

New Facts on Underground Antenna System; Gold Cup Award Standings; Advance Programs for All the Large Stations; A-B-C-Lessons for Beginners

Radio Digest

PROGRAMS **Illustrated** TEN CENTS

EVERY WEEK

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

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SATURDAY, AUGUST 16, 1924

No. 6

WORLD FLIERS ON WBZ

UNITED FRUIT ASKS GOVERNMENT FOR HEARING OF CASE

WANT COMPLAINT AGAINST COMPANY DISMISSED

Comes As Surprise to Everyone Who Has Been in Close Touch With the Case

WASHINGTON, D. C.—Much to the surprise of everyone who has followed the Federal Trade commission's investigation of the alleged Radio monopoly, the commission has just announced that it has acceded to the request of the United Fruit company for a hearing on its motion to dismiss the complaint against it. The commission has set September 15, as the date for hearing the argument on this application for dismissal.

The announcement of the commission is of particular interest because it brings up the question as to whether or not this hearing will delay the whole Radio monopoly case until the commission decides this angle of it or whether the commission's experts will go ahead with the other angles of the investigation regardless of the United Fruit application.

The application of the United Fruit company does not set forth anything new, but is merely a reiteration of its answer to the commission laying particular stress on the fact that as soon as Radio apparatus was available it gave up its control in any Radio manufacturing company. So little was thought of the application of dismissal by the United Fruit company that the action of the commission in setting the hearing came as a great surprise to all of those both in and outside of the commission who have been in close touch with this Radio monopoly investigation. What the other companies in the alleged monopoly will say about this move is to be decided.



AVIATORS TO GIVE DETAILS OF LONG TRIP

Honorary Guests at Many Banquets to Be Held in Their Honor

Radio Will Follow Flight

BOSTON.—First-hand narration by the fliers themselves of the thrilling experiences encountered in the pioneer around-the-world air cruise will be flashed to the world at large via Radio-casting through the Herald-Traveler Westinghouse station, WBZ, when the daring pilots first land on American soil in the port at Boston.



Folks, meet the Aalbu sisters, Aileen and Vera. They are two of the most popular artists who appeared on programs from WJLQ, the Twin Cities station, now out of existence. Aileen plays the violin and Vera the piano. What instrument wouldn't sing for the Aalbu sisters, we ask?



Above, June Doiores Goethe, a mid-western prodigy, pianist extraordinary at Station WOAW.

Station KGO Received at Bottom of Deep Coal Mine

BELLINGHAM.—Members of the Washington Radio club, located in this city, picked up Station KGO, Oakland, California, from the fourth level of the Bellingham coal mine, 615 feet below the surface. The distance by air line was approximately 650 miles. Vancouver, CKCD, was also picked up; this station is located about fifty miles away. The set used was an eight tube super-heterodyne receiver with a 24-inch loop. On Oakland and Vancouver only one step of audio frequency amplification, which produced sufficient volume to work the loud speaker, was used.

Description of Fireworks Radiocast by Radio-Paris

PARIS.—Radio-Paris was "on the job" the fourteenth of July, the chief French holiday, celebrating the fall of the Bastille. Some interesting Radiocasting was accomplished. In the early morning the great review of troops was Radiocast from the stands at Longchamps. In the evening a microphone was taken to the studio of an artist in the Montmartre district on the very top of the big hill which overlooks the central part of the city. From this vantage point, the announcer reported the gorgeous effects of the fireworks all over the city.

Microphones connecting every point in the city to be visited by the intrepid aviators, will lead direct to the Hotel Brunswick control studio of Westinghouse WBZ, and will tell a waiting world for the first time of the hazardous adventure and anxious moments attending the initial encircling of the globe through the air. From the mouths of the aviators themselves will be Radiocast the colorful log of the flight that will soon add a new laurel to the many already held by the United States of America.

Will Describe Approach
Not alone will the experiences of the aviators be told by themselves after they make their landing at the port of Boston. (Continued on page 4)

No. 13 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..... (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:

DECIDED CHANGES IN GOLD CUP STANDING

WDAF IS IN THIRD PLACE; HIRED HAND IS FOURTH

With Only Three More Ballots to Come; Field of Nominees Still Increasing

The nominees are beginning to become uneasy as the end draws near. There are at present 62 candidates in the race, who have received a grand total of 23,296 votes. The Hay candidates are still holding their own. George Hay, WLS, being in first place and Bill Hay, KFKX, coming up a close second. Leo Fitzpatrick, WDAF, has jumped into third position, the Hired Hand, WBAP, moving into fourth.

Among the other announcers who have made big strides in the past week are John Daggett, KLL; Fred Smith, WLW; H. E. Ehrhart, WJAR; Lambdin Kay, WSB; Howard Milholland, KGO; and Otto Becker, WGR.

A letter has been received from Geneva, Switzerland, in regards to the Gold Cup race, which is creating quite some interest even in that distant country. With the letter was received the first ballot printed in the Radio Digest. This was cast for the Hired Hand, by the sender, who heard that noted personage last winter during a trip to this country.

Four or More for Bonus

Numerous people have sent in ballots totaling three in number, thinking that this gets their favorite announcer a bonus. This is not so. Only ballots totaling four or in multiples thereof get a bonus.

Only three more ballots will be printed. All ballots must be in the mail by September 8, at the latest, otherwise they will not be counted eligible. Now is the time to start mobilizing the votes, so that they can be sent in without any delay whatsoever.

The latest standing of the contestants who have at least fifty votes to their credit, is given below:

Name	Station	Votes
George Hay	WLS	4,138
Bill Hay	KFKX	3,619
Leo Fitzpatrick	WDAF	2,727
Hired Hand	WBAP	2,451
J. M. Witten	WOS	2,028
Jack Nelson	WGN	1,543
John Daggett	KHJ	1,443
S. W. Barnett	WOC	1,203
H. W. Arlin	KDKA	1,167
Fred Smith	WLW	1,002
Richard Haller	KGW	923
Gene Rouse	WOAW	870
H. E. Ehrhart	WJAR	846
Lambdin Kay	WSB	780
Kolin Hager	WGY	724
Graham McNamee	WDAF	676
Sen Kanev	WGN	615
E. W. Tyson	WWJ	479
W. A. Fay	WGY	382
Major Andrew White	WJZ	361
Major J. J. Fanning	WVAC	369
Emmer Johnson	WJAX	369
Milton Cross	WIZ	301
Miss V. A. L. Jones	KSD	291
J. T. Shilling	WBB	283
Paul Johnson	WLAG	280
Howard Milholland	KGO	269
Otto Becker	WGR	267
A. O. Cogneski	WGY	265
N. T. Grand	WHN	250
Paul Reese	KFI	250
C. R. Emery	WGI	243
S. L. Rothafel (Roxie)	WEAF	222
Jennings Pierce	KGO	206
C. A. Entekin	WCAH	206
Henry Field	KFNF	193
N. D. Cole	WHO	192

A. F. Edes	WBZ	182
F. A. Buhlert	KFJC	181
Eleanor Poehler	WLAG	175
Harold Selyer	WHAS	167
Chas H. Meester	WCBR	164
John Reilly	WJAR	158
F. W. Johnson	CHYC	147
Joseph Sartory	WCAE	153
Johnnie Mack	WJAS	152
C. D. Tomy	WCX	152
Chas. Erbstein	WTAS	147
A. R. Herske	WTAM	146
C. A. Gaal	KUO	145
Wm. Ludgate	KSD	140
J. Lewis Reid	WIZ	140
Victor Martin	WHAM	127
Wm. F. Holliday	WWJ	125
R. P. Falcon	PWX	121
Morgan Eastman	KYW	120
E. A. Greene	WSAJ	101
Walter Wilson	KYW	62
Gilson V. Willetts	WOC	53
John F. Patt	WDAF	56
John T. Griffin	WHAH	55
Carl Mentzer	WHAH	54

CONTENTS

Radio Digest, Illustrated, Volume X, Number 8, published Chicago, Illinois, August 16, 1924. Published weekly by Radio Digest Publishing Company, 510 North Dearborn Street, Chicago, Illinois. Subscription rates, yearly, Five Dollars; Foreign Postage One Dollar additional; single copies Ten Cents. Entered as second-class matter at the postoffice at Chicago, Illinois, under the Act of March 3, 1879.

"All the Live News of Radio".....	1 to 6
Presenting Pierce, EGO; Kay, WSB.....	5
Combination Radio Frequency and Regeneration, Part II—Construction of Coils and Circuit Diagram, by Brainard Foote.....	7
An Evening at Home with the Listener In, a chart to show when to listen in for your favorite station.....	8
Advance Programs for the Week at the Larger Stations.....	9 to 12
Thirty-Minute A-B-C Lessons for Radio Beginners, Chapter XX—How Far Can I Hear? By F. E. Edelman.....	13
Editorials; Ind-Gest; Condenser by Dielectric.....	14
Further Data on Underground Antenna System, Kind of Wire Most Essential for Best Results, by Edward T. Jones, I. R. E.....	15
Convenient Table, Chair and Tool Box, a Three-in-One Utility Piece.....	17
Questions and Answers.....	18
Radiophone Broadcasting Stations, Part II.....	19

Looking Ahead

How to Select a Receiver is the subject matter next week in the regular feature article by Mr. Edelman. You'll want to know how to choose a new set. Better read this next week.

Neutralizing the Super-Regenerator Circuit is an art worth knowing. A new author for the Digest, C. E. Butterfield, gives some valuable tips on this difficult work in the next issue.

Putting Up Aerial Stacks by R. J. Broussard next week gives some new wrinkles on antenna supports. A collapsible staff will interest you.

Spurting Into the Home Stretch are the entries in the Gold Cup Award race. Some startling changes may be expected next week. Remember, only three more ballots.

Take Radio Digest with You on Your Vacation

WHEN YOU WANT

Radio Digest

YOU WANT IT!

BE SURE OF YOUR WEEKLY COPY BY SUBSCRIBING NOW

New Nominations

Last week there were 56 announcers on the list who had at least 50 or more votes. This week we have 62, seven of which jumped from oblivion into the race. They are as follows:

Name	Station	Position
Johnnie Mack	WJAS	46th
C. D. Tomy	WCX	47th
R. P. Falcon	PWX	55th
Gilson V. Willetts	WOC	55th
John F. Patt	WDAF	60th
John T. Griffin	WHAH	61st
Carl Mentzer	WHAH	62nd

EUROPE'S LATEST; RADIO ON TRAINS

Germany and England Install Complete Equipment on All Long Distance Trains

LONDON.—Radio on the railways is attracting the attention of many European engineers and has met with no small amount of success.

In Germany, the Berlin-Hamburg line has installed an experimental transmission set on the trains running between these two cities. It works on the principal of wired Radio. The train carries a six-wire aerial running the length of two cars. The Radio waves jump the short space between the cars and the telegraph wires which parallel the track. Connections to these wires carry the messages to any telephone station called by the train. Excellent results have so far been gained. In England, also Radio service for trains is being developed. The train from London to Newcastle is equipped with a two way set, with which it works the stations of London, Birmingham and Bedford. The only time communications cannot be maintained is while going through tunnels. This train runs at a regular schedule of over 60 miles an hour.

Rare Ceremonies via Radio

LIVERPOOL.—No cathedral has been consecrated in England since the thirteenth century. Much interest attaches, therefore, to the fact that the whole continent of Europe will be able to hear the sacred ceremonies of consecration of Liverpool cathedral, one of the historic events of the ecclesiastical century which is about to be Radiocast in England.

HANSEN BIRD CAGE LINE



4-TUBE PORTABLE RECEIVER

\$92.50 COMPLETE



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

Here is the "NIGHTINGALE PORTABLE" in a case ready to walk away with. Take it with you on your Vacation, Auto Trip or to your Summer Camp or Home. When you come back with it, take it out of the case and use it as a Home Radio Receiving Set. It is complete in all details including aerial, batteries and collapsible loud speaker. It is only 18 1/2 x 12 1/2 inches in size and weighs 25 pounds. It is ready to operate when you get it and costs.....\$92.50
NIGHTINGALE—4-Tube Radio Receiver without accessories..... 32.50
MOCKING-BIRD—5-Tube Indoor-Loop Radio Receiver without accessories..... 90.00
Write for Literature

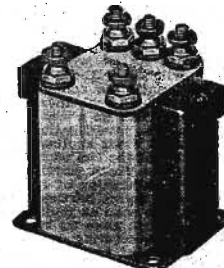
Dealers—A wonderfully attractive proposition
JOBBER—We want one responsible and active distributor in each state.

National Distributor



THE MILLION DOLLAR WAREHOUSE CO.
120-124 JEFFERSON ST. MILWAUKEE
DISTRICT DISTRIBUTORS
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Reins & Meiss Co., Cincinnati, Ohio
Penn. Nightingale Co., Ellwood, Pa.
Badger Radio Co., Milwaukee, Wis.
Phil. Gross Haw. Co., Milwaukee, Wis.
Goulding Mfg. Co., Milwaukee, Wis.

THORDARSON



POWER AMPLIFYING TRANSFORMERS

Price per pair, \$13.00

The new Thordarson Power Amplifying Transformers (push pull) are designed for use as third stage audio frequency amplifiers, to provide high power amplification for operating loud speaking devices.

With power amplification, not only is it possible to increase volume, but, since two tubes replace the usual one, the distortion and howling which usually accompany the overloading of a single tube on the third stage is done away with entirely.

The Thordarson Power Amplifying Transformers are well constructed electrically and are capable of indefinitely carrying the additional load without breaking down.

In total purity these transformers equal the Thordarson Super Audio Frequency transformer whose rich quality and even amplification has made it the popular transformer of the day.

THORDARSON

ELECT. MFG. CO.
500 W. Huron St. CHICAGO

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Name.....
Address.....
City..... State.....

DECIDED CHANGES IN RADIO REGULATIONS

AMATEUR'S BENEFIT MORE THAN COMMERCIAL

Four New Channels of Operation Added to Develop Various Short Wave Lengths

WASHINGTON, D. C.—The more than 15,000 amateur Radio operators of the country will no doubt be pleased at the amended regulations which have just been issued by the Radio section of the department of commerce. This is the first time that there have been any changes in the amateur Radio regulations since the last conference.

The high point in the new regulations is the fact that four new channels of operation have been added and the amateurs will be given an opportunity to develop the practical use of the short wave lengths. The new regulations as sent to the Radio supervisors is as follows: "Effective this date you are authorized to issue general and restricted amateur Radio station licenses to permit the use of any one or all of the following bands of short wave lengths: 75 to 80 meters, 40 to 43 meters, 20 to 22 meters, 4 to 5 meters, in addition to the band 150 to 200 meters, provided application is made by the owner of the station, which station must be prepared to use the wave length, or wave lengths, requested.

"The use of continuous wave telegraphy will be permitted on wave lengths other than 150 to 200 meters and the antenna circuit must not be directly coupled to the transmitting circuit.

"Silent hours will not be required of amateurs while using the wave lengths within the above bands except where the transmitting station is so situated as to produce objectionable interference with other services.

