New Style Flewelling and Miloplex Amplifier

Kallo

Vol. VII

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SATURDAY, OCTOBER 27, 1923

CHARLIE CHAPLIN "ACTS"



BOSTON FIRST USER OF RADIO FIREBOAT

HARBOR PATROL DIRECTED BY HEADQUARTERS SET

Danger of Flames Spreading Is Averted by Use of Airphon in Chief's Office

BOSTON.-This city is distinguished by being the first in the world to realize the advantages of Radio in handling Complete Radio transmitting and receive ing sets are being installed at fire headquarters and on each of the three fireboats which operate in the harbor and

The work is under the supervision of J. E. Callahan, a Boston Radio engineer. Heretofore, when it was necessary to communicate with a fireboat the message was telephoned to the nearest point and then relayed by messenger. If the fire was wide in area, messenger service was inadequate.

With Radio-equipped fireboats, the problem is simplified. If all three boats are fighting a fire in a certain locality when another breaks out fire headquarters could dispatch one boat to the other fire. The fireboats can keep headquarters informed as to the developments of a fire by means of their transmitting sets. The equipment includes loud speakers.

Congratulate WHAZ on Birthday

TROY, N. Y .- Among the thousands of congratulatory messages received on the first anniversary of Station WHAZ, .the Rensselaer Polytechnic Institute here, was a cartoon from Owen S. Young, German-

COMEDY KING AFRAID WHEN **FIRST ON AIR**

Famous Film Ethe. person Ally of the may

Quails before Microphone Takes Message to Thousands but Recovers Confidence

NEWARK, N. J .- Some one long ago said something to the effect that if he could write the songs of a nation he would not care who wrote its laws. And someone said about as long ago something about contributing to the gaiety of nations, in that way keeping them from killing each

Some time ago a slender, dapper young man returned to the slums of London in which he was born. He was received in a way that would have caused even the most adroit, the most astute of diplomats to envy. That young man has not as yet written the songs of a nation, although there are many who say he is talented (Continued on page 5)

Fire Truck Sounds Funeral March for Dallas' Chief

DALLAS. TEX .- Perhaps for the first time Chopin's funeral march was played from a fire truck by Radio recently when a gallant fireman of the local department was buried. A musician at Central station played the famous funeral hymn which was then broadcast over WFAA here. An instrument on the fire vehicle received the broadcast and reproduced it by loud speaker.

POWER LEAKS CAUSE OHIO "DEAD SPOTS"

LEVELAND, — Radio operators have discovered a "dead" spot in the air between Norwalk and Cleveland, Ohio. To connect the two cities by air operators say they must transmit hundreds of miles in a roundabout manner. The theory is that the electricity given off by the power houses at Beach Park and Elyria cause the trouble.

Alice Brady (above), stage and screen star, used WMAQ recently to tell why people go to the theater. At the right is wee Leslie Young, mascot of the "Clinging Vine" corroany, who sang at the same Chango station

Declares Atlanta's Best Advertisement Is WSB

City Official Finds Station Draws Locality into Spotlight

ATLANTA, GA .- "WSB, the station of the Atlanta Journal, is the finest advertisement the city has," declares Willis A. Sutton, local superintendent of schools, who made an extensive tour of the West and East during the summer.
"Wherever I went," the superintendent

said, "everyone knew about WSB."



RADIO LEADS PUBLIC **RECENT DATA SHOW**

REPORTS REVEAL RADIO AS GREAT EDUCATOR

All Phases of Life Indicate Development by Means of Addresses and the Arts

SPECIAL REWARD OFFER Coupon Number 22

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

Educators of the United States and its possessions or dependencies have con-cluded, after a recent survey, that Radio has become one of the greatest factors in the mental development of the people. was reported that it is destined soon to become the leading element in the advancement of the masses.

Investigation showed, it was said, that every vocation and almost every ambition has been assisted by means of lectures, concerts and other forms of Radiotelephonic communication.

The farm, the shop, the school, the studio, the pulpit, the press, public health, governmental activities of almost every character, the home, the child, physical culture, the arts, the sciences, peace, war all these and many more phases of life affected by Radio, the reports

n which Radio L. themselves more in ties which Radio affords by taking advantage of the parts offer as it appears in Please remember that detail below. changes in devices occur aften and on that account the latest issue of Radio Digest must always be consulted,

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 lo 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: I. Carter Imp Jack and Plug; 1 Carter 15-Ohm Resistat Unit; 1 Schindler .00025 mfd. Built-up Mica C ndenser; 1 Schindler .0005 mfd. Built-up Mica Condenser; 1 Schindler .001 mfd. Built-up Mica Condenser; 1 Schindler .002 mfd. Built-up Mica Condenser; 1 Schindler .0025 mfd. Built-up Mica Condenser; 1 Schindler .0025 mfd. Built-up Mica Condenser; 1 Martin-Copeland Sta Put Plug; Walnart Standard Tube Socket; Walnart UV-199 Socket: Dubilier Micacdons Type 601 (.0001, .002.5, .0005, .001, .002, .003 or .004 mfd.); Premier Grid Condenser (.00025 or .003 or .004 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 or 2 megolms, with clips); Amsco 3-sinch Dial; Amsco Inductance Switch; Freshman Micon Condensers, (.00005, .00025, .00035, .0005, .001, .0015, .002, .9025 or .003 mfd.); T-leradio V. T. Socket; B Metal Mounted Crystal; Aerovox Lightning Switch; Aerovox Series Parallel Switch; Aerovox Contact Lever; Na-Ald Small Space Socket; SeAr-De Vernier Adjuster; 3" Radion Dial, black; 2%" Radion Dial, black; 2%" Radion book with shafts, %" or %", black, 3" Radlon Dial, ribbed surface.

Class B Articles

Class B Articles

For four consecutively numbered coupons and sixty cents (\$0.60) any one of the following articles will be sent: 1 Carter .04 mfd. Special Fixed Condenser: 1 Carter Jack Switch; 1 Carter Hold-Tite Jack, One Spring Open 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 Closed Circuit; 1 Carter Hold-Tite Jack, Four 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 Suppersonal UV-199 Socket; 1 Martin-Copeland UV-199 Adapter 1 Martin-Copeland Pull Switch; 1 Martin-Copeland Suppersonal Switch; 1 Martin-Copeland Suppersonal Suppersona

Class C Articles

For six consecutively numbered coupons and ninety cents (\$0.90) any one of the following articles will be sent: 1 Carter 6-Ohm Vernier Control Rheostat; 1

Frideral Panel Mount Socket; I Federal 6-Ohm Rheostat; I Federal 3-Ohm (Power) Rheostat, I Amperito Automatic Pilament Control (with mounting); I Martin-Copeland Marco Rheostat; I Martin-Copeland Series Parallel Switch; I Martin-Copeland DPDT Panel Switch; I Martin-Copeland 7-Point Inductance Switch; I Martin-Copeland 9-Point Inductance Switch; I Martin-Copeland 11-Point Inductance Switch; I Martin-Copeland 11-Point Inductance Switch; I Martin-Copeland 11-Point Inductance Switch; Martin-Copeland II-Point Inductance Switch; I Martin-Copeland III-Point Inductance Switch; I Martin-Copeland III-Point Inductance Switch; I Martin-Copeland III-Point Inductance Switch; Walnart Variable Crid Leak with .00925 mfd. Condenser; Walnart Variable Condenser (3-plate .00006 mfd.); Dubilier Ducon; 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 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 TAM" Binding Posts (8); B-Metal Crystal Tube Detector Type B; Illinois Cushion Resilient Socket; Acrovox Antenna Plug; Aerovox Potentiometer; Aerovox Crystal Detector; Se-Ar-De Adjustable Verpier Condenser; Radion Panel & "X7" x1", black or mahoganite; Radion Panel & "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 Coulrol Rheostat; 1 Chindler Radio Frequency Transformer; 1 Martin-15-Point Inductance Switch; 1 Martin-Copeland 19-Point Inductance Switch; 1 Martin-Copeland 19-Point Inductance Switch; 1 Martin-Copeland 19-Point Inductance Switch; 1 Martin-Copeland (Copeland 13-Point Inductance Switch; 1 Martin-Copeland (Ob) mfd.); Electrad Variabhe Condenser; Dublier By-Pass Condenser (2 mfd.); CRL Variable Grid Leak with Condenser; Resistometer (Typc A or 2A); Thordarson Variable Condenser, 00025 mfd.; Amsoo 300-Ohm Potentiometer; Freshman Micon Condenser, Oli5 mfd.; Teleradio Variable Condenser, 23-plate; Acrovox Crystal Detector and Condenser mounting; Fil-Ko-Stat; R. S. C. Variable Condenser, 3-plate; Radion Panel & "x7"x12", mahoganite; Radion Panel 3/16"x10"x12", black; Radion Panel 3/16"x10"x12", black; Radion Panel 3/16"x10"x12", black; Radion Panel 3/16"x10"x12", black; Class R. Articles

Class E Articles

For ten consecutively numbered coupons and one dollar and fifty cents (\$1.50) any one of the following articles will be sent: 1 Carter 6-Ohm Automatic Control Rheostat; 1 Center 20 Ohm Automatic Control Rheostat; 1 Center 20 Ohm Automatic Control Rheostat; 1 Deneal 3-Plate Variable Condenser; Walnart Variable Condenser (13-Plate .00025 mfd.); Turney Genuine Reinartz Col; Dubilier Variadom (.0004 or .0006 mfd.); Resistometer (Type B); Delta Midget Tube and Socket; Thordarson Variable Condenser, .0005 mfd.; Freshman Micon Condenser, .02 mfd.; B-Metal Crystal Tube Detector Type C; Aerovox 3-Gang Socket; Aerovox Double Slide Tuning Coil; Na-Ald 3-Plate Vernier Condenser, with dial; Radion Panel & "x7"x18"

mahoganite; Radion Panel 3 "x7"x21", black; 1 Federal Potentiometer, 1850 ohms.

Class F Articles

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: I Aeme Pot-Rheo (potentiometer and rheostat); Walhant 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-De 3-Plate Condenser; Radion Panel & "x1"x21", mahoganite; Radion Panel & "x1"x21", black; Radion Panel & "x1"x1"x1", mahoganite; Radion Panel & "x1"x24", black; Radion Panel & "x1"x1", mahoganite; Radion Panel & "x10"x12", mahoganite; Radion Panel & "x10"x12", mahoganite; Radion Panel & "x10"x12", mahoganite.

