J. Howard Bennett. It uses the Ekynes circuit and has one tube. The coil of wire acts as the loop aerial. International.



Estelle Taylor, a motion picture star, is shown enjoying her portable Radio set on the beach at Venice, California. The radiator of her automobile serves as an antenna. U. & U.