"Hereafter special amateur stations will not use wave lengths above 200 meters. They may be authorized to use the band of wave length from 105 to 110 meters in addition to wave lengths within the bands authorized for general restricted amateur use, where the special amateurs are engaged in conducting tests with government or commercial stations.

"General, restricted and special amateur stations will be permitted to use the entire band of wave lengths from 150 to 200 meters employing pure CW, sparks and modulated forms of transmission.

"It should be made clear to the amateurs that the authority granted above is necessary tentative because of the rapid development taking place in Radio communication and the bands of wave lengths authorized may be changed whenever in the opinion of the secretary of commerce such change is necessary."

WDAR Treats Fans to 18-Hole Golf Match

Followed Players from Hole to Hole With Microphone

PHILADELPHIA—Radiocasting an entire golf match recently was accomplished from Station WDAR, located here, and proved to be quite a novelty.

The match was between Max Marston, amateur golf champion 1924, and Jesse Sweester, amateur golf champion 1923, who paired off against Walter Hagen, British open champion and Joseph Kirkwood, professional and trick shot champion.

Frank McCracken, the well-known sports writer followed the contestants over the course with a microphone, describing, in his breezy style, each shot and play as it was made.

To accomplish this new feat in Radiocasting, the entire course over the Overbrook Golf club, where the match was played, was wired from one hole to the next. At each hole the microphone on the end of a loose extension was plugged into the circuit which led into the Green Hill Farms hotel at the end of the course.

OPERA TOO LONG, SO "JAZZ" IS RADIOCAST

PARIS.—Radio-Paris got behind schedule on two days recently and was forced to cut out the finales of both Faust and Tannhauser. A storm of protest was raised in the French press, although the action has its defendants also. The reason for the cut was that the operas began to overlap on the regular schedule for the "jazz" concert. And the French like to hear jazz.

PORTABLE SETS TOO PORTABLE; IS CLAIM

PARIS.—The advantages of a portable set have long been harped upon. Now the one great disadvantage of its portability is being discussed by French fans as a result of an incident at the Radio show here. A salesman who had been advertising his portable set left it under his desk one day while he walked out for a moment. Upon his return the set was gone.

STATION WLAG ENDS LONG CAREER ON AIR

IN HANDS OF RECEIVER; TO BE PUT ON MARKET

No Offers to Take It Over Have Been Received at the Present Time

MINNEAPOLIS.—Station WLAG, located in this city, is no more. Due to financial troubles, this station known as the Twin Cities Radio central, was forced to suspend operations recently.

The station which is the property of the Cutting & Washington Radio corporation, now in receivership, will be placed on the market by the receiver. Efforts to have some syndicate take over the station and operate it by popular subscription have failed, thereby necessitating this course.

Whether the station will be taken over and opened later by a new organization, or whether it will be dismantled, has not been determined as yet.

WLAG was opened September 4, 1922, and supported by Minneapolis firms. Its slogan, "The Call of the North," became nationally known. Later a reorganization was effected by which it became a Twin Cities station, supported by people in both this city and St. Paul. It established a number of enviable long distance records, and was one of the best known and best liked stations in the United States.

Radiophans in this neighborhood regret the passing of the station, and are looking forward to it opening again some time soon.

Presents Old Greek Play Without Change

First Time on Air; Written 2,500 Years Ago

GLASGOW.—When Sophocles wrote his famous Greek dramas nearly 2,500 years ago, he had no idea that they would be heard by anyone except the small world of Greek-speaking people. Yet he produced classics that the entire world is still reading with pleasure and studying for dramatic and literary ideas.

First his works went to the Romans because an improved method of warfare made these hardy people conquerors over the Greeks. Then the great Greek plays came westward to France, to Spain and England and north to Germany. In the course of centuries they floated across the great Atlantic with the early settlers of a new and unexplored country.

Today, in less than a second, they could circle the globe. In fact they have started to do that very thing, for the Radiocasting station at Glasgow has brought these famous dramas into the Radio world. The first play of Sophocles to appear through the microphone was "Antigone." Save for the choruses, which were especially written, not a line of the original was changed, save as necessitated by translation. The Radiocast was received warmly by the British Radio public and is expected to point the way toward a wide interest in the old Greek classics and their wider distribution over the Radio.

Whistling Unique Feature; Public Asked for Criticism

NEW YORK.—Station WHN, recently put across a novel feature from their studio on the Loew's State theater building. It was Charles L. Ragot, who has developed the faculty of controlling the voice and whistling simultaneously, enabling him to render duets by himself with two distinct melodies at the same time.

This unique feature on the part of Mr. Ragot, who is not a professional, invited students and scientists to investigate how it was done. No one could offer any explanation for this mysterious performance.

WHEN BEAUTY LISTENS IN



Miss Jane Winton, one of the Follies' most beautiful girls, recently was captured by a large movie concern, who signed her up for five years. This is probably the first time in the history of motion pictures that a beginner has received a contract for such a long term. Miss Winton is an ardent Radiophan, and always likes to listen in when not on the stage.

Station WHAZ Using Mostly Home Talent

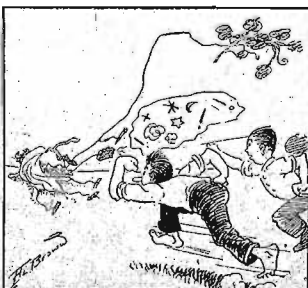
All Artists and Students Perform Without Compensation

TROY, N. Y.—The question, "Who is to Radiocast when the commercial returns wane?"—which is paramount to any such unpractical suggestion as "Who is to pay for Radiocasting?"—apparently has but one answer: College and public institutions, service, municipal and educational, including the newspapers.

One notable example of college Radio service, entertaining as well as instructional, and incidentally the first in the field of 500-watt stations, is the Rensselaer Polytechnic Institute at Troy, N. Y., whose Radiocasts from Station WHAZ have spanned the country and frequently far beyond for two years without any expectation of financial return.

Its very complete Radio equipment was the gift of the Roebings, the famous bridge builders; its operation for the benefit of the public, beside its very necessary uses in connection with the electrical engineering course, is maintained by this pioneer college of engineering, which will celebrate its centennial in October, and its entertainers, professional and amateur artists and students, contribute their talents for the pleasure and education of the Radio audience without compensation.

THE ANTENNA BROTHERS Spir L. and Lew P. One Strike—Out



STATION WOC HAS RECIPES PRINTED

"Daily Household Hints" Is Title of Popular Book Now on Sale

DAVENPORT, IOWA.—No doubt there are many women who listen in to the "Old Woman" at Station WOC, located in this city. Every morning at 10 a. m., the so-called "Old Woman," who is in reality Gilson Willets, Radiocasts the "Daily Household Hints."

Originating this schedule eight months ago, he has been the goat ever since. The public, it seems, does not want a woman to give these talks. This is something that Gilson Willets cannot understand, and anyone who knows the solution of this, will be doing him a big favor by telling him why.

His recipes have become so popular that they have been printed in book form. It is now possible to purchase this book from the Palmer school which owns this station. The title of the book is "Helpful Hints for Happy Homes."

It strikes Gilson Willets as being funny, that, being a Radio engineer, he should have drifted into such an incongruous job as telling women how to cook and clean their houses. And oftentimes when listening in to Miss Peterson at KFYW, he wonders how he gets away with it. Won't someone please tell him and relieve his mind?

Convict Wins Parole After Singing from Station WIP

PHILADELPHIA.—During a performance Radiocast recently from Station WIP, in this city, a person was introduced as C1412, who sang a ballad. It was received with such an ovation by the listeners in that they wanted to know who the singer was.

It was announced that he was a convict in the penitentiary, who had three years more to serve on a robbery charge. Among those who interested themselves in the convict was said to be Governor Ritchie of Maryland, who immediately asked that the singer be paroled. His request was granted.

The new Radiocasting station at Hull, England, will be inaugurated late in August. It will operate on a wave length of 306 meters, with call letters of 2HU.

WORLD FLIERS ON WBZ

(Continued from page 1)

but day by day as they approach Halifax and fly south along the Atlantic seaboard, the progress of their triumphant return will be told by periodic flashes from WBZ made possible through arrangements perfected with the intelligence department of the U. S. Army.

Immediately following the landing of the three ships in Boston Bay, Lieutenants Leigh Wade, Lowell Smith and Erik H. Nelson and their mechanics will proceed to their rooms in the Hotel Copley Plaza, where they will remain in seclusion to everyone but the Radio audience, who will hear their splashing as they revel in their first American bath since they left Santa Monica March 17. For in their rooms will be microphones, placed there to minimize their fatigue, brought about by the long, monotonous hours spent flying thousands of feet above the billowy crests of the Atlantic ocean.

To Radiocast Banquets

Three days will be spent in Boston while the pontoons are removed from the planes and wheels substituted for landing gear. The meanwhile, as the brave airmen are feted at public gatherings and banquets, Westinghouse WBZ pick-ups will continue to keep the public informed of the elaborate activities now planned. One of these will be the banquet in honor of the around-the-world fliers to be tendered them by the combined Aeronautical Societies of New England.

At this dinner, now marked as the first official welcome of the globe encirclers, Lieutenant Lowell H. Smith, flight commander, will recount the more adventuresome phases of the travel through the air over the Pacific ocean, Asia, Europe, Iceland and the Atlantic ocean. This event, to be given at the Copley Plaza hotel, will be Radiocast in its entirety.

Will Follow Flight

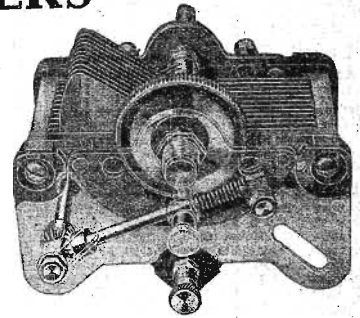
As soon as the aviators resume their flight across the United States to Sacramento, California, on the last leg of the transcontinental air voyage and with the realization of their mission just ahead, descriptive Radiocasts from the Herald-Traveler Westinghouse station WBZ will route the progress of the air cruisers as far as is possible by keeping in close communication with the fliers. In this way the Radio public of the entire nation will be enabled to follow closely the itinerary of the globe encirclers after they have hopped off from Boston on their flight to Mitchell field, New York.

A Whirlwind Success!
AMERICAN BRAND CONDENSERS

These Condensers are now ready for you. Jobbers and dealers everywhere should have them to fill the public demand.

American Brand Condensers are made with the highest ratio geared adjustment ever developed on variable condensers. They are without question the **Lowest Loss** condensers available today. Their price is no higher than the price of ordinary condensers.

Please ask your dealer to show you this condenser—if he can't do so, write us for a descriptive folder and send us your dealer's name.

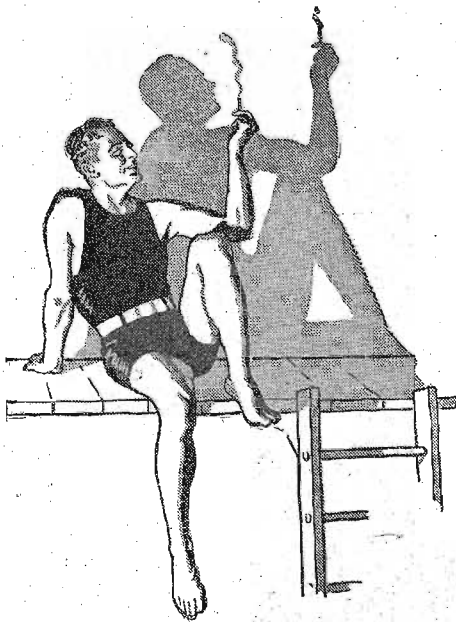


with the **100 to 1**
Worm Drive
23 Plate, only \$5.00

Note to Dealer: If your jobber can't supply you, write us.

AMERICAN BRAND CORPORATION,
8 West Park St., Newark, N. J.
FACTORY: PHILADELPHIA

"What a whale of a difference just a few cents make!"

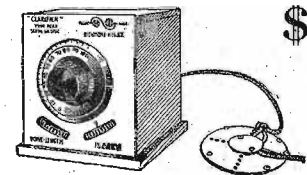


—all the difference between just an ordinary cigarette and—**FATIMA**, the most skillful blend in cigarette history.



The GREBE CLARIFIER

THE first practical, workable solution of the problem of radiation from regenerative receivers. Unlike the "wave-trap" it increases signal intensity.



\$30

- Increases Selectivity
- Increases Signal Intensity
- Improves Quality
- Prevents Radiation

And—

Is Easily Connected

Ask your dealer or write for literature.

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PRESENTING PIERCE, KGO; KAY, WSB

Jennings Pierce, KGO
BAKERSFIELD is the name of a city. It is the place in California where Jennings Pierce, announcer at KGO, the General Electric Pacific coast station, was born twenty-six years ago.

There is small wonder that the boy took to dry farming. But a desert ranch is a stubborn thing, and young Pierce determined to educate himself in the art of making a dry ranch yield interest on the investment. He graduated from the University of California and became an expert in the department of agriculture.

Not long ago Mrs. Pierce, who got interested in the statistics of dry farming at the University of California and later was won over by the man behind the statistics, called him on the phone at the studio of KGO and said:

"Is it going to rain today, dear?" (they had never married then about three months). "I want Yokohama to hang out the clothes."

Jennings looked up the weather report which had just arrived from the bureau, ran his eager eye down the interesting columns and replied: "No, Gearest, no rain today."

"Well, in about half an hour it was pouring. The phone rang again on the desk of Pierce at KGO, this time with a zing—the operator catching the spirit of the little lady who called. The rest of it will be left for your imagination.

Is it strange that a man so interested in dry farming should find his life's work all laid out for him by Providence as an announcer at KGO, known to thousands as "JP," reading the stock market reports, weather reports, agricultural reports and news items?

Not long ago a listener wrote: "For heaven's sake, get off the air! I've had enough about hogs, steers, hay and Pennsylvania fours. Give me jazz music." But in the same mail another letter carried this information: "Your report on the live stock market last week saved me the price of a receiver. Thanks, old boy. My wife is sending you a cake."

Lambdin Kay, WSB

DO YOU remember the little kid who was crying on this page last week, and we told you to watch who he was? Well, this is the baby himself.