Class G Articles

Panel % "x10"x12", black; Radion Panel % "x9"x14", mahoganite; Radion Panel & "x10"x12", mahoganite; Class G Articles

For fourteen consecutively numbered coupons and two dollars and forty echts (\$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 11-Plate Variable Condenser; 1 Federal Anticepacity Switch; 1 Demcal Variable Condenser; 1 Federal Anticepacity Switch; 1 Demcal Variable Condenser; 1 Pederal Anticepacity Switch; 1 Demcal Variable Condenser 11-Plate Wainart Variable Condenser (43-Plate 001 mfd.); Dubilier Variadon (.901 mfd.); Premier Variable Condenser with dial (.0007 mfd.); Premier Hegehog A. F. Transformer, 4 to 1 Ratio; Thordason A. F. Transformer, 3.5 to I Ratio; Thordason Variable Condenser, with vernier, knob and dial (.90025 mld.); Ritter Grand Crystal Set, Amsco Double H. C. Coll Mounting; Na-Alid 13-Plate Precision Condenser, with dial (.900237 mfd.); Se-Ar-De 9-Plate Condenser, with dial (.900233 mfd.) Se-Ar-De 9-Plate Condenser; Se-Ar-De 17-Plate Condenser; R. S. C. Variable Condenser, 23-plate; Radion Panel % x1"x2", mahoganite; Radion Panel % x10"x12", mahoganite; Radion Panel & x12"x21", black; Radion Panel & x14"x18", black.

Class H Articles

For sixteen consecutively numbered coupons and three dollars (\$\$5.00) and one of the following articles will be

Class H Articles

For sixteen consecutively numbered coupons and three dollars (\$3.00) any one of the following articles will be sent: 1 Federal Audio Frequency Transformer No. 226
W: 1 Demeal 23-Plate Variable Condenser: 1 Acme Audio Frequency Transformer: 1 Acme Radio Frequency Transformer: 1 Acme Radio Frequency Transformer (R-2, R-3, or R-4); Walnart Variable Condenser (23-Plate vernier); Walnart Variable Condenser (23-Plate vernier); Walnart Variable Condenser (23-Plate vernier); Publifer Duratran (R. F. transformer); Premier Micrometer Variable Condenser with dial (.0015 mfd.); Premier Variable Condenser with vernier (.0004 mfd.); Premier Hegohog A. F. Transformer, 10 to 1 Ratio: Premier Hegohog A. F. Transformer, 10 to 1 Ratio: Premier Hegohog A. F. Transformer, 6 to 1 Ratio: Premier Hegohog A. F. Transformer, 6 to 1 Ratio: Thordarson A. F. Transformer, 6 to 1 Ratio: Thordarson A. F. Transformer, 8 to 1 Ratio: Thordarson A. F. Transformer, 6 to 1 Ratio: Thordarson A. F. Transformer, 8 to 1 Ratio: Thordarson A. F. Transformer, 8 to 1 Ratio: Thordarson A. F. Transformer, 9 to 1 Ratio: Thordarson A. F

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Looking Ahead

The Mystery Man of the Miloplex—Next week will unfold to you what some of his engineer friends have to say about the theory of the Miloplex. Of course he will have his usual comments, too. He wants all Miloplex builders to read his next article and then tell him what they think the theory is.

By the Way, Speaking of the Miloplex, E. G. Hoffman of Cleveland, Ohio, has developed a circuit somewhat similar to the Miloplex. He claims dandy results from it and passes it on for your approval. Mr. Hoffman's hook-up will be given as R. D.-103 next issue.

Not that Next Week's Radio Digest Will Be a Special Miloplex Number-far from that—but H. J. Marx will start his series of articles telling just how to proceed in building the King Miloplex III. The set designed by Mr. Marx has all of the final developments in the circuit, together with several suggested improvements. It consists of detector and two stages of audio frequency amplification. Warning: don't put your headphones on the amplifier stages if you value your ears!

Inductance Dope for Everybody-Marvin Thompson will give more interesting information about various types of inductances in the second part of this chapter Winders of coils will find this article valuable. of his series.

How to Make a Vernier Two-Coil Honeycomb Coil Mount—This will be but one of the worth while "kinks" next issue of the Digest. A vernier control is often desired for honeycomb coil coupling. Make one.

Newsstands Don't Always Have One Left

WHEN YOU WANT

Radio Digest

YOU WANT IT!

BE SURE OF YOUR WEEKLY COPY BY SUBSCRIBING NOW

SEND IN THE BLANK TODAY

Publisher Radio Digest, 123 West Madison St., Chicago, Illinois. Please find enclosed check M. D. for Fiva DeHars (Six, Foreign) for One Year's Subscription to Radio Digest, illustrated.



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 of new distance records are received delivered. of new distance records are received daily. You, too, at a very small cost, can enjoy the many pleasures and conveniences that this new Crosley Model affords.

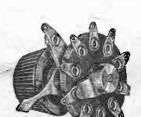
MODEL X-J \$65

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 condensativity 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 best radio receiver ever offered, regardless of price. The Crosley 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 MANUFACTURING COMPANY Powel Crosley, Jr., President 10494 Alfred Street Cincinnati, Ohio



WALNART Inductance Switch

\$100

Why drill ten holes in your panel—not only a difficult thing to do, but if you ever make a change in your hook-up, your panel is marred—when by drill-

ing 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. 406, 1251 West Van Buren Street CHICAGO, ILL.

WEIGHTY AIR RIGHTS **CASE BEFORE COURT**

MAY SUBPOENA HOOVER IN BERGMAN SUIT

Suit to Enjoin Dwight, Ill., Amateur Important to Transmitters and Broadcast Listeners

CHICAGO.—Not only are the rights to the air of every DX amateur in the United States involved in the suit for injunction states involved in the suit for injunction filed recently by a rich man against the son of a plasterer in Dwight, Ill., near here, but, it is said, the rights of the owners of receiving sets everywhere in this country. The case went to trial a few days ago in Pontiac, Ill.

So important are the questions involved in the legal action that the attorney for the defense may, if necessary, bring to the witness stand Secretary of Commerce Herbert Hoover, others of the president's cabinet and high army and navy officers. The case may be carried to the United States Supreme Court. It involves jurisdiction of the federal government as vested in the interstate commerce commission and a decision of the court itself, Congress itself may be asked to review the situation.

Seeks to Restrain Amateur All this because Edward McWilliams of Dwight complains of and seeks relief in the courts from what he calls the noisy interference of the amateur station ICA, built, owned and operated by G. W. Bergman, eighteen years old. Opinion for and against the principles in the suit have made of Dwight a town divided. And the cleft may spread until certain powers of the government itself may hover on the

When McWilliams wanted to hear a program for which he had waited several days, Bergman's station, according to Mc-Williams, would break into the air with "unseemly and irritating sounds," thus marring the place, quiet and comfort to white Marring and his household had

sending set the Bergman proud. He has a right to say. The Bergman transmitter has been heard, it is said, as far away as the Pacific coast. Its signals are received almost every night on the Atlantic coast. But that doesn't alter the plight in which McWilliams' set, which it is reported cost \$500, finds itself when 9CA goes on the air.

Denies McWilliams' Allegations The primary object of McWilliams' suit against Bergman, who is a district super-intendent of the American Radio Relay League is to obtain an injunction based on what the plaintiff alleges is Bergman's unlawful interference with McWilliams' set. Through the attorney, Irving Herriott, of Chicago, retained by the A. R. R. L., Bergman denies that he is interfering with McWilliams and denies, too, that he is violating the Radio regulations of the government and the league. Bergman also denies McWilliams' contention that 9CA, "a station of great power operated not for profit," interferes, too, with all other receiving sets in Dwight.

Chief among the legal points of the defense is that the courts of the State of

Illinois have no jurisdiction in the case, that the question of regulation or specifically whether Bergman interferes with McWilliams is a national rather than a state issue, that according to the United States Supreme Court any action once within the purview or determined by agencies of the government remains within

federal jurisdiction.

One of the most important questions to be raised during the trial of the suit is whether Congress has the right to r Radio amateurs. The defense will proceed along the line that state regulations as to Radio conflict with national and that the latter must supersede.

WASHINGTON .- Radiotelegraph bulletins giving hurricane warnings in the Carribbean sea and the gulf of Mexico have been supplemented by Radiophone broadcasts through the San Juan Station, WKAQ, of Porto Rico.

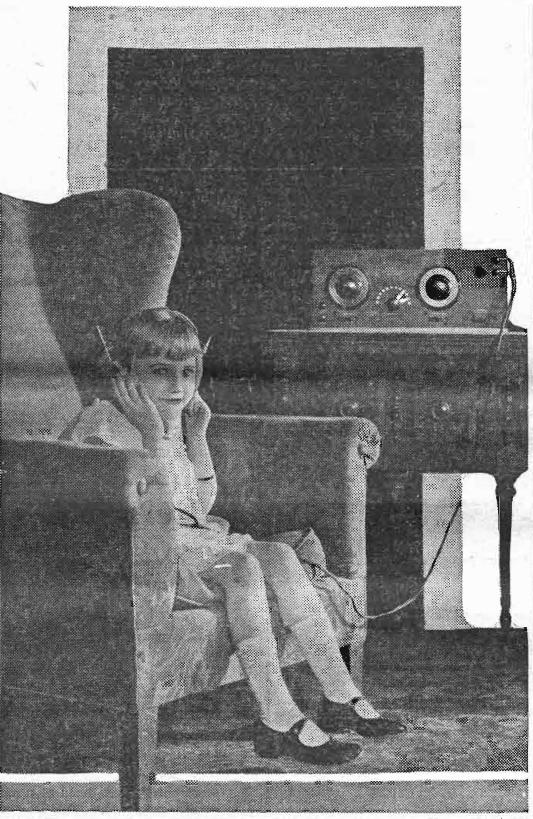
RADIO FINDS RUM ON FORMER GOULD BOAT

EW YORK.—The seventy-one-foot motorboat Atlanta, once owned by the late George J. Gould, was caught by Radio recently while attempting to run rum in the East River channel here. A police tug, launch and harbor station, all Radio equipped, flashed messages back and forth, reconnoitering until the Atlanta was cornered. Police officials found 386 cases of whiskey aboard.

GUINEA HENS NOISY WHEN STATIC'S BAD

SHREVEPORT, LA.—An 82-year-old farmer near here predicts Radio reception for the evening by the manner in which his guinea hens go to roost! The formula used by the octogenarian is: When the guinea hens go to roost making a lot of noise, atmospheric conditions will interfere with listening in, but if they go quietly to roost, there is to be a fine Radio evening.

