New Loop Aerial Reflex and Mystery Miloplex

Radio 10

Vol. VI

SATURDAY, OCTOBER 6, 1923

'HOT ROASTED PEANUTS'



Entire Program Picked Up Clearly
—in Spite of Static

TROY, N. Y.—Practically the entire Radio program of old-time songs, one of the most popular broadcast from Station WHAZ at the Rensselaer Polytechnic Institute here, was received in Liverpool England between the house of the pool of the polytechnic form. pool, England, between the hours of 3 and 4:30 a. m., August 28, according to a letter just received from Arnold P. Hill, B. Eng., of Mayfield Road, Wallasey, Liverpool.

"Despite the fact that the static was fearful all through the night and that it began to get daylight soon after 4 a. m. the program was clear in the headphones throughout and at times was almst up to loud talker strength," according to the correspondent. "The program for strength, purity and consistency makes the finest reception I have yet had of telephony from U. S. A.

England Hears Old-Time Songs Sent Out from Troy POPULAR SONG HAS BIG SALE WHEN BROADCAST

Test Proves Use of Music by Stations Makes Hits—Broadcasters Should Not Pay

By Marvin W. Thompson

NEW YORK .- Does Radio broadcasting help or hinder the sale of popular music? It helps! Doubters can no longer say that sales are hurt by ether publicity, when the fair test given here recently is considered. Composers of music, and particularly the Society of Authors, Composers and Music Publishers may well look up to the advantages of getting their compositions on the air!

Rather than attempt to collect a fee from broadcasters for the use of their music, the latter society some day may even be charged a fee for the privilege of having its pieces played or sung before the microphone. But, of course, broadcasters cannot accept payment now for such publicity, as the latter would then become direct advertising, which, under the existing Radio laws, is prohibited on the air. But should broadcasters pay? The test song answers, "No."

Write Test Song to Prove Argument.
It has been the contention of the Society of Authors, Composers and Music Publishers that broadcasting of popular song hits would ruin the sale of sheet music. The broadcasters have maintained that instead of hurting the sales, broadcasting was the greatest publicity medium and force for popularizing song hits that

has ever been offered the publishers.

Early in August a verbal battle raged one night in a New York restaurant over this question. Louis Breau and Charles Tobias, writers and publishers of many song hits, felt from their experience that the broadcasters were right. They had in mind a (Continued on page 5)

R. C. A. PUTS OUT NEW SUIT FOR FALL

Latest Court Action Based upon Charge of Patent Infringement by Fada

NEW YORK.—Recent developments in he Radio industry in this city indicate that clothing is likely to be a "side line." Early in 1923 A. H. Grebe and Company announced a new spring suit brought to its attention in relation to litigation instituted by the Radio Corporation of America. Now comes F. A. D. Andrea, Inc., with the announcement that a new fall suit has been presented it by the same plaintiff.

The latter suit charges infringements of the Rice and Hartley patents through the manufacture and sale of Radio receivers embodying the Hazeltine Neutro-

The defendant is to be aided by the Independent Radio Manufacturers, Inc., of which the Andrea concern is a member, which organization took part in the litigation last year involving the crystal patent.

FLAPPERS AND MONEY FLOCK TO THIS BANK

HITEHOUSE, N. J.—Hear ye bankers! The First National Bank here has found a new attraction to bring the fair sex and their money to its vaults., A Radio receiving set and loud speaker were installed in a new, comfortably furnished ladies' reception room. The ladies were then invited. Results show the loud speaker was irresistible.

The Fleming Trio (left at top) was featured on the opening program of the new studio of Station WEAF, New York, and has appeared before the microphone there several times since. Not alone do they excel on the cello, piano and violin, but they are very easy on the eyes. Miss Louise Kelly (circle) is a lyric soprano often heard over WEAF and the property of the prop metropolitan area broadcasters. At the right is Dorothy Bell, a well-known harpist who delights KYW, Westinghouse, Chicago listeners with her solos. Miss Bell's harp registers very cleanly on the microphone. She was a pupil of Tramonti, the famous harpist of the Chicago Symphony, and is a member of the Chicago Civic orchestra



TIMES CHANGE? YEP, BOYS LIKE SCHOOL

LADS ARE NO LONGER LIKE SNAILS-RADIO DOES IT

Reports Show Radio Digest's Parts
Offer Stimulates Interest in Three R's, Etcetera

SPECIAL REWARD OFFER Coupon Number 19

This Special Reward Coupon appears each issue in Radio Digest until further notice. When sent in, accompanied by necessary remittance, according to the rules governing same, apparatus can be secured. See apparatus list and rules of offer below.

Save Me — I Am Valuable

No longer does the boy, in one of the seven ages of man, creep like snail to school. In these days of instruction as to Radio, in these days of opportunities to make "small change," the regular lad is eager to go to school, for on the way he may be paid for running an errand or two and once in the school may learn much from his teacher and his mates about the assembly of a Radio receiver. According to reports from all over the

According to reports from all over the United States interest in Radio has been increased by the opening of the public and parochial schools. Most of the compositions or essays dealing with miscellaneous subjects are based on experiences with Radio.

The following instructions as to the parts offer of Radio Digest should be heeded so that purchasers may receive efficient service:

Rules to Remember

Rules to Remember

One point must be emphasized to those contemplating taking advantage of the special offer; that is, that the coupons turned in for any item must be numbered consecutively, as for example, 1, 2, 3, and 4 or 3, 4, 5 and 6. The number of coupons necessary and the cash remittance, of course, depend on the item sought by the reader. There is no limit to the number of series turned in by any one reader.

Another point to remember is that cash, checks and money orders but no postage stamps will be accepted.

To make selection more simple the items have been divided into eight classes, each class depending on the number of consecutive coupons and amount of cash remittance necessary. The eight classes of items follow:

Class A Articles

Class A Articles

For two consecutively numbered coupons and thirty cents (\$0.30) any one of the following articles will be sent: 1 Carter Imp Jack and Plug; 1 Carter 15-Ohm Resistanco Unit; 1 Schindler .00025 mfd. Build-up Mica Condenser; 1 Schindler .0001 mfd. Build-Up Mica Condenser; 1 Schindler .001 mfd. Build-Up Mica Condenser; 1 Schindler .002 mfd. Build-Up Mica Condenser; 1 Schindler .0025 mfd. Build-Up Mica Condenser; 1 Schindler .0025 mfd. Build-Up Mica Condenser; 1 Martin-Copeland Sta Put Plug; Walnart Standard Tube Socket; Walnart UV-199 Socket; Dubiller Micadons Type 601 (.0001, .00025, .0005, .001, .002, .0025, .003 or .001 mfd.); Premier Grid Condenser (.00025 or .0005 mfd.); Premier Variable Resistance; 1 Carter 25-ohm Resistance Unit; Standard Socket Adapter for Delta Midget Tube; Electrad Grid Leak (1, 1.5 and 2 megohms, with clips); Amsco 3-lnch Dial; Amsco Inductance Switch; Freshman Micon Condensers, (.00005, .00025, .00035, .0005, .001, .0015, .002, .0025, .00035, .0005, .0015, .0005, .0025, .00035, .0005, .0015, .0005, .0025, .0005, .0005, .0015, .0025, .0025, .0005, .0005, .0015, .0025, .0025, .0025, .0025, .0025, .0025, .0025, .0025, .0025, .0025, .0025, .0025, .0025, .0025, .0025, .

Class B Articles

For four consecutively numbered coupons and sixty cents (\$0.60) any one of the following articles will be sent: I Carter .04 mfd. Special Fixed Condenser; I Carter Jack Switch; I Carter Hold-Tite Jack, One Spring Open Circuit; I Carter Hold-Tite Jack, Two Spring Open Circuit; 1 Carter Hold-Tite Jack, Two Spring Closed Circuit; 1 Carter Hold-Tite Jack, Two Spring Closed Circuit; 1 Carter Hold-Tite Jack, Three Spring Filament Control; 1 Carter Hold-Tite Jack, Four Spring Filament Control; 1 Carter Hold-Tite Jack, Five Spring Filament Control; 1 Federal Universal Phone Plug; 1 Federal Open Circuit Jack; 1 Federal Closed Circuit Jack; 1 Federal Double Circuit Jack; 1 Martin-Copeland Shur Grip Plug; 1 Martin-Copeland WD-11 Socket: 1 Martin-Copeland WD-11 Adapter; 1 Martin-Copeland UV-199 Socket; 1 Martin-Copeland UV-199 Adapter 1 Martin-Copeland Pull Switch; 1 Martin-Copeland UV-199 Kapter 1 Martin-Copeland Spst Knife Switch 1 Martin-Copeland Spst Knife Switch; 1 Martin-Copeland DPST Knife Switch; 1 Martin-Copeland DPST Knife Switch; 1 Martin-Copeland DPST Knife Switch; 1 Martin-Copeland Spst Knife Switch; 2 Switch: 1 Martin-Copeland DPST Knife Switch: 1
Martin-Copeland DPDT Knife Switch; Walnart Variable
Grid Leak; Walnart Inductance Switch; Dubliler Micadons Type 600 (.0001, .0025, .0005, .001, .002, .0025, .003, .004, or .005 mfd.); Dubliler Micadons Type 610 (.000 mfd.); Dubliler Micadons Type 601 (.000 mfd.); Dubliler Micadons Type 601 (.000 mfd.); Dubliler By-Pass Condenser (.1, .25, or .5 mfd.); Premier Universal Tube Socket; Premier Radio Dial (3/16, ¼, or 5/16 in. black or white face); Premier Universal Radio Jack, Open Circuit; Premier Universal Radio Jack, Two-Circuit Three Spring; Premier Indiversal Radio Jack, Filament Control Three Spring; Premier Switch Lever and 10 Points; Turney Spider Web Coil (SW-10 with .038 milhenry inductance, SW-15 with .066 MH., or SW-20 with .300 MH.); Amsco 6-0hm Rheostat; Freshman Fix-O Grid Leak and Condenser; Freshman Variable Resistance Leak (with or without condenser); Freshman Micon Condensers (.006 or .005 mfd.); Teleradio 6-0hm Rheostat; Teleradio 30-0hm Rheostat; Teleradio G-0hm Rheostat; Teleradio 30-0hm Rheostat; Teleradio Lightning Arrester; B-Metai Crystal Tube Detector Type A; B-Metal Adjustable Detector Type D; Aerovox Rheostat; Se-Ar-Do Vacuum Tube Socket; Basco Crystal Detector Assembly; Basco Rheostat, 3-ohm or 6-ohm; 3¼" Radion Dial, black; 4" Radion Dial, black; 4" Radion Dial, black, ribbed surface.

Class C Articles
For aix consecutively numbered coupons and ninety
cents (\$9.00) any one of the following articles will be

sent: 1 Carter 6-Ohm Vernier Control Rheostat; 1 Carter "Tu-Way" Plug; 1 Federal Panel Mount Socket; 1 Federal 6-Ohm Rheostat; 1 Federal 3-Ohm (Power) Rheostat, 1 Amperite Automatic Filament Control (with mounting); 1 Martin-Copeland Marco Rheostat; 1 Martin-Copeland Series Parallel Switch; 1 Martin-Copeland DPDT Panel Switch; 1 Martin-Copeland 7-Point Inductance Switch; 1 Martin-Copeland 9-Point Inductance Switch; 1 Martin-Copeland 11-Point Inductance Switch; Walnart Variable Grid Leak with .00025 mfd. Condenser; Walnart Variable Condenser (3-plate .00006 mfd.): Dubilier Ducon; Dubilier Micadon Type 600 (.006 mfd.); Dubilier Micadon Type 610 (.01 or .02 mfd.); Dubilier By-Pass Condenser (1 mfd.), Premier Universal Radio Jack Filament Control Five Spring; CRL Variable Grid Leak, without condenser; Premier No. 250 Variable Resistance, panel mounting; Thordarson Vernier Rheostat; Resistance, panel mounting; Thordarson Vernier incestat; Ritter Loop Aerial; Martin Copeland Variable Grid Leak; Amsco Multiple Point Inductance Switch; Amsco 20-Ohm Rheostat; Amsco 50-Ohm Rheostat; Freshman Antenella; Freshman Micon Condenser, .01 mfd.; Teleradio Variable Condensers, (3-plate or 11-plate); Set "Read 'EM" Binding Posts (9); B-Metal Crystal Tubo Detector Type B; Illinois Cushion Resilient Socket: Aerovox Antenna Plug; Aerovox Potentiometer; Aerovox Crystal Detector; Se-Ar-De Adjustable Vernier Condenser; Radion Panel 3. "x7"x9", black or mahoganite; Radion Panel 3. "x7"x12, black.

Class D Articles

For eight consecutive coupons and one dollar and twenty cents (\$1.20) any one of the following articles will be sent: 1 Carter 20-Ohm Vernier Control Rheostat; will be sent: 1 Carter 20-Ohm Vernier Control Rheostat; 1 Schindler Radio Frequency Transformer; 1 Martin-Copeland 13-Point Inductance Switch; 1 Martin-Copeland 15-Point Inductance Switch; 1 Martin-Copeland 19-Point Inductance Switch; Walnart Variable Condenser (5-Plate .0001 mfd.); Electrad Variohm, with mica condenser; Dubilier By-Pass Condenser (2 mfd.); CRL Variable Grid Leak with Condenser; Resistometer (Type A or 2A); Thordarson Variable Condenser, .0025 mfd.; Amsco 300-Ohm Potentiometer: Freshman Micon Condenser, .015 mfd.; Telegadio Variable Condenser, .23-plate: Aerovox Crystal

Crystal Tube Detector Type C: Aerovox 3-Gang Socket: Aerovox Double Slide Tuning Coil; Na-Ald 3-Plate Vernier Condenser, with dial; Radion Panel 2"x7"x18" mahoganite; Radion Panel 2"x7"x21", black.

Class F Articles

For twelve consecutively numbered coupons and one dollar and eighty cents (\$1.80), any one of the following articles will be sent: 1 Acme Pot-Rheo (potentiometer and rheostat); Walnart Variable Condenser (23-Plate .0005 mfd.); Dubilier By-Pass Condenser (3 mfd.); Premier Variable Condenser without dial (.00039 mfd.): Thordarson Variable Condenser, .001 mfd.; Amsco Compensating Grid Condenser; Freshman Micon Condenser, 0.25 mfd.; Teleradio Variable Condenser, 43-plate; Se-Ar-Do 3-Plate Condenser; Radion Panel &"x1"x21", mahoganite; Radion Panel &"x1"x21", mahoganite; Radion Panel &"x1"x1", mahoganite; Radion Panel &"x1"x12", mahoganite; Radion Panel &"x1"x12", mahoganite.

Class G Articles

Glass G Articles

For lourteen consecutively numbered coupons and two dollars and forty cents (\$2.40) any one of the following articles will be sent: 1 Federal 7-Plate Variable Condenser: 1 Federal 11-Plate Variable Condenser: 1 Federal 21-Plate Variable Condenser: 1 Federal 21-Plate Variable Condenser: 1 Federal 21-Plate Variable Condenser: 1 Federal Anticapacity Switch; 1 Demcal Variable Condenser 11-Plate Walnart Variable Condenser (43-Plate .001 mfd.); Dubiller Variable Condenser (400078 mfd.); Premier Variable Condenser with dial (.00078 mfd.); Premier Variable Condenser with dial (.00078 mfd.); Premier Hegehog A. F. Transformer. 4 to 1 Ratio; Thordason A. F. Transformer, 3.5 to 1 Ratio; Thordason Variable Condenser, with vernier, knob and dial (.0005 mfd.); Ritter Grand Crystal Set: Amsco Double H. C. Coll Mounting; Na-Ald 13-Plate Precision Condenser, with dial (.000237 mfd.); Na-Ald 23-Plate Precision Condenser; Se-Ar-De 17-Plate Condenser: R. S. C. Variable Condenser, 23-plate; Radion Panel & "x1"x2", mahoganite; Radion Panel & "x12"x21", black; Radion Panel & "x12"x14"x18", black.

Class H Articles

0001 mfd.); Electrad Variohm, with mica condenser; Dubiller By-Pass Condenser (2 mfd.); CRL Variable Grid Leak with Condenser; Resistometer (Type A or 2A); Thordarson Variable Condenser, 00025 mfd.; Amsco 300-0hm Potentiometer: Freshman Micon Condenser, .015 mfd.; Teleradio Variable Condenser, 2-plate; Aerovox Crystal Detector and Condenser, mounted; Se-Ar-De Variable Grid Leak, with condenser mounting; Fil-Ko-Stat; R. S. C. Vernier Condenser, 3-plate; Radion Panel &"x1"x12", mahoganite; Radion Panel &"x1"x18", black; Premier Micrometer Varioscoupler with dial; Premier Micrometer Varioscoupler with dial; Premier Variable Condenser with dial (0015 mfd.); Premier Micrometer Varioscoupler with dial; Premier Variable Condenser with vernier (0004 mfd.); Premier Micrometer Varioscoupler with dial; Premier Variable Condenser with vernier (0004 mfd.); Premier Micrometer Varioscoupler with dial; Premier Variable Condenser with vernier (10015 mfd.); Premier Micrometer Varioscoupler with dial; Premier Variable Condenser with vernier (10015 mfd.); Premier Micrometer Varioscoupler with dial; Premier Variable Condenser with vernier (10015 mfd.); Premier Micrometer Varioscoupler with dial; Premier Variable Condenser with vernier, 1001 mfd.); Premier Micrometer Varioscoupler with dial; Premier Variable Condenser, 1001 mfd.); Premier Variable Condenser, 1001 mfd.);

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Looking Ahead

Miloplex I Receiver Details—by H. J. Marx next issue. Mr. Marx will give the information necessary in the making of this popular little set. The article will be based on the actual construction of the set that will be on display at the Digest booth at the New York Radio Show. No great changes will be necessary to convert this circuit over into Miloplex II (described this week) or Miloplex III, to be told about soon by the mysterious inventor.

How the Waves Are Rectified—and what is necessary to make the simplest type of receiving set; the topic of Warvin W. I hompson next week. peginners and even old timers are finding Mr. Thompson's series abundant with ideas and principles

Benson Conclusion—Some real kinks next for improving your circuit, and some data of considerable value to the fan that likes to build his own sets.

How to Make—An article next issue on how four hair combs can be used to make a self-supporting single layer coil. Lots of other good kinks, too.

One of Our Readers Has Had Some Very Unusual Results—His is a three honeycomb coil circuit with an untuned aperiodic primary. It's nothing new but you're always safe in making up a circuit of this type, so look up Hook-up Diagram R.D.-101 in the October 13 Digest.

www.americanradiohistory.com

Newsstands Don't Always Have One Left WHEN YOU WANT

YOU WANT IT!

BE SURE OF YOUR WEEKLY COPY BY SUBSCRIBING NOW

SEND IN THE BLANK TODAY

123 W	ner Radio Digest, est Madison St., o, Illinois.
Please (Six, Radio	find enclosed check M. O. for Five Dollars Foreign) for One Year's Subscription to Digest, Illustrated.
Name	
Addres	s
City	Stata

AND HAPPILY THEY LIVED EVER AFTER

SOME SHORT STORIES IN COURSE MAY END THUS

Westinghouse Broadcast Station Retains Noted Critic to Teach Those Inclined to Letters

SPRINGFIELD, MASS .- Believing that a great part of the public either write or a great part of the public either write or think that they can write as well as the authors of some of the stories they read current magazines, Westinghouse station, WBZ, here, has arranged with Dr. J. Berg Esenwein, probably the most widely-known short story critic, to give a course of ten lectures as to short-story writing. The course will cover the elements of writing plot interest, climaxes and the like. The course is now in progress.

like. The course is now in progress.

At the end of the course each of the students will be permitted to submit a short story; the best will be awarded a prize of \$25. Second and third prizes of \$15 and \$10 will be given the next best stories.

When Course Is On Air

The course began on Thursday, September 13, at 7:40 p. m., eastern time. The succeeding nine lectures are being given on Thursday of each week at the same time. The introduction of this course of study by WBZ marks a departure from its broadcasts. Heretofore, miscellaneous talks have been given of more or less interest to the Radiophan. It is the belief of WBZ that this kind of address has served its purpose and that the time has come when definite things should be done. Therefore, for the fall and winter, it has been planned to make every broadcast specific as to purpose.

Dr. Eisenwein holds degrees from Al-

bright, Lafayette, and Richmond colleges and the University of Omaha. Most of his life has been given to educational and

literary work.

"Plug-in" for Hospital Beds

FALL RIVER, MASS.—The hospital trustees here have appointed a committee to investigate the advisability and practicability of installing Radio equipment at all the municipal hospitals. If it is done there will be a plug and connection at each bed, so that the patients may suit' their convenience.



Where Shall We Go Tonight?

To New York, Cuba, Atlanta, San Francisco or perhaps Honolulu? Far distant stations are continually being brought in clearly and distinctly with a Crosley Model X-J. Unsolicited letters from users, telling You, too, at a very small cost, can enjoy the many pleasures and conveniences that this new Crosley Model affords.

CROSLEY MODEL X-J

A 4-tube radio frequency set, incorporating one stage of Tuned Radio Frequency Amplification, Detector and two stages of Audio Frequency Amplification, with jack to plug in on three tubes for head phones; new Crosley multistats, universal rheostats for all makes of tubes; new condenser with molded plates; filament switch and other refinements of detail. This receiver is exceptionally efficient in long range reception. It will bring in stations at almost unbelievable distances clearly and distinctly. We unhesitatingly claim the Model X-J is the We unhesitatingly claim the Model X-J is the best radio receiver ever offered, regardless of price. The Crossey Model X-J, together with the complete Crosley line of receivers, ranging in price from \$26 to \$150, are for sale by best dealers everywhere.

Crosley Better-Costless Radio Products

List prices on our equipment west of the Rockies 10% higher. In Canada add duty.

Write for Free Catalog

CROSLEY MANUFACTURING COMPANY

Powel Crosley, Jr., President 10491-2-3-4 Alfred St. Cincinnati, Ohio

NEW "ROLLS ROYCE" SET RANKED FINEST

CAPABLE OF TUNING FROM 200-700 METERS

Sam Curtis, Ex-Operator at WNAC, Completes His Outfit De Luxe

BOSTON, MASS.—Sam Curtis, Radio expert of the C. C. Harvey Co., former announcer and Radio operator of the TAC broadcasting station, has built a receiving set of the "Rolls-Royce" type, meaning a set de luxe, using seven dry cell tubes, with a loop, and embodying all the principles of the super-heterodyne and neutrodyne combined.

With his experience at WNAC, and with the Radio Corporation

the Radio Corporation and in various naval Radio positions. Curtis has been able to design what is perhaps the finest receiving set obtainable at the present

It is capable of tuning from 200 to 700 meters, and has an intermediate frequency of 48,000 cycles. The principal features are the combination of all batteries inside the cabinet which is of American walnut, polished and made five-sided, like the official French naval receivers.

Parts and Construction of Set
One rheostat controls the seven UV-199
tubes, which are used in the following
order: 1, oscillator; 2, first detector; 3,
4 and 5, intermediate frequency amplifiers;
6 good detector and 7 states of audio 6, second detector, and 7, states of audio frequency. Three long wave transformers have been supplied for the Radio frequency amplification. The set of tubes is mounted on a strip having rubber cushion supports, the sockets laid flush with the wood. These supports are encased in a holder of solid brass, while the cabinet and panel are lined with sheet copper.

A high efficiency is obtained by the use of two .001 mfd. low loss variable con-

densers, these constituting the only two adjustments except for one filament rheo-

Differences in Hook-Up In the following details, the circuit differs from the general super-heterodyne circuit: single control for all tube filaments; batteries all located inside the cabinet; embodiment of the neutrodyne principle in stabilizing; use of a loop with the center of its winding grounded, thus minimizing the antenna effect and allow-

ing for much sharper directional tuning. Mr. Curtis spent two months designing and constructing this set, which also includes plate volt meters inlaid into the panel and filament meter, showing at all times the exact amount of plate and filament voltage in the batteries. With a two foot loop, Curtis and Henry Clapp, who assisted him in the construction, picked up twenty-two broadcasting stations in one evening, including WBZ, WEAF, WSAI, KOP, WWJ, KDKA, WEAN, WLAG, WHAP, WIAP, and WIAZ. There was your WX, WJAR and WJAZ. There was very little static noticed.

"BUGS" AID OFFICIALS **RELAYING MESSAGES**

Springfield, Mass., Amateurs Give Services Voluntarily

SPRINGFIELD, MASS.—Radio amateurs residing in this city are giving their services voluntarily in the first naval district by relaying official messages, requiring prompt attention, between the reserve division here and the brigade headquarters at Boston. Commander J. T. Nelson in a recent letter addressed to Ensign H. F. Johnson of Springfield commended this work in these terms:

"The work of your division in training men for Radio operators is greatly appreciated and your division is the only unit where training of this nature is being carried on. It is the brigade comgeneral training of your division."