He is WSB's "chief announcer," and likewise essays the chores of director, editor, booking agent, impressario, reporter, handshaker extraordinary, and so on. The composite literary larceny proceeds something like this:

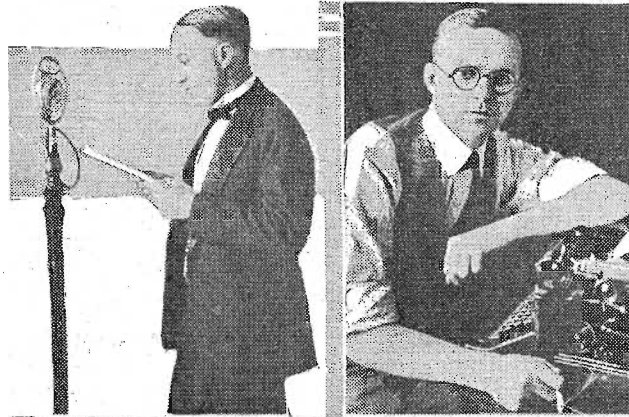
Age: 31—at least. Height: Inconsiderable. Appearance: Deceiving. Hair: Red, and fading (numerically). Condition of servitude: Single. Habits: Irregular. Hobby: Tucking bow necktie inside collar. Weakness: Poetry—trying to write it. Politics: Nil. Religion: Trace (Episcopalian). Ambition: Eight hours sleep. Ideal: Theodore Roosevelt. Aversions: English peas, O. O. McIntyre, cats, four-flushers, bridge-whist, "Love Sends a Little Gift of Roses." Preferences: Beef-steak, Charlie Chaplin, large blondes, Sherlock Holmes, golf. Record: (expurgated) cradle, school, college, stenog, sales manager, publisher, movie magnate, shoe polish peddler, news agent, cub reporter, "country" editor, laborer at a Radiocasting factory. Birthplace: (inhabited briefly during infancy) Brooklyn, N. Y. Ameliorating circumstances: Mother a Texan, father a Missourian, raised mainly in Georgia.

Thought up "The Voice of the South" as world's first radio program, likewise three-note chime as first identification signal; likewise WSB 10:45 Radiowis as first aerial fraternity.

Believe that an announcer is meant to be heard; that every solitary soul complimentary enough to tune in deserves to hear everything that's going on; that the Radio public owns the air regardless of the government. Radiocasters or dots-and-dashers; that a station that can't or doesn't regard the rights of a majority of its listeners should be legally dynamited; that an orator who clutters the ether with words for more than four minutes should then be strangled violently enough for the audience to hear his death-gurgles; that the audience likes anything from banjo-picking to grand opera if it's good; that being welcomed by your home circle is worth tons of mail from South Africa; that the human race is a fine institution; that a Radiocasting station's opportunity and obligation as a public servant are an awesome thing; and that running one is more work and more fun than any other job on earth.

Radio for Aviation Fields

BERLIN.—A law has been passed in Germany calling for the installation of a Radio set on every aviation landing field. The set must be capable of receiving meteorological bulletins from all parts of Europe and of communicating with all passenger planes while in the air.



Above are shown two well-known announcers. On the left is Jennings Pierce, KGO, who tells the Radiophans on the Pacific coast just what the weather will be, also the price of haws! To the right, is the one and only Lambdin Kay, WSB, who has a past that reads like fiction, and when it comes to announcing—well just listen to him sometime, and you will see why we talk this way.

Political Parties Are Committed to Radio

Feel That People Have Secured Insight Into Politics

WASHINGTON, D. C.—It is apparent that the Republican National committee is committed to the use of the Radio from recent statements made by William M. Butler, chairman of the committee.

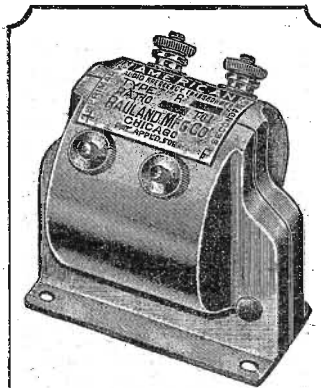
"There is no denying that the general Radiocasting of the Democratic and Republican conventions has given the people of the country a more direct interest in the campaign than they have ever had before," said chairman Butler recently in discussing the use of the Radio.

"Millions of people through the Radio were able to sit at home and hear the wheels revolve themselves," continued Mr. Butler.

"They feel that they have secured an insight into the political activities which they have never enjoyed before and as a result there is more sober serious thinking of the campaign as something vitally connected with the prosperity of the nation rather than merely a contest for office between candidates.

"I think those of us who listened in must have had sober moments when from the convention halls the actual voices of the delegates came to our ears as well as the disturbances and interruptions."

The Favorite Transformer of ALL America



All-American Audio Frequency Transformers (illustrated) come in three ratios: 3:1, at \$4.50; 5:1 and 10:1, at \$4.75 each.

THE RADIO KEY BOOK

Just out—is the most valuable radio handbook you can own. It tells how to hear farther and better; all the most workable circuits are clearly diagrammed. Contains practical helps on getting best results from your radio set. Send 10c, coin or stamps.

HERE is the trim, compact instrument that has been endorsed by radio set builders everywhere. The standard audio frequency transformer on the better sets—the largest selling transformer in the world.

All-Americans Audio Transformers amplify faithfully all vocal and instrumental musical sounds, including natural overtones, from the deepest bass notes to the highest treble in the orchestra. Install All-Americans in your amplifying unit and notice the difference.

**Latest Features—
No "Freak" Designs**

All-Americans embody the newest and most approved methods of amplification. Our experts are constantly developing improvements, but no "freak" designs are found in All-Americans. Each improvement is thoroughly tested before adoption.

We guarantee each instrument to be electrically and mechanically perfect.

RAULAND MFG. CO., 2648 Coyne St., Chicago
 PIONEERS IN THE INDUSTRY



ALL-AMERICAN
 AMPLIFYING TRANSFORMERS
 Largest Selling Transformers in the World.

BRITISH REFUSE TO GRANT NEW LICENSE

WANT ALL REVENUE TO GO TO THE GOVERNMENT

No Settlement Possible Unless British Government Consents to Satisfy Australia's Demands

WASHINGTON, D. C.—The contract for the erection of a high power Radio station in Australia has been held up owing to the refusal of the British government to grant a license for the erection of a British station.

Last year the Amalgamated Wireless, Ltd., in which the Australian government is interested to the extent of being half owner of the shares, announced that a tender of the Marconi company of London had been accepted for the erection of a high power station in Australia at a cost of approximately \$1,000,000 with an understanding to erect corresponding stations in Great Britain and Canada.

The report reaching here states that the British authorities appear to regard Radio in the same light as postal and telegraph business and would apply the principal of the Postal union—that each government retain the revenues from postal business originating within its own country—to Radio traffic.

The contract between the Marconi company and the Amalgamated company, Ltd., stipulated that the revenue from the British and Australian station should be pooled and divided between the two countries. In the event of arrangements having to be made for Australian traffic to pass through a British Post Office control station, this arrangement for allocation of revenue would go by the board.

The report states that no change in the position can be made unless the British government either consents to allow a station for Australian traffic to be erected or afford such facilities under safeguards of revenue and traffic hours as would satisfy the requirements of Australia and the financial interests stated by the Australian government.

Radiophans in Canada continue to pay a \$1 license fee for their receiving sets. Fees for other sets have been raised. They are \$2.50 for amateur code transmitters, \$10 for amateur phone stations and \$10 for ship stations.

NOTED READER TO TALK ON POETRY

Author Believes Popularity of His Book Due to Radio Appeal

BUFFALO, N. Y.—A splendid example, as the pink-tea lecturers are fond of saying, of the power of Radio is shown in the fact that H. F. Tenny, author of "The Songs of the North" and frequent reader from WGR, located here, has such a drag with the Canadian audience of WGR, that Mr. Tenny was chosen to lecture and recite his own poems at the famous Muskoka Assembly, Lake Rosseau, Ont.

"The Songs of the North" was a first book, and a book of poems at that. Mr. Tenny himself admits that he believes a large share of the steady sale and popularity of the book is due to the appeal its contents have made on recitation to the Radio audience. It's appeal has been particularly strong in Canada for most of the poems are about Canada and French-Canadians. Hence, the insistent public demand at the Muskoka Assembly—the big Canadian Chautauqua—for the appearance of Mr. Tenny.

Reassignment of European Wave Lengths Necessary

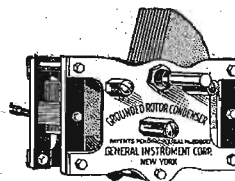
LONDON.—Assignment of wave lengths in Europe is beginning to be a serious problem. Every government seems to have the desire to have at least one long wave station. With the new English station at Chelmsford, of 25 kilowatts power, there will be several stations working on wave lengths around 1700 meters. Radio-Paris, the original one, is on 1760 meters. This was followed by Prague, Czecko-Slovakia, on about 1800 meters, and by Rome on 1800 meters. Radio-Madrid works a little lower than this. It is obvious that if many more stations crop up on these wave lengths, there will be serious interference. There is now no international agreement on wave lengths and Radio-casting times, and trouble in the European Radio world seems inevitable.

A. T. & T. Closes Station

IOLA, KAN.—Station KFID, located in this city and owned by Mr. Ross Arbuckle, has been compelled to close down by the A. T. & T. This station was operating on 30 watts output, but the pressure from King Telephone was too great, necessitating its shutdown.

Mr. Chairman—

They're off for the big presidential race! Hot stuff right off the bat from the biggest personalities in the country. And it's all yours if your set can play the game. Make sure by increasing its power with this rugged, highly polished, scientifically perfect condenser.



THE LOW LOSS GENERAL INSTRUMENT CORPORATION GROUNDED ROTOR CONDENSER

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.

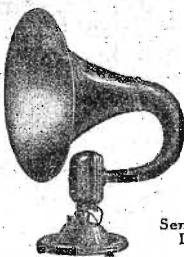
	Minimum	Maximum	
Type 46X 11 Plate	5 MMFD.	.00025 MFD.	\$4.50
Type 46A 13 Plate	6 MMFD.	.0003 MFD.	4.50
Type 46D 21 Plate	9 MMFD.	.0005 MFD.	5.00
Type 46E 43 Plate	15 MMFD.	.001 MFD.	5.50

AT YOUR DEALER

Otherwise send purchase price direct to us and you will be supplied.

GENERAL INSTRUMENT CORP.

423 Broome Street
NEW YORK CITY



Bristol Senior Audiophone Loud Speaker

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.

Price \$25.00

Ask for Bulletins Nos. 3011 and AY-3017

Made and Sold by


THE BRISTOL COMPANY

Waterbury


Connecticut




Bristol Baby Audiophone Loud Speaker



Filament Rheostat



No. 95 Vario-Coupler



Federal


Standard RADIO Products

THE Federal iron-clad performance guarantee does more than protect you from loss or disappointment when building your pet hook-up. It is a pledge of perfection which a manufacturer would not dare to give unless he had Federal's background of over a quarter-century experience in radio and kindred fields.


There are over 130 standard radio parts bearing the Federal iron-clad performance guarantee.

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

Boston New York Philadelphia Pittsburgh Chicago
San Francisco Bridgeburg, Canada



No. 65 Audio Transformer



Variable Condenser

Combination Radio Frequency and Regeneration

Part II—Construction of Coils and Circuit Diagram

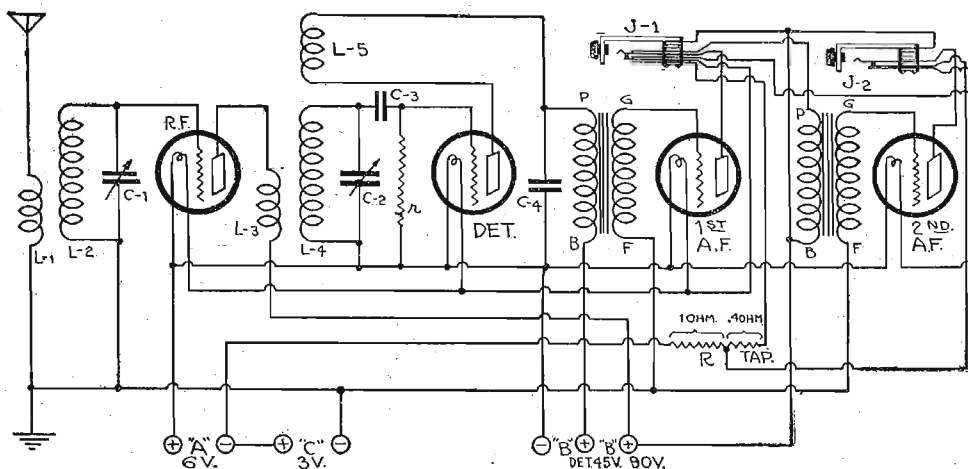
By Brainard Foote

THE use of such large wire is recommended for selectiveness. Its resistance is very low. Moreover, when wound, the coils will have a very fine appearance and will be very rugged. L-2 and L-4 are the main coils, each consisting of 83 turns. A narrow space should be left at each end of L-4, perhaps 1/8-inch and a similar space is left at one end of L-2. In L-2 is the upright coil, while L-4 is horizontal. L-1 consists of 20 turns of the same wire, wound into a ring or "doughnut" on a cylinder about 3 inches in diameter. The wires are then bunched and held together by two strips of bicycle tape. A length of stiff iron wire forms the shaft. This is bound once around the tape and passed through two holes in the tubing. If necessary, use fiber washers as friction bushings to maintain the coil in any desired position of coupling. Flexible leads form the connectors.

L-3 has 12 turns, wound in a similar manner to L-1, and mounted at the filament end of L-4. The circuit shows that L-1 and L-3 are both at the filament ends, however the picture in the first article of last week shows the coil at the right of L-4. The tickler coil, L-5, is also wound into a ring shape, and has 15 turns. Its length of iron wire, as the shaft, should be carefully put in place, and permitted to extend an inch or two at one side of the tubing of L-4. This is for attachment to the control shaft.

The Assembly

The coils are mounted at right angles to minimize inductive coupling between them. Place the coil L-4 so that the shaft for controlling the tickler, L-5, will fall right in the middle of the panel. The sub-panel is fastened to the frames of the jacks, which are mounted upside down, by three short 5-32 machine screws in each. These are clipped off after the nut is on in order not to interfere with the phone plug. After the sub-panel has been mounted to the jacks and the condensers and jacks fastened to the main panel, the two panels should be separated by removing the nuts holding the jacks, but leaving the condensers on the main panel. Then all the other parts may be



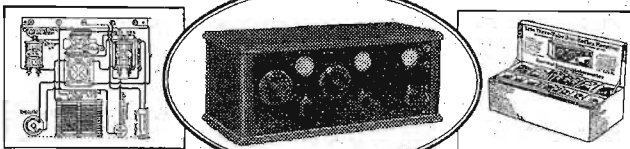
screwed in position, and the wiring commenced without hindrance from the large panel.

In wiring it is not necessary to make all the bends at right angles. This is only necessary for the sake of appearance, as it is much more simple to run the leads the shortest distance from point to point. The grid condenser, grid leak and by-pass condenser, C-4, are all mounted beneath the sub-panel. It is best to wire up the filament circuits first, and then to insert the tubes and try the control jacks and adjust the filament resistance coil of an old rheostat. Resistance R is this unit. When the phone plug is in jack, J-1, three tubes light and there will be 1/4-ampere flowing, since each tube requires 1/4-ampere. The correct filament

voltage for the tubes mentioned is 5 volts, and therefore the resistance must reduce the voltage to 5 and allow 1/4-ampere to flow. With the usual 6-volt battery (slightly above 6 as a rule), the resistance would have to cause a voltage drop of 1,

and at 1/4-ampere, the resistance should be about 1.4 ohms. If the resistance strip you use is from a 6-ohm rheostat, you would then require just slightly over one-fourth of it for the three tubes. Cut off (Continued on page 16)

Superior Erla Circuits Are Now Also Easiest to Build



Factory Sealed Parts Guarantee Perfect Results

TO the singular efficiency of Erla Duo-Reflex Circuits, tube for tube, the most powerful ever built, now is added maximum ease of construction.