LOTS OF GOODIES ON THE AIR



Little Marie Field, whose father could buy several islands, likes her single tube set best of all her playthings because she can listen to bedtime stories every evening

Mother Christian Science Church Service Put on Air

BOSTON.-For the first time in the history of either Christian Science or Radio, services of the Mother Church of Christian Science in Boston were broad-cast by radiophone from Station WNAC can be used in the same circuit that the here recently. The entire service of the audions requiring storage batteries can.

First Church of Christ, Scientist, known as the Mother Church, the first founded and built by Mary Baker Eddy, was sent out by WNAC, including the hymns, Scripture readings, responses and Christian Science readings.

An audion that works on a dry cell can be used in the same circuit that the

RADIO GIVES 'DOPE' **CLEW; TWO SIEZED**

U. S. AGENTS RAID SHIP'S WIRELESS ROOM

Secret Code Repeated Regularly from Same Position at Sea Arouses Suspicion

By B. A. Sullivan
NEW ORLEANS.—Federal agents and
police rushed the Radio room of the steamship Emergency Aid this week, and arrested the operator and a supposed narcotic peddler on the charge of participating in an international drug smuggling plot. The men are said to have admitted their guilt.

The Emergency Aid is in the New Orleans-Germany trade. Federal agents say they knew for some time narcotics were being smuggled into this port from Germany, but it was not until they arrested a man who gave his name as Herman Bruegermann of Ft. Worth, Texas, said to be a confessed drug peddler, that a glue to mysterious Bedle godder message. clue to mysterious Radio code messages was disclosed.

Plashed from Sea in Secret Code These messages, it is said, were flashed from approximately the same position at

sea for several months. The repetition of these messages with such regularity aroused the suspicions of the Department of Justice, whose operatives have been puzzled over the secret code for months.

The agents, through a process of elimi-

nation, cut down the three possibilities of smuggling-undesirable aliens, rum and narcotics-to the supposition that the code referred only to narcotics, and to the date upon which the vessel carrying the drug

was expected to reach port.

Get Data on Fourteen Ships

It is said the agents found information on Bruegermann which cleared the mystery. They declined to say whether the papers revealed the key of the secret code. The magnitude of the gang's operations was disclosed, it is said, by the finding of papers which referred to fourteen other ships besides the Emergency A which supposed conspirators we bring in narcotics from Germany.

With this information in their possession, federal agents and city police stormed the Radio room. Earl Ferguson, Radio operator, was arrested, authorities say, as he was in the act of handing over a large quantity of morphine to Bruegermann Bruegermann was induced to carry ou' the pre-arranged plan of accepting the narcotics from the unsuspecting operator.

Both were taken before United States Commissioner Carter and held under heavy bonds to await action of the federal grand jury.

15,000-MILE STATION FOR PACIFIC HARBOR

To Serve Coastal Shipping Southward from Los Angeles

LOS ANGELES .- Work of construction was recently commenced on a new Radio station by the Radio Corporation of America, at Wilmington, Calif., which is the inner part of Los Angeles harbor. According to present announcements, when completed in about three months, the plant will be of such power as to be able to both send Radio messages and receive a distance of 15,000 miles.

Reliable Radio service to and from Darien, Canal Zone, will be one of the special features of the new station, which will especially appeal to shipping men, and which will also serve to check better the progress of ships and their arrivals in the intercoastal trade.

A special Radiophone transmitting set of increased capacity will be installed by the same company in anticipation of arrangements with the telephone companies whereby a ship called by Radiophone at sea can talk direct with her principals in Los Angeles by connection to land wires at waterfront station.

THE ANTENNA BROTHERS

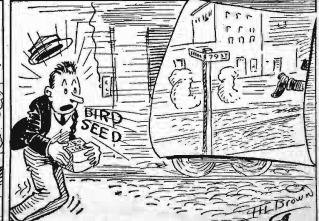
Spir L. and Lew P.

All He Needs Is the Bird









"LOST" VOICE STILL PLEASES THOUSANDS

FORMER MINSTREL RIDDLE TO ARMY OF LISTENERS

Will Collins, Accompanied by Bernice Raeburn, Broadcasts Songs from WCX by Cooing Them

By Fred J. Huntley

DETROIT .- During the last six or more months thousands of Radio enthusiasts have been delighted by the Red Apple Club which puts on a program of popular music and "stunts" every Tuesday night between 10 o'clock and midnight at Station WCX, the Detroit Free Press. They have heard the "Chief" announce that "Will Collins will now entertain you, with Bernice Raeburn at the piano." Then they have settled back for a musical treat.

It is only at irregular intervals that the "chief" is able to announce Will Collins and Bernice Raeburn; they are not always in Detroit.

Who They Are "Who is Will Collins?" and "Who is Bernice Raeburn?" are frequent questions.

Will Collins formerly was minstrel. He has "cracked" more jokes and sung more songs on the stage than most present-day entertainers. One day, two or three years ago, he suddenly lost the full use of his voice. His days of entertaining were at an end. Collins' Loss the Public's Gain

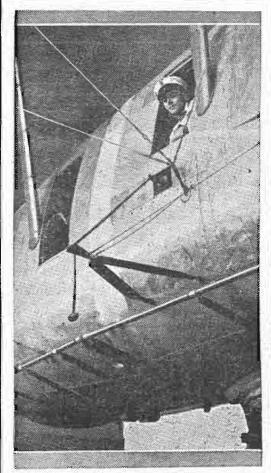
Did he despair? No. He's too big a man for that. He turned his talent to composing. The world since has been enriched by such delightful music as "Falling," "After Midnight," "You Are Easy to Remember," and other hits.

But how can he sing, as he does over the Radio, if he has lost the full volume

of his voice? One should see Will Collins as he sings at Station WCX to appreciate his work. Collins places his lips within two inches nicrophone and the Radio waves the "est. The "chief" says Collins "coos" his ballads which are broadcast with as much power and purity as if he were singing.

Collins says that wherever he is introduced into musical circles he will hear, "Oh, yes, I know; you sing for the Red Apple Club." And Will is proud to reply-"Yes, that's right."

ZR-1 HAS ITS AERIAL BELOW GONDOLA CAR



No overhead antenna for the new "greyhound of the air." The aerial is dropped from the gondola with the aid of an outrigger on the side and trails below the big bag for a hundred feet or more. John T. Robertson, Radio operator of the ZR-1, in the porthole, is commencing to let it out K. & H. Photo

Who is Bernice Raeburn? Well, Miss Raeburn is a charming young Detroit woman, a proficient pianiste. She, too, travels about the country entertaining

many people.

The "chief"? He is none other than C. D. Tomy, prominent in newspaper circles, director of WCX since Detroit Free Press opened the station about three years ago It was he who originated the Red Apple

145,000 SETS SEEN ON FARMS IN U. S.

Federal Agricultural Survey Shows Average of 51 to Each County

WASHINGTON, D. C .- The alacrity with which farmers have taken up Radio is shown in a recent survey made by the United States Department of Agriculture which shows that there are approximately 40,000 Radio sets on farms in 780 counties. This is an average of 51 sets to a county. Applying the average to 2,850 agricultural counties as total, it is estimated that there are more than 145,000 sets on farms throughout the country.

The county agents' estimates cover every state. In New York it is estimated that in 37 agricultural counties there are 5,502 sets on farms. The agent for Saratoga county, New York, reported 2,500 In 51 counties in Texas there are 3,085 sets. Forty-three counties in Illinois show 2,814 sets; 26 counties in Mis- regular weekly feature of the program.

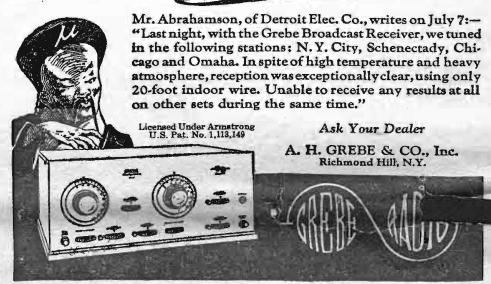
souri, 2,861 sets; 42 counties in Ohio, 2,620 sets; 40 counties in Iowa, 2,463 sets, and 26 counties in Kansas, 2,054 sets. New Jersey, Pennsylvania, Michigan, and

Minnesota have 1,000 to 2,000 sets each. Federal weather forecasts, crop reports, and market quotations are now broadcast from 150 Radio stations throughout the country. Special agricultural news in the form of so-called "Agriograms" and talks as to various phases of the work of the Department of Agriculture are also sent out regularly from 250 stations.

Broadcast State Ballroom Syncopation by Direct Wire

BOSTON.—Broadcasting of dance music direct from the State ballroom of this city is the latest edition of talent booked at WNAC, the Shepard Stores here. Listeners in can now get music direct from a public ballroom and fancy themselves on the floor with the other merrymakers, "tripping the light fantastic." A special telephone line from the ballroom, about two miles away, connects with the operating room of WNAC, and this will be a

The New Grebe Broadcast Receiver



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 speaker. Music that 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

THE BRISTOL COMPANY

WATERBURY, CONN.

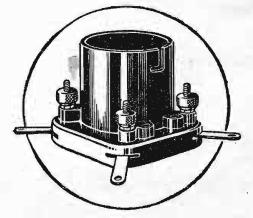
Boston New York Philadelphia Pittsburgh Detroit Chicago St. Louis San Francisco

Bockets. GENUINE-

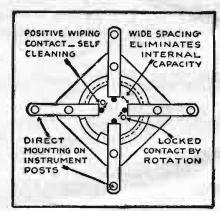
Can You Incorporate Any More Desirable Features In A Socket?

Mr. E. T. Flewelling's years of experience in Radio development work showed the need of a really good socket that would work satisfactorily in Radio Frequency and his well known Super Circuits.

Socket contacts have the same action as plates of a condenser. If they are brought close together they act as condensers and have a detrimental effect on the action of the set.



Standard Tube Socket \$1.00. At your dealer or, until he is supplied, post paid upon receipt of price.



But in the Flewelling socket the contacts are spaced from 5 to 10 times as far apart as in the usual socket and there is no condenser effect. This socket is the maximum in mechanical and electrical efficiency.

E. T. Flewelling says:

"A Radio Frequency Circuit that does what it should do is a rare thing. Most of these circuits suffer because we are not able to eliminate feedback action due to stray parasitic capacity effects. Every effort should be made to keep these effects at a minimum."