RADIO AS TRAIN GUIDE ATTEMPT BY EXPERTS

HICAGO .- The possibility of directing fast trains by Radio with-out interrupting their speed will be demonstrated soon on the Rock Island's Rocky Mountain Limited train by experts from all the big roads of the country. Riding in special coaches, they expect to keep in constant touch with stations here, WOC at Davenport and WOAW at Omaha, and later with Denver stations.

WCAE FINDS ROAMING LAD 30 MILES AWAY

PITTSBURGH, PA.—WCAE, Pittsburgh Press, probably broke the record recently as an air sleuth. The mother of Tommy Moran, 14, reported to WCAE that the police had failed to find her son who had been lost for twenty-four hours. Twenty-one minutes after the report was broadcast the boy was found by a policeman who had heard WCAE, thirty miles away, announce the quest. nounce the quest.

YOUNG FAN HAS SET LIKE BOOK



Little Miss Stella Pogany of Philadelphia listening in on the unusual booklike receiving set her father has made for her. Another view of the instrument is given on the back page. The "book" is entitled "My Set"

KGB Broadcasts Twenty Voice Open Meeting of Trade Two-Act College Operetta

TACOMA, WASH.—An entire operetta NEW YORK.—L. A. Nixon, secretary in two acts, with the original cast of of the Radio Trade Association, has anmander's wish that you continue this work and expand this Radio department if it can be done without detracting from the general training of your division."

KGB, The Tacoma Ledger station here. The operation was "The Pennant," a tuneful college comedy, which met with much favor. It took two hours to broadcast.

Chiefs at Gotham Palace

twenty voices, was presented recently at nounced an open meeting for the Radio KGB, The Tacoma Ledger station here, trade conducted under the auspices of The operetta was "The Pennant," a tune-this association for October 9 at 3:00 ful college comedy, which met with much p. m. at Grand Central Palace in this

AIR COMPASS CITED **AS MARINE SAVIOR**

NAVY VESSELS DISREGARD BEARINGS AND GROUND

New Englander Declares Cable in New York Harbor Would Have Averted Destroyer Disaster

SAN DIEGO, CALIF.—Disregard of the course indicated unerringly by the Radio compass at Point Arguello station, on the California coast, was the direct cause of the recent loss of twenty-three enlisted men and the destruction of seven destroyers, valued at \$10,000,000, when they ran on the rocks off Point Honda during a fog.

This was the gist of the evidence presented to the naval court of inquiry here.

Had the commander of the squadron and the navigating officers of each destroyer heeded the warnings of the Radio

and the havigating officers of each destroyer heeded the warnings of the Radio signals, had they believed that Radio was efficient, the wreck could have been avoided. According to the statement of E. C. Hanson, of Reading, Mass., inventor of the Radio pilot cable, the latter device also, if installed, would have prevented the wreck.

Cable Sixteen Miles Long

As an instance of the reliability of the Radio pilot cable, Mr. Hanson cited its achievements in Ambrose channel, New York harbor. The cable, as operated by the Navy department, has guided hundreds of vessels to safety. It is sixteen miles long, energized by a 500-cycle low frequency current from the shore. The current establishes a powerful magnetic field whose characteristics are readily recognized by an observer aboard ship. ognized by an observer aboard ship.

ognized by an observer aboard ship.

A vessel equipped in accordance with the requirements of the Radio pilot system bears on each side "pickup" coils which are affected by or sensitized to the magnetic field. When the ship passes directly over the cable the coils are affected acqually that is cause like response in equally, that is, cause like response in any pair of earphones worn by the watch aboard the ship. The coils are connected with the earphones by an ordinary two-step amplifier.

Sound Intensities Guide Ship

When the craft deviates from the course set by the cable a dissimilar response is registered by the earphones. The side of the ship nearer the cable produces the louder sound or response in the earphones. The navigating officer thus is enabled to right his course. He is also assisted by a mechanical visible indicator which forms part of the steering apparatus.

In the opinion of Mr. Hanson, the Atlantic coast from Maine to Florida and the Pacific littoral from Canada to Mexico.

when equipped with his Radio pilot, would be virtually free from shipwrecks caused by fogs. The cost of operating the Radio pilot, he said, is about ten cents an

Picks Up Broadcasts Deep in Grand Canyon

Prediction of Experts Prove to Be Incorrect

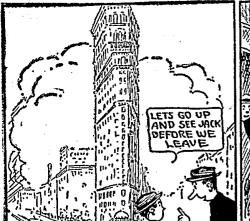
DENVER, COL .- The Geological Survey party carrying a Radio set on a trip through the Grand Canyon of the Colorado, has arrived safely at Bright Angel trail. Notwithstanding the predictions of experts that it would be impossible to receive Radio messages while in the bottom of Grand Canyon, Colonel Birdseye reports that he is in daily receipt of messages broadcast from Los Angeles, Salt Lake, and Chicago. He received the news of President Harding's death within fortyfive minutes after it occurred. Reports of his progress will be sent out for broadcasting when he reached Basstrail about September 10, Supai Creek, September 20, and Diamond Creek, October 15.

It is a violation of a city ordinance of Newark, N. J., to erect an antenna without a permit.

THE ANTENNA BROTHERS

Spir L. and Lew P.

Note: Jack Sells Ads in N. Y.









GERMAN RADIO HEAD DENIES 'FEAT' TALES

BRANDS MAGNETO STORIES "PURELY MYTHICAL"

Discredits Report That Planes, Autos Were Halted and Wrecked -Not Even Possible

By Carl H. Butman

WASHINGTON .- Public antipathy against Germany's war plans of the future should not be increased by the report from Berlin that the German Government can stop and render powerless automobiles, airplanes or other motor vehicles by Radio. Herr Prostrat Hermann Thurn, an administrative head of the German Radio service, dismissed the stories as "so much nonsense," in a recent interview sent officially to Washington.

Radio Digest, it will be remembered, some time ago interviewed German engineers and was first to brand the story

as false.

Herr Thurn further stated that the correspondent who sent dispatches to papers in the United States to the effect that in June, a number of automobiles en route to Hamburg were halted when their magnetos were stopped by powerful Radio waves from Nauen, was the victim of unscrupulous persons. "No such achievement has yet been anywhere reached," the German engineer asserted, adding that even if it had been attained adding that even if it had been attained by Germany, "it would have most certainly been kept a secret and not bruited about by anybody connected with Nauen."

Denies Plane Crippling Stories

This official information also discredits the stories that airplanes of France flying over Bavaria were stopped and forced down by Radio waves from German sta-

Both stories of Radio magneto control are impossible, according to the German expert, who pointed out that:

Magnetos are enclosed in iron or steel jackets and could not be influenced by Radio waves; no matter how powerful, Radio waves cannot be directed with precision so as to affect the magneto of a vehicle or vessel at any distance from the directing station, particularly when the vehicle is in motion; and that as definite or precise directing cannot be achieved, every vehicle or vessel within the zone of influence of the electrical wave would be similarly affected. This would stop, bring down or sink the vehicles or ships of the operating agency as well as those of the

Some skeptics may believe that the Herr Administrator would have denied the statements in an effort to protect Germany's secret Radio control, but the official forwarding the dispatches believes implicitly in this Radio engineer whom he knows personally and professionally, and, he feels that his negations and criticisms should be taken without reservation.

"Stories of a Reporter" at WJZ NEW YORK .- A feature which has already proved more than popular with ready proved more than popular with WJZ audiences here has become a weekly event on the program, for William H. Crawford, the noted journalist, author, war correspondent, and reporter, has agreed to give one of his delightful "Reminiscences of a Reporter" every Sunday evening for an indefinite period. A naturally charming speaker, Mr. Crawford has so many interesting anecdotes about the famous men of this country and Europe that his talks are a veritable revethe famous men of this country and Europe that his talks are a veritable revelation of the characters of those personages in a peculiarly fascinating manner.

The new club are Lhoyd Miller president, E. W. Heister secretary, and Ivan Stripe treasurer. Communications should be directed to Mr. Miller at 663 Yale Street or to the secretary Mr. E. W. Heister, 700 May Street.

BIRTH OF THIS BABY AIDED BY BROADCAST



"The Radio Baby of WLAG" is learning to walk. It is nearly a year since she was born during a Caesarian operation while her mother listened to the special program broadcast from WLAG in lieu of an anesthetic. The baby is Lucille Eleanor Cartwright, daughter of Mr. and Mrs. Guy A. Cartwright, 4105 Elliot Ave., Minneapolis, and scarcely a day passes that she does not listen in to the Twin City Station

Safety Congress Hears Broadcast Addresses

Experts Give Air Talks on Radio Hazards

BUFFALO, N. Y .- One of the biggest broadcasting demonstrations ever staged for a convention was to be put on by Station WGR during the week beginning October 1 when the National Safety Council was to hold its twelfth annual congress here. Three thousand delegates of the various sections of the council met to make America safe for Americans. Because of the great general interest in the subject of safety this convention was to be put on the air on a large scale.

on the air on a large scale.

Of direct interest to fans were two addresses applying particularly to Radio. One was an address by H. J. Burton of the Consumers' Power Company, Jackson, Mich., on "Hazards of Improper Radio Installation," and the other was "Safety in Playing the Public's New Scientific Game—Radio." The latter was given by S. E. Whiting, chairman of the Radio Hazards Committee Public Safety Section National Committee, Public Safety Section, National Safety Council.

Akron Youths Form Society

AKRON, O .- A new Radio club having for members young men interested in the popular science was recently organized in South Akron and has held several meetings at members' homes. The officers for the new club are Lloyd Miller president,

TRADE COMMISSION FINISHES INQUIRY

Next Congress to Act on Anti-Trust Investigation of Radio Industries

WASHINGTON, D. C.—The field work in connection with the Radio investiga-tion which is being made by the Federal Trade Commission in response to House Resolution 548 is practically complete acording to officials of the Federal Trade Commission. No details of the investiga-tion will be made public until the report is made to Congress, which report will be prepared in the very near future, so that it can be submitted to Congress when it convenes early in December. The investigation in accordance with

the resolution passed by the House of Representatives includes a report on the ownership of patents covering Radio apparatus, the contracts and leases, together with the manufacture, sale and resale of Radio apparatus. The purpose of the resolution is to "aid the House of Representatives in determining whether there has been a violation of the anti-trust

AIR SIGNALS GREATLY AID MILITARY FLYING

Applications Much Diversified and Increased at Canal Zone

WASHINGTON.—Radio, the latest wonder of the world," is materially aiding the development and efficiency of military and naval aviation. War time flying in its many phases would little avail the commanders in chief if instantaneous communication between the bases and the air fleets was not constant. Radio telegations raphy and telephony establishes direct liason between the air and the ground or sea, thus combining these arms of the service.

Peace time tests and maneuvers between the aerial forces and those of the land and sea, aided by Radio, are carried on regularly by both the Army and Navy; their scope and frequency are being ex-

tended each year.

A recent Army Air Service report from France Field, Canal Zone, states that during the past fiscal year 261 Radio flights,

Dept R. D. 2

embracing aerial Radio tests, voice-controlled formations, Coast and Field Artillery reglages or gun-fire observations, tactical maneuvers, reconnaissances and coast patrol work. This was an average of a Radio flight each working day. The diversity as well as the volume of Radio communication accomplished in the Canal Zone was in excess of any previous year but will be extended next year, the report states. France Field pilots had never be-fore attempted tactical maneuvers, coast patrol, field artillery spotting or voice control formation flying, yet the report indicates successful results in all lines where Radio was used.

France to Build Plants for Soviets WASHINGTON, D. C.—The Russian authorities have ratified a five year contract between the French Compagnie Générale de Telegraphie sans Fil and the Russian Trust Radio Electric for the installation of stations and the manufacture of apparatus in Russia. This is the first concession accorded by the Soviet government to any French company.

A license is necessary to operate regenerative receiving sets in England.



RADIO PANELS

POLISHED BLACK FINISH

CUT PERFECTLY SQUARE TO ANY SIZE

/32" THICK 1/24 PER SO INCH 16" THICK 3/4 PER SO INCH 3/32" THICK IC PER SQ. INCH

1/8" THICK 11/2" PER SQ. INCH 3/16" THICK 2 PER SQ. INCH 1/4" THICK 21/2" PER SQ. INCH 3/8" THICK 40 PER SQ INCH 1/2" THICK 51/4" PER SQ INCH

SEND FOR COMPLETE PRICE LIST PROMPT ATTENTION TO MAIL ORDERS DEALERS PRICES ON APPLICATION

STARRETT MFG. CO. 519 SOUTH GREEN ST. CHICAGO

WELL worth listening to, those programs that are coming in by radio! Great music, lectures, news of the minute, stories—to make your home alive instead of dead. Use only De Forest Radiophones, and get the joys of radio at its best. Go see that De Forest agent today.

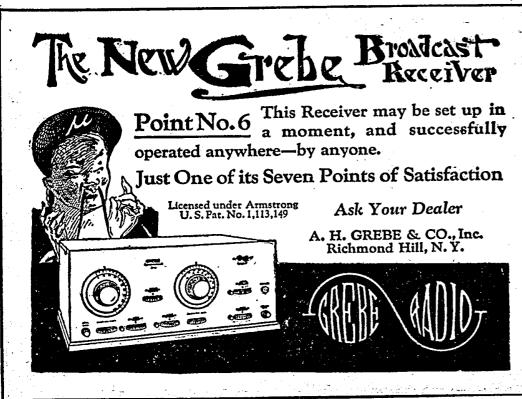
DE FOREST RADIO TEL. & TEL. CO JERSEY CITY, N. J. Dept. R. D. 2

If Located West of Pennsylvania, Address DE FOREST RADIO TEL. & TEL. CO.

Western Sales Division

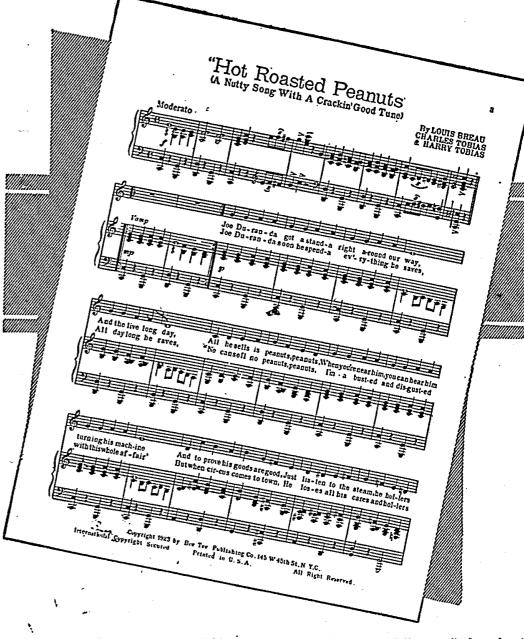
5680 12th St., DETROIT, MICH.





PROOF OF ETHER "PLUG" IN SALES





Louis Breau (left) and Charles Tobias, composers of "Hot Roasted Peanuts," the sale of which, following its broadcast at several stations, has proved the Radiophone is a real service for music publishers. One group of music publishers, which has sought to collect fees for the broadcasting of their compositions, will have a hard time disputing the argument presented by this test

New Song Has No Other Publicity Yet Rivals "Bananas" in Popularity

(Continued from page 1)

song which is the type of popular music now in demand and they decided to experiment with it.

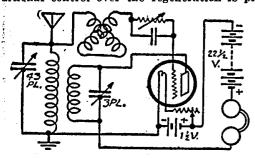
When sure their song was right and contained all the elements to make for suc-

RECEIVING RECORDS? SEND 'EM IN-

(The following items are based on letters from Radiophans, who have been doing good distance work. Readers submitting letters for publication must diagram their sets.—DX Record Editor.)

Coast to Coast on One Tube

Coast to coast on one tube is the record es tablished by "E. S. S.," 117 West Alexandrine, Detroit, Mich. His results are attributed by him to the efficient hook-up he used in making his set. As is shown herewith, the set uses a variocoupler for a tuning unit, the primary tuning the antenna circuit, and the secondary serving as a tuned tickler coil feedback. Ad ditional control over the regeneration is pro-



vided in the grid circuit by a variometer. The use of a variable grid leak helps to bring in the distant stations clearly.

WWJ and WCX of Detroit can be tuned out and WGY heard while the former are on the air, the builder of the set declares. He adds that his aerial is 100 feet long and 35 feet high with a 10-foot lead-in. A gas pipe serves as a ground. The WD-12 tube, used in the set, is lighted with a dry cell and controlled by a 30 ohm rheostat.

cess, they approached Station WJZ, the Radio Corporation plant here, and made arrangements to sing not only their new number, "Hot Roasted Peanuts," but also some of their other successes, "Grand Daddy" and "Underneath the Mulberry Tree." They put all they had into their renditions because they were gambling with the cost of publishing 2,000 copies of

the song.
WJZ's phones began to ring immediately with requests for the boys to repeat "Hot Roasted Peanuts," so they gave an encore. The following night they appeared at WHN and put over the same numbers with even greater success, two encores being necessary

Radio Alone Sells Out Song

Within a week, without any other publicity or advertising than that given "Hot Roasted Peanuts" by Radio, the 2,000 copies were sold and the printers were running off 10,000 more. Already 35,000 copies have been sold and peanuts are vieing with bananas for popularity. The song has been made on both records and piano rolls and is selling fast.

Breau and Tobias have been broadcasting since 1921 and Radio is now well repaying

Fans Hear Church Wedding

FORT WORTH, TEX.—Radiophans who tuned in to WBAP at high noon recently were treated to a surprise program in the form of a Radio wedding, the contracting parties being Miss Mary Rose Foster, sister of Will Foster, popular microphone artist and organist of the church in which the wedding took place, and C. G. Hutchings of Winston-Salem, N. C. mony took place in the First Methodist Church and the microphones in the auditorium picked up every word of the cere-mony. The ritual as voiced by the minister, with the replies by the bride and groom were distinctly audible.

A four-year course in Radio has been established at the Massachusetts Institute of Technology.

ever, the Society of Authors, Composers and Music Publishers have not yet ad- | broadcasting has been all wrong.

them for their frequent efforts to entertain | mitted defeat, or that they are convinced and amuse the listening in public. How- | by this time that Radio can be their greatest aid and that their attitude toward

AN EVENING AT HOME WITH THE LISTENER IN

	Station and City	Met.	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
l	CFCA Toronto, Ont	400 440	7:00- 8:00 10:00-11:00	7:00- 8:00			7:00- 8:00	7:00- 8:00	5:45- 6:45
ı	CFCN, Calgary, Alta CKAC, Montreal, Que	430	10:00-11:00	6:00- 8:00		6:00- 8:00	11:90- 1:90	11:00- 1:00	
l	KDKA, E Pittsburgh. Pa	326	4:00- 8:00	4:00- 8:00	4:00-8:00	4:00- 8:00	4:00- 8:00	4:00-8:00	6:30- 7:30
İ	KDZE, Seattle, Wash KFAF, Denver, Colo	455 360	9:00-10:00 9:00-10:00		10:00-11:00	8:30- 9:00	9:00-10:00 9:00-10:00		• • • • • • • • • • • • • • • • • • • •
١	KFI, Los Angeles, Calif.	469	8:45- 1:00	8:45- 1:00	8:45- 2:00	8:45- 1:00	8:45- 2:00	8:45- 2:00	10:00- 1:00
۱	KGW, Portland, Org	492	9:00- 2:00	12:00- 1:00	10:00-11:00	12:00- 1:00	9:00- 2:00	12:00- 1:00	9:00-10:00
ł	KHJ, Los Angeles, Calif KPO, San Francisco. Calif	395 423	8:45-12:00	8:45-12:00 10:00-12:00	8:45-12:00	8:45-12:00 10:00-12:00	8:45-12:00		10:00-12:00 10:00-12:00
۱	KSD. St. Louis, Mo	546		8:00-10:00			8:00-10:00	8:00-10:00	10.00-12.00
l	KYW, Chicago, Ill NAA, Radio, Va	536	1.6:46 . 8:66	7:00- 9:00	7:00- 9:00	7:00- 9:00	7:00- 9:00	7:00- 9:00	
l	PWX, Havana, Cuba	435	5:45- 7:20	6:05- 7:20	6:25- 8:40 8:00-10:30		7:00- 7:40	8:00-10:30	
l	WBAP, Fort Worth, Texas.	476	9:30-10:30		9:30-10:30		9:30-10:30	7:00- 7:30	
l	WBAV, Columbus, O	390	7:00- 9:00		1	1-2:22-2:44		1	
I	WBZ, Springfield, Mass WCAP, Washington, D. C	337 469	5:00- 8:00	5:30- 7:00 5:30- 6:30	4:00- 7:00	5:30- 7:00 8:45-11:00	4:00- 7:00	5:00- 7:00 5:30-11:00	
l	WCBD, Zion, Ill.	345	8:00-10:00	[<i>.</i>	,	1	8:00-10:00		5:30- 6:30
ı	WCX, Detroit, Mich	517	7:30- 9:00		7:30- 9:00	7:30- 9:00	7:30- 9:00		6:15- 7:15
I	WDAF, Kansas City, Mo WDAJ, College Park, Ga	411 258	6:00- 1:00 7:30-11:30		6:00- 1:00 10:30-11:30		6:00- 1:00 7:30-11:30		
Į	WDAP. Chicago, Ill	360	1	6:00- 1:00	6:00- 1:00	6:00- 1:00	6:00-1:00	6:00- 1:00	
ı	WDAR, Philadelphia, Pa WDT, New York, N. Y	395	6:30- 9:55	6:30- 9:55					
ŀ	WEAF, New York, N. Y	405 492		6:30- 9:00	6:30- 7:30 6:30- 9:00		10:00-11:00 6:30- 9:00		6:30- 9:00
ł	WFAA, Dallas, Tex	476	8:30- 9:30	8:30-12:00	1	8:30- 9:30	6:30- 9:30	8:30-12:00	9:30-11:00
Į	WFI, Philadelphia, Pa	395	5:30- 6:30					5:30- 6:30	6:30-7:00
ı	WGI, Medford, Mass WGR, Buffalo, N. Y	360 319	5:30- 9:00	6:00- 7:30 5:30- 7:45	6:30- 8:00 5:30- 9:00	6:00- 7:30 5:30- 7:45	6:30- 8:00 5:30- 9:00	6:30- 8:00 5:30- 7:45	7:30- 9:00
l	WGY, Schenectady, N. Y	380	6:45-9:00	6:45- 9:00		6:45- 9:00	G:45-10:30	0.00	5:30- 6:30
ı	WHA, Madison, Wis	360	7:30- 8:30		7:30- 8:30	2.20 .0.00	7:30- 8:30		
١	WHAS, Louisville, Ky WHAZ, Troy, N. Y	400 380	8:00- 9:30	7:30- 9:00	7:30- 9:00	7:30- 9:00	7:30- 9:00	7:30- 9:00	
l	WHB. Kansas City. Mo	411	 	8:00-10:00		8:00-10:00			8:00-10:00
ı	WHK, Cleveland, O WHN, Brooklyn, N. Y	360	5:00- 5:30	5:00- 5:30			5:00- 5:30	5:00- 5:30	
ı	WHN, Brooklyn, N. 1	360 509	6:30-11:00 5:00- 6:30	8:30-11:00 5:00-11:00					
ı	WIP, Philadelphia, Pa WJAX, Cleveland, O	390	l	6:30- 8:30		7:00- 9:30			
ı	WJAZ, Chicago, Ill. WJY, New York, N. Y. WJZ, New York, N. Y	448				10:00- 2:00	10:00- 2:00	10:00- 2:00	6:00- 9:00
ı	WIZ New York N V	405 455	6:30-10:00	6:30-10:30 6:30-10:00		6:30-10:30 6:30-10:30			5:00- 5:30 7:30- 9:30
ı	WKAQ, San Juan, P. R	360	1	7:00- 8:30	6:00- 7:00		7:00- 8:30	1	
ı	WLAG, Minneapolis, Minn.	417	7:30-10:00	7:30-10:00				7:30- 1:00	7:45- 8:45
ı	WLW, Cincinnati, O WMAQ, Chicago, Ill	309 448	8:00-10:00	10:00-12:00 7:00-10:00		10:00-12:00 7:00-10:00		7:00-10:00	
ı	WMC, Memphis, Tenn	500	8:30- 9:30			8:30-9:30			
ı	WNAC, Boston, Mass	278		7:00- 9:00			7:00- 9:00		
ı	WOAV, Omaha, Neb	385 526	9.00-10:00	9:30-10:30 9:00-10:00		7:30- 8:30 9:00-10:00	9:00-10:00	9:30-10:30 9:00-10:00	
ŀ	WOC, Davenport, Ia	484	8:00- 9:00				8:00- 9:00	9:00-10:00	
١	WOO, Philadelphia, Pa	509	6:45-10:00		1		6:45-10:00		
I	WOR, Newark, N. J WOS, Jefferson City, Mo	405	8:00- 9:30	5:15- 6:30	5:15-10:00 8:00- 9:30		5:15- 6:30 8:00- 9:30		
I	WSAI, Cincinnati ,O	309		W 00 0.00		7:00-9:00			
١	WSB, Atlanta, Ga	429	8:00-12:00	8:00-12:00			8:00 12:00	8:00-12:00	1 7:30- 9:15
١	WSY, Birmingham, Ala WWJ, Detroit, Mich	360 517	8:00- 8:45 7:30- 9:00	7:30 9:00	8:00- 8:45 7:30- 9:00	6:00- 7:30	7:30-11:00		8:00- 9:00 3:00- 4:00
1		1	1	1	1	1	1	1	1

Instructions for Use.—All the hours above are given in Gentral 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.