Complete parts for each circuit, down to the last screw, nut and wire, are packed in factory sealed cartons that eliminate all difficulty and doubt in the purchase and assembly of proper materials.

Synchronizing reflex and audio transformers, tested capacity condensers, balanced crystals, every unit designed for the circuit in which it is to function—these positively assure success to the amateur builder.

And, as a final guarantee of accurate, flawless construction, there is also included a drilled and lettered panel, stenciled baseboard, giving the exact location of each piece of apparatus, and full-size blueprints that make child's play of wiring. Even soldering is eliminated, through Erla solderless connectors.

For surest enjoyment of all that radio affords, for purest tone quality, maximum selectivity and ease of control, as well as range and volume, ask your dealer about Erla knock-down receivers, in the factory sealed carton. Or write us direct, giving your dealer's name.

Electrical Research Laboratories

Dept. A 2500 Cottage Grove Ave., Chicago



Materially improved range and volume over the whole broadcasting waveband follow the installation of Erla reflex transformers. List, \$5



Providing greatly improved selectivity and simplified control in reflex circuits, Erla Selectoformer records material advancement. \$5 ea.

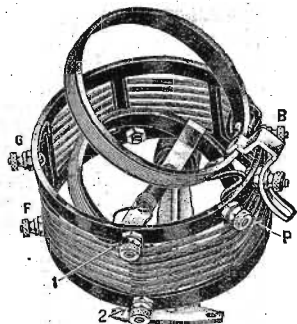


Unrivaled ability to meet the requirements of high resistance loud speakers gives first place to Erla push-pull audios. Pair \$10

ERLA

BREMER-TULLY

Leads Again



With a Real Low Loss TUNER

The tuner which gives results heretofore impossible.

This is the original B-T product, the first "tuner," improved with new B-T method of inductance winding and New adjustable untuned primary.

LOW DIELECTRIC LOSSES
Windings are supported with the least possible insulation (approved by Bureau of Standards).

ADJUSTABLE UNTUNED PRIMARY
meets the great problem of the past—that of adapting a tuner to the various types of antennae circuit requirements and local receiving conditions.

Go to your dealer and examine this remarkable new tuner.

"Better Tuning" (now in its 6th edition), tells you why and shows you how—complete instructions and diagrams for progressive construction from Crystal to Reflex and Radio Frequency circuits. Mailed on receipt of ten cents. Not a technical book but a book of Technique.

BREMER-TULLY MFG. CO.

532 S. CANAL ST.

CHICAGO

Adjustments permit greater selectivity or increased signal strength as desired.

A new support, providing either base or panel mounting. Single hole mounting can be used if desired.

A new adjustable, lubricated cone bearing. Pigtail connection. Binding post connections with tinned soldering lugs.

Adaptable for any circuit requiring a tuner.

Two types—for Broadcasting—200-565 meters.

—for short wave work—50-160 meters.

PRICE \$5.00

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

Station and City	Met.	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
CFRN, Calgary, Alta.	440	Silent	12:30-1:30	Silent	Silent	Silent	11:00-1:00	Silent
CFYC, Montreal, Que.	441	Silent	6:30-7:30	Silent	Silent	Silent	6:30	Silent
CKAC, Montreal, Que.	425	Silent	5:30-9:30	Silent	6:30-9:30	Silent	5:30-9:30	2:30-3:30
CKCD, Vancouver, B. C.	410	10:30-11:30	10:30-11:30	10:30-11:30	10:30-11:30	10:30-11:30	10:30-11:30	2:30
CKY, Winnipeg, Man.	450	Silent	8:15-10:00	Silent	8:15-10:00	Silent	8:15-10:00	7:00-8:30
CNRQ, Ottawa, Que.	370	Silent	9:00-11:00	Silent	9:00-11:00	Silent	9:00-11:00	8:00
CTB, Mexico City, Mex.	370	Silent	9:00-11:00	Silent	9:00-11:00	Silent	9:00-11:00	8:30-9:00
CYL, Mexico City, Mex.	510	Silent	10:00-11:30	Silent	Silent	10:00-11:30	Silent	Silent
CFX, Mexico City, Mex.	330	9:00-12:00	10:00-12:00	10:00-12:00	10:00-12:00	10:00-12:00	10:00-12:00	8:45-9:00
KDKA, E. Pittsburgh, Pa.	328	5:30-8:30	5:30-10:00	5:30-8:00	5:30-10:00	5:30-8:00	5:30-8:00	6:30-7:30
KFAF, Denver, Colo.	300	9:00-10:00	9:00-10:30	Silent	8:30-9:15	9:00-10:00	9:00-10:30	Silent
KFGZ, Berrien Springs, Mich.	256	7:45-9:00	Silent	Silent	Silent	9:00-10:00	Silent	7:45-9:00
KFI, Los Angeles, Calif.	469	8:45-10:00	8:45-10:00	Silent	8:45-10:00	Silent	Silent	8:45-10:00
KFKX, Hastings, Neb.	341	9:30-11:00	Silent	Silent	9:30-11:00	Silent	Silent	Silent
KFNH, Shenandoah, Ia.	266	Silent	7:30-9:00	7:30-9:00	7:30-9:00	7:30-9:00	7:30-9:00	6:30-7:30
KFOA, Seattle, Wash.	455	10:30-11:30	Silent	10:30-11:30	Silent	10:30-11:30	Silent	Silent
KFPT, Salt Lake City, Utah	263	10:00-11:00	Silent	10:00-11:00	Silent	10:00-11:00	Silent	Silent
KGO, Oakland, Calif.	412	10:00-11:00	10:00-3:00	Silent	10:00-11:00	10:00-11:00	10:00-3:00	Silent
KGU, Honolulu, Hawaii.	300	12:00-1:30	12:00-1:30	12:00-1:30	12:00-1:30	12:00-1:30	12:00-1:30	12:00-1:30
KGW, Portland, Ore.	493	10:00-12:00	10:00-12:00	10:00-1:00	10:00-1:00	10:00-1:00	10:00-1:00	Silent
KIL, Los Angeles, Calif.	328	5:30-8:30	5:30-10:00	5:30-8:00	5:30-10:00	5:30-8:00	5:30-8:00	6:30-7:30
KIX, Oakland, Calif.	509	10:00-12:00	Silent	10:00-12:00	Silent	10:00-12:00	Silent	Silent
KPO, San Francisco, Calif.	423	10:00-1:00	10:00-1:00	10:00-12:00	10:00-1:00	Silent	Silent	10:30-12:00
KSD, St. Louis, Mo.	540	7:00-12:00	Silent	8:00-9:00	Silent	8:30-9:30	Silent	Silent
KYW, Chicago, Ill.	330	7:30-9:00	7:30-10:00	7:30-10:00	7:30-10:00	7:30-10:00	7:30-9:30	Silent
NAA, Radio, Va.	435	5:45-7:30	6:05-7:20	6:25-7:40	5:45-7:40	7:05-7:40	Silent	Silent
PWX, Havana, Cuba.	400	Silent	Silent	7:30-10:00	Silent	Silent	7:30-10:00	Silent
WBAA, Columbus, O.	423	Silent	7:00-9:00	Silent	Silent	7:00-9:00	Silent	Silent
WBDR, Station City, N.Y.	423	6:00-7:00	6:00-7:00	6:00-7:00	6:00-7:00	6:00-7:00	6:00-7:00	7:10-8:30
WBT, Charlotte, N.C.	360	Silent	7:30-8:30	Silent	7:30-8:30	Silent	Silent	6:30-8:30
WBZ, Springfield, Mass.	337	5:00-8:00	5:00-8:00	5:00-8:00	5:00-8:00	5:00-8:00	5:00-8:00	7:00-8:30
WCAE, Pittsburgh, Pa.	402	7:30-10:00	Silent	7:30-8:30	Silent	7:30-8:30	Silent	7:30-8:30
WCAJ, Univ. Place, Neb.	328	7:00-8:00	7:00-8:00	Silent	Silent	7:00-8:00	Silent	Silent
WCAW, Washington, D.C.	469	7:00-8:00	Silent	6:45-8:45	Silent	6:40-7:00	Silent	6:20-9:00
WCBD, Zion, Ill.	342	7:00-9:15	Silent	Silent	7:00-9:15	Silent	Silent	1:30-3:00
WCX, Detroit, Mich.	417	7:30-9:00	7:30-9:00	7:30-9:00	7:30-9:00	7:30-9:00	7:30-9:00	6:30-8:00
WDAF, Kansas City, Mo.	390	8:00-1:00	1:45-1:00	8:00-1:00	1:45-1:00	8:00-1:00	1:45-1:00	4:00-5:00
WDAR, Philadelphia, Pa.	395	5:30-9:00	5:30-6:30	5:30-9:00	5:30-6:30	5:30-9:00	5:30-6:30	Silent
WEAF, New York, N.Y.	492	6:00-8:00	6:00-8:00	6:00-8:00	6:00-10:00	6:00-8:00	6:00-10:00	Silent
WEH, Chicago, Ill.	330	8:00-10:00	8:00-10:00	8:00-10:00	8:00-10:00	8:00-10:00	8:00-10:00	6:00-8:00
WEAY, Houston, Texas.	369	10:00-12:00	10:00-12:00	10:00-12:00	10:00-12:00	8:00-12:00	8:00-12:00	10:00-10:45
WFAA, Dallas, Tex.	478	8:00-12:00	8:00-12:00	8:00-12:00	8:00-12:00	8:00-12:00	8:00-12:00	6:00-11:40
WFL, Philadelphia, Pa.	395	Silent	6:00-10:00	Silent	6:00-7:30	Silent	6:00-7:30	6:30-8:00
WGL, Meford, N.Y.	380	8:00-10:00	8:00-8:00	8:00-8:00	8:00-8:00	8:00-8:00	8:00-8:00	6:30-8:00
WGN, Chicago, Ill.	260	7:30-10:30	7:30-10:30	7:30-10:30	7:30-10:30	7:30-10:30	7:30-10:30	8:15-9:00
WGR, Buffalo, N.Y.	319	5:30-11:00	5:30-6:30	5:30-11:00	5:30-6:30	5:30-11:00	5:30-6:30	6:00-4:00
WGY, Schenectady, N.Y.	350	6:45-9:00	6:45-9:00	6:45-9:00	6:45-9:00	6:45-9:00	6:45-9:00	6:30-7:30
WHA, Madison, Wis.	380	7:50-8:50	Silent	7:50-8:50	Silent	7:50-8:50	Silent	Silent
WHAA, Iowa City, Ia.	454	Silent	8:00-9:00	Silent	Silent	Silent	Silent	9:00-9:30
WHAS, Louisville, Ky.	400	Silent	7:30-9:00	7:30-9:00	7:30-9:00	7:30-9:00	7:30-9:00	4:00-5:00
WHAZ, Troy, N.Y.	330	Silent	7:30-9:00	7:30-9:00	7:30-9:00	7:30-9:00	7:30-9:00	6:00-8:00
WHB, Kansas City, Mo.	411	7:00-8:00	8:00-11:00	7:00-8:00	8:00-11:00	7:00-8:00	8:00-11:00	8:00-10:00
WHN, New York, N.Y.	360	5:30-10:00	5:30-10:00	5:30-10:00	5:30-10:00	5:30-10:00	5:30-10:00	7:30-10:00
WHO, Des Moines, Ia.	320	7:30-9:00	Silent	7:30-9:00	Silent	7:30-9:00	Silent	7:30-9:00
WHP, Philadelphia, Pa.	390	6:00-7:00	6:00-7:00	6:00-7:00	6:00-7:00	6:00-7:00	6:00-7:00	6:00-7:00
WJAR, Providence, R.I.	360	6:00-7:00	6:00-7:00	6:00-7:00	6:00-7:00	6:00-7:00	6:00-7:00	6:00-7:00
WJAX, Pittsburgh, Pa.	285	6:30-9:00	6:30-9:00	6:30-9:00	6:30-9:00	6:30-9:00	6:30-9:00	6:30-9:00
WJL, Cleveland, O.	380	Silent	6:30-9:00	Silent	6:30-9:00	Silent	Silent	Silent
WJY, New York, N.Y.	405	5:45-7:00	Silent	5:45-7:00	Silent	5:45-7:00	Silent	6:15-8:45
WJZ, New York, N.Y.	455	5:00-9:30	5:00-9:30	5:00-9:30	5:00-9:30	5:00-9:30	5:00-9:30	5:00-9:30
WKAO, San Juan, P.R.	350	Silent	6:00-8:00	Silent	Silent	Silent	Silent	Silent
WLS, Chicago, Ill.	345	Silent	7:00-12:00	7:00-12:00	7:00-12:00	7:00-12:00	7:00-12:00	6:00-7:00
WLW, Cincinnati, O.	280	7:00-9:00	7:00-9:00	7:00-9:00	7:00-9:00	7:00-9:00	7:00-9:00	6:30-8:15
WMAQ, Chicago, Ill.	445	Silent	9:00-12:00	9:00-9:00	9:00-9:00	9:00-9:00	9:00-9:00	6:30-8:30
WMC, Memphis, Tenn.	500	5:30-9:30	5:30-12:00	Silent	5:30-9:30	5:30-12:00	5:30-9:30	Silent
WMD, Cincinnati, O.	300	Silent	8:00-8:00	8:00-8:00	8:00-8:00	8:00-8:00	8:00-8:00	Silent
WNAZ, Boston, Mass.	278	9:00-9:00	7:00-9:00	7:00-9:00	7:00-9:00	7:00-9:00	7:00-9:00	6:30-8:30
WOO, San Antonio, Texas.	355	Silent	9:30-10:30	Silent	7:30-8:30	Silent	Silent	9:30-10:30
WOAS, Omaha, Neb.	328	8:00-11:00	8:00-11:00	8:00-11:00	8:00-11:00	8:00-11:00	8:00-11:00	8:00-11:00
WOC, Des Moines, Ia.	480	8:00-9:00	8:00-9:00	8:00-9:00	8:00-9:00	8:00-9:00	8:00-9:00	8:00-9:00
WOO, Philadelphia, Pa.	500	5:30-9:00	Silent	5:30-9:00	Silent	5:30-9:00	Silent	5:30-9:00
WQ, Kansas City, Mo.	390	Silent	8:00-9:30	Silent	8:00-9:30	Silent	8:00-9:30	7:00-7:45
WOR, Newark, N.J.	405	4:15-9:00	4:15-9:00	4:15-9:00	4:15-9:00	4:15-9:00	4:15-9:00	Silent
WOS, Jefferson City, Mo.	441	8:00-9:30	Silent	8:00-9:30	Silent	8:00-9:30	Silent	7:30-8:30
WQJ, Chicago, Ill.	448	Silent	6:00-1:00	6:00-1:00	6:00-1:00	6:00-1:00	6:00-1:00	6:00-1:00
WRC, Washington, D.C.	489	Silent	4:15-10:00	Silent	4:15-10:00	Silent	4:15-10:00	Silent
WSD, Cincinnati, O.	300	9:00-11:00	6:00-8:00	Silent	9:00-11:00	Silent	7:00-9:00	2:00-3:00
WSB, Atlanta, Ga.	429	9:00-12:00	8:00-12:00	Silent	8:00-12:00	8:00-12:00	8:00-12:00	7:30-2:00
WST, Birmingham, Ala.	360	Silent	Silent	Silent	Silent	Silent	Silent	8:00-9:00
WTAM, Cleveland, O.	390	5:00-9:00	5:00-8:30	5:00-10:00	5:00-8:30	5:00-10:00	5:00-11:00	Silent
WTAS, Elgin, Ill.	280	7:30-11:30	7:30-12:30	7:30-12:30	7:30-12:30	7:30-12:30	7:30-12:30	7:30-12:30
WTAY, Oak Park, Ill.	283	Silent	5:45-8:45	5:45-8:45	5:45-8:45	5:45-8:45	5:45-8:45	Silent
WJ, Detroit, Mich.	517	7:30-8:30	7:30-8:30	7:30-8:30	7:30-11:00	7:30-8:30	6:00-7:30	6:30-7:30

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 the result. This table includes only the evening Radiocasts, and, on Sunday, the late afternoon program.