BUELL MANUFACTURING COMPANY 2977 Cottage Grove Avenue CHICAGO

CHAPLIN IMITATES A JAZZ BAND---NOT

"QUITE AN ORDEAL," SAYS BROADCASTER CHAPLIN

Comedian Puts One Over on Fans in Address at WOR-His First Radio Talk

(Continued from page 1)

enough to do it. But that young man has contributed to the gaiety of nations in a way, during these troublous times, that has, in a sense, relieved the tension between peoples.

For where there is a motion picture theater (and where is there a town with none?), usually is shown the capers and the whimsicalities, the eloquent elbows, the sentimental shoes, the perky hat, the flippant cane and rising mane of Charlie Chaplin, the world's premier comedian. With the comic limb he has girdled the globe and with Radio here recently he, for the first time in his career, huried his humor through the ether. Even the Radio waves curled in delight as they eagerly hurried onward to bring fun to eager thousands.

Charlie Fears Ordeal

The man who, as a juggler and make believe drunkard, faced critical audiences; the man who afterward appeared on the silver screen before millions, the man whose vocation as actor and director required unusual poise, was visibly agitated as he made ready in the studio of Station WOR to speak into the microphone.

lt was not without much patience and diplomacy that the famed mimic was finally induced to face what he termed "that funny little thing." It was one thing to "cut didoes" before a camera; it was another, a far more exacting thing, to talk through a 'dojigger" of metal to an unseen audience

Chaplin approached the microphone gingerly. "This is quite an ordeal, you know," he volunteered to J. M. Barnett, director of work to use your imagination of a Chaplin would find it.

Can't Remake Broadcast

"You can face the camera," the noted comedian continued, "knowing that if you make a mistake, if you slip up, you can try again; you can make over the picture. But think of all the thousands of people out there in the world hanging onto every word I say" Charlie mopped his brow and



Charles Chaplin as he appeared when making his first broadcast

grimaced in the way that has thrown millions into uproarious laughter. "I don't know what to say; I haven't prepared a speech," he said pitiably.

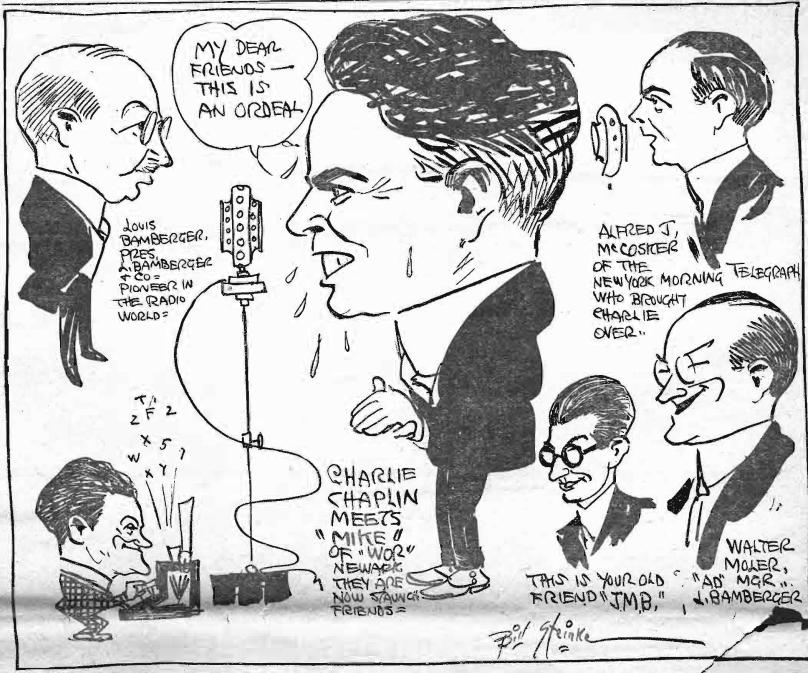
Chaplin paced the studio. This was indeed a dilemma. Now if it were only a picture, that would have been not nearly so hard. But this was a Radio, something different something that couldn't be "made over," nor corrected after its voice had vibrated through the void.

Is Introduced to Listeners

The man whom kings delight to honor perspired. From his finely tailored coat he extracted a kerchief which he pressed to his brow and hands. Nervously he glanced at the microphone. Silently he appealed to his companions to "get me out o' this."

Then the jaw whose laxity in buffoonery has convulsed myriads suddenly set. And Chaplin sat him down to the microphone He gulped; he shuffled his feet (this time well clad); he buttoned and unbuttoned his coat. But he sat. There came to his aid Alfred J. McCosker, a newspaper man of New York city, who calmly told the world heard, someone whom they had undoubtedly seen often, would speak to them-"none in length, installed on the roof.

SILVER SHEET COMIC KING PUTS LAUGH ON AIR



other than Charlie Chaplin himself, in per-

His First Time Before Microphone
The poor little, rich little man squirmed. He, like those around him, could see hundreds of thousands of men and women and boys and girls, the mighty and the lowly, grin and then grin again. "Charlie Chaplin—think of it!" Why, the night itself seemed to hesitate, to anticipate!

Chaplin braced himself, opened his mouth, shut it, opened it again then—"This is the first time. I have snoken over the

is the first time I have spoken over the Radio," he said tremulously. When he saw that the microphone was safe, wouldn't bite nor talk back to him, Charlie went on. "It is, to me, ghastly to think of you out there in your homes with Tom, Dick, Katherine, in your homes with Tom, Dick, Ratherine, Harry and the baby all gathered around, and me here by this funny little thing perforated with holes (the thing, not I), my knees trembling, my hands tightly clasped." And Charlie smirked.

"Imitates" Full Jazz Band

"I feel like the young actor whose only line was, 'There is a man downstairs who calls himself Solomon Isaacs.' As the young actor was pushed onto the stage he managed to splutter something that sounded like Si-mol-ix." The greatest of 'em all turned in his chair and nodded first inquiringly, then confidently.

"Now I'm beginning to get a little confidence," Chaplin continued. "So I'm going to give you a few imitations. First, I'll imitate a violin." Then there floated onto the air the strains of the stringed instrument. It was a real violin, no imitation. But Charlie didn't play it. It was played by one of the artists who compose the staff of Station WOR. "Next, I'll imitate a saxophone," continued Chaplin. Surely enough, the drone and moan of brass went "Now, all of youto the ears of throngs. listen to the jazz band." No imitations these. But the trickery of the comedian tickled almost the whole country.

Shakes Fist at "Mike" Charlie's "act" neared its end. "When you have nothing else to do," he concluded, "go to see my new picture, which I directed

-- "A Woman in Paris." That was all.

One could see the look of regret on the faces of the vast audience in the great outside. But they had heard the voice of Chaplin and that was enough. They would long remember it.

WGI Truck Set Hears Chicago

MEDFORD, MASS .- A novel performance was reported recently by WGI when the Radio equipped truck of Station WGI, here, returned from Nantasket Beach, where employes of the American Radio and Research corporation enjoyed an outing. The truck's receiving set picked up Station WDAP, Drake Hotel, Chicago. The close of the program was clearly heard that someone of whom they had probably through a loud speaker a block away. The truck had an antenna only thirty-five feet

As Charlie left the studio he asked | anxiousiy: "Did I talk sense to that thing?" Then he shook his fist at the microphone, grinned the grin that has earned him a fortune, and went on his way.

But before he passed personally out of the lives of those in the studio and station, Chaplin declared enthusiastically that he owned a Radio set and that he listened in often to the programs.

AN EVENING AT HOME WITH THE LISTENER IN

(SEE INSTRUCTIONS FOR USE BELOW)