FIRPO-LAND HEARS FIGHT BY AIRPHONE

GETS BLOW-BY-BLOW STORY IN 15 SECONDS

Argentine Boxing Fans, 6,000 Miles from Ring, Get Detailed Account from Broadcaster

NEW YORK.—The 85,000 spectators at the ringside who saw Dempsey knock Firpo to the canvas for ten counts, constituted an infinitesimal part of the audience that enjoyed one of the liveliest clashes in a twenty-foot ring. Far from the scene of the battle, to be specific more than 6,000 miles from the ring. cific, more than 6,000 miles from the ringside in New York, some of the most eager fight fans listened tensely to a blow-by-blow description of the supreme fistic engagement of the year.

And this invisible audience was Firpo's

own, those who had inspired him to enter the ring against Dempsey, confident that their giant brother would trot back to the Pampas with the world's heavyweight championship title. Disappointed as they are, nevertheless theirs is the satisfaction of knowing that the challenger fought bravely although defeated, and this fact was made known to them by Radio over their receiving sets through the inter-mediary of the most powerful station in the world, Radio Central, located at Rocky

Point, Long Island.
Chart Shows Scheme Used
The manner in which the transmission of this information was carried out during the many stages of its progress over telephone wires, telegraph circuits, and the many transformations of voice and telegraph signals, is represented sche-matically in the chart shown. Only fifteen

Moffett Follows ZR-1 Test Flight by Radio

Giant Zeppelin's Transmitting Set Works Perfectly

WASHINGTON.—The chief purpose of the American-built ZR-1 as an aerial naval scout was demonstrated during the re-cent test flights. Practically every move of the giant Zeppelin was sent to Admiral Moffett by Radio. This great helium airship is to be used for scouting and reporting to her base what she sees, a naval expert explained recently, adding that her Radio installation worked per-fectly for both short and long distances.

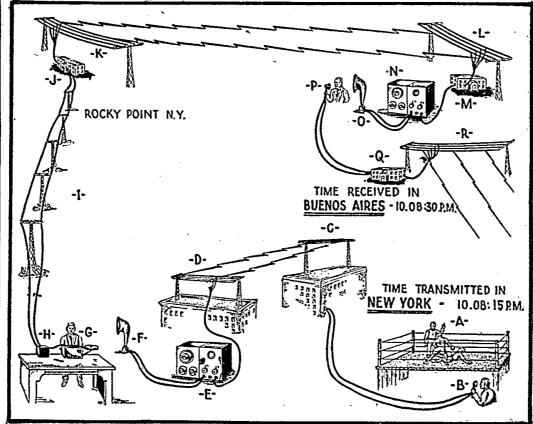
On the day of the initial flight over her home at Lakehurst, Commander McCrary sent the first Radio message to Admiral Moffett, chief of naval aeronautics, who was on the ground far below the great airship. The message was picked up in the field station and delivered to the admiral within a few moments. On the recent trip to New York and return, Admiral Moffett, then at his desk in the navy building in Washington, was advised periodically by Radio of her progress.

"It is of special interest," Secretary Denby said in an interview, "that the Navy Department was in constant comhome at Lakehurst, Commander McCrary

Navy Department was in constant communication with the ZR-1 by Radio." Her position was accurately reported at frequent intervals and full information was given of operating conditions aboard.

In this connection, it is of further interest to realize what this will mean when she journeys farther afield on exploration work. Admiral Moffett has reiterated the program planned after her trials are completed, including a flight to the North Pole, if practical. This it is now hoped can be undertaken by next spring.

HOW BUENOS AIRES HEARD FIGHT



seconds was consumed in the entire re- news of the big bout journeys to laying operation.

In this chart, Dempsey and Firpo clash in the ring shown at A. While the battle rages, J. A. White, the announcer stationed at the ringside at B, describes the blows exchanged. Each movement within the ring is translated into a word picture by White which is transmitted over the line through the microphone at B.

This land line connects with the Radio Corporation Station WJZ, located several miles from the scene of the engagement within the Polo Grounds. From the antenna of Station WJZ, shown at C, Radio waves are hurled outward at the speed of light to be picked up by thousands of receiving sets scattered throughout the United States.

Turns Words into Code

A few miles from WJZ, the antenna shown at D receives a minute portion of the energy from C which is received by the broadcast receiving apparatus E. After sufficient amplification at this point the blow-by-blow description of the bout is projected into the transmitting room of Radio Central's office by means of the loudspeaker F. An operator intercepts White's word messages and transcribes the words received into dot-dash language which is recorded upon a tape by means of the perforating machine G. The tape is then instantly fed into an automatic high speed transmitting machine con-nected directly in the control line extend-ing to the giant Radio telegraph trans-mitting station at Rocky Point, Long

This line, represented at I, links New York City with the three-mile multiple-tuned antenna and two Alexanderson alternators which deliver 700 amperes to the antenna K. Thus White's voice messages are converted into telegraph characters, and the waves radiating from K on 17,500 meters are an amplified telegraphic repetition of the short wave length Radiophone broadcast from the antenna C at WJZ.

Translated Again at Buenos Aires

At Buenos Aires, 6,000 miles away, the powerful wave energy flung from the antenna R registers at the receiving set N through the Monte Grande antenna represented at L. Over great expanses of water and long stretches of land, the

native land of Firpo.

But the circuit is not yet complete. The telegraph signals issuing from the loud speaker at O must be converted back from that staccato language into the very words originally delivered to the microphone at the ringside. This is carried out by a telegraph operator-announcer. He is sta-tioned in the studio of the Radio Corporation broadcasting station in Buenos Aires shown at O, where he translates dots and dashes into a word description.
The antenna at R flashes his announcements to eager South American listeners sitting beside their short wave receiving

But the wonder of it all is that from the moment the referee reached his tenth count while Firpo lay upon the canvas after a blow delivered by his opponent, only fifteen seconds were consumed in transferring the news from New York City to the countries in South America.

JUGO-SLAVIA BUILDING LARGE RADIO STATION

Will Be First High Power Plant in Balkans

BELGRADE, JUGO-SLAVIA. — Work has been started on a new 100-kilowatt station at Rakovica about 2½ miles from here and on a receiving station at Laudon Trench, a suburb. The station is being built by the French Wireless Telegraph Company and the total expense is estimated at \$400,000. On its completion the entire installation will be taken over by the state and the operating personnel will become employees of the Department of Posts and Telegraphs, the company maintaining one engineer as a technical ad-

This particular station will be the first high power Radio installation in the Bal-kans. Because of the greatly increased facilities it will afford for the dissemina-tion of news and the rapid dispatch of information, it should soon become well known internationally.

An amateur operator's license costs \$10 year in Australia.

Positive Radio Helps

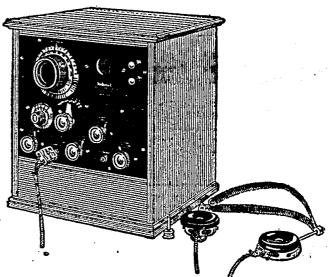
For Storage Battery Tubes Use Eveready Storage "A" Batteries.

For Dry Cell Tubes Use Eveready Dry Cell Ra-dio "A" Batteries.

For all Vacuum Tubes Use Eveready "B" Batteries.







HERE is a new DX dry cell receiving set that will bring in local stations clear and strong and tune out interference when you want to receive DX.

Tampa, Florida, is easily tuned in at New York City, in spite of powerful local stations.

This set, using Radio and Audio Frequency, equipped with Federal standard headphones, is reasonably priced at \$87.00, without tubes or batteries—a value made possible only by the tremendous volume of Federal production.

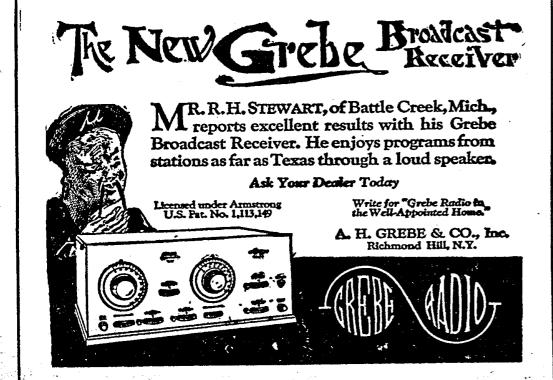
130 Federal Standard Radio parts offer the radio enthusiast a complete line of guaranteed parts of one quality—the best..



Federal Telephone and Telegraph Company Factory: Buffalo, New York

New York Boston San Francisco Bridgeburg, Canada

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A YOUNG ARMY OF WGY ANNOUNCERS



FLEWELLING ANSWERS TO QUERIES

By E. T. Flewelling-

(Editor's Note.—This department is written it has even less. A method that will greatly by Mr. Flewelling, the inventor of the famous reduce the capacity effects without any other super circuit. From the questions sent him each week care of Radio Digest, he picks the one considered most informative for all and answers it in this column.)

Purpose of Special Plate Lead

(Submitted by R. W. C., Fort Worth, Tex.) Question. Is there any method by which I can reduce the terrific capacity effects present in the Flewelling circuit?

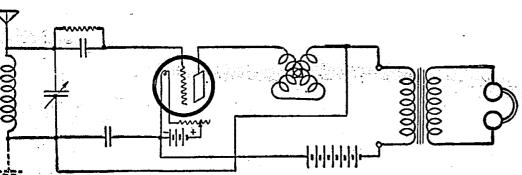
Answer. Body capacity effects with the Flewelling super seem to be quite a "bugbear" to a great many of the fans, and I often wonder if they take the same precautions to prevent body capacity effects with the Flewelling | fects by the use of apparatus so designed that

change in the circuit is to connect an audio frequency transformer in place of the phones and then connect the phones to the other side of the audio frequency transformer. Sometimes it is best to connect the phones to the secondary of the transformer, and at other times it is best to reverse the usual condition and connect the secondary of the transformer to the super circuit and the phones to the

primary circuit.

The diagram herewith has been published several times but is repeated here for the benefit of those who have not seen it.

I myself prefer to handle body capacity ef-



set that they do with the average Radio set, such effects are automatically wiped out, with-such as shielding the panel, properly connect-ing the plates of the tuning condenser, etc. former. If your colls are so mounted that The Flewelling set properly constructed has no more body capacity effect than any other with them, then you will get body capacity circuit; in fact, it can be so constructed sim-ply by the use of up-to-date instruments that therefore, these coils should preferably be



mounted back from the panel out of the way. It is very much worth while to go to some little trouble in order to secure the elimination of capacity effects because no real long distance work or sharp tuning can be done while these effects are present, and this, too, applies to any type of set.

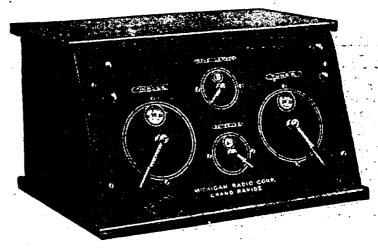
Boasts Best Harbor Radio

SEATTLE, WASH .- The harbor department of the city of Seattle has recently installed apparatus which makes its Radio outfit one of the most complete in the harbor service anywhere in the United States. The new equipment consists of two two-kilowatt navy standard spark sets with aerials 750 feet long, suspended on masts 165 feet above the level of Puget Sound. The range is about 4,500 miles.

News of Harding's Demise Heard at Bottom of Canyon

SALT LAKE CITY, UTAH,-The wonders of Radio were never better illustrated than in a letter just received from tourists at the Utah State Capitol. The party, according to the writer, was camped on the Lower Grand Canyon of the Colorado where they set up their receiving set dur-ing president Harding's illness, and were advised the same night of his death long before newspapers penetrated to their They learned of the President's death, in fact, forty-five minutes after it occurred. When the funeral cortege left San Francisco, they were also advised by

THE 1923 RADIO SENSATION



Never before in the history of Radio has a set of the quality and performance of the Michigan Midget been offered at anything like the price.

No longer is it necessary to buy parts and build your own set and save money. Michigan "Midget" has done that for you. It puts a long range, high-grade radio receiving set within the reach of everybody's pocketbook.

It is extremely selective—easy to adjust—tunes sharply, receiving all broadcasting wave lengths up to 600 meters. Works equally as well with dry cell tubes as with standard six volt tubes. Its light weight (weighs only 6 pounds) makes it ideal for touring, camping, etc.

The cabinet is mahogany finish, made in Grand Rapids, the world's greatest furniture center.

PRICE \$27.00

Also ask about the Michigan "Midget" Two Stage Amplifier \$30.00 and our exclusive line of Condensers, Variocouplers, Variometers, Rheostats, etc. When you send for circular, give us the name of your favorite radio dealer.

Michigan Radio (Orporat

GRAND RAPIDS, MICHIGAN

FIRST SALES STUDIO OPENS IN CHICAGO

DEMONSTRATION IN STORE INCREASES CUSTOMERS

Shop Owner Disproves Theory That Steel Structures Interfere with Clarity of Reception

CHICAGO.—What was said to be the first studio in the United States for the public demonstration of standard Radio receiving sets was opened here recently in the downtown district by the Electric Service products company of Chicago, of which P. C. Moore is president.

Unlike other Radio studios it is oper-

Unlike other Radio studios it is operated primarily to stimulate interest on the part of the consumer in the ready-made set. A survey under the direction of Mr. Moore had shown, he said, that only five to eight percent of the sets sold in Chicago last year were the product of manufacturers; the others were assembled by buyers of devices.

"Since the opening of the studio our sales have been doubled," said Mr. Moore. Studio on Balcony

On a balcony in the rear of the sales room a number of popular receiving sets are displayed. For the comfort of audiences there are divans and easy chairs. The other appointments are in keeping with the purpose of the studio.

"From eight o'clock in the morning until 9:30 o'clock at night we keep open house," Mr. Moore said. "When the programs of the various broadcasting stations are put on the air we tune in, using loud speakers. In a few minutes the studio is crowded by persons attracted from the street. Almost every one is a Radiophan. Twenty-five of every 100 thus drawn are potential buyers of receiving sets."

Steel Buildings Do Not Interfere
Perhaps the most important phase of
the Radio studio in relation to the technique of operation is its dissipation of the
theory that tall buildings of steel construction elevated train structures and
other placements of metal necessarily offer
interference to selection or reception. "By
exercising care and patience we have overcome the usual obstacles to clear reception," Mr. Moore declared. "We received
distinctly the returns of the recent Dempsey-Firpo bout. Stations in Jefferson
City, Troy, N. Y., Detroit, Davenport, Ia.,
Omaha and Minneapolis are heard by our
studio audiences almost every night."

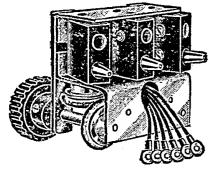
The aerial which serves the studio is stretched the length of the sales room to the glass front where it emerges at the top and is strung to the top of the building and is attached to a water tank. A four foot spreader is used to swing the aerial away from the building. The length of the aerial is about 100 feet.

Mormon Messages to Reach Ends of World, Smoot Says

SALT LAKE CITY, UTAH.—"The time is not far distant when leading men of this church will be able to stand in this pulpit and by means of Radio have their message carried to the ends of the earth," declared U. S. Senator Reed Smoot in an address in the Mormon Tabernacle here on Sunday afternoon. It was the greatest tribute to the possibilities ever paid here by a man of national prominence. When at home Senator Smoot is an apostle of the Mormon or Latter-day Saint Church.

The Radio filter problem of separating the signals of one station from those of other stations is being studied by a University of Wisconsin professor.

Another Columbia Scoop



A Geared Coil Mounting for Inside Panel Mounting, made of moulded Bakelite and mirror nickeled brass—for those who prefer their bulky coils on the inside of the cabinet hidden from view.

Ask your dealer for it. All good dealers stock it.

Price \$6.00

COLUMBIA RADIO CORP. 157 NO. UNION ST. CHICAGO

DAVID GRIMES PAID BIG PRICE FOR IDEA



David Grimes, twenty-six years old, blond and rather shy, is the inventor of the Inverse Duplex set for which he has been paid a record price. The exact amount is not yet disclosed. The idea was conceived by Grimes in 1917 when a lieutenant in the United States Air Service

Bandit Hunters Are Misled by Tangled Air Message

CHICAGO.—Radio failed as a thief catcher recently when several bandits, driving a gray touring car, held up the Purple Grackle, a roadhouse east of Elgin, owned by Attorney Charles E. Erbstein. The alarm was broadcast by Mr. Erbstein's Radio station, WTAS, was caught at Hinsdale, and relayed in such manner as to give police authorities an impression a Hinsdale bank had been robbed. So they watched the roads from Hinsdale instead of from Elgin.

WALNART INDUCTANCE SWITCH



Why drill ten holes in your panel—not only a difficult thing to do, but if you ever make a change in your hookup, your panel is marred—when by drilling only one hole you can use a Walnart Inductance Switch.

Positive contact; attractive Bakelite knob and pointer make a much more attractive panel, and simpler adjustment. And the price is no more than switch points with pointer lever would cost.

Ask your dealer for Walnart Inductance Switch; if he cannot supply, write us. Catalog of Walnart radio accessories and parts on request.



Dept. 403, 1251 W. Van Buren St., CHICAGO, ILL.

Review of Books

An Introduction to Radio. A real book for the amateur. This treatise comes in two volumes. 96 pages in each volume, fully illustrated with flexible leather covers. Price two volumes, \$1.

ers. Price two volumes, \$1.

How to Retail Radio. A new book telling of tested plans and methods and policies for the dealer in Radio. Financing, location, store equipment and arrangement. Price, \$2.00.

Vacuum Tube Receivers. By O. F. Heslar. A book that tells how to make a simple set. How to make the cabinet. It includes a 27 by 36-inch layout blueprint.

Price, 75 cents.

The Armstrong Super-Regenerative Circuit. By George J. Eltz, Jr., E. E. This is a De Luxe edition of this famous circuit. Profusely illustrated and fully explained. Fifty-two pages. Price, \$1.00.

plained. Fifty-two pages. Price, \$1.00.

Home Radio—How to Make It. By A.

Hyatt Verrill. This book is particularly
adapted for the amateur who desires to
know how to make Radiophones. Twelve
full page illustrations and diagrams.

Price, 75 cents.

Elements of Radiotelegraphy. By Elery W. Stone. The text was written for the guidance and instruction of Radio students in the communication service of the Navy. It is an instruction book for Radio schools. Price, \$2.50.

Radio Reception. By Harry J. Marx, Technical Editor Radio Digest Illustrated, and Adrian Van Muffling. A simple treatise on Radio reception. Beginning with the elementary principles of electricity it carries the reader on into the essentials of Radio telephony. The most successful methods of Radio reception are explained and special reference given to practical tuning. Price, \$2.00.

The book department of the Radio Di-

rest is prepared to send you any of the books on Radio published, whether listed in our Book Review or not. Let us know what book you want, send us your check and we will see that the book is mailed to you. Postage stamps in payment for books not accepted. Send money order or check. Radio Book Department, Radio Digest, 123 W. Madison St., Chicago, Ill.

B-T VERNIER TUNER

ADOPTED—RECOMMENDED

By 40 Largest Jobbers

Within the last thirty days forty leading radio jobbers with credit ratings of \$100,000 or more, seventeen of them with ratings of \$1,000,000, have rushed the Bremer-Tully Yernier Tuner into their catalogs at the last moment.

They recommend and catalog only the best radio equipment.

Here's why they catalog B-T Vernier Tuners:

1. It's the best Reinartz Tuner available.
2. It gives better control and maximum results
on any single circuit regenerative, any of the
ultra-audions or practically any of the reflex
circuits, including Hazletine.

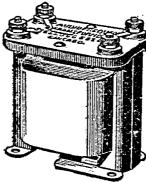
3. It's easy to change—ideal for "try-outs." Liberal discounts to jobbers and their dealers. Price \$5.00 Postpaid. (But ask your dealer first.) Send for one today. Hook it up and you'll understand.

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Kellogg Radio Equipment For Better Results

Transformers



transformers are designed to overcome defects of existing types and to furnish distortionless amplification of all audio frequencies.

Built complete by the using highest

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Kellogg Company, using highest grade wire, maroon enameled metal case, and molded Bakelite top. The primary and secondary binding posts are accessibly placed on top of the transformer.

These binding posts are plainly marked, so that there need be no error in assembling. Every Kellogg transformer is thoroughly tested before leaving the plant, and we guarantee the purchaser a product of exceptional efficiency.

No. 501 Ratio 4½ to 1......\$4.50 No. 502 Ratio 3 to 1..........4.50

KELLOGG SWITCHBOARD S SUPPLY COMPANY 1066 West Adams Street, Chicago, Illinois

The Reader's View

Purpose of the Variocoupler Just a few lines to let you know that I

have read your latest Radio Digest and am writing this letter as a flare-back to that of C. S. Wymore, Nebraska, under variocoupler winding.

I wish to say for his benefit and others like him who read and misinterpret articles that they want to be sure they are right before they "holler."

right before they "holler."
In 1921, I was one of many interested but "dumb" Radiophans. Then I took Radio Digest.

At present, after 1 year and 6 months, by following the advice of the editor and his staff I can build and have built most

all the circuits published in Radio Digest. Perhaps Mr. Wymore does not really know the purpose of the variocoupler. He would not mention the Flewelling and 3 circuit in the same breath if he did.—Joseph G. Gormley. Philadelphia.

Experience with Nacireman

E. P. Parker's article on the Nacireman hook-up in Radio Digest, August 11, was read with interest. I will give you my experience with the hook-up, using a variocoupler with 48 turns on the stator, tapped every 8 turns, 52 turns on the rotor, a Cunningham 301-A tube with 67½ volts on the plate, aerial 100 feet total with lead-in. (I live 30 miles east of St. Louis.)

The first station tuned in was WGY, 820 miles away; it came in as strong as the smaller St. Louis station. Next came WPAD, WHAS, WLAG, WSB, WWAY, WSAI, WWJ, WMC, WDAP, WFAA, WOAW, WBAP, WJAZ and WDAF; all were heard in one evening.

The secondary variable condenser plays

The secondary variable condenser plays a very important part in DX work. However, local stations may be tuned in without it.— Otto Steffens, Trenton, Ill.

Radiophone installation and use are contaught by correspondence by the University of Wisconsin Extension division.

Every Question ANSWERED for only \$1

At last you have under one cover a Complete Radio Handbook



JUST OUT 562 PAGES

Compiled by HARRY F. DART, B.S.E.E.

Formerly with the Western Electric Co., and U. S. Army Instructor of Radio.

Technically Edited by F. H. DOANE

No more need you turn from book to book, hoping to find what you want. It is all here, in 562 pages crammed full of every possible radio detail. Written in plain language, by engineers for laymen. Clears up the mysteries, tells you what you want to know. A complete index puts everything within your reach in a few seconds.

IT EXPLAINS: Electrical terms and circuits, antennas, batteries, generators and motors, electron (vacuum) tubes, every receiving hook-up, radio and audio frequency amplification, broadcast and commercial transmitters and receivers, super-regeneration, codes, license rules. Many other features.

Under one cover. Yes, it is all in one volume of 562 pages of clear type with hundreds of diagrams and illustrations. Takes the place of eleven or more specialized texts, each costing from two to ten times the dollar you pay for this single book. Belongs in every radio-equipped home, on every amateur's table.

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MAPS NEW LEADER IN HOTEL STATIONS

CLEVELAND FIRM SEEKS SOMETHING UNUSUAL"

Hollenden Hostelry to Make Definite Steps toward Establishing Set Soon

CLEVELAND.—Convinced that Radio is not only an educator of the widest scope but conducive to commercial welfare, Herman Mack, head of the company which recently assumed control of the Hollenden hotel of this city, head of the concern which operates the Lexington hotel in Chicago, said here recently that plans were under consideration for the establishment of a broadcasting station in the Hollenden. Decisive steps are expected soon.
"We have discussed the necessity of

such a station," Mr. Mack said, "in relation to the operation of a first class hotel, We have seen that many if not most of the finest hostelries in the United States are thus equipped."

Must Be Different

But the ordinary transmitting set, rather the usual program, will not conform with Mr. Mack's purpose. "The Hollenden plant," he declared, "when it is established, will lead all other hotel sets. And the Hollenden programs must be new and unusual else we will not operate. We are determined to make our broadcasting so interesting that people all over the country will remain awake until late at night to hear the Hollenden.

The Hollenden is one of the best hotels in Cleveland. It is among the widest known in the central west.

Cuban Amateurs Recognized by President of the Island

HAVANA, CUBA .-- A presidential decree now allots amateurs here a wave length of twenty meters and a power of one-half kilowatt. This decree will continue in effect, pending passage of a law to cover the use of Radio.

If this gives the expected impetus to amateur Radio, it should not be long be-fore Cuban operators will communicate regularly with amateurs in this country. The first Cuban amateur station heard in

this country is 6XJ at Tuinucu; operated by Frank H. Jones, member of the America Radio Relay League.