Radio Travels by Night
ITALY.—In a recent interview to the press, Senator Marconi, who has been making such remarkable tests of short wave Radio telephony between Poldhu, England and Australia, told his interviewers that it had been determined that these Radio waves were reasonable in Australia by crossing the half of the world in which it is night.

Another Station Shut Down
PEABODY, KAN.—The A. T. & T. has scored again! This time it has compelled Station KFNX in this city to stop Radiocasting programs immediately. According to the owners of this station, the demands by "King Telephone" were very reasonable; in fact, they were just the same as making the Radiocasting station a present.



Audio Amplification at a Popular Price

The volume and clearness of amplification of this HALF PRICE transformer is always a pleasant surprise to users. Many have written us that they prefer their 3 to 1 ratio Coto Specials to others selling at double the price.

Great for reflex circuits.
Type 4500..... **\$2.50**

If your dealer fails you, write us, giving his name and address, and list of Coto parts you need.

COTO-COIL CO.
87 Willard Ave., Providence, R. I.

BRANCH OFFICES:
Los Angeles, 329 Union League Bldg.; Minneapolis, 705 F. Darling; Big. Atlanta, C. P. Atkinson; Atlanta Trust Co. Bldg.; CANADA, Perkins Electric Co. Ltd., Montreal, Toronto, Winnipeg.

Testimony!

Never once has The Radio Shack failed to deliver the goods expected by our customers. Never once have we advertised any set or kit without FIRST making TESTS that we PUBLISH. Why not get for yourself the profitable BENEFITS of this Real Honesty in radio dealings? Send now for the FREE "TEST PROOFS" on the unmatched Portable Ambassador and Neurodyne described below. Write us, for your own good, today.

DE LUXE AMBASSADOR

Let The Radio Shack furnish you the PROOFS of hearing London, England on the synchronized De-Luxe 3-Tube Ambassador, the incomparable portable radio for the peak of ideal summer D X reception. Shipped all assembled ready to wire in an hour, just as picture shows. Send for the FREE "TEST PROOFS" and you will be truly amazed.

SET CONSISTS OF

- 1 DRILLED 7 x 10 Radiom Mahogany Panel, engraved in Gold.
- 1 Genuine Ambassador Master 3-Circuit Litzendrach Tuning Coil.
- 1 Genuine Comco Bakelite-End Condenser.
- 1 Triploid Mounting Sinker.
- 1 Premier Hegehog Audio Transformers.
- 1 Brunswick Under-slung Foundation Brackets.
- 1 Brunswick Jacks with Gold-Plated Binding Posts for 1 for phones; 1 for loud speaker.
- 1 Freshman Mica Grid Condenser.
- 1 Standard Glass-Enclosed Grid Leak.
- 1 30-Ohm Shackton Bakelite Rheostats.
- 1 Moulded Mahogany Dial, grained to match panel.
- 1 Lengths Professional Round Bus-Bar.
- 1 Set of 7 Moulded Engraved Binding Posts completely mounted.
- 1 Special Blue Print for this circuit. Not ordinary hook-up, but in clear picture form child can understand and make. Assembled ready to wire, packed in handsome box, complete.

Only \$27.95 C. O. D. Send no money.



\$27.95 C.O.D.



Special Suit Case Cabinet

Space for set, "A" and "B" Batteries and Antenna. Covered with fine automobile leather. Fabricoid, reinforced genuine leather corners and handle, special convenient doors. A truly elegant high-class affair that you will delight to own. Additional—

\$12.00

ACCESSORIES

Everything needed to operate after building is listed here—

- 3 Type 201-A Tested Tubes.....\$11.70
- 1 60-Ampere Hour Storage Battery.....\$11.25
- 2 45-Volt Extra Large Enco "B" Batteries.....\$6.50
- 1 pr. 3000-ohm Head Phones and Cord.....\$3.75
- 1 Phone Plug, Double......90
- 1 Antenna Equipment.....1.50

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

SPLENDID CABINET FREE

Order Building Kit and Accessory Outfit together, and we will send Fine Mahogany Finish Cabinet FREE.

The DeLuxe NEURODYNE

SET CONSISTS OF

- 1 Drilled Mahogany Panel, polished mahogany effect, engraved in gold.
- 1 Four-Ind. Mahogany Dial, gold engraved.
- 1 Gold-Plated Jacks.
- 1 Genuine Hazeltine Neurodyne Transformers mounted on the famous Comco Bakelite End Condensers. Positive by the only Neurodyne Kit including them.
- 1 Hazeltine Neurodyne.
- 1 Heavy Bakelite Sockets.
- 1 30-ohm Rheostat with gold plated knob to match panel.
- 1 30-ohm Battery with gold plated knob to match panel.
- 1 Genuine Killark Completely Shielded Audio Transformers.
- 1 Engraved Bus-bar.
- 1 .0025 Freshman Grid Condenser.
- 1 Submer Glass Grid Leak.
- 1 Set Engraved Binding Posts.
- 1 .002 Micon Condenser.
- 1 .006 Micon Condenser.

Exact size special blue print and instructions. All packed in attractive box.

Complete Building Kit, \$34.49 C. O. D.



OPERATING OUTFIT

- 5 Tested Tubes (Type 201A).....\$19.50
- 2 45-Volt Extra Large Variable "B" Batteries for Neurodyne.....6.5

Tuesday, August 19

(Continued from page 11)

White Star Line Steamship orchestra: 10:30, Joseph C. Smith and his Mount Royal hotel roof garden dance orchestra.

KFSG, Los Angeles, Calif. (Pacific, 278), 3:30-4:50 p. m., auditions and program; 6:30-7:30, Gray studio concert and program.

KGO, Oakland, Calif. (Pacific, 312), 4-5:30 p. m., concert orchestra; Hotel St. Francis; 8, Arlon Trio; California Ladies' quartet; Claire Kinosh Upton, soprano; Laura Brudersick, soprano; Eva Grunzaker Atkinson, contralto; Ruth Waterman, contralto; Clara MacDonaid, double male quartet; 10-11 p. m., Henry Halstead and his dance orchestra.

KHJ, Los Angeles, Calif. (Pacific, 393), 12:30-1:15 p. m., concert; 4-5:30, Art Hickman's concert orchestra; 8-10:30, children's hour, American history, Prof. Walter Sprague; 10:30-11:30, The woman and Queen Titania; bedtime story, Uncle John; 8-10, do luxe concert; 10-11, Art Hickman's dance orchestra.

KYW, Chicago, Ill. (Central, Daylight, 506), 11:30 a. m., table talk, Mrs. Anna J. Peterson; 6:45 p. m., children's bedtime story; 7:30, summer concert; 8:30-9:30, hotel; 9-10, Chicago Musical college; 8:20-9:30, hotel; 9-10, American Farm Bureau federation; 11:15-12:30, Dining in Illinois; 8:30-9:30, Chicago Musical college; 11-12:30, "Home" program.

WBAV, Columbus, Ohio (Eastern, 423), 13 p. m., Ila Lorbach Owens, pianist; 8 p. m., Charley Mubley's dance orchestra.

WCAY, Milwaukee, Wis. (Central, 286), 10:30 p. m., recitate late program, Milwaukee Journal contest night; Zelma trio, Michael Savelish, baritone; Eino Lehtinen, tenor; Ross Bink, soprano; 11:30, midnight frolic.

WCX, Detroit, Mich. (Eastern, 517), 4:15 p. m., musical program; 6, dinner concert; 10, Red Apple club, Bud Penitler, Eddie Barnes, "Bernice" Will Collins, Norman White, Kings-Royal's Temple hallion orchestra.

WDAF, Kansas City, Mo. (Central, 411), 3:30-4:30 p. m., the Star's Radio trio; 5-5:30, weekly child talent program; 6-7, School of the Air, piano tuning in number on the Duo-Art; twelfth of a series of piano lessons; Mandelien Littlefield, piano; 7:30, Story lady; music; Carl Kober's Flanation players, Hotel Aluehbach; 11:45 p. m.-1 a. m., Nighthawk frolic; 11:45-12:30, "The Star's" piano tuning.

WDAF, Philadelphia, Pa. (Eastern, Daylight, 393), 11:45 a. m., daily ultimatum; 12:02 p. m., Stanley theater organ; 1-2, Arcadia cafe concert orchestra; 2, educational lectures, member Ohio state university faculty.

WFAA, Dallas Texas (Central, 478), 12:30-1 p. m., dancers; DeWitt McHenry, 3-5:30, "The Comedy" quartet; 11-12, Hedley Conner, violinist.

WEAF, New York, N. Y. (Eastern, Daylight, 482), 11:15 a. m., Grand of education; 11:30-1:30, "Motion Picture Music" Adelo Woodard; 4-4:15 p. m., Ralph H. Hudson, tenor; 5-5:30, children's program; 6:30, dinner music, Waldorf-Astoria hotel; 8-8:30, Gold Dust corporation; 8:45-9, Arthur Berch, pianist.

WEAL, Columbus, Ohio (Eastern, 380), 1:30-2 p. m., educational lectures, member Ohio state university faculty.

WFJ, Philadelphia, Pa. (Eastern, Daylight, 395), 1 p. m., Meyer Davis Bellerose Stratford concert orchestra; 3, "Columbia" Design Furniture; "Ear" L. Raymond, Caroline Hoffman; 7:30, Meyer Davis Bellerose Stratford orchestra; 7, Sunny Jim, the kiddies' pal, assisted by the Eldridge kiddies; 8, Park concert band.

WGR, Buffalo, N. Y. (Eastern, Daylight, 319), 12:30-1 p. m., George Albert Bonstead, organist; 6:30-7:30, dinner music.

WGY, Schenectady, N. Y. (Eastern, 398), 1 p. m., "The Keynote to Conservation—Preservation of Forests," Mrs. Edward C. Whitmyer; 6, Joseph A. Chiekone and his Clover club orchestra; 7:30, New York Philharmonic orchestra.

WHAA, Iowa City, Ia. (Central, 484), 8 p. m., Mrs.

William Mueller, violinist; Mrs. Louise Suenpel, pianist.

WJAS, Louisville, Ky. (Central, 400), 4-5 p. m., Dick Quinlan's Golden Derby orchestra; Alamo theater orchestra; 7:30-8, Zur Schmelde Harmony diggers.

WLB, Kansas City, Mo. (Central, 411), 8-9 p. m., varied musical program, Frank R. Marks' orchestra; 10:30-11:30, dance music, Marks, orchestra.

WLN, New York, N. Y. (Eastern, Daylight, 300), 2:15-3:30 p. m., Radiolastic overture and rhapsodies from Lower's State theater, N. Y. city; 3:45-4, Irving Miller, baritone; 4-4:15, boys' period; 5-5:30, Original St. Louis Rhythm Kings; 6:30-7:30, Paul Specht's Alamo dance orchestra; 9:30-10, Gus Strickland's Palladium Park orchestra; 10-10:30, Bertram J. Goodman concert orchestra; 11-11:15, Edw. B. Marks Music company; 11:30-12, Club Alamo revue.

WIP, Philadelphia, Pa. (Eastern, Daylight, 509), 10 p. m., seashore gossip; 10:10, Denmark MacFadden's health talks; 1:05, Karl Bonowitz, organist; 3 p. m., "What the wild waves are saying"; 3:30, Comfort's Philharmonic orchestra; 3:05, Henry Ehrensveller's concert orchestra; 7, Uncle Wip's bedtime stories; 8, Comfort's Philharmonic orchestra; 8-8:45, "What the wild waves are saying"; 8:50, Vessella's concert band; 10, Bob Leman's dance orchestra.

WJAX, Cleveland, Ohio (Eastern, 283), 7:30 p. m., program arranged by Cleveland News-Leader; E. G. Johnson, bedtime story; Dan Palmer, Radio talk concert; Cleveland male choir; Joe Smith-Martha Lee club orchestra.

WLV, Cincinnati, Ohio (Central, Daylight, 423), 10 p. m., Bernice Cummings-Gonsett Recording orchestra.

WMAQ, Chicago, Ill. (Central, Daylight, 475), 9 p. m., Chicago theater organ; 9:30, Hotel LaSalle orchestra; 8, Harry Jensen, Heavy editor; 8:30, travel talk; Clara E. Laughlin; 8:40, talk; 9, civil service talk; 9:15, music.

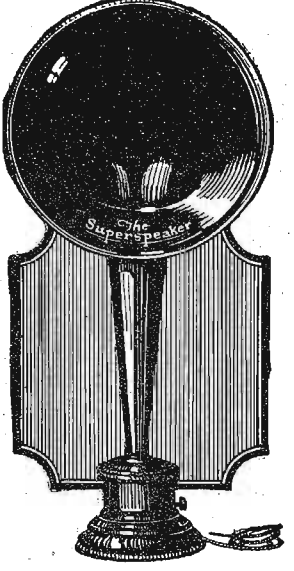
WOO, Philadelphia, Pa. (Eastern, Daylight, 509), 11 a. m., Mary E. Vogt, organist; 12:02 p. m., Wana-

Protecting Dry Cells
Enclosing a dry cell in a piece of inner tube will protect the cell and keep it

DRY CELL
INNER TUBE
WOODEN BASE

Don't make the error of connecting the plate batteries to the filament terminals—watch all battery connections.
Don't unscrew the caps from your receivers and tighten up the set screws with the diaphragm.

insulated as well. To do this right make a disk of wood the size of the dry cell and fasten one end of the rubber tube to the wood.—Potter Fueth, Los Angeles.