Station and City	Met.	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
CFCA Toronto Ont	400	7:00- 8:00	7:00- 8:00	7:00- 8:00	7:00- 8:00	7:00- 8:00	7:00- 8:00	5:45- 6:45
CFCN, Calgary Alta	440	12:00- 1:00		11:00- 2:00	1.00- 0.00		11:00- 1:00	
CKAC, Montreal, Que	430		6:00- 8:30	2.00	6:00- 8:30		6:00- 8:30	3:30- 4:30
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
KDZE, Seattle, Wash	455	10:30-12:30		10:30-12:30	1.00.0.00	10:30-12:30	2.00	9.00- 1.00
FAF, Denver Colo	360	9:00-10:00	9:00-10:00	-3.50 13.50	8:30- 9:00	9:00-10:00		
FI, 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
GW, Portland, Orc	492	10:00-12:30	10:00- 1:00	10:00- 1:00		10:00- 1:30	10:00- 1:00	
(HJ, Los Angeles, Calif	395	8:45-12:00	8:45-12:00	8:45-12:00	8:45-12:00	8:45-12:00	8:45-12:00	
PO, San Francisco Calif .	423	10:00-12:00	10:00-12:00	0.10 12.00	10:00-12:00	0.40-12.00		10:00-12:00
SD, St. Louis, Mo	546	8:00-10:00	8:00-10:00	8:00-10:00	10.00-12.00	8:00-10:00	8:00-10:00	10,00-12.00
YW, Chicago, Ill	536	0.00 10.00	8:00- 9:00	8:00- 9:00	8:00- 9:00	8:00- 9:00	8:00- 9:00	
JAA, Radio Va	435	5:45- 7:20	6:05- 7:20		5:45- 7:40	7:05- 7:40	0.00- 0.00	
WX, Havana, Cuba	400	0110	0.00 1.20	8:00-10:30	0.10- 1.10	1.00- 1.40	8:00-10:30	
WBAP, Fort Worth, Texas.	476	7:30-10:30	7:30-10:30	7:30-10:30	7:30-10:30	7:30-10:30	7:00- 7:30	5:00- 6:00
WBAV. Columbus. O	390	7:00- 9:00	1.00 30.00	1.00-10.00	1.50-10.50	1.00-10.00	7.00- 7.00	0.00- 0.00
VBZ, Springfield, Mass	337	6:30- 8:00	6:30- 8:00	6:00- 8:00	6:30- 8:00	6:30- 8:00	6:30- 8:30	7:30- 8:30
VCAP, Washington, D. C.	469	0.00- 0.00	5:30- 6:30	0.00- 0.00	8:45-11:00	0.00- 0:00	5:30-11:00	5:20- 8:00
VCBD, Zion, Ill	345	8:00-10:00	0.50- 0.50		3.40-11.00	8.00 10.00		
VCX, Detroit, Mich	517	7:30- 9:00	7:30-11:00	7:30- 9:00	7:30- 9:00	8:00-10:00		2:30- 5:3
VDAF, Kansas City, Mo	411	8:00- 1:00			11:45- 1:00	7:30- 9:00	11.45 1.00	6:15- 7:1
WDAJ, College Park, Ga	258	7:30-11:30		10:30-11:30	7:30-11:30	8:00- 1:00	11:45- 1:00	4:00- 5:0
WDAP, Chicago, Ill	360	7 35072 1 30	7:00- 1:00	7:00- 1:00	7:00-11:00	7:30-11:30	7:30-11:30	7:30-11:3
WDAR, Philadelphia, Pa	395	6:30- 9:55			6:30- 7:00	7:00- 1:00	7:00- 1:00	9:15-11:13
WDT, New York, N. Y	405	0.00	0.30- 7.00	6:00- 7:00	0:30- 7:00	6:30-12:00	6:30- 7:00	
WEAF, New York, N. Y	492	6:30- 9:00	6:30- 9:00	6:30- 9:00	6.00 0.00	10:00-11:00	10.00 10.00	400 00
WFAA, Dallas, Tex	476	8:30- 9:30		0:50- 9:00	6:30- 9:00	6:30- 9:00	6:30-10:00	6:30- 9:00
WFI, Philadelphia, Pa	395	6:00- 6:30		6:00 6:00	8:30- 9:30	6:30- 9:30	8:30-12:00	9:30-11:00
WGI, Medford, Mass	360	0.00- 0.50		6:00- 6:30	6:00- 8:00	6:00- 6:30	6:00- 6:30	6:30- 7:30
		F.90 0.00	6:00- 7:30	6:30- 8:00			6:30- 8:00	7:30-10:0
WGR, Buffalo, N. Y WGY, Schenectady, N. Y	319	5:30- 9:00		5:30~ 9:00	5:30- 7:45	5:30- 9:00	5:30- 7:45	12.02.10
		6:45- 9:00		7.00 0.00	6:45- 9:00			5:30- 6:30
WHA, Madison, Wis	360	7:30- 8:30		7:30- 8:30		7:30- 8:30		
WHAS, Louisville, Ky	400	0.00 0.00	7:30- 9:00	7:30- 9:00	7:30- 9:00	7:30- 9:00		4:00- 5:0
WHAZ, Troy, N. Y	380	8:00- 9:30			1			
WHB, Kansas City, Mo	411	200 800	8:00-10:00		8:00-10:00			8:00-10:00
WHK, Cleveland, O	360	5:00- 5:30					5:00- 5:30	7:00- 8:5
WHN, Brooklyn, N. Y	360	6:30-11:00					6:30-11:00	8:30-11:00
WIP, Philadelphia, Pa	509	5:00- 6:30				5:00- 6:30	5:00-11:00	3:30- 4:3
WJAX, Cleveland O	390		6:30- 8:30		7:00- 9:30			
WJAZ, Chicago Ill WJY, New York, N. Y	448		10:00- 2:00	10:00- 2:00	10:00- 2:00	10:00- 2:00	10:00- 2:00	6:00- 9:00
WJI, New York, N. Y	105	0.00 40 96		14122121				1:30- 5:0
WJZ, New York, N. Y	455	6:30-10:30			6:30-10:30	6:30-10:30		7:00- 9:3
WKAQ, San Juan, P. R	360	- 00 40 00	7:00- 8:30				7:00- 8:30	
WLAG, Minneapolis, Minn.	417	7:30-10:00					7:30-12:30	7:45- 8:4
WLW, Cincinnati, O	. 309		10:00-12:00					
WMAQ, Chicago Ill	448	1.1.22.1.22	7:00-10:00			7:00-10:00	7:00-10:00	4:30- 5:0
WMC, Memphis. Tenn	500	8:30- 9:30			8:30- 9:30		8:30- 9:30	
								5:30- 7:3
WNAC, Bostou, Mass	278				7:00- 9:00	7:00- 9:00	8:00-10:00	0.30- 7.0
WNAC, Bostou, Mass WOAI, San Antonio, Texas.	278 385		9:30-10:30					
WNAC, Bostou, Mass WOAI, San Antonio, Texas. WOAW, Omaha. Neb	278 385 526	9;00-10:00	9:30-10:30				9:30-10:30	9:30-10:3
WNAC, Bostou, Mass WOAI, San Antonio, Texas. WOAW, Omaha. Neb WOC, Davenport.la	278 385 526 484	9:00-10:00 8:00- 9:00	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	9:30-10:3 9:00-10:0
WNAC, Bostou, Mass WOAI, San Antonio, Texas WOAW, Omaha. Neb WOC, Davenport Ia WOO, Philadelphia, Pa	278 385 526	9;00-10:00	9:30-10:30 9:00-10:00		7:30- 8:30 9:00-10:00	9:00-10:00 8:00- 9:00	9:30-10:30 9:00-10:00	9:30-10:3 9:00-10:0
WNAC, Bostou, Mass	278 385 526 484	9:00-10:00 8:00- 9:00	9:30-10:30 9:00-10:00	8:00-11:00	7:30- 8:30 9:00-10:00 8:00- 9:00	9:00-10:00 8:00- 9:00 8:45-10:00	9:30-10:30 9:00-10:00 9:00-10:00	9:30-10:3 9:00-10:0 7:00-10:0
WNAC, Bostou, Mass	278 385 526 484 509	9:00-10:00 8:00- 9:00 6:45-10:00 5:15-10:00	9:30-10:30 9:00-10:00 5:15- 6:30	8:00-11:00	7:30- 8:30 9:00-10:00 8:00- 9:00 5:15- 6:30	9:00-10:00 8:00- 9:00 6:45-10:00 5:15- 6:30	9:30-10:30 9:00-10:00 9:00-10:00 5:15-10:00	9:30-10:3 9:00-10:0 7:00-10:0
WNAC, Bostou, Mass. WOAH, San Antonio, Texas. WOAW, Omaha. Neb. WOC, Davenport la. WOO, Philadelphia, Pa. WOR, Newark, N. J. WOS, Jefferson City, Mo.	278 385 526 484 509 405 441	9:00-10:00 8:00- 9:00 6:45-10:00	9:30-10:30 9:00-10:00 5:15- 6:30	8:00-11:00 5:15-10:00 8:00- 9:30	7:30- 8:30 9:00-10:00 8:00- 9:00 5:15- 6:30	9:00-10:00 8:00- 9:00 6:45-10:00 5:15- 6:30 8:00- 9:30	9:30-10:30 9:00-10:00 9:00-10:00 5:15-10:00	9:30-10:3 9:00-10:0 7:00-10:0
WNAC, Bostou, Mass. WOAM, San Antonio, Texas. WOAW, Omaha. Neb WOC, Davenport, la WOO, Philadelphia, Pa WOO, Newark, N. J WOS, Jefferson City, Mo WSAI, Cincinnati. O	278 385 526 484 509 405 441 309	9;00-10:00 8:00- 9:00 6:45-10:00 5:15-10:00 8:00- 9:30	9:30-10:30 9:00-10:00 5:15- 6:30 8:00-10:00	8:00-11:00 5:15-10:00 8:00- 9:30	7:30- 8:30 9:00-10:00 8:00- 9:00 5:15- 6:30 8:00- 10:00	9:00-10:00 8:00- 9:00 6:45-10:00 5:15- 6:30 8:00- 9:30	9:30-10:30 9:00-10:00 9:00-10:00 5:15-10:00 10:00-12:00	9:30-10:3 9:00-10:0 7:00-10:0
WNAC, Bostou, Mass WOAL, San Antonio, Texas. WOAW, Omaha. Neb WOC, Davenport. Ia WOO, Philadelphia, Pa WOR, Newark, N. J WOS, Jefferson City, Mo WSAI, Cincinnati O WSB, Atlanta. Ga	278 385 526 484 509 405 441 309 429	9:00-10:00 8:00- 9:00 6:45-10:00 5:15-10:00 8:00- 9:30	9:30-10:36 9:00-10:00 5:15- 6:30 8:00-10:00 8:00-12:00	8:00-11:00 5:15-10:00 8:00- 9:30 8:00-12:00	7:30- 8:30 9:00-10:00 8:00- 9:00 5:15- 6:30 8:00- 10:00 8:00-12:00	9:00-10:00 8:00- 9:00 6:45-10:00 5:15- 6:30 8:00- 9:30	9:30-10:30 9:00-10:00 9:00-10:00 5:15-10:00 10:00-12:00 8:00-12:00	9:30-10:3 9:00-10:0 7:00-10:0
WNAC, Bostou, Mass. WOAL, San Antonio, Texas. WOAW, Omaha. Neb. WOC. Davenport. Ia. WOO, Philadelphia, Pa. WOR, Newark, N. J. WOS, Jefferson City, Mo. WSAI, Cincinnati. O. WSB, Atlanta. Ga. WSY, Birmingham, Ala.	278 385 526 484 509 405 441 309 429 360	9;00-10:00 8:00- 9:00 6:45-10:00 5:15-10:00 8:00- 9:30	9:30-10:36 9:00-10:00 5:15- 6:30 8:00-10:00 8:00-12:00	8:00-11:00 8:00-11:00 8:00-9:30 8:00-12:00 8:00-8:45	7:30- 8:30 9:00-10:00 8:00- 9:00 5:15- 6:30 8:00- 10:00 8:00-12:00	9:00-10:00 8:00- 9:00 6:45-10:00 5:15- 6:30 8:00- 9:30	9:30-10:30 9:00-10:00 9:00-10:00 5:15-10:00 10:00-12:00 8:00-12:00	9:30-10:30 9:00-10:00 7:00-10:00 7:30- 9:1 8:00- 9:00
WNAC, Bostou, Mass WOAI, San Antonio, Texas. WOAW, Omaha. Neb WOC, Davenport la WOO, Philadelphia, Pa WOR, Newark, N. J.	278 385 526 484 509 405 441 309 429	9;00-10:00 8:00- 9:00 6:45-10:00 5:15-10:00 8:00- 9:30 8:00-12:00 8:00- 8:48	9:30-10:36 9:00-10:00 5:15- 6:36 8:00-10:00 8:00-12:00	8:00-11:00 5:15-10:00 8:00- 9:30 8:00-12:00	7:30- 8:30 9:00-10:00 8:00- 9:00 5:15- 6:30 8:00- 10:00 8:00-12:00	9:00-10:00 8:00- 9:00 6:45-10:00 5:15- 6:30 8:00- 9:30 8:00- 8:45	9:30-10:30 9:00-10:00 9:00-10:00 5:15-10:00 10:00-12:00 8:00-10:00	9:30-10:3 9:00-10:0 7:00-10:0 7:30- 9:1 8:00- 9:0

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

FORTY ENGINEERS IN GIGANTIC NAVY LAB

EXPERIMENT ON DEVICES FOR SEA COMBAT

Radio Research Now Prime Aim of Workers in Extensive Quarters at Capital

By L. M. Lamm

WASHINGTON, D. C .- Amateur Radio enthusiasts are likely to reap considerable benefit from experiments which are now being carried on by forty first-class Radio engineers working for the navy department and just assigned to the new navy research laboratory constructed by Government at a cost of approximately \$1,500,000.