Jewish New Year Observers Hear Broadcast in Hebrew

BOSTON, MASS .- The first Hebrew musical service to be sent by Radio from Boston was broadcast by Station WNAC recently. It consisted of solos by Cantor I. G. Glickstein and choir of Temple Mishkan Tefila of Roxbury, Mass. There was also a short address by Rabbi H. Rubinovitz of the Temple. This service was in keeping with the Jewish New Year being observed at the time, and was for the benefit of the many Radiophans of Jewish faith who listen in on WNAC.



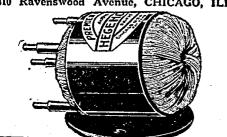
Ask your Dealer about HEGEHOG

AUDIO TRANSFORMER \$3.50

This little wonder is the surprise and talk of Radio Engineers everywhere. Fix in your mind's eye an AUDIO Transformer about the size of an English walnut and you have the "HEGEHOG" for size. Then recall the best Radio amplification you ever heard, and you have the "HEGEHOG" for volume and tone quality. Our new patented design and construction (100% shielded) makes this possible. It's a real bit of engineering, and we would like to have YOU try one.

Ratios 1 to 3, 1 to 4 and 1 to 5\$3.50

Premier Fleriric Company 3810 Ravenswood Avenue, CHICAGO, ILL.



MRS., THE CAUSE AND MR. L. BOLLING WELLER

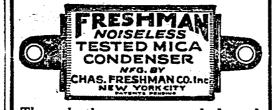


MAYOR ADVOCATES MUNICIPAL PLANT

Police Now Uses Private Station and Park Bands Have No Radio Outlet

PHILADELPHIA.—That activities of a municipal Radio broadcasting station for this city need not be confined to the broadcasting of police reports, was pointed out by Mayor J. Hempton Moore when he referred to the concerts given by the Phila-delphia Municipal Band, Philadelphia Plaza Band, Fairmount Park Band and the Fairmount Park Symphony Orchestra, made possible by appropriations from the

The Condenser Sensation of Modern Radio



Through the accuracy and dependability of Freshman Condensers, hookups and circuits have been perfected which have completely revolutionized the art of Radio Reception.

These little Storers of energy and rectifiers of Radio Current are the very heart of a well-built radio set.

The proper fixed condenser will make all the difference in the world in the reception, clarity and selectivity your set affords.

Capacity	Each	Capacity	Each
-0001	\$.35	.002	
.00015		.0025	
.00025	35	.003	
.0002	35	.004	
.0003	35	.005	
.00035	35	.006	
.0005	35	.008	
.0006	40	.01	
.0008	40	.015	
.001	40	.02	
.0015	40	.025	2,50

The FRESHMAN is so designed that constant equal pressure is exerted on the condenser plates over the entire area. They are the only condensers that do this and therefore the only condensers that avoid noises, which are due to variable pressure on the plates.

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



owned and operated broadcasting station would appear to be a future requirement of every large city.'

"The Radio of the future," he said, "will unquestionably enter into the official municipal activity, and will no doubt in a relatively short time take its place among all progressive discoveries and inventions

in its service to the citizen." There are many indications, from pres- ing sets in Argentina, as compared with ent discussions, that this city will soon 100 a year ago.

Mayor Moore stated that "a municipally have a municipal broadcasting station, as wned and operated broadcasting station the city hall is now equipped with receiving stations, and many of the officials are vitally interested in Radio. Police reports at this time are broadcast from Station WOO, and reports of missing persons are-broadcast from practically all the 500-watt stations in this city.

There are approximately 25,000 receiv-

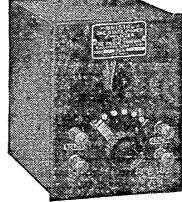
THE

AUDIOPHONE

Quality of reproduction such as only the original itself can equal. Speech that is so distinct that the voice heard is the actual voice of the Music that speaker. requires no tolerant imagination to be recognized as music of the finest type.



Bristol's Single Stage Power **Amplifier**



gives additional VOLUME with any two stage amplifier. No separate batteries required. It provides the additional volume, necessary to bring in very distant stations on the loud speaker.

Write for bulletin and address of the nearest dealer handling our instruments

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Boston New York Philadelphia Pittsburgh Detroit Chicago St. Louis San Francisco

Further Details of the Famous Miloplex Hook-Up

Part II—Introducing King Miloplex II

By the Mystery Man

WE INTRODUCED you to the Miloplex last week. How many have tried out this simple, economical, and efficient circuit? If you've built it, don't quit reading the series. There are several tricks to be told. However, the improvements will not mean junking the old apparatus. All the old and a few new parts will be used.

Before I start smoothing up a few of the sore eardrums the Miloplex passed you on its initial bow, let me put you "hep" to a secret.

When an editor wants to fire his crack office boy he mails him a blue envelope, when he needs a new star reporter, well when he needs one—I don't know the dope—but I do know that I recently purchased a new "Now I lay me down to sleep." One of those dollar down, balance as you sleep; or those donar down, balance as you sleep; and I figure I don't owe a cent on it, certainly I don't sleep. Clever fellow (the editor) bought me a cover charge lunch and said, "Why all you will have to do is just give us a rough sketch of your circuit with a short synopsis and we'll do the rest. Sounds easy, eh! He'll do the rest. Do you know what he meant; well, listen, he really truly meant that he would see that I was busier than a one arm man with the prickly heat. I'm sore, my wife is sore, and his office boy confidentially told me his grandma was going to stop carrying letters to me for a day, and rest up. Still, while it's true that I built the "Plexy" in 30 minutes, yet it took nine Iong experimental months to get ready, so why kick about writing 40 or 50,000 words about it. Here goes-yet let me first truly thank the many who have said so many nice things about the "Plex." Naturally one cannot answer all in person, nor the specific questions asked. Yet as the articles continue, I am hoping the final one will have produced for you a three tube receiver that you will prize, as I shall then

have been well repaid for your patience.

The most asked or inferred question is "Where is the trick?" "Will it amplify?"
"Can I build it so and so?"

As to "where is the trick," the answer is "There hain't none." As a bundle of parts it's nothing; properly built it works and works wonderfully well. You know it's a good deal like the small boy's father who wasn't worth a cent, but in Colorado he was worth \$10,000—dead or alive.
The inside story of it is really two

stories, one based upon the fact that, after all is said and done, there is nothing more to any finished receiving set than a combination of capacity and inductance as the dominating factors.

He who can best make these two factors each subservient to the whims of the other profits most. I didn't think I could say the above and make it mean much, but friend wife marked it 93 percent.

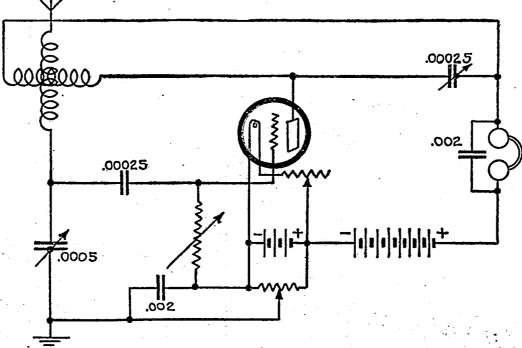
Further . . . now close your eyes and think. The manufacturers of tubes tell you they possess capacity, also mutual inductance; all right, but is it not also true that it has within itself more than one capacity. The cross sectional area capacity between filament and grid surely is less than that of filament and plate. Look at the plate area and answer "YES." But just a minute, we're getting technical; let's back up and get out of this traffic jam by leaving you to think what would happen if one could reconcile these varied

In other words, the Miloplex as you

Carter Jack Switch

\$1.00

The best radio switch yet devised—easily mounted on panel—a quarter turn of the knob operates the heavy phosphor-bronze springs.



elaboration was made upon "dead end" you that we did not care to dissipate any it there, it may come in handy.

voltage secured or have a section of our What do you know about head teleon this later.

One very sincere experimentor in Snaky, Ariz., (sure that's the snake capital) wrote me he had the secret; that all I had was an untuned primary, while the rotor with the condenser across it was nothing more than a wave trap, and I'm not so cocksure but that he is right. Think it over in the morning between coffee and "donots." Then another fellow writes "the impedance of your phones in the plate, not being by-

foundation for possible betterness. The passed, act as a radio frequency choke, first step for marked efficiency, naturally thus establishing a varying frequency or falls to the tuning unit, and while no super-effect." Not so good. Another chap (and he knows his C.W.) tells me I don't losses from tapped coils, yet we touched a couple of its high spots just to prove to they won't let me return it, so let's leave

primary crying just at the time the wed-phones? So do I, but most manufacturers ding bells were ringing . . . but more tell me that the positive tip should go to tell me that the positive tip should go to positive B, and generally this tip cord has a re-marking; try this, do this, you'll get better results.

One more word about tubes. Strange how many fellows slap 22 volts on a de



DIRECT Greatest radio B battery on market. Absolutely fresh, full voltage, seamless cells, noiseless—will bring in Concerts LOUDER and STRONGER! Built correctly—full number of voltage taps—will work any tube or loud speaker. Real service GUARANTEED. Sold directfrom our factories to you at lowest prices. Shipped prepaid to your door. ORDER TODAY. Send money order, check or pay C. O. D. Order By Number

No. 322B-221/2 volt variable-regularly \$2.25-our price \$1.96 No. 322A - 22½ volt variable-regularly \$3.00-our price \$2.65 No. 345A-45 volt-8 taps-regularly \$6.00-our price \$3.98 AYRES BATTERY CORPORATION. Cincinnati, Ohio tector and kiss it goodbye, yet every tube I have talked with, very frankly told me it worked best on from 14 to 22. If you haven't done so, make it your next big job to try out different voltage taps on the B with the tube in the "Plex"; it's a big help and gives the set a chance. Whetheryou can do this will be answered later; also it is quite possible that we will add a stage or two just for fun. Yes, we may even go so far as to show the little fellow with a wire or two changed. Anyway it is strictly up to you fellows; tell the editor you want more and what you want. As I said in the beginning, "He'll do the rest—and I the work. (Let's make him work!—Ed.)

(TO BE CONTINUED.)

Plans are on foot to form a British Radio Relay League. In the formation of such a club the approval of the Postoffice Department is necessary, and as this has been secured, British amateurs are sincerely hoping for the league's success

Latest Radio Sensation

Has Become Indispensable

PRIMARY SECONDARY AND CONDENSER



VERNI-TUNER

(Trade Mark)
Saves Space - Labor - Expense HANDSOME APPEARANCE FINEST WORKMANSHIP MORE SELECTIVE— THAN ANY OTHER COUPLER

For all regenerative circuits, for Home Combined Tuned Radio Frequency and Reflex, also Reinartz, Flewelling, Cockaday, etc. FREE BOOKLET of 13 Latest Circuits with each Verni-Tuner

At your dealer or nostpaid on receipt of pur-HORNE ELECTRIC & MFG. CO. Mercer & Colgate Sts. Jersey City, N. J.

WATCH FOR OUR ANNOUNCEMENT

To those Radiophans who appreciate highgrade, standardized Radio apparatus we will offer parts designed by our Radio Engineer-



(Inventor of the Flivver Circuit)

BUELL MANUFACTURING COMPANY

Cottage Grove at 30th Street CHICAGO

WATCH FOR OUR ANNOUNCEMENT

QUALITY RADIO PRODUCTS



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Simple Explanation of Radio for Everybody

Chapter II—Electrical and Radio Terms

By M. W. Thompson

HE following article is the first of a series THE following article is the first of a series for Radio beginners, written by Marvin W. Thompson, well known in airphone circles for his understandable style of approaching his subject, and his ability as a Radio engineer. Mr. Thompson is now an associate editor on the staff of Radio Digest. A preliminary outline of the Chapters to follow is:

Chapter III—Rectification and Receiver Essentials.
Chapter IV—Inductances—Fixed and

Variable.
Chapter V — Condensers — Fixed and Variable.
Chapter VI—Vacuum Tubes.

Chapter VII—Antennas and Grounds. Chapter VIII—Regeneration.

Chapter IX-Audio Frequency Ampli-

Chapter X-Loud Speakers.

N THE first chapter we discussed Radio transmission as it affects the atmosphere and that great conducting medium, the ether. Now we can consider Radio when it is in the form of electrical currents in the wires and apparatus of transmitting and receiving equipment. Since Radio is a branch of electrical engineering and is merely the utilization of electricity in smaller quantities and with slightly different characteristics than electricity as used for power and light, it is but natural that Radio science should use electrical terms and similar symbols in the drawing of diagrams.

Electrical and Radio Engineering

From electrical engineering, Radio has borrowed four terms with which every fan and experimenter should be more or less familiar—volts, amperes, ohms and watts. To force any liquid or substance through an opening or tube, pressure is required and since "electrical pressure" is necessary to force current through wires we must have some unit of measurement of this pressure. This unit is termed a volt. Pressure must drive something—in this case, current—through something else, and to measure the quantity of current involved, we need another unit, the ampere. The pressure, or voltage, is necessary because the wires or other conducting mediums offer opposition to the passage of current, and as we must have some

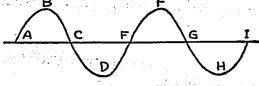


Figure 3—Here we have a diagrammatic representation of two cycles of alternating current

means of measuring and expressing this opposition or resistance we use the term ohm.

Ohm's Law

These three factors always have a definite relation to one another which is expressed by Ohm's law. To write this formula we designate the voltage by the letter E, the current by I and the resistance in ohms by R. Then we say that

$$I = \frac{E}{R}$$
.

To determine the amount of current that will flow in a circuit we must divide the voltage available by the resistance of the units in the circuit. If, on the other hand, we know the current flowing in a

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$$R = \frac{E}{r}$$

Dividing the pressure in volts by the current as expressed in amperes we learn the resistance in ohms. The third variation of this formula is, of course, when it is used to determine the voltage, and the resistance and current are known-

E = I xR.
A UV-199 Radiotron should have 3 volts pressure at the pins leading to the filament; it is rated at .06 ampere; we would

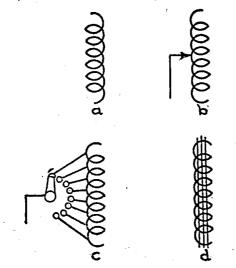


Figure 4—Four types of inductance as used in Radio receiving circuits

like to know the resistance of its filament. Using the second form of Ohm's law, we divide 3 by .06, and the result is 50. The resistance of the filament of a UV-199 Radiotron is 50 ohms.

The term watt is used to designate the unit of electrical power provided by one ampere of current with a pressure of one volt behind it, and the power in a circuit is always determined by multiplying volts by amperes. The filament of the UV-199 Radiotron, drawing .06 ampere with 3 volts' pressure, may be said to require .18 watt.

D. C., A. C. and Prequency

Let us now consider the three termsdirect current, alternating current and fre-The term direct current designates the flow of current in a circuit when the pressure is always in one direction and the current flows into the circuit at one end and out of it at the other. Such a current is supplied by a dry cell, a storage battery, and frequently in power and electric light lines.

Alternating current differs in that the pressure alternates in direction and the current flows, momentarily, from the end we will call A to the end B, and then reverses and flows from B to A. Such a current cannot be obtained from a battery but is supplied in many power lines. Radio transmitters change direct current into alternating current to produce Radio waves in the ether.

We speak of the number of times the current changes its direction of flow per second as the frequency (see Figure 3). Here, we represent one second of time by the distance A to E and of another second by the distance E to I. At point A, the current begins to flow in one direction, reaches its greatest strength in one quarter of a second (point B), then begins to circuit and the voltage but wish to know weaken until at the one-half second point

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the resistance, we consider the law in this form:

(C) there is no current flowing. Then it begins to flow in the opposite direction until at point D it is as strong as when at B, then it weakens until the one second point (E) is reached and it is ready to flow again in the original direction. The current is said to have completed one cycle and the frequency is 1. This would be one-cycle alternating current. If, how-ever, we take the distance A to I as one second and the current flows twice in each direction in that time, and completes two cycles we have two-cycle current. In power lines, the frequency is usually 60

> In Radio transmission, we use alternations or frequencies of from 15,000 to 4,-000,000, and frequencies within this range, usually termed band, are spoken of as Radio frequencies to distinguish them from others. So, when you see Radio frequency (R. F.) transformers advertised, it means that these units are designed to handle small currents whose frequencies are within these limits.

Audio Frequency

There is one use of the term frequency in Radio, which does not meet the above definition, although perfectly correct. Be-fore being put into the head telephone receivers, Radio signals are changed from their alternating current form into direct current which, while it flows in one direction only, does so in pulsations and not steadily as does electricity from a bat-We then use the term frequency to give the number of the pulsations per Since these produce sounds in the head phones that are audible, we speak of this current as audio frequency current and the transformers which handle it as audio frequency transformers. Audio frequencies are those within the band 8 to 12,000, which are those commonly used in music, although the human ear can hear sounds consisting of as many as 30,000 vibrations per second.



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Inductance and Capacity

We now come to the terms inductance and capacity. A straight piece of wire is said to have a certain amount of inductance, which is a property essential in a circuit to the reception of Radio signals. This property is greatly increased by winding the wire into a coil, either of several layers or of a single layer on a tube.

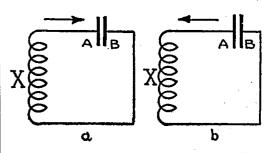


Figure 5-A diagrammatic representation of conscillating circuit which explains condenser action

It is not necessary for the average experimenter to fully understand inductance; the knowledge that it is the property of a coil of wire and is measured in henries and millihenries being sufficient. Another method of increasing the inductance of a piece of wire is to insert an iron core after winding the wire into a coil.

In Figure 4 are shown four ways of designating inductance in a diagram: 4a is an inductance which does not contain an iron core, but is of the "air-core" type; it is not variable and all of the turns of wire are always in use; 4b shows another (Continued on page 20)

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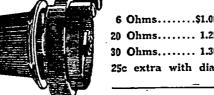
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POPULAR STARS ON THIS WEEK'S PR

The Week's Headliners on the Air

MANY unusual programs are offered this week. Amrad Women's club meeting Tuesday afternoon at WGI is worth while. WJZ broadcasts "Broadway." "Three Live Ghosts," given by the WGY Players promises to be hair raising (not hair restoring), and KSD mysteriously features the carnival, parade and ball of the Veiled Prophet. All this to happen on Tuesday evening. Tuesday evening.

"Big Smoke" meets the Camp Fire Girls at WGI, Wednesday evening. Llewellyn Jones re-views the latest books at KYW. While Congressman Holton W. Summers is fronting the microphone at WFAA, KSD will broadcast the presentation of trophies to the winners of International Air Races.

Air Races.

Thursday is Spanish night at WLW. KYW announces the return of Rev. C. J. Pernin in his Twenty Minutes of Good Reading, and the broadcasting of the Edison Symphony Orchestra.

Two amusing farces will be presented by the Amrad Players of sented by the Amrad Players of

WGI.

"Broken Wing" will be broadcast direct from the theater by
KSD Friday evening. WHAS is
producing a Columbus Day

'Football season opens in earnest at KDKA Saturday afternoon and the 103d birthday of Jenny Lind, and Irish Night at WJZ distinguish Saturday night. Chicago presents Mayor Dever at

Sunday evening the Daughters of the American Revolution, Saratoga Springs, N. Y., will present a program at WGY. How about Monday? Easy—let's "go" to the Barnum and Bailey Circus Monday night via WBAP.

Tuesday, October 2

KDKA, E. Pittsburgh, Pa. (Eastern, 326), 10:00 a. m., Music; 12:30 p. m., Victrola and Victor Records, S. Hamilton Company; 6:15, Dinner concert, Orchestra at the Pittsburgh Athletic Club; 7:45, "Mother Nature's Wonders," by "Lady from the Deep Woods"; 8:45, Concert, Carlson Brothers' Saxophone Quartet; Laura Statska, soprano; Mrs. M. E. Good, planist, KGW, Portland, Ore. (Pacific, 492), 10:00 p. m., Dance music by George Olsen and his orchestra.

KHJ. Los Angeles, Calif. (Pacific, 395), 12:30-1:15 p. m., Concert features; 2:30-3:30, Matinee musicale; 6:45-7:30, Children's program, "Uncle John"; 8:00-10:00, De Luxe program, courtesy of G. Allison Phelps, of the Suburban Estates Company, assisted by the Powers Film Studio; William F. Alder, lecturer, KSD, St. Louis, Mo. (Central, 546), 7:00 p. m., Music, Street carnival and parade of Velled Prophet; 9:30, Music, Velled Prophet Ball.

KYW, Chicago, Ill. (Central, 536), 1:35 p. m., Studio program; 4:00, News of the day; 5:50, Children's bedtime story; 7:00-7:58, Musical program, Herble Mintz, planist; A. W. "Sen" Kaney, specialty act; Allee Cronin, planist; 8:28, Program, American Farm Bureau Federation.

WBAP, Fort Worth, Tex. (Central, 476), 7:30-8:30 p. m., Fort Worth, Tex. (Central, 476), 7:30-8:30 p. m., Fort Worth artists; 9:30-10:45, Broadway Baptist Church.

WBZ, Springfield, Mass. (Eastern, 337), 7:30 p. m., Twilight Tales for the Kiddles; 8:00, Concert, Harriet Ely, planist; 9:00, Bedtime story for Grown-ups, Orison S. Marden.

WDAP, Chicago, Ill. (Central, 360), 1:35 p. m., Drake Concert Ensemble; Blackstone String Quintet; 7:00, Drake Concert Ensemble; Blackstone String Quintet; 10:00, Frederick W. Agard, tenor; Bob Cougle, planist; Jack Chapman and his dance orchestra.

WDAR, Philadelphia, Pa. (Eastern, 395), 12:00-12:54 p. m., Organ recital, Edna Finestone; 7:30-7:45, Dream Daddy with boys and girls; 7:45-8:00, Dramatic Review, Walter Greenough.

WDT, New York, N. M. Y. (Eastern, 405), 12:00-12:50 p. m., "Our Sister, Ain't That Hot," "Mama Going to C

Bernie Grossman; "Pretty Buddy," Wonder," Brooks and Ross; "I Want to Call You Mine," Helen C. Willsing; Songs, Mrs. Earl Fully; Plano solos, Wills White.

WFAA, Dallas. Tex. (Central, 476), 12:30-1:30 p. m., Address. DeWitt McMurray, editor Semi-Weekly Farm News; 8:30-9:30, Dramatle program, Council of Jewish Juniors; 11:00-12:00. Harris Brothers' Orchestra.

WFI, Philadelphia, Pa. (Eastern, 395), 1:00 p. m., Dinner music, Meyer Davis Bellevue Stratford Concert. Orchestra; 3:00, Concert; 6:30, Dinner music, Meyer Davis Bellevue Stratford Orchestra; 7:00. Bedtime stories, Cousin Sue; 8:00, Boy Scouts Radio Corps; 8:30, Dance music; 9:15, song recital.

WGI, Medford Hillsido, Mass. (Eastern, 360), 12:00 p. m., Selections on Edison, Brunswick & Chickering-Ampico; 3:00, Amrad Women's Club, "Hospitality Talk," Ida Bailey Allen; Selections on the Chickering-Ampico & Brunswick; "Public Health Talks"; 5:00, "Twilight Tales," Eunice L. Randall; 7:00, Evening program to be announced.

WGR. Buffalo, N. Y. (Eastern, Daylight Saving, 360), 12:30-1:00 p. m., George Albert Bouchard, organist; 6:30-7-00, George Albert Bouchard, organist; 7:00 Digest of the day's news; Topics of scientific interest.

WGY, Schenectady, N. Y. (Eastern, 380), 2:00 p. m., Music and reading, "The Posy Ring," Mrs. John Day; 7:45, Musical Program; Soprano Solos, with violin obligato; "By the Waters of Minnetonka," "For You Alone." "Hirthday," "The Moon Behind the Cottonwood." "Life," "Whisper and I Shall Hear." Grace H. Held, soprano; Regina L. Held, violinist; Mr. Herbert Robinson, accompanist; "Concerto Romantique," "Adoration," "Romanee," Regina L. Held, violinist; Mr. Herbert Robinson, planist; Reading, "Jim's Brothers," "The Forests," Guinivere Riferburg.

WHAS, Louisville, Ky. (Central, 400), 4:00-5:00 p. m., Selections, Mary Anderson Theater Orchestra; Ollie Jones, conductor; "Just Among Home Folks," daily column running in the Courier-Journal; Strand Theater Orchestra; Harry S, Currie, conductor; 7:30-9:00, Concert, Ray Pfaff and his orchestr

ter Orchestra; Harry S. Currie, conductor; 7:30-Concert, Ray Pfaff and his orchestra; Reading, Interesting Historical Episode."