GIVE YOUR SET A REAL CHANCE

to show the tone and volume it can develop with this sensationally successful, long range reproducer! Exclusive micrometer adjustment means more stations, better values, real music. No extra batteries or coils—natural reproduction.

Superspeaker

Costs no more than others but yields results that can't be equalled—As fine in appearance as in performance—A big, substantial, well finished musical instrument—any dealer can be proud to stand back of it.

JEWETT RADIO & PHONOGRAPH COMPANY
5680 Twelfth Street
DETROIT MICHIGAN

Dealers Jobbers

The Walnart 1924-1925 proposition will be better than ever. Wonderful innovations. Hearter's advertising. Write for particulars today!

Walnart "Trouble-Proof" Radio Products include: Unbreakable unconditionally guaranteed tube sockets, "B" Battery and Inductance Switches, Variable Condensers (plain and vernier), Vernier Adjusters, Dials, Variable Grid Resistances, Lettered Binding Posts, etc.

Write for Literature.

"Makers of good goods only"
WALNART ELECTRIC MFG. CO.
Dept. 448 Chicago

Remember this mark and look for it. It is your GUARANTEE of reliable radio apparatus

Super Crystal
New Non-Metallic Housing Eliminates Scratches & Squealing

Wonderful new crystal—millions of sensitive spots—long life—no short circuit.

FITS ANY STANDARD DETECTOR
At your dealer—otherwise send purchase price and you will be supplied postpaid. Ask for redex circuit 120.

50 Cents
Chas. Freshman Co. Inc.
Radio Condenser Products
106 Seventh Avenue, New York City

ANTENELLA
Overcomes Static and Re-radiation!
No Outside Wires or Lightning Arresters Needed

Why pay \$10.00 or more to have an aerial spoil the appearance of your home? Antenella eliminates all unsightly wiring, lightning arresters, etc., and precludes the possibility of dangerous grounding on a power line. It also stops "canary bird" re-radiation from nearby oscillating sets interfering.

ANTENELLA is not only a real distance getter, but also overcomes troublesome static.

At your Dealer, otherwise send purchase price and you will be supplied postpaid.

Ask for Circular A-40

Chas. Freshman Co. Inc.
Radio Condenser Products
106 Seventh Ave., New York

after you get through experimenting get yourself a De Forest Radio.

DE FOREST RADIO TEL. & TEL. CO., Dept. R. D. 12, Jersey City, N. J.

A \$200,000.00 COMPANY STANDS SQUARELY BACK of EVERY PHONE

TOWER'S Scientific
WEIGHS ONLY 8 OZ.
\$2.95
Plus a few cents postage

SEND NO MONEY

Order by mail if your dealer cannot supply you and we will ship immediately. Written 5-day money back Guarantee with each set.

Our next year's production schedule of two million phones UNDOUBTEDLY places us at the

WORLDS GREATEST HEADSET VALUE

Five-Day Money-Back Guarantee If Not Fully Satisfied. We Guarantee the Scientific to be:

1. One of the finest phones on the market regardless of price.
2. The most comfortable—weight only 8 oz.
3. Perfect tone mates.
4. Made of standard double pole construction (no single pole nonsense to save expense).
5. Made of the best materials money can buy. Powerful magnets, genuine lined cords, aluminum cases.
6. Manufactured under ideal working conditions.

WORLDS LARGEST HEADSET MAKERS
THE TOWER MFG. CO.
98 BROOKLINE AVE. BOSTON MASS.

30 Minute A-B-C Lessons for Radio Beginners

Chapter XX—How Far Can I Hear?

By P. E. Edelman

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

- Chapter XXI—Choosing a Radio outfit.
- Chapter XXII—Making Your Own Radio.
- Chapter XXIII—Fixing Up the Radio Set.
- Chapter XXIV—The Radiocast Listener's Brief History.
- Chapter XXV—Home Radio.

A VERY popular question is "How far can I hear?" Much over-estimating is done on the subject. It depends on the receiving equipment used, the location, and transmitting conditions.

One thing noticed is that the range is greater at night time than during the day. Stations which are not heard during the day will be clearly picked up in the evening. The rays from the sun are thought to have an ionizing effect on the upper atmosphere so that there is more absorption of the radiating waves during the daytime.

There is a seasonal variation in reception. The winter months afford much better reception conditions than do the summer days. Part of this is due to the fact that less static comes to both winter reception. Radio can be enjoyed all the year around, and that is why conservative claims should be made for average range at all times rather than occasional records, even though such records can be repeated for many days when factors are favorable.

Reliable Range
Reliable range means how far an ordinary Radiocast program can be heard distinctly with tolerable minimum of interference, at any time. The extravagant claims for distance made for some sets are boiled down to a skeleton under such test.

A steel building or a room containing

metal lath will greatly cut down the distance range of the usual indoor aerial or loop receiver. Sometimes, moving a loop to an outside room or placing it near a window will make it possible to hear stations which the same equipment fails to pick up in another room in the same building. Expensive machines have been found unsatisfactory in certain large apartment buildings where the walls form a shielding cage. Sometimes a local elevator motor will cause much disturbance to clear reception.

A different condition exists near some mineral lands, and reception range is much cut down by such local conditions. The same is true for certain mountainous districts and in other instances nearby heavy foliage of trees is thought to absorb much of the incoming energy.

Distance Means Little in Radio
After all, distance means little in Radio. A few hundred or even thousand miles are traversed by a Radio impulse in such a tiny fraction of one second that the difference of a few hundred miles makes little change in the traveling time. Ranges of 3,000 to 7,000 miles are sometimes attained.

There is a certain appeal in the novelty of hearing a distant station. The average listener wants to do this at times, to demonstrate the "powerful ability" of a set to friends, or occasionally to hear a particular Radiocast program. Many old time listeners get the point of view that it is a game to see who can hear the most stations or the greatest distance, but this is usually the viewpoint of the new listener. Others regard distance reception as no more noteworthy than hearing a phonograph re-creation of a voice from a singer, made years ago, with the singer, perhaps, departed. As regards distance reception, an experienced listener can say, "That is nothing much. It has been done before, you know, and over greater distances."

Logging
There is a certain interest in logging stations which does much to increase a broadening attitude of mind and acquaintance with geographical centers, local customs, and even variations in language used by different sections of the

country. Logging means writing down the call letter of the station heard, the time, and the adjustment of the receiving set used. A convenient chart can be prepared or purchased, such as indicated by Figure 204. Many listeners find it interesting to compare the previous evening's log with a neighbors. A log also permits a chart to be made for setting the dials of a receiving outfit to bring in a certain station, provided that it is operating at the time. After much listening a certain station can be recognized by its announcer's voice or other typical distinguishing feature, without waiting for the call letters.

Radio fishing comprises more or less haphazard twisting of the tuning control dials in the hopes of getting a station not previously heard. Ever so often as conditions favor this a new station can be heard for the first time and some listeners derive much pleasure from such a catch.

Station	Time	Dial No.	Program
KDKA	8:20 p.m.	20 21	Music, clear
WGR	8:30 p.m.	21 21 1/2	Talk, O. K.
WOS	8:40 p.m.	33 34	Band, clear
KSD	9:00 p.m.	64 66	Singer, O.K.

Figure 204

Radiocast programs are taking some of the distance novelty from the long range receiving set owners and placing it with the sample crystal outfit owners. It depends on the viewpoint whether you regard the program or the means by which it is spread as the main thing. One thing about this "distance interest" is that many thousands of listeners stay at home and reach out for stations even into the wee small hours of the morning, to such extent that some lighting companies trace an increased consumption of lighting current thereto.

Favorable Operating Circumstances
For local Radiocasts up to fifteen miles, using earphones, a crystal set operated from an aerial will suffice. A one tube

set can operate with indoor aerial within this range, for earphone reception. One stage of audio amplification may be added and two stages will permit good volume on loud speaker. Radio amplification is not necessary unless one wishes to use a small-sized loop within this range. One stage of Radio amplification is sufficient to operate a loop within this range.

For reception within one to two hundred miles, using earphones, a one-tube set works best with outside aerial. Two stages of audio amplification will bring this within good loud speaking range. For indoor aerial or loop operation, one, and preferably, two stages of Radio amplification will be needed.

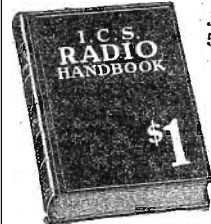
For average coast to coast range, using aerial, one stage of tuned Radio ahead of one tube set will suffice for earphone reception, though two stages will be better. Two stages of transformer coupled Radio amplification will be required. Audio amplification can be added as usual for loud speaker volume.

For average coast to coast range, using indoor aerial or loop, two or three good stages of Radio amplification are desirable to obtain loud speaker reproduction. Reflex combinations employing four tubes, Radio sets using six tubes, and outfits using eight or possibly ten tubes are also in this class. Foreign broadcast stations come in range of such outfits. The difference between indoor aerial or loop and outside aerial will commonly be equivalent to one stage of Radio amplification, so it is advisable to use aerial where such an aerial does not get too much other interference.

(Continued on page 16)

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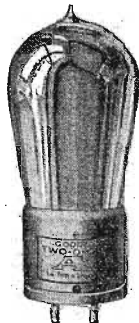
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Legislation and the Amateur

Few Lights on What the Amateur Has Done

BACK in 1912 when the amateur bill was passed the senators and not a few executives of the larger commercial companies winked at each other. At last it was thought that the amateur was placed where he belonged, and some of the wise ones believed he was quite a hopeless predicament indeed. Now, it should not be inferred that some of our worthy students of the art at that time, with their roaring 5 KW transformers, did not need to be squelched, but it is a fact that this legislation did encourage amateur experimentation along new lines.

Not in the least deterred by the use of the 200-meter wave as a possible avenue for long distance transmission, our worthy amateurs rolled up their sleeves and went into a long series of experiments that added tons and tons of literature to the art, to say nothing of the practical results achieved in transmitting on wave lengths that were at one time completely ignored by professional engineers. As a result of this experimentation which the amateurs were forced into, the 200-meter wave is today regarded as a commercial possibility, for our experiments have succeeded in getting messages in practically every corner of the world with it. They simply took that wave length out of the scrap heap of Radio refuse, brushed it off and did the impossible. Consequently the Alexander bill did nothing but allow our amateur fans to prove their ability as research workers.

The records of the Patent Office today stand as evidence that amateurs are born experimenters: the most ingenious and persevering type. We have only to mention men like De Forest, Armstrong and Reinartz to prove this beyond the shadow of doubt.

There are many other problems in Radio that could be overcome by the attention of the amateur, but, of course, as long as they are not moved to involuntary action as a body, it is doubtful if the sporadic experiments made by certain of their number will ever bring to them any deserving credit. It was the amateur who contributed to the processes of sharp tuning, and it was the amateur who really taught us how to make the most efficient use of the vacuum tube. He must also receive credit for having developed the lower wave lengths, and contributed to what little research that has been done in the cause of fading, but will we likewise be able to credit him in the future with new accomplishments along similar lines?

Weather Not Radio Fault

The Universe Still Controls Itself

SOMEbody, with more or less authority to speak, suggests that the unusual weather of this spring and summer may be attributed to the effects of Radio-casting. The idea furnishes text for much conversation and varies the stereotyped comment about the weather.

Our scientific adventurer this time does not offer us reasons why Radiocasting agitation of the air should produce rain rather than drought, winds rather than calm. He does not take into consideration the records of the weather bureau that we have had seasons as rainy and stormy as this.

And later in the year, if we should be afflicted with protracted dryness, would we still be justified in clinging to the faith that the rain and storms of May and June were created by too much Radio talk and wind-jamming?

If the Radio wave travels at 186,000 miles per second why should it slacken the speed to develop a rain cloud somewhere along the line, then too, why should one spot remain warm and another cold, the Radio wave travels in all directions? The fact still remains that all these new things developed have never changed the earth out of its orbit or cut off one single second in time for the year. All things were placed here for us to work out and there will be many things yet to be worked out by future generations and maybe Radio, as it is now, will look like a small thing, that cannot even change a raindrop, when we look upon it ten years hence.

RADIO INDI-GEST

"Ain't It the Truth?"

A wealth of pathos, endearment, passion, entreaty, in fact all of the human emotions can be emphasized in those four words. They also bring to mind that truly here is the 9th wonder of the world.

To make a short story longer. It was a dark and chilly night and having accumulated an earnest conviction "That our house was a barren waste without a Radio," an immediate canvass of the family was made, which showed one for and one against the motion, in summing up "She" said, "She would not have one of those squawky things in the house."

Ah! Well! that was six months ago. Since then—concerts and sopranos, sermons, the price of pigs, plays, static and conventions, anything and everything at will daytime or night, the wife is an expert.

How well I remember the joy and pride in personally making this set, it is a large one I think, I can almost remember what I put into it, of course I can see the dials at any time I want and occasionally I get brief glimpses of the lights through the peep-holes, and sh! listen! one time (when she ran over to the grocery) I got a hold of one of the dials and almost got a wheeze out of it myself before she got back. Well! maybe some time I'll get a chance. But about women again—when a woman says "no," does she mean "no?"
Answer: No! H. G. PAUER.

Mrs. Partington Speaks Out

Dear Indi: Mizz Partington says she's getting sort of "Huffy" at your artist, Mister Brown, and threatens a law suit, directly, for libel and defame-a-tion of character, account of her pictures in Indigest colyum of your paper, also says you had better watch out your own self or she may up and ast you to stop your old paper. She insists that Mr. Brown is awful ignorant if he don't know that all young widders generally keeps up to style or maybe a little ahead, and if he wasn't so smart he'd notice the pictures of Radio artists in your paper, or if he could visit her town once, he would mighty quick see that on the whole two blocks of Riverside avenue a young lady without bobbed hair is just as stylish as a horse and buggy. She wants Mr. Brown should know that more than one Delinicator comes to this postoffice, and even if they don't, why, there's a lot of stations keeps her posted, just by listening in, and she ain't no back number neither, even if he did draw a picture of her on the way to her Sunday school in 1872.

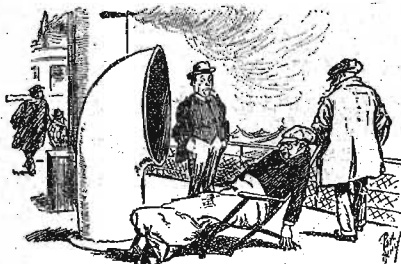


SIGNING OFF.

This Ain't a Bit Funny

A Tragedy in Two Choruses
The merry little oscillation
Fared upon its way;
Started by regeneration,
It had no bit of say,
As to just when or where;
Or how or why it went.
Rapidly it rent the air
As it onward spent.
Wandered in wide increasing rings
That had no destination,
Made some queer squeals and things
Caused by regeneration.

5XV.



Faith Supreme

Befuddled Radio enthusiast: "Been waiting over an hour—when does the concert commence?"
London Opinion.

Hope Springs Eternal

Dear Indi: Fred Smith, studio director of the Crosley WLW station, has a wife who believes she can keep his hair from falling out, despite the old proverb, "grass don't grow on a busy street nor does hair grow on a busy brain."