The new laboratory, which is located at Bellevue, D. C., in the outskirts of the city, is being devoted almost entirely at this time to Radio research, but eventually it will be devoted to experiments of all kinds by the navy department. Radio, however, will continue to be one of the main subjects studied.

The navy department in opening up the new laboratory has decided to center all of its Radio experiments here and therefore the navy Radio section at the Bureau of Standards, the naval aircraft Radio section and the naval Radio design section, have all been transferred to the new

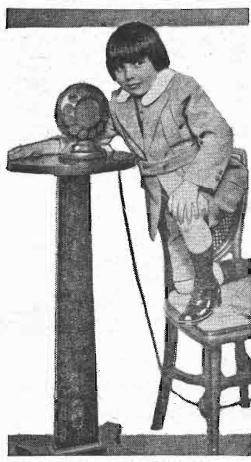
Laboratory Has Pive Buildings

Captain E. L. Bennett, U. S. N., is the Director of the Laboratory; while Commander E. G. Oberland, U. S. N., is the Resident Director; and Dr. A. H. Taylor, is in direct charge of the Radio section, having working under him about forty Radio engineers.

The laboratory consists of five buildings, including the laboratory proper, a machine shop for models, a foundry and a pattern shop, and a power house. The for years and have just been opened

The engineers are working out many problems about which the departmental officials do not care to talk for publication, but they affect new Radio apparatus for the use of the fighting ships, the increasing of the selectivity of receivers,

JACKIE MEETS MIKE; SAYS HELLO TO FANS



Jackie Coogan, famous juvenile motion picture star who warms the cockles of the hearts of many grown-ups, is here pictured as he was first introduced to "Mike" (the broadcasting microphone). After the formal introduction, Jackie made a very manly little speech to his audience of movie-Radiophans

other similar problems. While these matters of course are primarily for the navy, any discoveries that are made (and some must be made where forty men are working day in and day out on a subject) will eventually be made public.

Edison Responsible for Laboratory

Thomas A. Edison, as chairman of the naval consulting board during the war suggested the advantages of such a lab-oratory and it was his insistence, in its the production of directional receiving appearatus, the elimination of static and to appropriate the money for the laboraearly stages at least, that led Congress

CHALLENGE SUPPORTS LIST'S CORRECTNESS

NE DOLLAR will be paid to every Radiophan reader of Radio Digest submitting the most errors in any one station's listing in the Directory of Radiophone Stations, which appears in four parts, serially continuously, on page 23. Letters must reach Radio Digest's office not later than one week from date of issue corrected. Readers are not limited to correcting one station. Turn in corrections for as many stations as you can find—if you can find errors! Use separate sheet of paper for each station submitted and place name and address on each sheet.

tory. The navy experts are not disposed to discuss the machinery in the buildings but they are insistent in saying that every thing is of the latest design and right up to the minute in completeness.

Air Signals for Astronomer

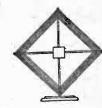
WASHINGTON .- Another series of time signals is being arranged for the benefit of the Australian Government astronomer, to be transmitted twice daily from Honolulu. These signals will last for a period of three months beginning November 1

Australia Plans to Erect Sydney-to-London Station

SYDNEY, AUSTRALIA.-E. T. Fisk, director of the Amalgamated Wireless Company of Australia, who recently returned from Great Britain, has announced before the Sydney branch of the Colonial Institute that next year a high-power Radio station at Sydney would connect with London at two-thirds of the present cable rates.

This station would be in constant touch with important centers throughout the

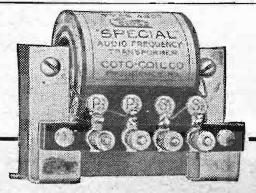
GENUINE RITTER LOOP



(equal to the best) sold at this extremely low price. Wondersold at this extremely low price. Wonderful results. Set up in a few minutes. Exerything complete. Endossed and approved by Radio News, Popular Radio, N. Y. Mail, Sun and Clobe and others. Over 200,000 sold in the past 6 months.

RITTER RADIO CORPORATION 230 Canal St.

Dealers write for exclusive territory proposition



Coto Special Audio Transfor

Real Coto Quality at a Popular Price

DEALERS!

JAVE your jobbers let you in on this big seller? If ot, write us, giving jobber's name

A marvel of manufacturing economy. In finish, high grade materials and amplifying efficiency, actually superior to many transdealer to show COTO SPECIAL. If he fails you, send us his name and we will see that he is supplied.

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

Pacific Coast Branch: 329 Union League Building, Los Angeles Northwestern Branch: Geo. F. Darling, 705 Plymouth Bldg., Minneapolis Southeastern Branch: C. P. Atkinson, Atlanta Trust Co. Bldg., Atlanta

-outdistance your friends!

Defeat interference, abolish foreign noises, annihilate distance-bring in distant and nearby stations with volume and tone-quality that mean real thrills and make your friends envious. Use



AMPLIFYING TRANSFORMERS

for Audio or Radio Frequency

Largest selling transformers in the world. More than a quarter million in service. Standard equipment on the better sets. Suitable for all circuits.

All Better Dealers Sell "All-American"

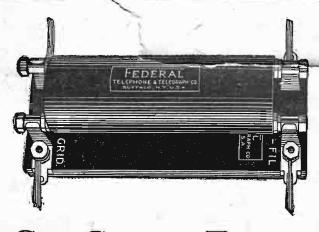
RAULAND MFG. CO. 200 N. Jefferson St., CHICAGO Pioneers in the Industry

Special Offer!

We will gladly mail the "All-American" Book of Tested Radio Hookups-on receipt of 2 cents to cover postage.



"All - American" Audio Frequency Transformers come in three ratios.



You Can Cover a Tremendous Range of Wave-Lengths with Federal R.F. Transformers

WITH one mounting, you can use any one of four Federal R.F. Transformers covering any wave-length from 175 to 3000. Contacts are made through spring clips, and the transformers can be changed in a few seconds.

Highest grade of materials, and painstaking care in assembly assure efficient amplification of incoming signals without distortion.

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, N. Y.

New York San Francisco Bridgeburg, Canada

O, A..
Philadelphia
Pittsburgh
London, England

All - American'

Bakelite Tube Socket base or

panel mounting

75C

CHARLIE ERBSTEIN AND TWO OF HIS ARTISTS



Famous Criminal Lawyer Has Broadcast Plant to Fill in Few Leisure Moments

Charles Erbstein's WTAS Station at Elgin, Ill., Receives a Visitor from Jungles of South America Who Says He "Picked Up" Plant Two Nights Running

(what difference do a few miles make when Radio is concerned?) a few weeks he returned to God's country. ago a high official of one of the largest fruit companies, a firm which shapes republics, heard, by way of amusement, a real United States' song.

Now, there are many kin of Uncle Sam

below the equator; most of them like to station during two successive nights at a sing at times the airs of the cabaret or place 1,700 miles south of New Orleans.

theater But the song that the fruit comthe song that pany's chief heard came not from the deep, is known in every state in the Union and

By J. L. Newman

'Way down in the jungles of South lows nearby, but from a Radio set in his America, maybe it was in Central America

The song stirred him so that he he returned to God's country.

Visits Villa Olivia

Shortly afterward he walked into Station WTAS, Villa Olivia, Elgin, Ill., and told C. J. Meyers, operator, and Charles E. Erbstein, owner, that he had heard the



LAKE ERIE SPLASH IS WJAX MYSTERY

Cleveland Station Puts Slogan Sound on Air-Listeners Wonder How

CLEVELAND.—Have you heard "The Wave from Lake Erie"—have you heard the water sloshing around the rocks on the shore and breaking into a mist of spray? Hundreds of Radiophans have written to WJAX, the broadcasting station of the Union Trust Company, at Cleveland, Ohio, to praise the wonderful realism with which the station has vivified its unique slogan.

One gentleman wrote from New Orleans that he can picture a twelve-pound "mus-kie" in the swirling water, and a prominent business man of New York City wants to settle a bet by knowing if a microphone is placed on the shore of the lake to catch the sound. A writer from Minnesota states that the effect is perfect and that he should know, as there are 400 lakes within a twenty-mile radius of his home. Hundreds of letters have been received, praising the fidelity of the sound.

E. G. Johnson, announcer for WJAX, originated and developed the idea and, when questioned as to the method of accomplishment, smiled graciously and said something to the effect that "the possibilities of Radio were unlimited." So the mystery is as deep as ever.

Licensed Operator Hired for Part in Arliss Play

NEW YORK .- A duly licensed, union Radio operator was put on the payroll of the Capitol Theater here recently, when George Arliss in "The Green Goddess" was presented. This bit of realism behind the scenes was synchronized with certain Radio messages used on the screen. Two of the most thrilling sequences in the pic-ture are the sending of a decoy message by the scheming Rajah at his private sta-tion, and the SOS sent by his helpless

CFAC Gives Health Tal CALGARY, ALTA.—Miss Gilvray, Ph.D., Ph.C., physic specialist, is now telling R.A. the west how to keep well ousised station of the Calgary Herald. This is an innovation in broadcasting in Western Canada and has met with public favo

YOUR boy knows the difference in radio receiving sets, even if you don't. Give him a De Forest Radiophone this Christmas and hear him say "Gee, Dad, you certainly know how to pick the winner!"—authorized agents everywhere—satisfied users all over the world.

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

If Located West of Pennsylvania, Address

DE FOREST RADIO TEL. & TEL. CO.

Western Sales Division

Dept. R. D. 2

in almost every province in Canada; its

estimated range is 1.000 miles, but its

country. Among his clients have been men and women of international repute,

one of such cases now attracting much interest in the public print.

Builds Station for Hobby

heavy, when whereases and wherefores and hereinbefores and sobelts were so numerous as to weigh heavily. Erbstein decided to build a Radio station. With

that persistence and diligence which had

brought him to the fore in his profession,

the distinguished attorney perfected arrangements which resulted in the erection of Station WTAS on his private estate, (Continued on page 8)

When the burdens of the law became too

5680 12th St., DETROIT, MICH.