"Californians"; 9:15, Weekiy program, Leyon & Healy.
WOC, Davenport, Iowa (Central, 484), 12:00 m., Chimes concert; 3:30 p. m., Educational Program, A. G. Hinriches; Music; 5:45, Chimes concert.
WOO, Philadelphia, Pa. (Eastern, 509), 11:00-11:30 a. m., Organ recital, Mary E. Vort; 12:00-12:55 p. m., Luncheon music, Wannamaker Tea Room Orchestra; 4:45-5:00, Organ recital, Mary E. Vogt.
WWJ, Detroit, Mich. (Eastern, 517), 9:45 a. m., "Ironing Day," program, Fred Shaw, planist; Margery Richmond, planist; 12:00 m., Tho Detroit News Orchestra; 7:00, Detroit News Orchestra; Town Crier; Vocal selections, pupils of Madame Home Dubard's.

Wednesday, October 3

KDKA, E. Pittsburgh, Pa. (Eastern, 326), 10:00 a. m., Music; 12:30 p. m., Victrola and Victor Records, S. Hamilton Company; Piano and player rolls, C. C. Motor Company; 6:15, Dinner concert, KDKA Little symphony Orchestra; 7:30, Literary program, Marjory Stewart; 7:45, "Fables for the Little Folks." Dreamtime Lady; 8:45, March and procession from "The Queen of Sheba," "Serenade," "Dragon Fly," "Butterfly," "Swan," "Bec," "Berceuse," Excerpts from "Lucia de Lammermoor," "Down South," "Sari," KDKA Little Symphony Orchestra; "She Has Flown," "My Pretty Turtle Dove," "Margaret at the Spinning Wheel," "Prayer from Freishutz," "Still as the Night," "Songs My Mother Taught Me," Marie Keller Kennedy, soprano; Mrs, Arthur Brandt, accompanist.

companist.
KGW, Portland, Ore. (Pacific, 492), 3:30 p. m., Musical program for children, Laura Van Houton, child planist; Franconia stories, Aunt Nell; 8:00, Concert, Rybka String orchestra; 10:00, Dance music by George Olsen

and his orchestra.
(HJ, Los Angeles, Galif. (Pacific, 395), 12:30-1:15
p. m., Concert, 2:30-3:30, Matinee musicale: 6:457:30, Children's program, "Uncle John": 8:00-10:00,
Program, Woman's Club and Oak Glen Lodge of

Program, Woman's Club and Oak Glen Lodge of Yucaipa; Old Time Dance.

KSD, St. Louis, Mo. (Central, 546), 6:30 p. m., Music and speeches, presentation of trophies to winners of International Air Races; 9:30, Vocal and instrumental specialties, orchestra and organ music, Grand Central

Chicago Association of Commerce luncheon at the Hotel La Salle; 4:00, News of the day; 5:50, Children's bedtime story; 7:00-7:58, Musical program, Sherwood School of Music; Harry Geise, planist; Mary Lee, soprano; 8:05, Book Reviews, Llewellyn Longer

Jones. WBAP, Fort Worth, Tex. (Central, 476), 7:30-8:30 p. m., Mrs. Pearl Calhoun Davis: 9:30-10:45, Texas Hotel

WBAP, Fort World, Jex. (Central, 497, 7:50-535 p. m.,
Mrs. Pearl Calhoun Davis; 9:30-10:45, Texas Hotel
Orchesta.
WBZ, Springfield, Mass. (Eastern, 337), 6:00 p. m.,
"Serenade." "Wiener Blut," "Entr' Acte Gavotte."
"Angel's Serenade," "Men of Sparta." "Blue Bells."
Dinner concert by the WBZ Trio; 7:00, "The Bacrground of Radio," Edward H. Goodrich; 7:30, Twillight Tales for the Kiddles; 8:00, Concert, Mrs. Lilla
W. Ladd, contralto; Mrs. La Zazzera, accompanist;
WBZ Trio; 9:00, Bedtime story for grown-ups, Orison

WBZ Trio; 5.00, Bedfinds story to grown and S. Marden.

S. Marden.

WDAP, Chicago, Ill. (Central, 360), 1:35 p. m., Drako Concert Ensemble; Blackstone String Quintet; 7:00, Drako Concert Ensemble; Blackstone String Quintet; 10:00, John Stamford, tenor; Joan Young, soprano; Jack Chapman's Orchestra.

Chicago, III. (Central, 536), 1:00 p. m., "Talks

WDAR, Philadelphia, Pa. (Eastern, 395), 12:00-12:54
p. m., Organ recital from Stanley Theater; Dinner
music, Areadia Cafe Concert Orchestra; 2:00-3:00,
Concert and plano solos, Areadia Cafe Concert orchestra; Edna Finestone; 4:30-5:55, Short talks and
serie; 8:00. Talk on Philadelphia's Industries; sone;
recital; Features from Stanley Theater; Dance music,
Howard Lanin and his Arcadia, Cafe Dance Orchestra.
WDT, New York, N. Y. (Estern, 495), 12:00-12:50 p. m.,
"Not Here, Not There," "Who's Sorry Now," Tommy
Maille, Soloist; Frank Bessenger, soloist; 'Il's Not
the First Time You Left Me." "Waiting for the
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numbers. WWJ. Detroit, Mich. (Eastern, 517), 12:00 m., Detroit News Orchestra; 7:00 p. m., Detroit News Orchestra; Town Crier; Vocal selections, pupils of George Carr's.

Thursday, October 4

KDKA, E. Pittsburgh, Pa. (Eastern, 326), 10:00 a.m., Music; 12:30 p. m., Victrola and Victor records, S. Hamilton Co.; Piano and player rolls, C. C. Mellor Co.; 6:15 Dinner concert, Grand Symphony Orchestra; Co.; 6:15 Dinner concert, Grand Sympnony Orenestra; 7:45, Uncle Remus, himself, children's period; 8:05, Farm program, Frank E. Mullen; 8:45, Esther C. McGuire, dramatic reader; English Coster Songs, "It the Garden by the Sea," "I Love the Sea," "Lend Mo Your Aid," Evan Lloyd, baritone. KGW, Portland, Ore. (Pacific, 492), 3:30 p. m., Woman's program, child training; 8:45, Dramatic program, "Within the Law," Mrs. Herbert Garr Reed; 10:00, Dance music by George Olsen and his orchestra.

orchestra. KHJ, Los Angeles, Calif. (Pacific. 395), 12:30-1:15 p. m., Concert program: 2:30-3:30 p. m., matinee

9:30, Emmett B. Peck, violinist.

"The American Boy," Employment Bulletin; 8:45, Address, Twelfth Annual Congress, American Safety Council.

WGY, Schenectady, N. Y. (Eastern, 380), 2:00 p. m., Music and address, "The Object and Meaning of Federation," Mrs. E. P. Pressey; 7:45, Instrumental selection, "Medley of Popular British War Songs," WGY Instrumental Quartet; Radio drama, "Three Live Ghosis," cast, Mrs. Gubbins, as "Old Sweetheart," Helen Campbell; Peggy Woofer, Lola Sommers; Bolton, the American detective, Harold Sundae; Jimmie Gubbins, Frank Oliver; William Foster, alias Wm. Jones, Edward H. Smith; Spoofy, Edward St. Louis; Rose Gordon, Rose Cohn; Birggs, of Scotland Yard, Jerome Loveheim; Benson, John Loftus; Lad Leicester, Margaret V. Smith; Act I, the home of "Old Sweetheart," in London, time 1917; Act. II, same as act I, the following morning; Act III, same as II, a few minutes later.

WHAS, Louisville, Ky. (Central, 400), 4:00-5:00 p. m., "Just Among Home Folks"; Selections, Strand Theater Orchestra; Harry S. Currie, conductor; 7:30-9:00, Concert, suspices of The Kentucky Committee on Public Utility Information.

WIP, Philadelphia, Pa. (Eastern, 509), 3:00 p. m., Song recital; 6:02, Dinner music; 7:00-7:30, Bedlime stories, Uncle Wip; 8:00, "Where to Go and How to Get There," Eugeno E. Hogle, secretary of the Automobile Club of Philadelphia; 8:15, Dance music, Ace Brigode and His Ten Virginians from Hotel

musicale; 6:45-7:30, Children's Hour, "Uncle John"; 8:00-10:00, Program, Clifford Lott, basso; Rev. Thomas Lutman, lecturer.
KYW, Chicago, Ill. (Central, 536), 1:35 p. m., Studio program; 4:00, News of the day; 5:50, Children's bedtime story; 7:30-7:58, Herbie Mintz, pianist; A. W. "Sen" Kaney, specialty act; "The Diplomat," "The Swinging Lanterns." Edison Symphony Orchestra; "Columbia." A. N. Brabrook, cornetist; "Finlandia," "Caravan," "To a Mummy," "Katebet," "Waltz from Serenade." Edison Symphony Orchestra; "Kashmiti Song," "Sweet Little Woman o' Mine," John Stamford, tenor; "The Red Mill," Edison Symphony Orchestra; 8:05, Twenty Minutes of Good Reading, Rev. C. J. Pernin.
WBAP, Fort Worth, Tex. (Central, 476), 7:30-8:30 p. m., Fort Worth artists; 9:30-10:45, The Euterpean Club.

wBAP, Fort Worth artists; 920-10:45, The Euterpean Club,

WBZ, Springfield, Mass. (Eastern, 337), 7:30 p. m.,

Twilight Tales for the Kiddles; "How Plots Are Built," Dr. J. Berg Esenwein; 8:00, Concert, James Morton, tenor; Grayce Bradley O'Connell, soprano; Eleanor McCormick, pianist; 9:00, Beddime story for Grown-ups, Orison S. Marden.

WDAP, Chicago, Ill. (Central, 360), 1:35 p. m., Drake Concert Ensemble; Blackstone String Quintet; 7:00, Drake Concert Ensemble; Blackstone String Quintet; 7:00, Drake Concert Ensemble; Blackstone String Quintet; 10:00, Program, Lyceum Arts Conservatory; Jack Chapman's Orchestra.

WDAR, Philadelphia, Pa. (Eastern, 395), 12:00-12:54 p. m., Organ recital, Stanley Theater; Dinner music, Arcadia Cafe Concert Orchestra; 2:00-5:50, Program of popular selections, Arcadia Cafe Concert Orchestra; 4:30-5:55, Song recital and plano solos; 7:30-8:00, Dream Daddy with boys and girls.

WDT, New York, N. Y. (Eastern, 405), 12:00-12:50 p. m., Plano solos, Jack Stanley; Solos, Fred Whitehouse; 7:00, Stage and Screen, Charles R. Jones; Vaughn De Leath Orchestra; Violin solos, Elise de Grode; Madame Lundow.

WFAA, Dalias, Tex. (Central, 476), 12:30-1:00 p. m., "Books and Their Use," Dr. J. H. McGinnis; 8:30-9:30, Emmett B. Peck, violinist.

"Books and Their Use." Dr. J. H. McGinnis; 8:309:30, Emmett B. Peck. violinist.
WFI, Philadelphia, Pa. (Eastern, 395). 1:00 p. m.,
Dinner music, Meyer Davis Bellevue Stratford Concert Orchestra; 3:00, Plano solos, Loretta Kerk;
Song recital; 6:30, Dinner music, Meyer Davis Bellevue Stratford Orchestra; 7:00, Bedtime stories; Cousin
Sue; 8:00, Song recital; 8:30, Dance music, Jack
Lo Roy and his Manhattan Melody Men from Cathay
Tea Gardens.
WGI, Medford Hillside, Mass. (Eastern, 360), 12:00
p. m., Selections on Edison, Brunswick and Chickering-Ampico; 5:00, "Twillight Tales," Eunice L. Randall; 7:00, "Bits of Wisdom," Geo. Brinton Beal;
Musical program, two planos, Miss Drew and Mr.
Emery: "Nonsense School," farce, Amrad Players;
"His Wife's Father-in-Law," play by Amrad Players;
WGR, Buffalo, N. Y. (Eastern, Daylight Saving, 360),
12:30-1:00 p. m., George Albert Bouchard, organist; 7:00,
Digest of the day's news, Boy Scout Radlograms,
"The American Boy," Employment Bulletin; 8:45,
Address, Twelfth Annual Congress, American Safety
Council.
WGY, Schenectady, N. Y. (Eastern, 380), 2:00 p. m.

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GRAMS WILL DELIGHT LISTENERS IN



Walton Roof; 9:00, Organ recital, Karl Bonawitz, from Germantown Theater.

WJAX, Cleveland, Ohlo (Eastern, 390), 8:00 p. m., Concert program: Madrigal Male Quartette; Roy A. Lewis, planist; Gpp Gins, violinist; John L. Mainwaring, first tenor; Val Saurwein, second tenor; Roberts, baritone; Lowell W. Dilts, bass.

WJAZ, Chicago, Ill. (Central, 448), 10:00 p. m.-2:00 a. m., Selections, Orlole Orchestra; "Song of the Volra Boatman," "Vision Fugative," Mary Withaius Sparrow, soprano; "To You," "When You and I Were Young, Maggie," Bert Graham, tuba player; "A Volce is in the Wilderness," "My Hope Is in the Everlasting," Mary W. Sparrow; Violin Solos, Glen Halik; "Love Is the Wind," "Will of the Wisp," Mary W. Sparrow; "Just a Wearying for You," "I Love You Truly," Bert Graham; Selections, Orlole Orchestra.

WJZ, New York, N. Y. (Eastern, 455), 3:00 p. m., Auditorium Concert; 4:05, Recital, pupils of Harold Land; 5:00, Concert, Norma Gradstein; 6:05, "Jack Rabbit Stories," David Cory; 7:35, World's Work; 7:45, Popular songs, Jimmy Moore, tenor; 8:00, "The Waddington Cipher," a radio detective serial story; William Johnston; 8:15, Organ recital, J. Thurston Noe.

WLW, Cincinnati, Ohio (Eastern, 309), 4:00 p. m., Class-

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William Johnston; 8:15, Organ recital, J. Thurston Noe.
WLW, Cincinnati, Ohio (Eastern, 309), 4:00 p. m., Classical piano selections, Adelaide Apiel; 10:00, Spanish inght: Spanish dance, Cincinnati Conservatory of Music Ensemble; A group of Spanish songs, Leah Fred, soloist; Thomie Williams, planist; "Spanish Dance," Sam Morganstern, planist; The toreador song from "Carmen," Ererett Marshall, baritone; "A Sunny Morning," one-act play, Crosley Radarians, Dona Laura, Helen Schuster Martin; Petra, Emma Helen Haswell; Don Gonzalo, Verno Fitzpatrick; Juanito, Maynard Babbs; Descriptionist, Julia Leo Applegate; Spanish dance, Ensemble; 11:15, Popular entertainment, Eastern Hills Dance Orchestra.
WMAQ, Chicago, Ill. (Gentral, 447), 4:30 p. m., Program to be announced; 7:00, Weekly talk, Rockwell R. Stephens; Weekly talk to Boy Scouts; 8:00, Chicago Association of Commerce; 9:00, Dance music, Hotel La Salle; 9:15, Program, Chicago Musical Col-

cago Association of Commerce; 9:00, Dance music, Hotel La Salle; 9:15, Program, Chicago Musical Col-

Hotel La Salle; 9:15, Program, Unicago Musicai College.

WOC, Davenport, Iowa (Central, 484), 12:00 m., Chimes concert; 3:30 p. m., Educational program, Karl G, Stephan; Music; 5:45, Chimes concert; 6:30, Sandman's visit; 8:00, Musical program, P. S. C. Orchestra; V. B. Rochte, barltone.

WOO, Philadelphia, Pa. (Eastern, Standard, 509), 11:00, 11:30 a. m., Organ recital, Mary E. Vogt; 12:00-12:55 p. m., Luncheon music, Wanamaker Tea Room Orchestra; 4:45-5:00, Organ recital, Mary E. Vogt.

WMJ, Defroit, Mich. (Eastern, 517), 12:00 m., Detroit News Orchestra; 7:00 p. m., Detroit News Orchestra; Town Crier; Antonio, tenor; Albertine Schmidtke, soprano; Mildred L. Williams, contraito.

Friday, October 5

KDKA, E., Pittsburgh, Pa. (Eastern, 326), 10:00 a. m., Music; 12:30 p. m., Victrola and Victor records, S. Hamilton Co.; Piano and player rolls, C. C. Mellor Co.; 6:15, Organ recital, Howard R. Webb; 7:45, "Come Sing With Me," Jane Peckham Alexander, conductor; 8:05. Boy Scouts program; Richard Victor, scout master; 8:45, "Fiddle and I." "My Mother Bids Me Bind My Hair," "Pirate Dreams," Happy Days," "Deep in a Rose's Glowing Heart," "II Baccio," "Angel's Serenade," Mrs. F. L. France, soprano; Mrs. Pauline Denny, planist; Tenor solos, Elmer Ablett; Violin solos, Leo Kruczek, KGW, Portland, Oregon (Pacific, 492), 3:30 p. m., Woman's program; 8:00, Vocal solos; 8:15, Studlo program of dance music, George Olsen; 9:00, "Oregon Resources," lecture by University of Oregon extension division; 10:30, Hoot Owls with Pantages froile.

tension division; 10:30, Hoot Owis With Faintages frolic.

KHJ, Los Angeles, Calif. (Pacific, 395), 12:30-1:15
p. m., Music; 2:30-3:30, Matinee musicale; 6:45-7:30, Children's program, "Uncle John"; 8:00-10:00, Program, Choir of the Memorial Baptist Church.

KSD, St. Louis, Mo. (Central, 546), 8:00 p. m., "The Broken Wing," direct from Empress Theater.

KYW, Chicago, Ill. (Central, 536), 4:00 p. m., News of the day; 5:50, Children's bedtime story; 9:00-10:30, Musical program, Herbic Mintz, planist; Harry Geise, planist; Mary Lee, soprano; A. W. Kaney, specialty act.

WBAP, Fort Worth, Texas (Central, 476), 7:30-8:30 p. m., Texas Christian University; 9:30-10:45, Knights of Pythias Girls' Orchestra.

WBZ, Springfield, Mass. (Eastern, 337), 6:00 p. m., Selection, "Aida," "Valse Poudree," March, "Elegie and Consolation," "Scarf Dance," "March, "Elegie and Consolation," "Scarf Dance," "Marchonette," Andante from "La Source," "Zallali," "Flower Song," "Spirit of America," WBZ Trio; 7:30, Twillight tales for the kiddles; Current book review, R. A. McDonald; 8:00, Concert, Demetrius Zades, tenor; Mrs. Francis Regal, accompanist; WBZ Trio; 9:00. Beditme story for grownups, Orison S. Marden.

WDAP, Chicago, Ill. (Central, 360), 1:35 p. m., Drake Concert Ensemble; Blackstone String Quintet; 7:00, Drake Concert Ensemble; Blackstone String Quintet; 7:00, Drake Concert Ensemble; Blackstone String Quintet; 10:00, George R. Hill, Jr., baritone; Rosemary Hughes, soprano; Jack Chapman's orchestra.

WDAR, Philadeiphia, Pa, (Eastern, 395), 12:00-12:54 p. m., Organ recital, Stanley Theater, Dinner music, Arcadia Cafe Concert Orchestra; 2:00-3:00. Concert and song recital, Arcadia Cafe Concert Orchestra; 4:30-5:55, Short talk and dance music; 7:30-8:00, Dream Daddy with boys and girls; 8:00, Book review, Doris Hyde; Piano solos; Edna Finestone; Radio drama by Walter Greenough's players; Dance music, Howard Lanin's Arcadia Cafe Dance Orchestra; Special for the "Morning Glory Club."

WDT, New York, N. Y. (Eastern, 405), 12:00-12:50 p. m., Talk on astrology, Dr. Arthur Brooks; Songs, Dorothy Adrian; Anne Greenleaf: "In a Tent," "Where the Sacramento River Flows," "Maggie," Yaughan De Leath's Orchestra: Saxophone selections, Mr. Kenster; Songs, Ross Fowler; Selections, Vaughn De Leath's Orchestra: Saxophone selections, Mr. Kenster; Songs, Ross Fowler; Selections, Vaughn De Leath's Orchestra: Saxophone selections, Mr. Kenster; Songs, Ross Fowler; Selections, Vaughn De Leath's Orchestra: Saxophone selections, Mr. Kenster; Songs, Ross Fowler; Selections, Vaughn De Leath's Orchestra: Saxophone selectio

"Ara, Danis, 1exas (Central, 476), 12:30-1:00 p. m., Robert Stewart Hyer; 8:30-9:30, Mrs. Albert Smith, soloist.

Wfl, Philadeinhia, Pa. (Eastern, 395), 1:00 p. m., Dinner music, Meyer Davis Bellevue Stratford Concert Orchestra; 3:00, Recital, John Owens, tenor; John Vandersloot, bass; Caroline Hoffman, planist; 6:30, Dinner music, Meyer Davis Bellevue Stratford Orchestra; 7:00, Bedtime storles, Cousin Sue.

WGI, Medford Hillside, Mass. (Eastern, 360), 12:00 p. m., Selections on Edison, Brunswick and Chickering-Ampleo; 3:00. Amrad Women's Club, "Talks," Mrs. D. H. Goodwin; Selections on Chickering-Ampleo; 3:00. Amrad Women's Club, "Talks," Mrs. D. H. Goodwin; Selections on Chickering-Ampleo and Brunswick; "Public Health Talks"; 7:30. Musical, Rupert Edward Blatchford, vocal instructor; Harry Norton, organist, Washington Theater, Boston; "Girl of My Heart," "Old Fashlon Songs," sung by Mr. Blatchford; Talk on "The Art of Singing," Mr. Blatchford; Talk on "The Art of Singing," Mr. Blatchford; Old time songs, Blatchford and Norton. WGR, Buffalo, N. Y. (Eastern, Daylight Saving, 350), 12:30-7:00. George Albert Bouchard, organist; 2:30, Piano selections; Olive Roetling, (11 years old) 6:30-7:00. George Albert Bouchard, organist; 7:00. Digest of the day's news; 9:00, Concert, direction of J. P. Quinn.
WGY, Schenectady, N. Y. (Eastern, 380), 2:00 p. m., Music and address, "Money, Early Barter and Exchange," Mrs. Katherine V. Steers; 7:45, Songs of the South, WGY Orchestra; Sure cure for the blues, Georgia Minstrel Boys; "Who Built de Ark?," "Way Up, Yonder," Radio Four, Male Quartet; "Rocked in the Cradle of the Deep," Rollin Thunder, bass, assisted by the Georgia Minstrel Boys; "Confield Medley," "Swanee River," "Old Black Joo," Radio Four; "A Handful of Burnt Cork," Georgia Minstrel Boys; "Jonah," orchestra; Cornfield Medley," "Swanee River," "Old Black Joo," Radio Four; "Handful of Burnt Cork," Georgia Minstrel Boys; "Jonah," orchestra, "Tannhauser," "Zampa," "Here They Come." "Time of Lilacs," "Just Like Your Eyes

Getman-Doxtader, violinist; "Valse de Concert," planist; "The Enchanted Glade," Mildred Hayward, soprano.

WHAS, Louisville, Ky. (Central, 400), 4:00-5:00 p. m., Selections, Strand Theater Orchestra. Harry S. Currie, conductor; "Just Among Home Folks," selections, Rialto Theater Organ; 7:30-9:00. Columbus; Reading, "An Interesting Historical Episode."

WIP, Philadelphila, Pa. (Eastern, Standard, 509), 3:00 p. m., Program of popular dance music; 6:45, "Radio Baseball Dope," Monte Cross, old-time player; 7:00, Bedtime stories and roll call by Uncle Wip.

WJAZ, Chicago, Ill. (Central, 448), 10:00 p. m.-2:00 a. m., Selections, Oriole Orchestra; "Ave Marie," "Sweet Little Woman of Mine," Hugh B. Marshall, baritone; "Caprice," "To a Wild Bose," Florence Demming, violinist; Selections, Oriole Orchestra; "Chante Paroles," "Serenade in D," Florence Demming; "Duna," "Until," Hugh B. Marshall; "Etude in F Major," Gale Hubbell, pianist; "Orchestra," "Guitarre," "Hejr Katil," Florence Demming; Estelle Sargent. soprano; Oriole Orchestra.

WJZ, New York, N. Y. (Eastern, 455), 3:00 p. m., Organ recital, Leo Riggs; 4:05, Fashion developments, women's wear; 4:10, Plano recital, Adaline Fisher; 6:05, Bedtime story for the kiddies; 7:35, "Putting Thought in the Children's Lunch-Box," Anne Lewis Pierce; 7:45, Looseleaf current topics; 8:00, Popular songs, Jack Oliver; 8:15, "The Cheerful Philosopher," Burr McIntosh; Recital, Mabel Ash, soprano.

Ash, soprano.

WMAQ, Chicago, III. (Central, 447), 4:30 p. m., Program, Bush Conservatory of Music; 7:00, Weekly "Wide Awake Club," Mrs. Frances Ford, director; 7:30, Weekly musical lecture, Mrs. Marx E. Oberndorffer: 8:00, Music and choral work, William L.