When asked if the special treatments were doing him any good, he replied: "No, but they make my wife happy."

What, \$\$\$\$\$ Bills?

Dear Indi: I see that your mail box is empty, you're lucky, mine is full of bills.
IN. S. ULATION.

"Larry, Turn the Crank!"

Dearest Indi: Just imagine my tuning in 2LO today at high noon. Can you? I can't!
EDDY CURRENTS.

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I. BUNKUM GETS THE RETURNS

Condensed

By DIELECTRIC

We in this country went so rapidly along the way of discovery in the realm of Radiophony that for a time no one seemed to be catching up to us. It appears that our English cousins are picking up speed with a new idea which may have a lot to do with the nature of sets later to appear on the market. Many plans are in existence to reduce the number of parts necessary to properly operate a receiving set and it is along this line that the English claim to have advanced. They have put out a four electrode tube which would require no B batteries, hence eliminating one of the bulkiest items. We will await further tests with interest. It is time for some American inventor to get busy on a similar tube or to go the English one better and make a five electrode tube, it needs be, to get results.

A few of the largest of our department stores have undertaken to supply entertainment and service to those who engage in the past-time of listening in. In the main their programs are of a high order and the quality of transmission is of the best. Gimbel Brothers have operated two stations, one in Philadelphia and another in Milwaukee, which are well known to Radio audiences, so that the announcement of the opening of another in New York in the near future will be good news to many. It is expected to link the three together, when advisable, a procedure looked upon with favor by the majority of fans.

With the announcement coming from General Harbord of dissolution of the Radio Sud America, which organization included Radio companies in England, France and Germany, whereby the Radio Corporation of America finds itself in a preferential position, the immediate extension of Radiocasting in Latin America may confidently be expected. Distances between towns and the large percentage of population resident in farming regions will have a direct bearing on this. Other means of communication that are not comparable to those in this country, another fact influencing the development of Radiocast service. The two Americas may soon become far more closely linked through air lines and new features in transmitting.

It is said that WGY has recently done what no other Radiocast station ever attempted—transmitted simultaneously on three wave lengths. Several stations have been operating on two different waves, one intended for local reception and another (low wave) for reception at a distant point for re-Radiocasting; the system whereby KDKA has reached England while entertaining its own listeners in America. Under the new arrangement all programs from WGY will now go out on 380, either 60 or 107, and 15.85 meters simultaneously. In the use of the 15-meter wave length, the Schenectady station hopes to improve daylight reception of its programs, as it is believed short waves are more reliable during that time.

Mr. Flewelling has accomplished something capable of adding considerable stimulus to the latest method in Radiocasting in his reception of station ZY T, Poldhu, England, while operating a receiving set in Chicago. The British station was using this most modern of discoveries—the "direct ray"—on a 94-meter wave length. Since details of the circuit used to receive are no doubt of importance in the accomplishment, I shall leave that phase of it and refer to plans for extending the Marconi principle. The Marconi company is to erect a beam station in England, adapted for communication with Canada and capable of extension to provide communication with South Africa, India and Australia. Let's see what develops from the short wave on a direct ray transmission.

Further Data on Underground Antenna System

Kind of Wire Most Essential for Best Results

By Edward T. Jones, I. R. E.

NEVER before have I received so many communications. I am literally swamped with letters regarding the underground system which I wrote about in the columns of this magazine a short while ago. A majority of my correspondents were successful and some of them were not. I have replied in full to all of those who wrote to me. For the benefit of those who have not written but have been prompted, I am going to bring out in the following those points raised by my correspondents.

Some tried using lead covered wire throughout the installation. This is not recommended because it increases the capacity of the antenna system to a point where it is hardly possible to maintain the tube in oscillation, especially where a single circuit receiver is used. Only use lead covered cable for the lead-in—that is for that portion of the wire which is exposed and not buried.

Some experienced a considerable decrease in volume. For some locations that is true. However (as they gladly told me), the static was not bothersome at all on the underground system. At the same time it was not possible to enjoy the concerts on their overhead systems.

Any type of receiver can be used on the underground antenna. Simply connect the ground in the usual way and the underground antenna to the antenna binding post of the receiver.

The condenser to be connected in series with the aerial and the receiver is almost always found to be .00025 or very nearly .0005. The author has picked up the fol-

lowing stations (from New Orleans) on the 2-foot coil described in the last article of the series: KDKA Pittsburgh, WHAS Louisville, WOS Jefferson City, WBAP Fort Worth, WLS Chicago, WSB Atlanta, WMC Memphis, WSAI Cincinnati, and KFKX Hastings. All of these stations were received with sufficient volume to operate a Music Master large type loud speaker. The receiver employed throughout the tests was a Radiodyne WC-B-5 comprising one stage of tuned Radio frequency, detector and two stages of audio amplification (four tubes).

For those who have the space, it is suggested that a 4-foot loop (open ended loop) be constructed and "planted" instead of the smaller 2-foot loop. This larger loop, with the wires spaced approximately 1 inch apart, will give greater volume.

Instead of the .00025 fixed condenser in series with the coil and the receiver, a General Radio .0005 (23 plate) variable condenser was substituted. With this arrangement the best value of "series capacity" can be arrived at, at each installation. In my particular case it was found to exceed .00025 because the .0005 condenser was very nearly at maximum, the scale reading 30 degrees. Once the best position of the condenser (capacity value) is found it is not necessary to move the

condenser any longer. Simply permit the condenser to remain at that setting—and always see to it that it is at that particular setting before beginning to operate, because the settings of the receiver dials will be slightly off.

For those desiring to make a permanent installation let me suggest the use of Packard high tension cable, or a similar good grade of high tension cable. The Packard company made some of this "special" cable for the Navy department during the war for underground installations and will no doubt be able to furnish this or a similar grade wire at this date.

It is best to make use of this high grade wire because the installation can be relied upon for a much greater length of time. There is very little possibility of a ground developing within a period of five years or longer.

Those with five tube receivers can expect much after reading what Mr. Parks Johnson, Vice President and General Manager, United Development Company of Atlanta, Ga., wrote the author:

"The buried aerial is wound 21 turns instead of 16 and is 9 1/4 inches wide in-

stead of 5 inches as you suggested. It is just 2 feet in the ground, constantly moistened by the refrigerator drain.

"I have used it but three nights, having heard WLW, WFAA, WSAI, WGY, KDKA, KFKX, and tonight PWX at Havana, Cuba. Each night the static was so bad as to make it impossible to distinguish a word even from KDKA, which is very strong here—when using the aerial. However, while static was still present when using your buried coil, it was not sufficiently loud to cut out a single word in reception. Hence, I'm naturally grateful for your suggestion."

That is typical of the letters received. There is no doubt but that this system will receive widespread use this year and continually increase in favor among Radiophans.



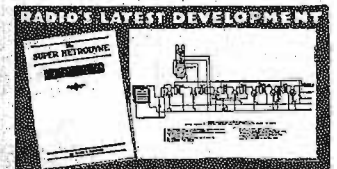
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R. F. AND REGENERATION

(Continued from page 7)

this amount. Connect this part of the filament circuit and try the tube illumination. If you have a volt-meter, use enough resistance to put 5 volts on the filaments. The tap to the other jack is taken at such a point that the voltage remains at 3 when all four tubes are lighted. All tubes together take 1-ampere, and the resistance of the unit should then be just about 3 ohm, and the tap is placed quite near the end, or just a quarter of the way down. The volt-meter may be used again here. This makes any adjustment of the voltage unnecessary, and when the battery falls low, the set will indicate the fact by its lower volume and disinclination toward oscillation.

The C Battery

This is an important item. The use of the C battery not only results in better amplification, but it cuts the B battery current in half and thus makes the B battery last twice as long as it would without it. Isn't that a real saving? The grid return leads of all the amplifier tubes are brought to the negative terminal of the C battery.

You will note that the binding posts are distributed along the rear of the sub-panel. Small holes are drilled at corresponding points in the rear of the cabinet and all connections made from the back. This keeps unsightly wires away from the front and in that way improves the set's appearance.

With all connections made and checked carefully, set in the cabinet, tubes inserted and batteries, etc., in place, you are ready to put the set into action. First of all, insert the phones in the first jack, thus lighting three tubes. Set the coil L-1 at about 45 degrees, and the tickler at the non-oscillating position. Then vary coil L-3 until the Radio frequency tube is on the verge of oscillation but not quite oscillating. The condensers should tune at approximately the same settings for the same wave length, and the coupling between L-1 and L-2 adjusted for good volume, but not so closely that the antenna absorption prevents oscillation of the detector or makes the dial settings of condenser C-1 very different from those of C-2.

The set is well adapted for antennae of various capacities, and will function well when connected to the electric lighting or telephone circuit through a .001 or .002 fixed condenser. With this form of antenna, the coupling will have to be re-

duced considerably on account of the relatively large capacity.

Reception Range

The set is extremely selective, especially on condenser C-2, and should tune through local stations successfully for stations of but slight difference in wave length. In New York City, for instance, KGO of Oakland is heard repeatedly with the set illustrated, without interference from locals or from WLW or WSAL, only 3 meters different. KGO is on 312, while the Cincinnati stations are on 309. Of tune out WDAP if you live in Chicago and hear WKAQ, Porto Rico, even though the latter be a little "off wave." However, the circuit will be surprisingly sharp, nevertheless, for the regenerative feature improves the selectiveness wonderfully, and in this respect, selectivity is usually superior to that of a three control Radio frequency set, as the neutrodyne. The ease of its operation, the absence of complicated controls, and the long range are recommendations amply for the tuned Radio frequency and regeneration combination. Its selectivity makes the receiver a pleasure to operate, for it's often but a half degree's touch of the vernier from one station to another.

THIRTY-MINUTE A-B-C

(Continued from page 13)

Phantom or aerialless operation, coast to coast range, requires two good stages of Radio amplification or sometimes three, ahead of a good detector and two stage audio amplifying set.

(Perhaps one of the most difficult things to do is to choose a receiving set suitable to your needs and what you can afford to pay for it. Mr. Edelman will tell you about this in the next issue. It will aid many a newcomer in Radio.—Editor's Note.)

The Reader's View

Tuning Aerials

I notice many items in Radio Digest regarding the number of turns for the primary of a coupler, particularly the discussion in the issue of August 11. The following may be of interest:

The amateur seems to forget that there is nothing mysterious nor arbitrary in

tuning. It is precisely like putting weights on one pan of a scales to balance a substance in the other pan. With a set and an aerial the latter acts as one weight, and the turns on the coupler act as additional weights. You put on weight, adjust weight, or turn after turn, until it balances, or in other words is in resonance with the incoming wave. It is evident that the number of turns you add will depend on the value of the aerial. If your aerial is long and high, with several wires, it will be "heavier"; hence you will need but a few "weights" or turns to balance up. Below are some data as to tuning various aerials. It should be remembered that two aerials of exactly the same dimensions may not have exactly the same value.

Very small aerial, 32 feet long, 12 feet high single wire, tunes to 400 meters with 57 turns on tube 4 1/4 inches diameter. Tunes to 517 meters with 86 turns.

Medium aerial, 80 feet long, 35 feet high, single wire, tunes on 400 meters with 30 turns. Tunes on 517 meters with 43 turns.

Larger aerial, 90 feet long, 50 feet high, single wire, tunes on 517 meters with 38 turns. Same aerial except with three wires spaced 2 feet apart, tunes on 400 meters with 18 turns. Tunes on 517 meters with 31 turns.

In general, if your aerial is at least 80 feet long and at least 35 feet high, you will need at least 48 turns to tune 517 meters, more to reach 545 meters. Such an aerial should have a coupler wound with about 60 turns on the primary. If your aerial is under 50 feet long and less than 30 feet high, your coupler, using a tube 4 1/4 inch in diameter, should have not less than about 75 turns, in the primary.

If the primary is wound with taps so that single turns may be cut in, or even three turn steps, no condenser will be needed in the primary for crystal reception of local broadcasting; merely the coupler, crystal and phones are needed. With an aerial 90 feet long and 50 feet high, single wire and such an outfit I can hear WWJ or WCX local stations 40 feet from the phones in another room with a crystal. An exceptionally good nights this outfit brings in WGY, Sebelectady, or WDAP, Chicago.

As for the turns on the rotor—for crystal sets used for local broadcasting, I have found that the rotor gives best results when wound with about 80 to 100 turns of about Number 28 to Number 33 wire; no phone condenser is then needed. I have had Kansas City on it.—F. C. Suter, Detroit, Mich.

Squealers

Your very interesting periodical is looked for eagerly each week. You are now running a helpful series of articles on operating different makes of Radio receiving sets. I am prompted to repeat, of what use are all these things without "charity," and charity in this case means—if the user is not especially instructed to avoid re-radiation.

Not enough stress is laid on this subject. I beseech your good offices to induce the manufacturers themselves to furnish with each machine instructions—and it should be fastened to the detector chestnut as a printed tag or tacked to the cover, or in some way brought forcibly to the operator's notice—how to avoid re-radiation. Explain it to him first and foremost. Impress it on him that his set may be taken away from him if he allows it to oscillate. Inform him how he can tell if it is oscillating—by touching his finger to the base aerial or by the squeals when he moves a dial; tell him the whole story, and have each salesman impress the same thing on the purchaser. Single circuit tuners are not the only offenders, I am confident.

About every night a new Radio receiving set is started up and for half the evening everyone else within a half mile has his entertainment spoiled. Most of the offenders would not do so if they knew any better, but no one impressed it on them. I hear folks tell how their children, little tots whom they wouldn't trust with their phonograph, can and do run the Radio set. Ye gods, just think of the helpless crowd of neighbors, doomed for a while, etc. You know the quotation. Get after them. Thanks.—E. Z. Lane, Mechanics Falls, Me.

Take sufficient precautions to prevent crossing of storage battery terminals or wires.

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Crystals of Quality

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

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

Dealers and Jobbers please get our proposition.

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The Kellogg No. 610 condenser is designed to provide a vernier of minute capacity and that can be used as a bias. It also provides the greatest degree of efficiency in circuits requiring grid, micrometer or biasing condenser. Unnecessary wiring is eliminated when using this condenser. The number of pieces of apparatus to build a set is reduced.

If your dealer does not carry Kellogg, write us giving his name.

USE—IS THE TEST

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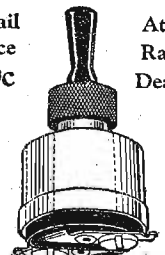
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The Bradleyswitch is a beautifully finished radio battery switch. It is extremely essential in sets using UV-199 tubes, to be sure the battery circuit is open when the set is put away. Easily installed. Pays for itself many times in longer battery life. Try one today!

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Convenient Table, Chair and Tool Box

Tool Chest in a Chair and a Table or Bench

A Radio work table that may be turned into a chair and at the same time be a tool box will add considerably to the

WORKSHOP KINKS EARN A DOLLAR—

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

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

home constructor's comfort and convenience.