RADIO CONTROL FOR OLD NORTH DAKOTA

NAVY MAKES PLANS FOR NEW MOVING TARGET

Vessel to Be Scrapped by Armament Conference to Be Bull's-Eye for Aerial Bombing Experiments

By Carl H. Butman

WASHINGTON.—The next Radio-controlled ship of the navy will be the old battleship North Dakota, authorized in 1907 and commissioned in 1910, but designated to be scrapped by the Arms Conference. A lack of available funds for the Radio control equipment will prevent the execution this year of the navy's plan to carry out extensive gunfire and aerial bombardment with this ex-first-line ship as a moving target.

She will be de-commissioned and much of her armament and equipment salvaged in anticipation of equipping her with Radio control apparatus next year. In the meantime, she will be kept in good condition at her present berth at the Nor-folk Navy Yard.

'How can the navy afford to sink a vessel whose hull, armor and machinery alone cost \$7,246,687, and whose Radio equipment will cost \$100,000 more?" some critics will ask.

Useless as Fighting Craft

In the first place, she is useless as a fighting craft, but the answer lies in the results of the aerial bombing and the gunfire experiments with the old Iowa, now at rest in Panama Bay. The latter was the navy's first Radio-controlled target ship, and the only full-sized ocean-going craft ever operated by Radio without men aboard. From her, naval radio engineers learned how to equip and control a vessel from a distance; the aviators learned how to bomb moving targets; and the range finders and gunners experienced for the first time long range and even in-direct fire at a real battleship while under

rs and ordnance experts also luable data. Improvement in all lines of the service was noted; hence a second ship is to be Radio equipped when sufficient funds are appropriated. She must be sunk or disposed of eventually, but, with special shells and bombs, it is planned to keep her afloat as long as ossible when the final maneuvers start.

Control by Ship Miles Away
North Dakota will have similar io control equipment to that on the ola Iowa, sunk last winter. The equipment will enable her to proceed at a higher rate of speed, approximating fifteen knots, it is understood. Radio control will provide for increasing her speed to a max-imum from a low initial speed and stopping her. The speed cannot be varied, but she can be maneuvered right and left by her Radio rudder control from the operating ship several miles away.

The new Radio equipment will cost \$100,000, it is estimated, although no definite figures have been prepared. The total cost of partly scrapping, that is removing guns, etc., will also cost another \$100,000, but this amount would be entailed necessarily through the armament

JE W ELL FRENC H RAY-O-V KEL . WESTERN | LECTRIC CRO S LEY MAGN A VOX GENERA **RADIO** ALL-AM RICAN RADIO CORPORATION 24 HOUR SERVICE

Elallitom Son Company

OBBERS ELECTRICAL AETAILERS

Mattoon, Illings

FANS MAIL OFFERING FOR CHURCH "PLATE"

Two Calgary Pulpits Now Broadcasting Sunday Sermons

CALGARY, ALTA.—CFCN, the Radio proadcasting station of the W. W. Grant Radio, Ltd., at Calgary, has now commencd broadcasting the regular Sunday evening service from Knox Presbyterian church.

Local ministers do not agree that broadcasting of services detract from church attendance and from receipts. Considerable money has been received by Grace Church from Radiophans since broadcasting was commenced, the contributions coming by mail. They are generally larger than those placed on the collection plates by transients, it has been observed. The attitude taken by local ministers is that Radio enlarges the scope of church work.

ATTORNEY HAS STATION

(Continued from page 7) Villa Olivia. The cost of the plant was \$10,000; it was designed by Mr. Meyers.

Station WTAS, which uses all the power from a 500-watt generator, is distinguished by the "Sapphire Studio," a room of extraordinary beauty where draperies, lights and other appointments yield a hue of bright blue. Here artists of renown have taken part in programs, nightly excepting Friday, arranged by Mr. Erbstein and Mr. Meyers.

Meyers Pioneer Operator

The latter, although only twenty-four years old, is a pioneer operator. Meyers wned one of the first amateur stations in Cincinnati, built at a cost of \$200.

One of Mr. Meyers' duties at Station states in this country. The station has been appointed the official broadcasting plant of the American Legion plant of the American Legion.

Not only does WTAS draw the great and near great but it has caused the wily to flee. Not long ago the station broadcast the description of a man who had robbed the patrons and owner of a nearby roadside cabaret. Fifteen minutes after the robbery the thief was ptured ten miles away, as he fled toward Chicago.

When repairs or adjustments are necessary to WTAS, Mr. Erbstein is able to drop his law books and tinker at tubes, oscillators, the antenna and the like. Radio is his hobby and WTAS his pet.

"Radio Cops" Guard Canada

DETROIT.-What are known as "Radio cops" have been appointed by the Radio telegraph branch of the department of marine and fisheries for twenty-two dis-



AT NEW YORK PRICES

VIA DAILY PARCEL POST The Prices Quoted Below Deliver Goods to Your Door

REFERENCES REFERENCES

R. G. Duns, Bradstreet, Coal & Iron National Bank, Corn Exchange Bank, N. Y. City. No salvaged goods handled. Only standard brands in original packing, which bears our and the manufacturers' guarantee. Due to our tremendous output we can undersell any of our competitors. Send your order in today and

insure prompt delivery. HOW TO ORDER-Write your order plainly; state number, description and price of items wanted. Send Post Office or Express Money Order, personal check or bank draft.





VACUUM TUBES Standard brand Radio Corp. tubes. Guaranteed Corp. tuber brand new. B50 Detector, U.V.200 B50 Detector, U.V.200
each \$4.25
B51 Amplifier, U.V.
201A each ... 5.75
B52 1½ volt W. D. 11
each ... 5.75
B53 W.D.12 ea. 5.75
B54 U.V.199 ea. 5.75
B55 U.V.199 Adapter
for U.V.199 tube

Audio Frequency Transformers
The following transformers are guaranteed standard makes, and will produce very efficient results.

B63 Dietzen 3 to 1
Ratio \$3.95

B64 Dietzen 5 to 1
Ratio 3.95 B63 Dietzen Ratio Ratio S.95
B64 Dietzen 5 to 1
Ratio S.95
B65 Dietzen 10 to 1 Ratio S.95
Acme Audio S.95
5.75



Loop Aerial B76. Can be assembled by anyone in five minutes, all wood parts, wire and binding posts included, complete ... \$1.00

Moulded Bakelite Variometer B79 Ea. \$5.75. List: \$8.00 A high grade instrument. Takes in the wave lengths from 250 meters to 800 from 250 meters to 800 meters. Table or Panel Mounting.



FRESHMAN VARIABLE GRID LEAK
AND GRID CONDENSER
Lowest filament current increases b attery life; eliminate howling; zero to 5 megolius.

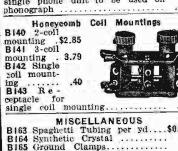
megohus.

B102 Freshman Variable Grid
Leak and Condenser combined .85

Filament Controlled Rhenstats Highest grade of ma-torial used, tapered used, -6 ohm ...\$0.39 20 ohm ... 49 knob: B104—6 ohm ...\$ B105—30 ohm ... B106—200 ohm Potentiometer79 B107-400 o b m



graph into a loud speaker.



ceptacle for	
single coil mounting	.50
MISCELLANEOUS	
B163 Spaghetti Tubing per yd\$	0.09
B164 Synthetic Crystal	.30
B165 Ground Clamps	.17
8166 Black Rubber Binding Posts.	.05
B167 Nickel Plated Binding Posts	
2 for	.05
B168 No. 18 Annunciated Ware	
half pound coil	.39
B169 6 ft. Phone Cord with tips	.79
B170 20 ft. Extension Cord with	., 0
	1.95
tips Direction	.05
Bi71 Wall Insulators, Porcelain	.00
B172 Tubular Porcelain lead-in	.10
Insulators, 6-in.	
B173 Reinartz Coil	1.45
B174 Cockaday Coil	2.45
B175 2 in. Dial and knob	.25
B176 3 in Dial and knob	,35
B177 4 in, Dial and knob	.49

BUILD YOUR OWN SET

Cockaday CIRCUIT COMPLETE

Consisting of
1 Cockaday coll and 7 pigtail connections
.0005 Variable Condensers
Socket
Panel 7x18
Dials, 3 in.
Grid Leak and Condenser

Rheostat Switch Lever Base Board

Marked Binding Posts Jack iring Diagram and Instructions

B178. Our Price \$12.65

Flewelling COMPLETE

1 .0005 Variable Condenser
3 .006 Mica Condensers
1 7x12 Panel
2 Coil Honeycomb Mount
Variable Grid Leak and
1 50 turn Honeycomb Coil
2 Coil Mounts with straps
1 Dial, 3 in.
8 Marked Binding Posts
1 Baseboard
Whing Diagram and Instructions
R180 Our Price \$12.45

B180. Our Price \$12.45



High Grade
Moulded
Variometers
B97 Price \$2.65
A real high
grade job at extre mely low
price. Takes in price. Takes in all wave lengths. B98 Wooden



Improved Outdoor Lightning Arrester
Passed by
the Board of Fire Un-derwriters. Regularly sells for 1.50 B108



AMPLITONE LOUD SPEAKERS This speaker will give efficient results when used with any pair of Head Phones; highly nickel plated; 18 inches high. B117\$3.95

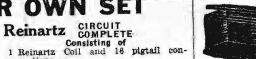
Standard Brand Head Phones B134

B135 Dic-tograph... \$6.75 B136 Baldwin Type "C" Type "C"
Double...
\$9.85
B137 Baldwin "C"

Electric \$10.50

71 Cortlandt St. New York, N. Y.

America's Greatest Radio Mail Order House **ELEVEN NEW YORK STORES**



nections
2 3 in. Dials
1 .0005 Variable Condenser
1 11-Plate Condenser 11-Plate Condenser
1 Socket
1 Vernler Rheostat
3 Witch Levers
1 Tx14 Panel
1 Base Board
8 Marked Binding Posts
2 Ft. Bus Bar
1 Grid Condenser
2 doz. Switch Points and stops
1 Tring Diagram and Instructions
2 Tring Diagram

B179. Our Price \$10.85

Ultra Audion COMPLETE Consisting of

7x12 Panel Variable Condenser .0005 Socket Variometer Vernier Bheostat Grid Leak .0002 Mica Condenser Marked Blanding Posts 1 Base Board 16 Ft. Bus Wire Diagrams and Instructions

B181..Our Price \$9.65



1½ VOLT DIETZEN
TUBE
Two-element F1 e m i n g
valve effect; operates on
one dry cell with or without "B" Battery; wiring
diagram free with each
tube

tube B95 Dietzen Tube..\$1.00 B96 Socket for Diet-zen Tube40 BAKELITE TUBE SOCKETS

Moulded of brown bakelite; Binding Post Connections. Connections.
B99 Standard Type for 261A, 301A, W.D.12 396
B100 For U.V.199, U.V.299, Socket...39e
B101 For W. D. 11,



Indispensable for the man who builds

VARIABLE AIR CONDENSERS

VERNIER VARIABLE CONDENSERS

Specifications the same as above.