Tomlins; 9:00, Dance music, Hotel La Salle; 9:15, Program, Cosmopolitan School of Music, WOC, Davenport, Iowa (Central, 484), 12:00 m., Chimes concert; 3:30 p. m., Educational program, C. C. Flannigan; Music; 5:45, Chimes concert; 6:30, Sandman's visit; 8:00, Musical program, Erwin Swindell, director; Arthur McNeil, baritone; Lois McDermand, planist; Lillian O'Mara, reader; Hugo Schroeder, tenor, WOO, Philadelphia, Pa. (Eastern Standard, 509), 11:00-11:30 a. m., Organ recital, Mary E. Vogt; 12:00-12:55 p. m., Luncheon music, Wanamaker Tea Room Orchestra; 4:45-5:00, Organ recital, Mary E. Vogt; 7:45, Dinner music, Hotel Adelphia Roof Garden Orchestra; 8:30, Plano and song recital; 8:45, Dance music, Hotel Adelphia Roof Garden Orchestra; 11:10, A continuation of danco music, Hotel Adelphia Roof Garden Orchestra; WUJ, Detroit, Mich. (Eastern, 517), 12:00 m., Detroit News Orchestra; 7000 p. m., Detroit News Orchestra; Town Crier; Anne Campbell, News Poet; Mrs. 1ry Sweet, soprano; Herbert C. Lamb, baritone; Frederick J. Homberger, tenor.

Saturday, October 6

KDKA, E. Pittsburgh, Pa. (Eastern, 326), 10:00 a. m., Music; 12:30 p. m., Victrola and Victor records, S. Hamilton Co.; Piano and player rolls, C. C. Mellor Co.; 3:00. Conert, Grand Symphony Orchestra; 3:15, Football game, University of Pittsburgh vs. Lafayette College; 6:15, Dinner concert, Westinghouse Band; 3:26, Humor from "Judge"; 8:15, Tribute of George Westinghouse, his 77th Anniversary; 8:30, "Stradella", "Babillage," "Silter Threads Among the Gold," Peer Gynt Suite, "Flower Song," "Adoration," "Jolly Robbers," "The Dance of the Serpent," Westinghouse Band, Orc. (Pasific, 492), 3:30 p. m., Children's Performant, 10:00, Dance music by George Oisen and his orchestra. (Mr. Fortam, 10:00, Dance music by George Oisen and his orchestra. (Mr. Fortam, 10:00, Dance music by George Oisen and his orchestra. (Mr. Fortam, Isadel Block, Sp. 12:30-4:15, p. m., Concert; 2:30-3:30, Program, Maurice Keltz, violinist; Helen Nagin, pianist; Carl Nordbloom, cellist; 6:45-7:30, Chidren's program, "Uncle John", 8:30-1:00, Program, Isadel Block, Sp. 10:00, Pro

ion developments, Women's wear; 3:05, Recital, Edith Ebert, soprano; 3:15, Dance program, Mel-O-Dy Eight Dance Orchestra; 4:05, Plano recital, Madalaino Miller, Jeanette Tisnee, Hedwig Schacht, pupils of Mary Wilderman; 5:00, Dance program, Mel-O-Dy Eight Dance Orchestra; 5:15, Concert, Blanche Winogram, planist; 6:05, "Uncle Wiggly Stories," Howard Garls; 7:30, "Jenny Lind Evening," 103rd Anniversary of her birthday, Mr. Eschenberg, director; 8:15, "The Larger Aspects of World Affairs," Frederick Dixon; 8:30, Recital, Elsic DeVoe, planist; 9:00, Concert, Carl Albert, violinist; 9:30, "Irish Night," Thomas Hannon.

WMAQ, Chicago, Ill. (Central, 447), 8:00-10:00 p. m., Mayor William E. Dever; Music, Blue Fountain Room, Hotel La Salle; Ted Brown Musical Company: Bryant String Quartet; Chicago Theater.

WOC, Davenport, Iowa (Central, 484), 12:00 m., Chimes concert; 3:30 p. m., Educational program, C. C. Hall; Music; 5:45, Chimes concert; 6:30, Sandman's visit; 9:00-10:00, Dance program, P. S. C. Orchestra; V. B. Rochte, baritone.

WOO, Philadelphia, Pa. (Eastern Standard, 509), 11:00-11:30 a. m., Organ recital, Mary E. Vogt; 12:00-12:55 p. m., Lunchon music, Wanamaker Tea Room Orchestra; 4:45-5:00, Band concert and organ recital, Mary E. Vogt.

WTAM, Cleveland, Ohio (Eastern, 390), 8:00 p. m., Program of popular dance music, WTAM's six-piece orchestra.

orchestra. WWJ. Detroit, Mich. (Eastern, 517), 12:00 m., Detroit News Orchestra.

Sunday, October 7

KHJ, Los Angeles, Calif. (Pacific, 395), 10:00 a. m., Sacred service; 10:30, Organ recital from First Meth-odist Episcopal Church, Prof. Arthur Blakely, or-ganist; 7:00-7:30 p. m., organ recital from First Methodist Episcopal Church, Prof. Arthur Blakely, organist

Methodist Episcopai Unuren, Froi. Arthur Conganist.

KYW, Chicago, Ill. (Central, 536), 10:00 a. m., Church services, Orchestra Hall; Dr. F. F. Shannon, pastor; 6:00 p. m., Chicago Sunday Evening Club services; Choir, Edgar Nelson, conductor.

WBZ, Springfield, Mass, (Eastern, 337), 6:45 p. m., Sunday vespers, Springfield Municipal Chimes; Ernest Newton Bagg, chime ringer.

WDAP, Chicago, Ill. (Central, 360), 9:15 p. m., Drako Concert Ensemble; Other artists furnished by Alexander Nakutin.

Sunday vespers, Springfield Municipal Chimes; Ernest Newton Bagg, chime ringer, MDAP, Chicago, Ill. (Central, 360), 9:15 p. m., Drake Concert Ensemble; Other artists furnished by Alexader Nakutin.

WDAR, Philadelphia, Pa. (Eastern, 395), 12:00-12:54 p. m., Organ recital, Stanley Theater; Dinner music, Arcadia Cafe Concert Orchestra; 2:00-3:00. Concert, Arcadia Cafe Concert Orchestra; 2:00-3:00. Edna Finestone; 7:30-7:45. Dream Daddy with boys and girls; 7:45-8:00. Moving picture review, James A. Nasson; 8:00-10:00, Talk on Philadelphia's industries; Song recital, WDAR Trio; Dance music, Howard Lanin's Arcadia Cafe Dance Orchestra.

WFAA, Dallas, Texas (Central, 476), 2:30-3:30 p. m., Radlo Chapel Bible Class, Dr. William M. Anderson, Jr., pastor First Presbyterian Church; 4:00-5:00, Grand concert of the Palace Theater; Don Albert, conductor; Emil Velazco, organist; 9:30-10:00. Choir singers, Central Presbyterian Church; J. Wesley Hubbell, director; 10:00-11:00, Jimmy Allen's Orchestra, Southern Methodist University boys.

WFI, Philadelphia, Pa. (Eastern, 395), 10:45 a. m., Church service from Arch Street Presbyterian Church; Sermon, organ recital.

WGI, Medford Hilliside, Mass. (Eastern, 360), 4:00 p. m., Thilight program; "Adventure Hour," conducted by Youth's Companion; Concert program, Edison Laboratory Phonograph; Stories, Arturo; 8:30, "World Unity." under auspices of American Federation of Churches: Evening concert program to be announced. WGR, Buffalo, N. Y. (Eastern, Daylight Saving, 350), 3:30 p. m., Vesper scrices

WGY, Schenectady, N. Y. (Eastern, 360), 10:30 a. m., Church service, First Reformed Church, Schenectady, N. Y., Rov. Clayton J. Potter, pastor; 8:00 p. m., Orchestra selection, "Large"; "America," vocal selection, Bethesda Male Quartet; Perry Gaylor, Howard Balch, James Long; "America, the Beautiful," "Our God, Our Country of Revaling Co

Monday, October 8

WBAP, Fort Worth, Texas (Central, 476), 7:30-8:30 p. m., Guy Pitner & Brooks Morris; 9:30-10:45, Barnum and Balley Circus.
WDAP, Chicago, Ill. (Central, 360), 1:35 p. m., Drake Concert Ensemble; Blackstone String Quintet.
WFI, Philadelphia, Pa. (Eastern, 395), 1:00 p. m., Dinner music, Meyer Davis Bellevue Stratford Concert Orchestra; 3:00, Song recital, piano solos, Loretta, Kerk, pianist; 6:30, Dinner music, Meyer Davis Bellevue Stratford Orchestra; 7:00, Bedtime storiee, Cousin Sue.

Suc. /GR. Buffalo, N. Y. (Eastern. Daylight Saving, 360), 12:30-1:90 p. m., George Albert Bouchard, organist; 6:30-7:90, George Albert Bouchard, organist; 7:00, Digest of the day's news; 9:90, Mixed program, Wheat Ice Cream Co., direction of P. Arlow Ma-

Wheat Ice Cream Co., different of thews.

WGY. Schenectady, N. Y. (Eastern, 380), 2:00 p. m.,

Music and address, Dr. Florence A. Shuman: 7:45,

Musical program; "Gone," "Panama Twillght,"
"Jonah," "Marcheta," "Aloha," "Medley of Old

Time Songs," Elias Brody, planist: "Forgotten,"
"My Virginia Home," "Maxis," Ernest Morris, tenor;

Address, Steel Mills, J. E. N. Humes.

WHAS, Louisville, Ky. (Contral, 400), 4:00-5:00 p. m.,

Strand Theater Orchestra, Harry S. Currie, conductor;
"Just Among Home Folks"; Selections, Ridto Theatre organ.

Strand Theater Orchestra, Harry S. Currie, conductor; "Just Among Home Folks"; Selections, Rialto Theatre organ.

WHAZ, Troy, N. Y. (Eastern, 380), 9:00 p. m., Concert, Christ Episcopal Church Choir; Jared S. Horton, dlrector; 12:00, midnight, R. P. I. Radio Owls.

WIP, Philadelphia, Pa. (Eastern Standard, 509), 3:00 p. m., Artist recital; 5:45, "Radio Baschall Dope," by Monte Cross, old-time player; 7:00-7:30, Bedtime stories by Uncle Wip.

WLW, Cincinnati, Ohio (Eastern, 309), 4:00 p. m., Special music, Jennie Kehrt; 8:00, "Rustle of Spring," Adelaide Apiel; "Souvenir," Earl Derble, violinist; "My Mother's Rosary," "is There Room for Me," "Give Me the Moonlight," "Good Night, My Love," Price Hill Four, Jack Powers, first tenor, James Powers, second tenor; Norman Nascele, baritone; Miko Powers, lead; Harry Grubor, planist; "Hungarlan," Adelaide Apiol; "Nocturne," Barl Derbes, riolinist; "The Master Soul," "The Joy of a Rose," Norma Reiss, soloist, William Epperhart, accompanist; Roger Hill Dance Orchestra.

WOO, Philadelphia, Pa. (Eastern Standard, 509, 11:30-11:30, a. m., Organ recital, Mary E. Vogt; 12:00-12:55 p. m., Luncheon music, Wanamaker Tea Room Orchestra; 4:45-5:00, Organ recital, Mary E. Vogt; 7:45, Dinner music, Hotel Adelphia Roof Garden Orchestra; 8:30, Song recital and concert, WOO Orchestra, Robert Golden, director; 9:30, Organ recital, Mary E. Vogt; 1:00, Dance music, Hotel Adelphia Danco Orchestra.

OMPLETE PARTS FOR

.0005 Variable Condenser.... 1-..002 Phone Condenser.... 1-Socket, Bakelite base.... 3-Dry Cells.

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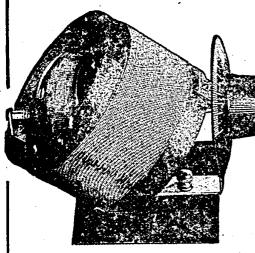
RECEIVER DISTANCE

(See September 29th issue Radio Digest)

3 sockets; 3 Rheostats; 2 A. F. Transformers; 2 Double Circuit Jacks; 1 Open Circuit Jack; 1 Radiometer; 1 Variable Grid Leak and Condenser; 1 .0005 Variable Condenser; 1 .005 Fixed Condenser; 1 75 Turn Honeycomb Coil, Mounted; 1 Single Coil Mounting; 1 Set Readem Binding Posts; 1 Bakelite Panel, 7x16x16; 1 Cabinet, 7x16 fine makegany finish 7x16, fine mahogany finish.....

OUR PRICE

VARIOCOUPLERS



Webster Variocoupler with List dial, Type 1A\$4.50	Our Price \$2.19
Moulded Coupler 5.50	
Moulded Bakelite Variocoupler All-Meter Variocoupler, 150-2600	6.00
meters	7.00

WIRE

All kinds of wire put up in 1/4 pound spools, No. 18 to No. 28, silk, cotton and enamel, double or single.......45 cents a spool Same wire as above on 1/2 pound spools75 cents a spool

Hook-up Wire, No. 14 square brass, cut in 10 foot lengths......15c

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6x18x6—Stained\$3.00
9x14x6-Stained 3.2
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SPECIAI

Single Tube WEBSTER RECEIVING SET (Non-Regenerative Type), without head set and tube, in beautiful mahogany cabinet; \$20.00 list price, \$30. Our price, while they last, ONLY......

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Webster Radio Frequency, 5 A-1, wave length 200 to 500; 5 A-2, wave length 300 to 1200; 5 A-3, wave length 500 to 2,000; \$4.00...... (NOTE: One stage of Webster Radio frequency amplification is almost equal to the results obtained with a regenerative circuit; two stages can be said to be much superior, while three stages will bring in stations too far away to be received with any regenerative set. More stages can be used with still better results.)



DOUBLE HEAD PHONE RECEIVERS

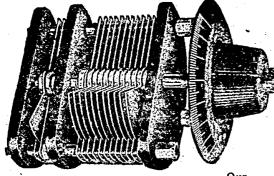
Webster Double Head Phone Receivers, 2500	List	Price
ohms	7.00	\$3.49
Double Phone Cord	1.00	.75
Baldwin Type C Unit	6.00	3.49
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UNITS

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WEBSTER 2-A Detector Unit	. 15.00	7.50
WEBSTER 3-A Audio Frequency Amplifier Unit	. 17.50	8.50
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This unit especially designed as an effective amplifier for the 2-A Receiving set. It consists of two stages of audio amplification having 4 to 1 ratio. The two vacuum tubes are controlled by one rheostat which makes for simplicity in operation. The unit is equipped with the following apparatus: 7 1A Binding Posts, 1 1C Socket, 1 1E Rheostat, 2 3B Transformers.

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VARIABLE CONDENSER

8
0
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5
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GRID-LEAKS



Freshman Grid-Leak with Condenser\$1.00	5 .7:
Freshman Grid-Leak75	
C. R. L. Variable Grid-Leak with Condenser	1.5

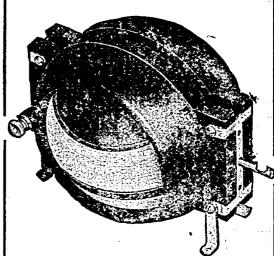
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Switch Lever, 1-A, 1½" Radius, 1¾ Knob, ¼ Shaft..\$.75 \$.35 Hydrometer Perfect85

PRESTO AERIAL SUPER-SEDER ADJUSTABLE List Price can be attached to electric light socket or telephone. 3.00 2.00 ROGERS RECEIVING RA-DIOMETER, can be used like Radio Frequency Transformers Combination Socket and Rheostat with Vernier... 3.00 2.29 B Metal Ever-Ready Tube Detector, Type B......

Erla Reflex Crystal.....

VARIOMETERS



Moulded	Variometer		Our Pric \$4.3 9
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5.50 Variometer, All Circuit.....

B BATTERIES

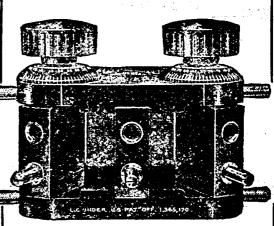
						Price
Hipco	\mathbf{B}	Batteries,	221/2	volts	\$2.25	\$1.75
		Batteries,				

TURES

De Forest Tube, D V 6	.\$6.50	\$5.00
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composed	of 1	anter	nna. 1	
ground, 1	A Batt	ery+. 1	A Bat-	
tery—, 2	telepho	ones. 1	B Bat-	
tery+, 1	B Batt	ery—		

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Reflex Circuit Works on Loop or Aerial

Aerial Hook-Up Is Combination of Several Types

By Dr. S. L. Kalinowski

UT of the many different types of receiving sets the writer selected the reflex circuit for experimentation. After almost a month of this work the following hook-up was found to give best results:

Beginning with the aerial, there is a 43 plate vernier condenser, A, of .001 mfd. capacity in series with the aerial and the primary of the variocoupler, M, the latter being of the ordinary type, having five taps of units to the aerial and five taps of tens to the ground. Across the sec-ondary, or the rotor of the variocoupler, is a 23 plate vernier condenser, B, of .0005 mfd. capacity. Between the secondary of the variocoupler and the 23 plate condenser a double circuit jack, J. is placed for the use of a loop aerial, the plugging in of which cuts out the large or outdoor aerial, the 43 plate condenser, variocoupler and ground. By using the outdoor aerial, the writer has obtained better results than with the loop, which was of the 3 foot square type with 13 turns wound solenoid fashion. The fixed condensers, C, .002 mfd.; D, .001 mfd., and E .001 mfd. are migg type and must have E, .001 mfd., are mica type and must have correctly fixed and tested capacities, as they are very important, being the means of properly balancing the circuit, remembering that both Radio and audio frequencies are present. Also make sure that the 43 plate and 23 plate variable condensers have the proper capacities, as often they do not come up to their rating. The vernier condensers are also used separate-Several transformers were tried in the Radio frequency circuit, and nearly all of them worked well.

Transformer, Amplifier and Wiring

The Radio transformer in the diagram is marked G. Any good transformer will do well, and if the reader has one at hand and intends to build a reflex set, it will be best for him to try the one he has on hand. In the audio frequency, H, a ratio of three to one or four to one works best. Higher ratio transformers were tried, but the lower ratios proved better. The filament rheostat has a vernier, and is of the 6 ohm resistance type, to which 25 ohm radio resistance unit is attached for the purpose of controlling the ¼ ampere vacuum tubes if used. The filament rheostat. L, and its vernier are very important in the control of the filament current, as proper filament control not only adds to the life of the tube, but also aids greatly in tuning. It is not necessary to do away with the rheostat that one may have of the 6 ohm type if the 14 ampere tube is to be used, because a 25 ohm resistance unit may be attached to it to increase the resistance to about 30 ohms. The vacuum tube, K, is an amplifier. Any amplifying tube taking a voltage from 45 to 671/2 or more on the plate will do. When the set is not in use, the current from the six volt battery is cut off by means of a switch, Q, while the plate voltage is con-trolled by means of switch points and lever, one of the points being dead and very sensitive, as has been found during serving to cut off the B battery voltage. Experimentation and even more so when the minus binding posts on the B battery are connected to the contact points, outdoor aerial is used, tuning is done by

Tuning is not as difficult as some writers say it is. The outfit is critical and

Tuning In with Loop and Outdoor Aerials | comes in, adjust by means of the variocoupler rotor, verniers, rheostat, potentiometer and B battery. When a small loop or indoor aerial is used it is plugged in by means of a plug into the jack, J,

thus cutting out the variocoupler, 43 plate condenser and large aerial and ground. Tuning is done by rotating the loop aerial into proper position, and by means of the 23 plate condenser. Clearing up for loudness and clearness is accomplished the same way as before.

Distance, Clearness and Sharpness

There are no claims as to originality or any great improvement for this outfit as it is merely something that other men have done, but I may say that of all the different hook-ups I have tried the reflex circuit is my first choice. For instance, clearness and sharpness is of the first or-der. On it Atlanta, Davenport, Chicago, Schenectady and other stations have been received.

In combination with a Magnavox and a one tube power amplifier this one tube re-flex is heard all over a three story build-ing as clear as a bell, without hums, hisses or knocks. A hook-up of the outfit accompanies this article and anybody wishing to construct one like it will surely feel well paid for his trouble. Try it and judge for yourself.

A beginner should learn the operation of a simple Radio set first before attempting complicated hook-ups.

GENUINE EDISON ELEMENTS (new) for making "B" Batteries, obtained from U. S. Government. A positive and negative element—6c; glass tube—3c; all other parts at reasonable prices. Postage, etc., 50c extra per order. Free instructions. TODD ELECTRIC COMPANY, 109 West 23rd Street, New York.

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while the lever which sweeps over these | means of the variocoupler and the 43 points is connected to the minus post of the A battery. The plus binding post on the B battery leads to the phones or loud speaker. The A and B batteries and their outputs are also controlled by a potentiometer, F, having a resistance of 200 ohms. Any crystal detector, I, will serve its purpose in this circuit. No advantage is gained by using a vacuum tube as a detector, at least none were noticed. All the wiring is bus bar insulated by tubing and as short as possible. The panel is 10 by 20 by 3/16 inch of hard fiber. (The writer uses all hard fiber panels in his experimental work prior to mounting a definitely decided hook-up on bakelite.)

plate and 23 plate condensers. The crystal detector is adjusted to a very sensitive spot, and when the signal or broadcast

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Vol. VI Chicago, Saturday, October 6, 1923

Oratory Before the Microphone

Appearance Accounts for Nothing, Speech Is All THE Radio orator need not worry about facing his audience or directing his voice to all parts of the hall. The nervous Radio speaker can rely on no prompter, because the microphone picks up the faintest whisper and sends it out through space. After he has been introduced, he must begin immediately. If he falters or coughs, nervously impatient listeners will tune to another station. The attention of the unseen audience is held by words, and words alone.

Deprived of elecutionary gestures and tricks, Radio speakers must depend upon their speech. There are no friendly smiles or applause to indicate success, nor the shuffle of feet or restless moving about to tell of

The Radio speaker is likely to be embarrassed as his last word strikes the microphone. Silence reigns in the studio. When he turns away and sees the announcer near, he feels like a person caught talking to himself.

The studio is a place of suspense. The broadcasting novice would like to run away after he has finished his first talk. In the reception room adjoining, he sees others scheduled for the program waiting their turn. The scene reminds one of a doctor's anteroom, because a general tension and silence prevail. The atmosphere is of nervous portent.

Underground Communication

Longer Wave Lengths Seem to Penetrate Earth Better IN CONNECTION with its efforts to keep pace with all safety and rescue developments, the bureau of mines of the department of the interior, is planning to continue its investigations as to Radio communication underground. The development of Radio has been rapid and officials of the bureau feel that any application to mine rescue work must not be neglected.

Some months ago preliminary Radio experiments in sending and receiving underground at a mine in Pennsylvania were conducted with partial success. It was found that signals could be heard distinctly through fifty feet of coal strata but that the audibility fell off rapidly as this distance was increased. In all experiments a vertical antenna was found to give the better results. The horizontal antenna gave practically no reception. A loop of a single turn was used with fair results.

The present preliminary experiments, while unsuccessful in indicating any practicable method of using Radio waves for underground communication, nevertheless indicate clearly that electromagnetic waves may be made to travel through solid strata. The "absorption" or loss of intensity with distance is very great for the short wave lengths used in these experiments. Longer wave lengths are known to suffer less absorption and may possibly be found practically effective under certain conditions.

Results Obtained by Broadcasting

New Wave Lengths Cause Some Changes in Sets THERE has been rapid progress in broadcasting recently. Instead of the overcrowding of all stations on the two wave lengths of 360 and 400 meters, the stations have now been assigned definite wave lengths covering the wide range of 220 to 545 meters. This has greatly increased the possibilities of broadcast reception, provided the listener can use his receiver in such a way as to pick up any desired station. Difficulty has been experienced by some in receiving the

New stations have been established in certain localities producing very powerful signals in the receiving sets of nearby listeners and somewhat interfering with reception at more distant stations while their local

station is in operation.

Then, too, a few stations have been shut down or transferred, thereby requiring the listeners to get their programs from more remote stations, which in turn involves some modifications in the receiver or in the way in which it is handled. Fortunately all of the difficulties mentioned can be overcome to a great extent by a little care and a proper attitude.

* RADIO INDI-GEST

You a Lawyer? Hope You Blow 'Em All! WHY DO THEY TEACHER. SO THEY SAY, MAKE TUBES THAT TAKE DIFFERENT AND OF COURSE VOLTAGES, AND IT HELPS HOW'S A LAWYER THE TUBE BUSINESS. TO KNOW THAT ANYHOW-A FOUR-VOLT I PUT A TUBE AND **FOUR-VOLT TUBE** A SIX-VOLT ON A SIX-VOLT TUBE ARE ENTIRELY LIGHTING BATTERY. DIFFERENT ANIMALS? PING! WENT BUT EXPERIENCE THE TUBE, AND IS THE BEST SO I LEARNED. GOO GOO.

A-B-C Lessons for Indigest Beginners Chapter XVI—Refer to Our Back Numbers for Data BY GOSH

IS for Patents,
That some folks try to steal,
So they can boss the ether
And make we fans all squeal.

Since Father Has a Radio

Broadcast from WOR by Charles L. H. Wager, Author Since father has a Radio our home is not the same, In fact, 'tis all confusion and Radio is to blame, No longer is the routine of daily tasks gone through, Nor are those things attempted which we had planned to do.