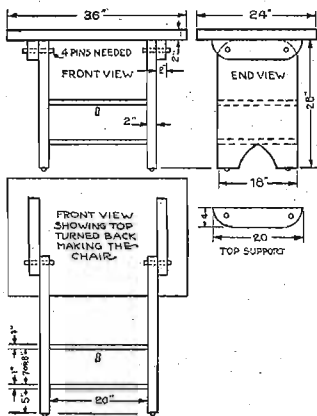
To be satisfactory the work table must be strongly and firmly built. Hard wood is difficult to handle but undoubtedly the

Material List

- 2 sides 28 inches long, 18 inches wide and 2 inches thick.
- 2 top supports 20 inches long, 4 inches wide and 2 inches thick.
- 4 pins to fit holes used.
- 1 top 36 inches long, 24 inches wide and 2 inches thick.
- 1 box top and bottom each 30 inches long, 18 inches wide and 1 inch thick.
- 2 box sides 20 inches long, 7 or 8 inches wide and 1 inch thick.
- 2 box ends 16 inches wide and 5 or 6 inches deep.

most satisfactory for stiff construction. To make the table steady and strong first assemble the parts forming the box. The

THREE IN ONE UTILITY PIECE



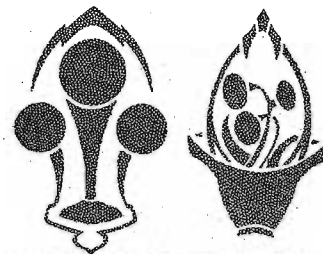
end pieces are fastened to the box with glue and screws. The top is laid in place and marked so that the position for the table supports may be accurate. For a work table it is best to use pins as shown. One set to swing the top on and the other to hold the top firmly in place when the piece of furniture is being used as a table.

If the table is to be used as a companion piece to the cabinet described in the Radio Digest for June 21, 1924, it should be finished to match the cabinet.

A sturdy cushion will add to the comfort of the seat and a table cover to match will cover the mars to the top that will doubtless appear.

Canvas pockets placed inside of the box cover will be convenient for small tools. The box may be made still more convenient by building trays to fit within it. The trays make the tools easily found and quickly replaced when work is finished for the time.

Two stencils suitable for the cushion



and table cover. One symbol of Radio and the other a conventionalized basket design. To stencil use oil paint as it comes from the tube. Use a short thick brush using a tapping motion. Do not use a brush stroke as the paint will pass under the edge of the stencil and make poor edges on the design. Very coarse material such as monks cloth, hand woven linen or crash will make the most serviceable cushion top and table cover.—Bertha Morey, Ottumwa, Iowa.

Lead-in Logic

The lead-in is an important item for perfect reception. It should be well insulated and kept distant from the sides of the houses along which it is brought down to the receiver. Also it should not run adjacent or parallel to other current-carrying conductors of any kind. At the point of entry into the house special precaution must be exercised. If the wire is bare, without any covering, it should be passed through a long porcelain tube or brought into the house through some other insulating medium. Under no condition should the bare wire touch any part of the building. After the wire has been brought into the room it should run to the aerial binding post on the receiver in the most direct path with the minimum amount of turns or twists.

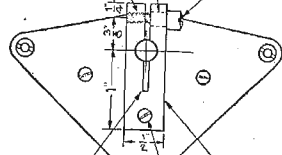
Bearing Clamp Ends Condenser Shaft Wear

Having a 43-plate condenser that the shaft friction adjustment would no longer permit easy tuning, I tried the following scheme with very satisfactory results:

A piece of 1/4-inch bakelite was cut 1/2-inch wide and 1 1/4-inch long and drilled and tapped as shown in the illustration. This piece was split with a hack saw after the 1/4-inch shaft hole was drilled, to make a friction clamp for the shaft. The 6-32

DRILL #25 OR 9/64" HOLE IN ONE ARM TO PERMIT 6-32 SCREW TO PASS THROUGH FREELY. SPLIT PIECE SERVES AS A CLAMP.

DRILL #35 OR 7/64" HOLE AND TAP WITH 6-32 MACHINE TAP, THEN 6-32 MACHINE SCREW USED TO MAKE FRICTION AS DESIRED ON CONDENSER SHAFT.



SPLIT PIECE 1/2" AFTER 1/4" HOLE HAS BEEN DRILLED FOR SHAFT BAKELITE PIECE 1/4" X 1 1/4" X 1/8"

DRILL #35 OR 7/64" HOLE IN CONDENSER AND TAP WITH 6-32 SO THAT BAKELITE PIECE CAN BE FASTENED TO CONDENSER.

screw passes freely through one of the arms and screws into the remaining arm, thus providing an easily accessible adjustment whereby the dial can be made to turn according to individual taste. This stunt made a better than new condenser out of the original. This friction may be attached to the panel, just back of the dial if desired.—H. E. Jenson, Milwaukee, Wis.

Guaranteed Head-Sets

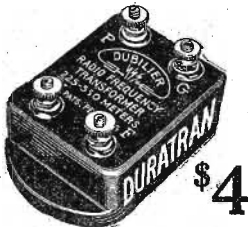
RED-HEADS are guaranteed radio phones. You run no risk when you buy them. Money back if, after 7 days' trial, you're not satisfied that they're the best receivers on the market at the price. Why not act right now and get a pair? It'll mean getting the maximum from broadcasting from the day you put them into use.

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

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THE ELGIN SUPER-REINARTZ RADIO RECEIVING SETS

Embodies all the advantages of the well known Elgin Reinartz (the 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 long aerial.

It has brought in 250 England, and California stations two thousand miles from Elgin, clearly and without interference on a loud speaker with only one tube, and that while our powerful local station was broadcasting three miles away.

Send 2-cent stamp for circular giving one, two and three bulb hook-ups of this remarkable circuit.
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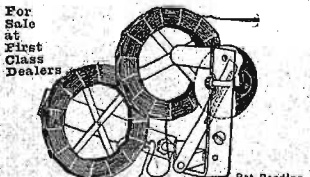


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For Crystal or Reflex Sets



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THE TYPE E DETECTOR IS THE BEST BUY IN THE CRYSTAL MARKET TODAY and will be sent subject to exchange for any other item you wish.

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DETROIT - MICHIGAN

Questions and Answers

Wave Lengths
(65348) E. S. Rochester, N. Y.
Why is it that here in Rochester, where they have reduced the wave length in Radio-casting, most crystal sets cannot get down far enough on coil to get good reception? Is it the shorter the wave the less wire on the coil and vice versa?
Will you tell me the proper way to tune in a Westinghouse radiola? Am using a peanut tube having a wave and tickler dial. In your paper of December 8 you show

inghouse distributor in your city for the information requested.
A peanut tube can be employed, generally speaking, in any standard circuit, which includes that of your inquiry. We recommend a UV-201A tube, operating on dry cells, as desirable and affording better results than either the WD-11 or UV-199 tubes.
The Margo tube is a two-element type and can be substituted advantageously for a crystal detector.

USE OF FARM LIGHTING PLANT

Being a reader of your valuable paper and taking notice of article in Q. & A. from 9221, T. R. S. Maume, Ohio, reminds me of my experience using 32-volt farm lighting batteries about two years ago, as a result of which I lost four tubes at different times until I got a regular 6-volt A battery.
Your reply to this is correct so far as it goes, but you should have added, Do not attempt to use this battery system for any other purpose while connected to Radio.
To study the accompanying sketch you can see it involves quite a complicated circuit by varying resistances on 32-volt line as well as the 6-volt line.
When the resistance between the plates of the three cells (6 volts), is greater than the resistance of the

and lead-in about 20 feet. I am using 201-A and 200 tubes with 90 volts on the amplifiers.
A—We have carefully noted the limitations encountered in operation of your neutrodyne receiver and while it is evidenced that you are not experiencing its full effectiveness the details offered are insufficient to isolate the factor which is acting as a deterrent. Admittedly the circuit is imminently selective and quiet in operation, under favorable construction, and superior to a 3-tube Rehnartz circuit by virtue of the principles involved.
Few builders of the neutrodyne receiver give adequate attention to the important feature of avoiding electromagnetic coupling between the neutroformers. The resulting feedback through the coils is always great to be balanced out by the minute capacities of the neutrodons. The neutroformers must be positioned with relation to each other at an angle to prohibit interaction between their fields.

Wave Traps
(88001) HDH, Kingston, Ont.
Having read your article on "Wave Traps" on page 14 of your issue of February 23d, please advise me if they are potent against local spark coil interference.

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Procured. Send sketch or model today for examination, prompt report and advice. No charge for preliminary advice. Write for free booklets "How to Obtain a Patent" and "Invention and Industry" and blank form on which to disclose your idea. Highest reference to Prominence assured. Clarence O'Brien, Registered Patent Lawyer, 2003 Security Bank Building, Directly across the street from Patent Office, Washington, D. C.

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ULTRADYNE TRANSFORMERS
1 Input Transformer and 3 Intermediate Transformers \$20.00
Tuning, Oscillating Coils, \$ 4.00 per pair.
Full instructions and Blue Prints furnished with each kit. Absolutely guaranteed. These transformers are suitable for any Super-Heterodyne circuit. Put up in handsome kit display box. Special discount to dealers. Prompt delivery. Write for special circular.
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S. HAMMER RADIO CO.
303 Atkins Ave., Brooklyn N. Y.
STANDARD SUPERDYNE 4-TUBE
Knockdown Kit—Complete Parts More powerful than a 6 tube naval receiver. Easy to build.
1—Superdyne Coupler. 1—Single Circuit Jack.
2—25-Plate Variable Condenser. 1—Double Circuit Jack.
1—Variable Grid-Leak. 7x24 in. Panel, Drilled.
1—5000's mfd. Fixed Condenser. 7x24 in. Baseboard.
3—Rheostats. Bus Wires, Spagbetti and Diagram. OUR PRICE \$27.50
2—Acme Audio Transformers. \$45.00
Wired complete in Genuine Mahogany Cabinet.

3 TUBE COCKADAY 4 CIRCUIT TUNER
1 Precision Coil. 1 Amson Rheostat, 20 ohms.
2 Amson 20-Pl. Cond. 8 ohms.
2 Dubilier .00025 Fixed Condenser. 2 Amson Rheostats, 20 ohms.
1 Amplifier Grid Densar. 7 Switch Points.
1 Patent Single Jack. 2 Switch Points.
3 Metal Sockets. 1 Dubilier .0005. 1 Bradbury. 1 Panel.
2 American Transformers. 1 Baseboard.
1 American 3000 Cycle. 1 Wire, Diagram, Etc.
SPECIAL KIT \$35.00 Wired Complete in \$53.00 Mahogany Cabinet.
Orders over \$5.00 will be shipped prepaid. Money order, C. O. D. insured unless insurance charges included. Write for Price List.

I operate a Marconi 3-tube set and am bothered continually by a local amateur who persists in disturbing the hundreds of receivers in this city.
A very heavy and cracking sound is heard when this amateur is transmitting code, which drowns everything else, as he is "all over the dial."
If you think that one of these wave traps would eliminate this annoyance, please let me have early reply.
A—A wave trap will be efficacious in eliminating amateur transmission or spark if you are not too close to station. However, the disturbance to which you are subjected as described is quite unlike an amateur interference, which produces a high tone with a shrill note. We are very much inclined to the belief that your difficulties can be traced to inductance from an arc light or leaky power lines in your vicinity.
If an amateur is violating the regulations governing operation the matter can be reported and his license revoked. Such would be the proceedings under our Federal rules.

WHOLESALE FOR DEALERS AGENTS WANTED
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A liquid metal: cuts out body capacity, brings in music clear and sweet. Done in 5 minutes. One can will shield 5 or more sets. See our ads. Also a liquid spaghetti can be used on after set is finished. Line for insulating the base board, 50c per can. Post paid.
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The New Pfannstiel Non-Oscillating Principle
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We quickly and get our special price offer with 2 week's FREE trial, and near perfect satisfaction.
WARREN'S RADIO PRODUCTS, Inc. Dept. C-584 Marshall Blvd. and 15th Street. Chicago, Ill.

a hook-up of single-tube selective long-distance Simplex. Will this operate with a peanut tube? If not, what tube shall I use? The Aug. 25 number of Radio Digest shows a Margo 1½-volt tube sold by Modell's; could you use same on crystal set instead of crystal and get better results?
A—Wave length depends upon inductance and capacity, consequently fewer turns are used on coil for reception on lower wave lengths. It is recommended that your present coil be rewound with heavier wire to overcome limitations cited.
Tuning procedure accompanies manufactured sets, and we refer you to the West-

PATENT ATTORNEYS
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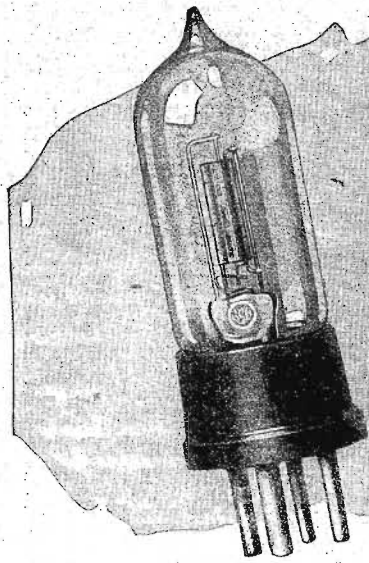
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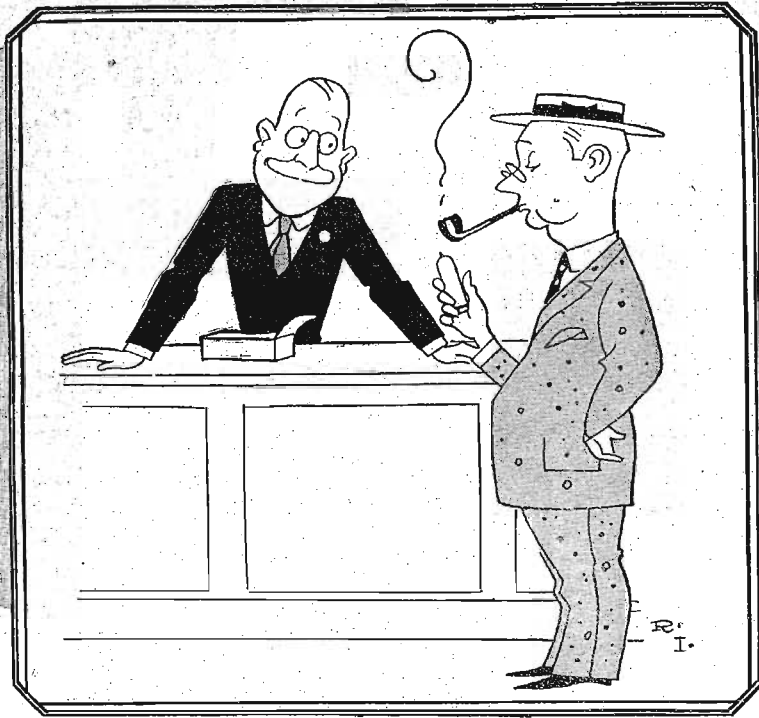
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