Since father has a Radio he sits at it all day, And mother has to do the chores and keep the kids away, He says he's trying to tune in, he can't have any noise, We have to tiptoe round the room, 'tis hard on healthy boys.

Since father has a Radio you ought to hear him talk, "O, Boy! I'm hearing Pittsburgh," "Say Ma! I've got New York,"

And "Darn' that measley naval code," "Ye Gods, just hear that band From 'X-Y-Z' in Boston, Mass.," and "Isn't Newark grand?"

Since father has a Radio even mother has the bug, To music from some distant place she sweeps the parlor rug, She irons with the ear-phones attached upon her head, And while she listens in at night she mixes up the bread.

Since father has a Radio our meals are served on trays, We masticate in rhythm with some late symphonic craze, We drink our coffee and our tea by sips arranged in code, But we've got used to anything since Radio is the mode.

Since father has a Radio he never goes to church, He used to be a deacon but he's left them in the lurch, For now, when Sabbath comes around instead of in the pews He sits at home and listens to some far-off preacher's views.

Since father has a Radio the neighbors now come in,
The Reeds, the Peaks, the Stones, the Pratts, with children
all a-grin,
They say, "We just dropped in to call, Hello! what have you
here?
I swan!—a Radio—By Gosh! do you mind if we hear?"

Since father has a Radio our home has gone to pot, And even to the flivver we scarcely give a thought, But father says that Radio has been a boon to men, I wonder—will it ever make home sweet home again?

> No, He'za Dial "Pointer" Our Pup, He'ze fan all right, For he listens in every night.



Looks like a Setter by his tail;
Pop says he must be "Air-dale."
Al Brown.

Heave a deep sigh For Will Kinard— The roof was high, The pavement hard.

Tell It to the Phonograph

MOTHER (Listening to son's new Radio set): John, play that same piece over again. I think it is just wonderful.

H. K. C.

A Few More Bends



Condensed

By DIELECTRIC

A majority of the broadcasting stations have completed their operations intended to improve the quality and range of their transmission. The effect of this work has been noticeable in many instances. It yet remains, however, for Station KYW to put into effect the plans mapped out by Radio engineers whereby that station will overcome certain obstacles due to wave length and location. There are large numbers of grand opera fans who look forward to hearing the Chicago company through the courtesy of KYW, and to these the news will be welcome.

I doubt very much the basis in fact for the contention of some that broadcasting of crop reports (prices) by various stations consumes time not proportionately appreciated. Stop long enough to realize the percentage of this country's inhabitants who secure their living from the soil; consider the price fixing and marketing difficulties confronting them, then revise your conclusion. WBAP is receiving evidence of keen appreciation from cotton and grain men of their broadcasting service along this line. The farmer needs it and values it highly.

Re-broadcasting programs by one or more stations in the United States is not a new story; it is frequently accomplished and with much success. The musical program at the Capitol theater in New York City is broadcast each Sunday evening by Station WEAF and re-broadcast by WCAP, in Washington, D. C., and WMAF, South Dartmouth, Mass. Now turn to the Pacific coast and see what is going on there. Long distance reception during summer months is admittedly poor in the South Pacific region, yet KGU in Honolulu has been re-broadcasting programs from Station KHJ, the Los Angeles Times, and getting it nightly!

One more natal celebration is worthy of notice here, not only because it marks the third birthday of a well-known broadcasting station, but for the fact of that station being the first owned by a newspaper to come on the air. The Detroit News could only count on a radius of a hundred miles of effective transmission when it started, but that has been increased. England, Hawaii and Peru have successfully received its entertaining features, including concerts by a well organized orchestra composed of members of the news staff. Good wishes to Station WWJ.

It is not easy to erase from the mind the picture of horror and destruction which came to us from Japan a few weeks ago. It should not be easy to lose sight of the tremendous importance of Radio to thousands of earthquake sufferers on that island. Had news of the disaster been delayed forty-eight hours (as would have been the case had Yonemura failed), then the suffering and death records would today be much larger. One lone Radio station in sole touch with the outside world provided means of bringing quick aid to the stricken.

I am quite sure that the use of Radio as a means of reaching America's millions of people in behalf of any cause has a distinct advantage. A message delivered orally by Mrs. Wallace Reid from broadcasting stations, urging a more active fight against the drug evil, makes an impress not easily erased from the mind. She hopes to have the active support of broadcasting stations throughout the land, giving time to information on the appalling conditions confronting those interested in suppressing this mostrous evil. Are you with her? Get busy.

First Steps for Beginners in Radio

Chapter XIX—Locating Trouble in the Set

By Thomas W. Benson, A. M. I. R. E.

BEGINNERS will find the accompanying series by Mr. Benson very helpful in learning the rudiments of the popular science of Radiotelephony. The series will be concluded in our next issue with

Chapter XX-Useful Information and Formulas.

N the last chapter we treated the testing of the individual instruments of the Radio set, and this chapter will take up the effect of defective apparatus in the operation of the set. It is practically impossible to cover every trouble that might develop in the operation of a set, but sufficient data will be given to enable one to eliminate the more common troubles and serve as a guide in more difficult cases.

When a set refuses to function it is advisable to tackle the problem in a systematic manner. First of all make sure the aerial and ground are connected, the phones connected up, the battery wires properly attached and the tubes in their sockets and lighted. By loosening the phone cord and tapping on the phone post a click will be heard which indicates the B batteries are connected up. If after checking the above no signals are received or the set seems dead, it will be necessary to go to the interior of the set to locate

Testing Out Telephones

Connect the phones into the plate circuit of the detector tube. If no signals or noise are heard, it may be for any of the following causes: Batteries run down; tube not making contact in the socket properly; polarity of B battery reversed; telephone defective, phone condenser shorted, or primary circuit not tuned.

If good signals are heard in the detector circuit but when switching on the amplifiers the signals are weak, we may look for the following: Tubes not making contact; battery too low to operate ampli-fiers with detector on; a burned out trans-

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transformer primaries.

Weak signals in the detector circuit may be due to one or more of the causes that will prevent signals entirely, and also to wrong connection on the tickler coil; grid condenser shorted; open circuit in the grid, or improper adjustment of the tube filament brilliancy and plate voltage when a soft tube is used. By checking all the above when a set refuses to work up to its maximum efficiency, the trouble will usually be located. At least the check will in all cases serve as a guide in locat-

Locating Stray Sounds

We may now turn to the problem of locating stray sounds, such as scratching, scraping or popping. When these occur in the detector circuit with the amplifiers turned off, they are due to one or more of the following: If tuning the set changes the noise it is probably caused by excessive voltage on the plate or filament; too large a tickler inductance; irregular oscillation of the set due to poor connection to aerial or ground, and in some cases when too low a capacity is used for tuning, the aerial circuit may make it unsteady and difficult to handle. In the latter case, swaying of the aerial will often affect the set. It is advisable to use a larger condenser in the aerial circuit to stiffen it and more inductance to again obtain resonance. Popping sounds occur when the grid charge becomes too great and can be remedied by lowering the resistance of the grid leak.

When the noises are not affected by tuning, the trouble may be due to any of the causes listed in the last paragraph or



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former, or an open transformer or phone to poor connections in and between incondenser shorted. If jacks are used they struments. Look for loose connections on may be making poor contact or shorting the instruments, make sure the rheostat is making good contact; that variable condensers are not shorted by dust or warped plates, and that aerial and ground are tightly connected. We must include under this head static, but one can usually tell this after a little experience. There are many types of static, but if the sounds come and go when the set is not touched and are very irregular in occurrence, the trouble can usually be laid to static.

Occasionally the knocking or ticking sounds are heard when the amplifiers are switched on and not in the detector circuit. Switch off the detector, and if the

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sounds continue they are in the amplifier units and may be due to poor connections between instruments, poor contact at rheostats or batteries, or to defective transformers.

Howling and Whistling

More general are howling and whistling. When they occur in tuning and encountered in the detector circuit with the amplifiers off, excessive feedback, often (Continued on page 20)

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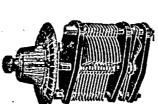
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1 Reinartz wound coil, 1 tube socket, 1 rheostat, 1 23-plate, .0005 MFD, variable condenser, 1 13-plate .00025 MFD, variable condenser, 3 inductance switches, 16 switch points and nuts, 4 switch stops and nuts, 8 binding posts, 2 8" dials. 1 variable grid leak, 1 002 MFD, plane condenser, 23 feet bus bar wire, 1 high-grade panel ALREADY DRILLED AS PER DIAGRAM \$10.95

FLEWELLING CIRCUIT

2 honeycomb coils, 1 2-coil mounting, 2 coil plugs, 3,006 condensers, 1 variable grid leak, 1 grid leak, 1 23-plate .0005 MFD. variable condenser, 1 Vernier rheostat, 1 tube socket, 8 binding posts, 20 feet bus bar wire, 1 high-grade panel ALREADY DRILLED AS PER DIAGRAM, 1 3" dial and the Radio Digest Booklet on Operation and Construction of Circuit

\$11.95

Two-Stage Audio Frequency Amplifier

\$11.00

Γ	-	CONDENSERS
13	Plate Plate	Variable; value, \$1.75. \$1.05 Variable; value, \$2.50. 1.20 Variable; value, \$3.50. 1.35 Variable; value, \$4.50. 1.95
23	Plate	VERNIER: value, \$5.50. \$3.75 VERNIER: value, \$6.00. 4.00 VERNIER: value, \$6.50. 4.25

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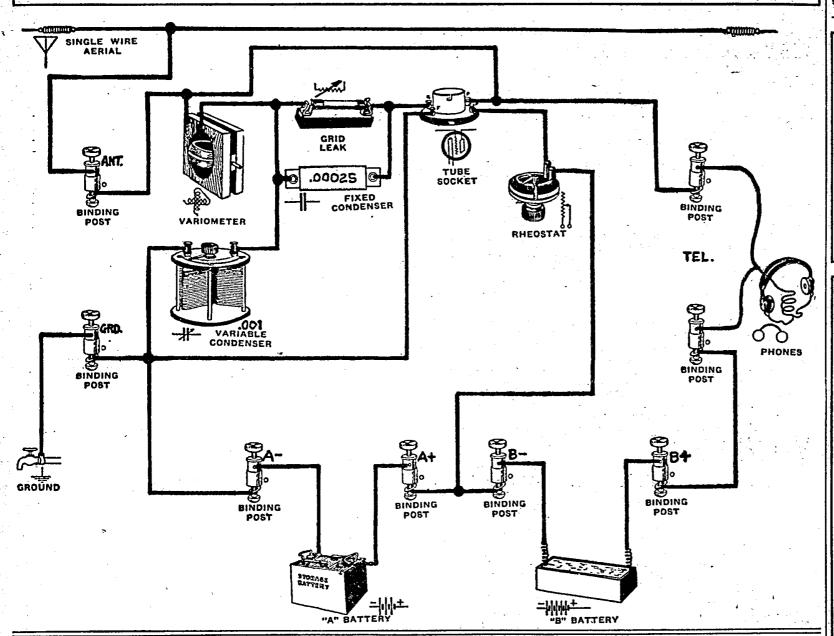


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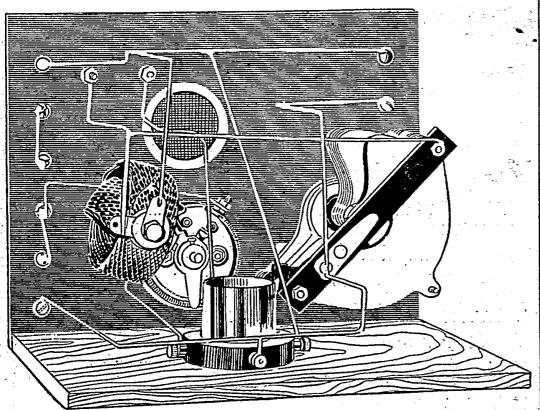
AN ULTRA AUDION SIMPLEX DIAGRAM



gram is by no means a new one but it has numerous good points that make it especially attractive for the new fan. Not only is it an extremely efficient mount unit was used) on variometer, and form of circuit, but its simplicity and eight binding posts.

low cost make it an ideal receiver. A dry cell tube can be used if desired;

HE circuit shown in the above dia- apparatus required is one tube socket, as a single wire not over 60 feet long is one rheostat, one variable condenser. (.001 mfd.) preferably with vernier, a vavariable condenser. riable grid leak and grid condenser (panel



The other illustration shows an assembled set, mounted on a 7 by 9 inch panel with a 5 by 7 inch baseboard. The

two stage audio frequency amplifier is the B battery is 22½ volt recommended, but this can be increased if UV-99 or C-299 tubes are used. As the diagram indicates, the wiring is very simple. The aerial need not be a very long one

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To letter a bakelite panel, clean the sur-

face with wood alcohol to remove any greasy film, then write what you want on the panel with a sharp, stiff steel pen and draftsman's white ink, such as is used on blueprints. When the writing is perfectly dry, cover it with transparent varnish to protect it, using a fine, soft hair brush.

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Determination of Resistance Values for Rheostats

Relations of Resistance, Voltage and Amperage for Various Tubes

By H. J. Marx

phans in regard to the proper resistance in rheostats to be used for the va-

rious tubes now on the market.

The immediate result has been the flooding of the market with a series of rheostats of a resistance range running from total resistance required is:

"In a 6 volts, the current consumption will be .15 amperes.

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"In a 6 volts, the current consumption will be .15 amperes.

"These tubes operate at 3 volts and draw total resistance required is:

"The immediate result has been the flooding of the market with a series of rheostats of a resistance range running from total resistance required is: one ohm for a power rheostat (controlling two or more tubes) to 50 ohms for the UV-199 and C-299 tubes.

Fans are using dry cells connected in series and some in parallel, or storage batteries with single, double and three cells. Each change in current source, and also in tubes used necessitates a consideration of the proper rheostat required. Apparently this has been extremely puzzling to fans but can easily be remedied by an application of Ohm's Law.

Direct Current Circuit This part of the vacuum tube circuit, which pertains to the filament lighting, is a simple direct current circuit. As such, it follows Ohm's law:

R

The proper application of this formula will solve all problems covering the proper selection of rheostats.

Function of the Rheostat

For example, the familiar UV-200 and C-300 operate at 3 volts' potential and draws approximately 1 ampere. The average source of current supply is the 6 volt storage battery. By introducing a variable resistance, such as a rheostat, the voltage Coross the filament can be varied from about 3 volts to 6 volts. Then varied from about 3 volts to 6 volts. Then if the tube operates even better at 4.5 volts than at five, this can be taken care of by means of the rheostat. Obviously, by increasing the rheostat resistance, the range of variation also can be increased, from even lower values to the maximum 6 volts

of the battery.
Since the tube does not begin functioning until about 4 volts are applied to the filament, there is no gain in the surplus control range. In selecting the rheostat for any combination of tube and battery, the resistance should be such as to furnish a voltage range covering that of the oper-ating range of the tube.

Filament Resistance

Going back to the tube mentioned, if the operating voltage is five and the current consumption at that potential 1 ampere, the filament resistance can be computed by applying Ohm's law.

$$R = \frac{1}{1} = \frac{1}{1} = 5$$
 ohms.

The tube begins operating at about 3 volts on the filament. In order to find the consumption at this voltage, Ohm's law is again applied.

E 3 volts

-=.6 amperes.

R 5 ohms

The filament resistance varies slightly as the heat of the filament is changed, but this can be disregarded.

The source of current, however, has a potential of 6 volts. If only .6 amperes is wanted, the required total of resistance, including filament and rheostat will be:

6 volts = 10 ohms.

I .6 amperes
The filament resistance is 5 ohms so only 5 ohms more are required in the rheostat. The average storage battery, when fully charged, is likely to have a slightly higher voltage, so the standard rheostat used was the 6 ohm type.

Power Kneost

When rheostats are used to operate two or more tubes connected in parallel, conditions are a little less simple. The effective filament resistance is the result of the resistance of one divided by the number of tubes connected in parallel. The current consumption is that of one tube multiplied by the number of tubes. For example, where two tubes are operated by one rheostat, the required resistance be-

6 volts

.6 amperes \times 2

The effective filament resistance is only half of one, or 2.5 ohms. The required resistance in the rheostat is therefore 2.5 ohms. The standard two tube power rheostat has a resistance of 3 ohms. factor to be considered in power rheostats is whether the resistance wire has the carrying capacity for the current required; if not, the resistance wire will fuse. If an ordinary 6 ohm rheostat is used for more than one tube, this usually happens. The safe limit for the standard 6 ohm rheostat is 1.5 amperes.

Dry Cell Tubes

As previously explained, it was the development of the dry cell tube that started most of the trouble in respect to rheostats. In order to make this as clear as possible, it will be advisable to analyze the prob-lem for the two popular types, under dif-

ferent battery conditions.

The UV-201A and C-301A tubes operate

Assuming that the tube begins function-

THERE has been created a decided on a filament voltage of five, but only consciously, but can be used. If three dry confusion in the minds of the Radio-sume .25 amperes of current. The filacells in series are used, the voltage of 4.5 phans in regard to the proper resist-ment resistance then will be 20 ohms. Is not sufficient, whereas four cells give 6 volts, making the condition parallel to

TUBE-	Battery Voltage	Operating Voltage	Current Amperes	Filament Resistance Ohms	Total Resistance Necessary	Rheostat Resistance	Detector Plate Voltage	Amplifier Plate Voltage	Grid Bias Voltage	Grid Lealt Megohms	Grid Condenser Microfarads
UV-200 C-300	6	5	1	5	10	5 to 6	22.5			1	.0005
C-301A UV-201A	6	5	.25	20	40	20 to 30	22.5	45to80		1 to 5	100025
WD-11 WD-12	11/2	1.1	.25	4.4	10	5 to 6	22.5	45 60 80 100	0 1.5 3 4	2	.00025
UV-199 C-299	41/2-6	3	.06	50	90to130	30 to 7 5	22.5	40 60 80 100	0 3 4.5 6	1 to 5	.00025
UV-201 C-301	6	5	1	5	10	5 to 6	22.5	40 60 80 100	0 3 4.5 6	1	.0005

 $R = \frac{}{I} = \frac{}{.15} = 40 \text{ ohms.}$ The resistance of the filament is 20 ohms, so the rheostat resistance should be 20 ohms. Naturally, a 25 or even 30 ohm rheostat simply increases the range

sistance of 50 ohms. They do not start functioning until a filament voltage of about 2.3 is reached.

At this voltage, the current draw is: E 2.3

I = - = - = .046 amperes.

Now if three dry cells, connected in series (two cells leave no margin) are used, the potential at the source is 4.5 The required total resistance will then be:

 $R = \frac{1}{I} = \frac{100}{.046} = 100$ ohms.

The rheostat resistance required will then be 50 ohms. Sixty ohm rheostats are sometimes used.

If a two cell storage battery (4 volts) is used, the resistance of the rheostat should be about 30 ohms or more.

Suppose, however, that a 6 volt storage battery is used, the required total resistance will be:

$$R = \frac{E}{I} = \frac{6}{.046} = 130 \text{ ohms.}$$

This indicates that the rheostat resistance must be 80 ohms. Under these circumstances it is of particular importance that the voltage should not exceed 4.5 or even 4 volts. It is suggested, in this case, that a permanent resistance of 25 or 30 ohms be inserted in series, the rheostat requiring only 50 ohms. If, then, the rheostat is accidentally turned on full, there will always be the fixed resistance in series with less possibility of burning

The use of a fixed resistance is recommended only where the voltage at the source greatly exceeds that required for operation. A small margin over the operating voltage is always necessary in order to compensate for deterioration of battery and variations in tubes.

WD-11 and 12 Tubes

When using WD-11 or 12 tubes with a single dry cell, the required rheostat resistance will be found to equal 6 ohms.

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(Continued from page 11)

coil, also air core, but variable. Such a drawing is used to show either a coil from which short leads are brought out at intervals to switch points or a coil which is varied by moving a metallic slider along a rod, the slider making contact with the wires of every turn, the insulation having been removed for a distance of about is inch on every turn. Figure 4c specifies that the coil be varied by taps and a switch. In 4d we have a coil wound on an iron core and non-variable.

Capacity is another property necessary in a circuit in which Radio frequency currents are to travel. Capacity is the result of having close together two metallic surfaces or wires in which alternating or pulsating direct current is flowing. For a better understanding of this let us consider Figure 5a. Here we have a circuit consisting of a coil of wire (X) and a device consisting of two flat plates about 2 inches square and 16 inch apart. In this circuit, Radio frequency current is flowing and we will consider it at a moment when the current is flowing in the direction indicated. The current spreads out over plate A until the plate is full. If the plate is of the correct capacity, it will become full at just the moment when the current reaches its greatest value and begins to weaken. As plate A is full and plate B contains no electricity we have an unbalanced, unstable condition and plate A discharges or unloads its current back through the coil X and into plate B, as shown in Figure 5b. Electrical current has momentum, just as does a swinging pendulum, and the flow does not stop when both plates are equally charged, but the current piles up in plate B and then must

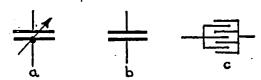


Figure 6-Three methods of showing condensers on diagrams, one variable and two fixed

again flow as in Figure 5a. This action would continue indefinitely and we would have a perpetually oscillating circuit were it not for small losses which occur and the resistance of the circuit.

The symbols used for showing capacity in the form of an instrument known as a condenser, are shown in Figure 6; 6a designates a variable condenser, that is, a condenser whose capacity may be varied from maximum to very nearly zero. The unit of measurement of capacity is the farad and its subdivision, the microfarad (.000001 farad). Condensers used in Radio work have very small capacities and are usually measured in fractions of a microfarad; 6b is the usual designation of a fixed capacity, while 6c is another less used method of showing it.

As the capacity of condensers is usually written and spoken of in decimals such as .001, .0005 and .00025, Radio men have developed the following way of speaking of them. The Radio experimenter would say "double O one," "triple O five" or "triple O two five," meaning condensers of .001 of a microfarad, .0005 of a microfarad or .00025 microfarad.

Resistance

Resistance is, as was stated before, measured in ohms. Since we frequently ase resistances of from 1,000,000 to 12,000-000 ohms, the Radio fraternity has come to use the word megohm for 1,000,000

Resistances are shown on diagrams by the symbols shown in Figure 7. A resistance which cannot be varied is shown as in 7a. while a resistance that is variable (such as a rheostat) may be specified by 7b; 7c shows a particular form of resistance known as a potentiometer, which is usually connected across the filament battery of a vacuum tube. The sliding also will cause squealing and howling.

At times a buzzing or humming sound

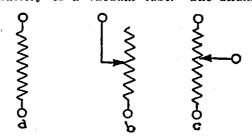


Figure 7-Resistances are shown in these draw ings, one fixed, one variable, one of a special unit

contact is connected to one of the other elements of the tube (grid or plate), and moving this contact varies the difference in pressure between the filament and the second element.

(TO BE CONTINUED)

FIRST STEPS IN RADIO

(Continued from page 17)

caused by too large a tickler coil, is responsible. Also, the grid leak resistance may be too high, causing the tube to block or the trouble may be due to a too high plate voltage or undesired feedback, caused by the closeness of the plate circuit to the grid circuit leads. Often a steady whistle is heard when a nearby regenerative set emits waves, or if two broadcasting stations are heterodyning each other. Interference of this nature will be recognized by the inability to change the note by tuning, whereas feedback effects are altered by adjusting the tuning controls.

Squealing usually is experienced when the amplifiers are switched on and is due to reaction between the plate and grid circuits of the tubes. The most common

reverse the connections to the transformers until the noise is eliminated. When transformers are close together. squealing often is caused by the magnetic field of one reacting on the other. They should either be completely shielded, or the cores set at right angles. The wiring of amplifier units, when run too close,

is encountered that is difficult to locate. Often it is due to induction from nearby power lines. It may be caused by a grid condenser made of tinfoil or paraffin paper. In one case, the panel of the set picked up the vibrations from the loud talker through the table, and the vibration was transmitted to the tubes and caused a ringing sound. A plate lead brought close to the ground lead or high voltage leaking into the aerial circuit is a frequent cause of buzzing or humming.

Unsteady and Wavering Signals Unsteady and wavering signals are due to the unsteady operation of some part of the set. Poor contacts in the filament circuit or an aerial circuit with too low capacity in series with the primary inductance will cause them. Loose inductances will result in unsteady signals, and a leaky aerial or lightning arrester due to rain or moisture will affect the signals.

In locating trouble one should bear in mind that the broadcaster is sometimes at fault. The set can only reproduce what it receives, and before blaming the set the operator should tune in another station and see if that acts the same way. In homemade apparatus many factors enter into the operation. For instance, the shielding on the panel may result in feedback effects that cause whistling and squealing. Homemade inductances are often coated with shellac that is unfit for the purpose, sometimes containing water that causes leaks between the turns and poor tuning.

Fiber is considered a good insulator as a rule, but it should not be used as an insulator in Radio apparatus. A fiber panel will make any regenerative set noisy, if

RADIO FOR EVERYBODY ohms and to mention 8,000,000 ohms we cause is the reversal of a transformer not worthless for long distance work. would say "eight megohms." winding, in which case it is necessary to Fiber washers should never be used to insulate the binding posts from the shielding on your set. Scrape the shielding away for a quarter inch around the posts or use bakelite washers.

(TO BE CONTINUED)

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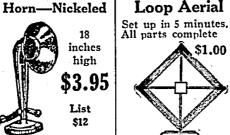
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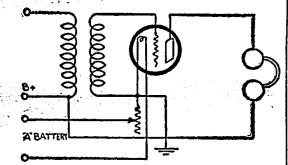
variable may be reduced all along the scale by using a small fixed condenser in series with it. Thus a .001 mfd. variable may be made into a .0005 by using in series with a .001 fixed condenser; or it may be changed to .0002 by using a .00025 fixed

This method of reducing the capacity of a variable somewhat distorts the capacity curve; i. e. reduces the upper part of the scale in greater proportion than the lower part, but this is especially desirable with condensers of the type of the Connecticut variable.

In the diagram two fixed condensers of .001 mfd. and .0005 mfd. are used with a 43-plate variable so that five different series and shunt combinations are possible, varying from a maximum capacity of .00025 mfd, when all are in series, to a maximum of .0025 mfd. when all are in shunt. Switch A is used to obtain the series combinations, switch B being left in the first position (to the left). With A in the third position, the variable only is in the circuit. The fixed condensers are shunted across it to increase its capacity by moving switch B to the second and third positions, switch B being left in the third position (to the right). It will be noted that switch B has two blades. The con-densers used should be mica insulated and of guaranteed capacity.-Russell Skeeters, Des Moines, Ia.

Audio Frequency Transformer

Pick up from your neighboring garage a few Ford coils. These coils are divided



into two small coils each about 11/2 inches long which constitute the secondary. These two coils and the cores are used

-Improved-Ground Clamp



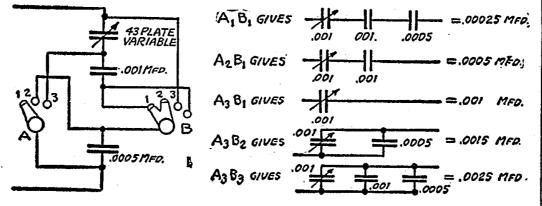
Equipped with Fahnestock Patent Wire Connectors Easily Attached No Soldering. For Radio Use Only

At Your Dealers

Fahnestock Electric Co.

Long Island City, N. Y.

SWITCH CONTROLS THE CAPACITY



in the transformer. If the case, binding coil out at the other end and keep in mind posts, vibrator and the various equipwhich is which. The larger coil is the ment are still in place, save them. Many secondary and the smaller the primary. things not needed at first will become of

Separate the coils to make two independent coils. Take the primary winding—the larger wire around the core—out of

SECONDARY PRINARY

both and keep the core-the bunch of an nealed wire-in the center. If you want to know how many layers are on a coil count them. It's good practice. On most coils there are 35 and 37 layers. If we have a 35-layer coil and desire a 10 to 1 ratio it is necessary to have a 30 to 3

First, five layers of the coil are pulled out of the inside and the ends are brought out free. Remove 30 layers from the outside of the remaining coil and bring the ends out free. It will now be easy to place the smaller coil into the larger one. Wind enough tape around the smaller coil to make it fit snugly into the larger coil. Bring the ends from the large coil out at one end and the ends from the small



ON APPROVAL FOR 30 ZOBEL-STEIN LABORATORIES 322 9TST. BROOKLYN,N.Y.Scuth2650

METALECTRIC SOLDERING IRON

(The All-Metal Instrument)

A Solution to the Small Soldering Problem of the Discriminating Assembler. Unbreakable Construction — Economical Operation on any Electrical Circuit— Interchangeable Tip.

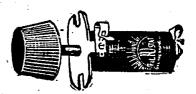
From your dealer or write

Post Electric Co., Mfrs. Dept. 509, 30 East 42nd St. New York City

Connecting Testing Sets That Use Vacuum Tubes

When the construction of a receiving set empolying vacuum tubes either as detectors or amplifiers is complete, the filament or A battery should first be con-nected up to be certain that all the connections to the tubes and control rheostats are correct for filament lighting. The plate or B battery should always be connected last so as to eliminate the possibility of having the tubes burnt out through improper connection of the B battery to the filament terminals.—Peter J. M. Clute, Schenectady, N. Y.

A single circuit set will pick up almost as many stations as a more complicated one, but it may happen that it does not pick up one station at a time.



YOUR set is probably bringing in DX stations you never hear because your rheostat cannot control your filament action. The Fil-Ko-Stat gives infinite adjustment and enables you to magnify the weak stations and bring them in strong and clear.

Full resistance 30 Sm. adjusted to ALL TUBES.

"Avoid the use of in-ferior powdered carbon rheostats."

At All Dealers in High Grade RADIO

Sole International Distributors.

Radio Stores Corp., 218 W. 34, N. Y. City

Do you wonder how we can do it?

A great many radio men have wondered how for example we can offer a genuine Automatic Electric \$10 head set for \$3.65. The reason's simple enough. When we buy



Wind the core with enough tape to fit well into the inside of the small coil.

core as shown in the illustration; it will serve the purpose admirably. If you want an open core type leave the core as

it is shown.-Edwin Rust, Phoebus, Va.

Keep Rust Out of Receivers

telephone receivers sometimes become

rusted after long use and even the pole pieces themselves become slightly cov-

ered with rust which will interfere with

the vibration of the diaphragm. When

this is noticed, remove the cap and wipe

the magnets and diaphragm with a soft cloth dampened with sewing machine oil.

Care should be used not to bend the circu-

Testing Crystals
The more ambitious of experimenters will find it an interesting and instructive pastime to test out crystals of different

kinds of sensitiveness. While thousands

of crystals and combinations of crystals

have been tried out, a new combination may accidentally be discovered that will bring results well worth the trouble.

The diaphragms of certain types of

If you want a closed core transformer, the usual kind, bend back the ends of the

> we don't merely place an order for a dozen or so. We buy big! We buy out a complete stock or the entire output of a factory. We bought 40,000 of these Automatic Electric head sets. We got a special price by paying spot cash for the lot—and that's how we can offer these \$10 head sets for

The Automatic Electric head set embodies a style and design proved by use and experiment to be the best. Coil wound with about 6500 turns of No. 40 enamel coated copper wire. Direct current resistance approximately 1600 ohms. Impedance and average music and voice frequency (800 cycles) is 21,000 ohms.

WATCH FOR OUR BIG SALE ON WESTERN ELECTRIC V.T.-2's We Just Bought 10,000 of Them from the Navy

HONEYCOMB

1,500 Turns	.\$1.5
1,250 Turns	. 1.5
1,000 Turns	. 1.2
750 Turns	
250 Turns	
150 <u>Turns</u>	
100 Turns	
75 Turns	
50 Turns	4
35 and 25 Turns	. 4

CAPT. SCHOONHOVEN REINARTZ COILS \$1.95

COCKADAY COILS \$1.95

U. S. A. SIGNAL CORPS, AVIATION TYPE 194-W WESTERN ELECTRIC **PHONES**

Each Phone Cap is covered with large, soft rubber ear cushions, and an aviation leather helmet goes with each set! These are the only phones to pass the Government specifications for sensitiveness and loudness, the requirements called for in aircraft reception.

Special \$7.95

SUPERSENSITIVE **MICROPHONE** TRANSMITTER \$2.45

VARIABLE CONDENSERS

\$7.60 val., 43-pl. Vernier...\$3.95 \$6.50 val., 23-pl. Vernier... 3.45 \$6.00 val., 11-pl. Vernier... 2.95 \$1.75 val., 3-pl., Vernier... 1.15 \$4.30 val., 43-pl. NOW.... 1.75 \$3.70 val., 23-pl. NOW... 1.45 \$3.30 val., 11-pl. NOW... 1.35 \$2.25 val., 5-pl. NOW... 1.25

FRESHMAN VARIABLE GRID LEAK AND CONDENSER

\$1.00 65c

SOLDERING IRON ONE YEAR GUARANTEE \$2.45

"THE LARGEST RADIO STORE IN AMERICA"

ALL MDSE. **GUARANTEED** BY US

> TO BE OF **FIRST QUALITY**

ALL MAIL ORDERS. LARGE OR SMALL, SHIPPED TO YOU

PROMPTLY

509 South State St., Dept. D 10-6, CHICAGO, ILL.

trying to figure out this problem on a

series parallel switch but could not solve

Can you tell me the right size loop to use on this circuit? I have a loop which I bought; it brings in the wave but I find

I cannot split it; so I have not as yet been able to use the loop. Of all the circuits I have tried, I find this to be the

best for all around work. Its selectivity is remarkable and the range is fine.

A.—Noting limitations encountered in the operation of Circuit 01321, Radio Digest, we advise that it should be capable of tuning to lower wave lengths as constructed. However, in approximation

constructed. However, in experimentation

you might eliminate the variometer shown between the audio frequency transformer and the rotor of coupler for low wave

For accomplishment of higher wave

lengths place a .00025 mfd, fixed conden-

ser between the grid variometer, grid

condenser connection and the filament

side of the variocoupler or ground.

A wave trap is most effective in the

antenna circuit; we recommend it in that position only. It is doubtful if your

A loop may be constructed of 10 turns

of wire spaced at 1/2 inch on a 3-foot

proposed arrangement could be effected.

Questions and Answers

Two Tube Super

(4816) AW, Evanston, III.

I have noted the two tube super-regenerative circuit shown in Mr. Benson's article in Radio Digest July 28. If it is possible for you to do so please print additional information about this circuit. Could a variocoupler or a variometer with stator and rotor winding separated be used in place of the honeycomb coils in the circuit of detector tube?

To a variable coupling between the D. L. coils, are 1250-250-1500, turns necessary? If so, can they be mounted as shown in the description of the single tube circuit of August 4?

Should the D. L. coil, 250 turns, be mounted between the large coils in this

A .- A standard variocoupler can be substituted for the honeycomb coils indi-

A variable coupling is necessary until the point of best operation is found. Coils can be mounted as suggested.

The 250 turn coil is not in inductive relation to the 1250 and 1500 turn coils.

Body Capacity

(4723) JLR, Allegan, Mich.

I am a reader of your publication and would like to ask a question relative to my single tube variometer coupler regenerative set. My entire tuning panel is shielded with tinfoil; this shield is connected directly to the ground binding post. I get satisfactory results excepting that after tuning in a station it is necessary to keep my hand on the variometer dial or the set will howl and the station tuned in will be lost. I do not use a variable condenser with this set.

I will be very appreciative of any help you can give me in regard to eliminating this trouble.

-The action cited is characteristic of variometer set. It will be overcome by placing a 3 or 5 plate variable condenser across the secondary of the variocoupler. After the circuit has been tuned use the condenser to compensate for the difference in the wave length caused by the hand capacity. Rotary plates of the condenser should be connected to the filament side of the secondary to eliminate body capacity effect.

TWO SUPERSENSITIVE CIRCUITS

(Both Copyrighted)

My Highly Improved Reinartz brings in all important stations on both coasts and Mexican border, loud, clear and without distortion. We dance to music from Atlanta received on one loud Baldwin unit. Build one of these wonderful sets from my blueprints and specifications, price 50c, or with a porfect and complete double wound spiderweb coil, \$3.00 by mail. No other windings used. Photo of my set on a glass panel with every order.

This copyrighted circuit is the most successful of any Reinartz modification yet produced, and is initated the most. Thousands are in use.

My W. D. 11 Circuit is especially designed for use with the "Pickle" tube and brings out the full value of that little tube as no other circuit can. Stations 1000 miles away come in clearly on one tube. This set is small, complete, portable. For the man who wishes the highest efficiency, this is the set to build. Price of blueprint and specifications, 50c, or with complete and perfect windings, \$3.00. Photo of set with every order.

complete and period windings, 55.55.

with every order.

Sets built from these plans will receive all broadcasting stations operating under the new laws.

Their wave length range is from 170 to 800 meters.

Their wave length range is from 170 to 800 meters.

AUXILIARY TUNER

This new instrument connected to your present receiving set with one wire enables you to easily bring in both the long and short wave stations which you cannot get with your present equipment. It also enables you to eliminate that local interference so you may listen to distant stations.

Copyrighted diagram and complete instructions for building and operating this instrument. 50c, or with all parts, including Condenser, Colls, Switches, and Panel, §8.50. Complete instrument, §15. All goods prepaid.

These instruments are easy to build, easy to operate.

S.A. TWITCHELL

1925 Western Avenue, Minneapolis, Minn.

D

The Crystal That Brought Joy to 100,000 Radio

Users Last Season.

Sent on approval. Pay us 50 cents when you are satisfied. That's how sure we are that it will please you. Just pass the good news on to a dealer so others may

enjoy B-Metals too. Just send us the name of dealer who hasn't heard of B-Metal when remitting.

The B-Metal Type C Fixed Detector for Your Reflex Set—
Try One and Know
The price is reasonable when you see what it does. Thousands in use.

Read one of the many reports.

B-Metal Refining Co. Pittsburgh, Pa., June 4th, 1923.
Gentlemen:—I cuclose check for \$3.00 in payment for the Reflex and B-Metal crystals recently sent me on trial. The Reflex detector is entirely satisfactory in every respect, in fact, much better than I expected. I am using it in a three-tube circuit.

Very truly yours,
For Sale by All Dealers

B-METAL REFINING COMPANY
3134 Trumbuil Avenue, Detroit. Mich.

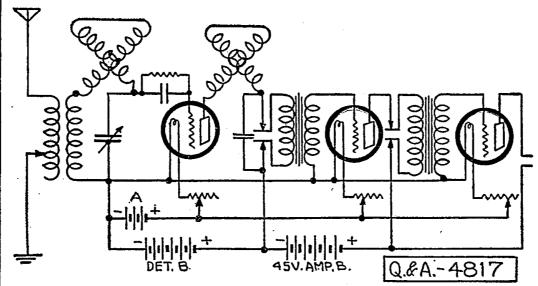
[量:量][(重)][(重)]

Regenerative Circuit with Amplifier

(4817) WG, Roanoke, Va.

of the following parts .001 condenser, 180- very thin and mushy. I have added to degree variocoupler, variometer and a this circuit a wave trap in the aerial

From 392 meters to 509 meters it works put the wave trap in shunt with the very well. I have been able to get as aerial and ground, in series with the low as 309 meters and as high as 517 but in both instances the reception has been out entirely? I worked for two hours Will you send me a hook-up consisting in both instances the reception has been fithe following parts.



two-stage audiofrequency with jacks, not | lead.

filament lighting jacks?

A.—Complying with your request, we are giving a diagram of a circuit conforming with your specifications. Either the variometer or variable condenser shown in the secondary circuit may be eliminated (not both, however). If both instruments are employed as indicated the circuit will be capable of twice the wave length possible with only one of these units.

Allen Regenerative Circuit (4712) CHN, Paoli, Pa.

Referring to your circuit 01321, Radio Digest, November 4, 1922, please note the following:

I have been using this circuit for some time very successfully, finding it especially good during the summer months, being able to work as far west as Omaha, in the middle of July. However, I am handicapped in one way—it does not work very well on the new short wave lengths.

Worksman Radio Service "THE ACCENT IS ON SERVI 14-16 Vesey St. NEV NEW YORK ## 14-10 vesey St. NEW YORK

Our appreciation of your orders is expressed in the quality of our merchandise and prompt service.

VARIOCOUPLERS

\$3.50 Workrite 180° \$2.95

3.50 Fisher, Large, 180° 2.25

3.50 Fisher, Large, 90° 2.25

2.75 Fisher, Small, 180° 1.75

2.75 Fisher, Small, 90° 1.75

YARIOMETERS

\$3.50 Workrite \$2.95 \$3.50 Workrite \$2.95 8.50 Remier, Molded 4.45 3.50 Fisher, Large 2.65 CONDENSERS

have a vernier but even this does not split certain waves on the short or high lengths.

Will you please give me a hook-up and indicate the switch to use so that I can



Ready for **Immediate** Delivery— ALL PARTS FOR THE

Acmedyne Circuit

as described by Mr. Lawrence Cockaday in the August Issue of "Popular Radio," employed in the wonderful Melco-Supreme Receiver.

Tuned Radio-Frequency at

Telos Vario-Transformer	\$8.50
Telos Variometer	\$6.00
AMSCO Compensating Condenser	
Condenser	-

All goods absolutely guaranteed by manufac-turer and ourselves. Shipped immediately, prepaid, on receipt of purchase price. Write for price list on our complete line of quality apparatus. RADIO & MECHANICAL TRADING CORP

lead. Can you tell me what to do to enable me to get 360 meters and less in a satisfactory way? Across the variometer leading to the audio transformer I

ATwist of the Wrist

length work.

square frame.

YELLOWTIP MICROMETER ADJUSTING

CRYSTAL DETECTOR The every-purpose detector—fixed or changeable adjustment, just as you wish. Tune with the YELLOWTIP. No hunting or looking for a sensitive spot, just "A Twist of the Wrist—It's Set." Micrometer adjustment in a moment, fixed indefinitely. Ideal for reflex and other circuits.

Write for folder and name of your nearest dealer.

WHOLESALE RADIO EQUIPMENT CO.

Exclusive Factory Representatives 35 WILLIAM ST., NEWARK, N. J.

Dealers and Jobbers write for attractive proposition.

MAKE Perfection YOUR Selection"

Neutrodyne Cockaday Erla Reflex

NEW YORK CITY

The Neutrodyne Circuit is the 1 Eastern Cockaday Coil

set that can be made today.

Formica Panel 7x24 5 Bakelite Sockets 3 Neutroformers 2 Neutrodons

2 Neutrodons
2 Franco Audio
Transformers
1 "A" Battery Switch
3 Dials, 4 inch
1 Klosner Rheostat

1 Amsco Power Rheostat 8 Binding Posts with Names

3 Jacks
27 Feet Spaghetti
28 Feet No. 14 Tinned
Copper Wire
2 Condensers, .006 Dubilier
1 Grid Leak and Condenser.

Freshman 1 Dubilier Condenser, .002

Special price for complete parts for 5 tube set

Circuit Complete | Circuit Complete

2 Amsco 23 Plate Vernier

Condensers 1 Panel 7x14x %

2 Dials, 3 inch 1 Bakelite Socket 1 Tubular Leak, 2 meg.

1 Dubilier Condenser, .00025 1 Klosner Rheostat 8 Name Binding Posts

12 Feet Tinned Copper Wire No. 14

6 Feet Cambric Spaghetti 1 Switch Lover

7 Contact Points and Nuts 2 Contact Stops and Nuts 1 Diagram

Our special price for complete Cockaday Set

Operate a loud speaker on one tube with this wonderful set.

1 Formica Panel 7x14x ... Panel is drilled, engraved and polished.
1 Erla Reflex Transformer.
1 Pearico Moulded Bakelito Coupler.

2 Switch levers. 1 Amsco 23 Plato Vernier Con-

1 Amsco 23 Plate Vernier Condenser.
1 Klosner Vernier Rheostat.
1 Crystal Detector with Crystal.
2 Bakelite Sockets.
1 Dtal. 3 inch.
1 Improved Jack.
1 Dubilier Condenser .001.
1 Dubilier Condenser .002.
1 Erla Bezel.
8 Name Binding Posts.
12 Ft. Tinned Copper Wire, No.
14.
6 Ft. Cambrie Spaghetti.
12 Contact Points and nuts.
2 Contact Stops and nuts.
1 Franco Audio Transformer.
Our Special Price Complete

Our Special Price Complete

Perfection Radio Corporation

59 Cortland Street, New York City

Six New York Retail Stores Add Parcel Post Do Not Send Stamps 208 page complete Radio catalogue free with order of \$5.00 on request. Otherwise prepaid for 25 cents.

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California:

Galifornia:
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Berkeley, KQI, KRE
Del Monte, KLN
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San Luis Obispo, KFBE
Santa Ana, KFAW
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McLeansboro, WRAS
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Boone, KFGQ
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Lamoni, KFFV
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Marshalltown, KFJB
Newton, WIAH
Ottumwa, KFJL
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Sioux City, WEAU
Waterloo, WHAC
Kansas:

Kansas:

Kansas:
Anthony, WBL
Beloit, WPAR
Cheney, KFGP
Emporia, WAAZ
Hutchinson, KFHX
Independence KFIX
Iola, KFID
Lindsborg, WDAD
Louisburg, KFIL
Manhattan, WTG
Marion, WRAD
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New York:

New York:
Albany, WNJ
Buffalo, WGB
Canandalgua, WSAW
Canton, WCAD
Cazenovia, WMAC
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Voungstown, WDBF Ohlo:

Oklahoma: Ardmore, WOAA Bristow, KFJK Chickasha, KFGD

Oklahoma City, KFJF, WKY Norman, WNAD_ Okmulgee, WPAC Tulsa, WGAF, WLAL

Oregon: Oregon:
Astoria, KFJI
Arlington, KFGL
Baker, KFDA
Corvallis, KFDJ
Hillsboro, KFFO
Hood River, KFHB, KQP
Medford, KFAY
Pendleton, KFFE
Portland, KDYQ, KFEC, KFIF,
KGG, KGN, KGW
Salem, KFCD

Pennsylvanla:
Allentown, WCBA, WSAN
Altoona, WGAW
Easton, WAAP
Erie, WOAV
Grove City, WSAJ
Harrisburg, WABB
Johnstown, WTAC
Lancaster, WDBC, WGAL
McKeesport, WIK
Parkesburg, WQAA
Philadelphia, WCAU, WDAR, WFI,
WGL, WIP, WNAT, WOO.
WWAD
Pittsburgh, KDKA, KQV, WCAE,
WJAS
Reading, WBBD, WRAW
Scranton, WQAN, WRAY
State College, WPAB
Villanova, WCAM
Wikke-Barre, WBAX, WNAH
Rhode Island: Pennsylvania:

Rhode Island: Cranston, WKAP
Edgewood, WEAG
East Providence, WKAD
Providence, WEAN, WJAR, WRAH,
WSAD, WTAG

South Carolina: Charleston, WNAQ, WOAH Clemson College, WSAC Greenville, WQAV

South Dakota: Brookings, KFDY
Rapid City, WCAT
Sioux Falls, WFAT
Vermillion, WEAJ
Yankton, WNAX

Tennessee: Knoxville. WNAV Lawrenceburg. WOAN Memphis, WMC

Texas : Abilene, WQAQ
Amarillo, WDAG, WRAU
Austin, WCM, WNAS
Beaumont, WMAM
College Station, WTAW
Dallas, KFFZ, WDAO, WFAA,
WRR
EL Page, WDAH, WDAT

Dallas, KFFZ, WDAO, WFAA.
WNR
EI Paso, WDAH, WPAT
Fort Worth, WBAP
Galveston, WHAB, WIAC
Houston, WCAK, WEAY, WEV,
WRAA
Laredo, WWAX
Orange, KFGX
Plainview, WSAT
Fort Arthur, WFAH
San Antonio, AS6, WCAR, WAOI
Stanford, WOAZ
Tyler, WOAF
Waco, WJAD, WLAJ, WWAC
Wichita Falls, WKAF

Utah: Ogden. KFCP State, City, Call

Salt Lake City, KDYL, KZN

Bellows Falls. WLAK Burlington, WCAX Springfield, WQAE

Arlington, NAA
Blacksburg, WEAE
Fortress Monroe, WNAW
Portsmouth, WOAQ

Washington:

Washington:
Aberdeen, KNT
Bellingham, KDZR
Everett, KFBL,
Lacey, KGY
Neah Bay, KFHH
Pullman, KFAE
Scattle, KDZE, KDZT, KFHR,
KFIY, KFJC, KHQ, KJR, KTW
Spokane, KFDC, KFIO, KFZ
Tacoma, BEI, KFBG, KFEJ, KGB,
KMO
Walla Walla, KFCF
Wenatchee, KDZI, KZV
Yakima, KFIQ

West Virginia: Clarksburg, WHAK

Wisconsin:
Beloit, WKAW
Fond du Lac, KFIZ
Kenosha, WOAR
La Crosse, WABN
Madison, WGAY, WHA
Milwaukee, WAAK, WCAY,
WHAD, WIAO
Neenah, WIAJ
St. Croix Falls, WRAL
Waupaca, WPAH

Douglas, KFEV Laramie, KFBU

Alaska: Juneau, KFIU

Honolulu, KDYX, KGU, KYQ Lihue, KFHS

Porto Rico: San Juan, WKAQ

Canada:
Bellevue, CFCO
Calgary, CHBC, CFAC, CFCN
Edmonton, CFCK, CJCA
Hamilton, CKOC
Iroquols Falls, CFCH
London, CFCW, CJGC
Montreal, CFCF, CFUC, CHYC
CIKAC
Olds, CJCX
Quebec, CFCJ, CHCD
Regina, CKCK
St. John, CJCI
Saskatoon, CFQC
Toronto, CFCA, CJCD, CJCN,
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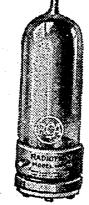
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