B|14—14 Plate Vernier with knob
and dial \$2.95

B|15—26 Plate Vernier with knob
and dlal \$3.45

B|16—43 Plate Vernier with knob MAGNET WIRE-8 OZ.

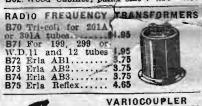
Double Cotton

Green Silk Size Price No. Size Price No. SIZE FILE
B144 . 18 . . \$0.43
B446 . . 20 . . 53
B488 . . . 22 . . 68
B159 . . 24 . . 78
B152 . . 26 . . 88
B154 . . 28 . . 1.07
B155 . . 30 . . 1.58 B145 . 18 . \$0.73 B147 . 20 . . . 85 B149 . 22 . . 1.00 B151 . 24 . . 1.13 B153 . 26 . . 1.65



W00D CABINETS
Highest grade Mahogany finish Cabinets. Hinged top. These cabinets are being sold at less than one-half regu-lar value.

B57 Wood Cablnet Each.....\$2.56 panel size 7"x10". Each. \$2.50
B58 Wood Cabinet; panel size 7"x12" 2.75
B59 Wood Cabinet; panel size 7"x14" 3.00
B60 Wood Cabinet; panel size 7"x18" 3.50
B61 Wood Cabinet; panel size 7"x21" 3.75
B62 Wood Cabinet; panel size 7"x24" 4.00





VARIOCOUPLER B77 High Grade 180 Degree Coupler made of Bakelite tubing wound with green silk pectal \$2.65 8 Variometer same

specifications 2.65

PLATE CIRCUIT "B" BATTERIES The highest grade of battery made at prices lower than they ever were sold before. B80—22½ Volt

| B80-22½ Volt | Shall 1886—360 nr.
http://www.arm.nr.



Price, mounted ... 30c
B160 14 K. Gold Supersensitive Rusonite
Catwhisker. Permanent. Will not oxidize.
Price ... 25c
B164 Rusonite Reflex Crystal. Manufactured expressly for Reflex
Cuaranteed. Price, mounted ... \$1.00

JACKS AND PLUGS

acus are bousned nickel constructure silver contacts. B118 One Spring open circuit.....\$0.39 Bill Two spring closed circuit49

B120 Round plug as illustrated.... AERIAL WIRE B123 25 ft. coil......\$0.49 B124 50 ft. coil.................85

INSULATORS These are very strong strain type insulators.

B|58 Moulded insulator





RADIOPHANS DECIDE "BATTLE OF MUSIC"

LETTER CARRIERS' BANDS COMPETE ON AIR

Postmen Distribute Million Voting Blanks to Listeners In for Decision on Prize Band

PROVIDENCE, R. I.—Millions of votes by Radiophans will be cast in what was planned to be the biggest nation-wide contest ever held, when the twenty-nine postal bands, who played on a recent night in all the principal cities of the United States, held a Radio concert contest, or "battle of music."

Plans for the contest were made at the convention of the National Letters Carriers' Association, held here recently, when Emory Johnson, the motion picture producer, and the Film Booking Offices of America offered a cash prize of \$500 and a beautiful silver cup to the best postal band in America.

With the agreement to hold the contest, Radio was immediately accepted as the best means of reaching the public, who was to give the decision. In the United States there are twenty-nine large postal bands, from the Atlantic to the Pacific Coast and the plan called for concerts to be held simultaneously all over the coun-

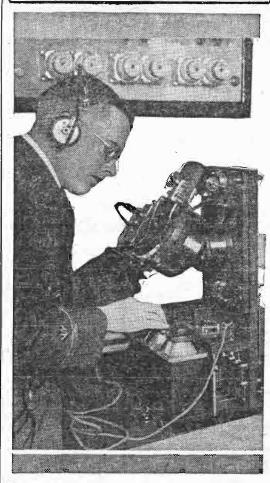
Ballots Distributed to Take Fan Vote

Ballots were printed in the Radio sections of daily newspapers, and 1,500,000 more blanks were distributed by letter carriers to people on their various routes who own receiving sets. The blanks will be the means of deciding the winner. The names of each band and the station from which they broadcast were printed on the ballots so that it was possible to tune in for three or four different bands before the contest finished. As the ballots were sent out several days previous to the concert date, Radiophaps had ample advance nothe event

The ballots, alled in by those who histened in, are being returned to the carriers, who in turn forward them to the donors of the prizes for counting. weeks are allowed from the date of the concert to count the votes, and the winners are to be announced by Radio November 1.

The \$500 cash prize is divided into three, his time in this work.

AMERICAN SHIP HAS GERMAN EQUIPMENT



The U. S. S. Resolute, much in the public eye The U. S. S. Resolute, much in the public eye because she sails under Panama registry in order to remain "wet," has another title to distinction in her "Telefunken" Radio equipment. As one may see, the receiver looks quite different from those familiar to us of the U. S.

K. & H. Photo

\$300 for the first prize, together with the silver cup, and \$150 and \$50, second and third prizes respectively.

Whittemore Gets New Job

WASHINGTON, D. C.-L. E. Whittemore, former assistant chief of the Radio section of the Bureau of Standards, has been appointed technical secretary of the interdepartmental Radio advisory committee and from now on will spend all of

The Reader's View

Radio and St. Peter

Just received a copy of Radio Digest at the news stand. I notice in the Questions and Answers, Number 4044, the writer seems to know much more than

If he had been as I was more than a year ago with no paper that had the information Radio Digest gives every week and had tried to build his own set without the help you give, he would surely know how to appreciate Radio Digest.

If I were in your place I would be like Saint Peter. A very rich man died and arrived at the pearly gates. He asked for admission. Saint Peter asked Gabriel what he had credited on his book for the man at the gate. After much searching Gabriel found that the rich man had given a dime to the poor. Saint Peter studied a bit and said: "Give him back his dime and let him go to h—l."

I don't think much of the Reinartz circuit. But maybe I think too much of my set to give any other a fair trial. I try nearly every thing that is new.

This letter is for the Question and Answer man who has more patience and Radio knowledge than most of us and should be encouraged .- E. R. U., Prince-

Heavy Service Bell Talks

With reference to the article "Talking Transformers," by L. B. Godbey, St. Louis, Mo., I submit the following:

As he so ably explained away the mysteriousness of that case, perhaps he may be able to explain the "why" of a talking electric signal bell in regular use in this office for signaling between this and two adjacent stations about three miles distant on either side.

On several occasions voices have been heard quite distinctly by listening close to the bell; upon removing the receiver from the phone, stations on either side of me were heard conversing.

The bell is for heavy service-coils each 2½ inches by 1½ inches, gong 5 inches, back frame and removable cover heavy east-iron at least 13 inch thick. There is no thin light metallic part that could function as a diaphragm.

This has occurred only at infrequent intervals chiefly, I believe, when storms approached.—F. A. E., Rome, N. Y.



POLISHED BLACK FINISH

CUT PERFECTLY SQUARE TO ANY SIZE

1/32" THICK 1/20 PER SO, INCH 16" THICK 3/4 PER 50. INCH 3/32" THICK IC PER SQ. INCH 18" THICK 1/2 PER SQ. INCH THICK 2¢ PER 5Q INCH 1/4 " THICK 21/2" PER SQ. INCH

3/8" THICK 40 PER SQ INCH 1/2" THICK 5 1/4" 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

BRITON SEES RADIO LINK ALL EMPIRE

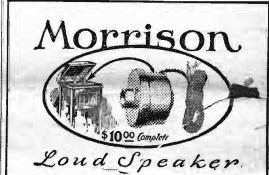
English Postmaster General Paves Way for Air Communication with Colonies

WASHINGTON, D. C.—Recent statements of the British postmaster general indicate that a solution has been found to the problems connected with the establishment of the British empire Radio chain. Not all points connected with the issuance of Radio licenses have been disposed of but it is considered probable that the British government has adopted a policy which will permit private Radio companies to establish high-power stations both in the United Kingdom and in the colonies. The postoffice will proceed with its own plans for a high-power stational control of the colonies o tion at Rugby, England.

The companies which have applied for licenses are the Marconi Wireless Telegraph, Limited, and the Eastern Telegraph; the latter is the largest unit in the British cable system. The Marconi company has contracted with the Union of South Africa and the Dominion of Canada for high-power Radio stations designed to communicate directly with England; it is associated with the Amalgamated Wireless which has a similar contract in Australia.

The Eastern Telegraph company is the first cable concern of any size to use Radio transmission as an adjunct to its cable service.

A pleasant signal filling a moderate size room should be enough to give satisfaction. It is not worth while producing signals which deafen the neighbors. It is wasteful to insist on tremendous signals which are generally not pleasant.



A LOUD Speaker that DOES re-produce with perfect distinction and clarity of tone-that DOES eliminate all harsh vibration and rattle.

Phonograph Horn

Morrison attaches to practically any phonograph or horn in a moment. Hundreds of users write enthusiastically of the enjoyment they now get out of radio. For you can adjust from soft, mellow tones to loud, full volume by the turn of a little dial. We positively guarantee Morrison Loud Speaker.

Nickel Plated Model, Complete with 5 ft. cord \$10.00

Ask your dealer for demonstration or send order to us direct.

DEALERS

Investigate today—we will show you the wonderful possibilities of Morrison Loud

Write for Illustrated Catalog

MORRISON LABORATORIES INC. 343 Jefferson Avenue, East, Detroit, Mich.



Here is a set which brings distortionless speech and music to you no matter where you live. The Moon is operated by simply grounding to a water pipe or radiator—no antenna, loop or indoor wire is necessary.

Stations within a conservative 1,000-mile radius are regularly received with a non-power loud speaker on this set.

It is the ideal set for use in apartments, automobiles, yachts or railroad trains where an antenna is not practical. Extremely sensitive, unusually selective, yet simple to operate.

> Write today for our folder "California or Newark."

DEALERS:—Ask about our franchise

MOON RADIO CORPORATION

501 Steinway Ave., Long Island City, N. Y.

In Canada, Continental Equipment Co., Ltd., New Birks Bldg., Montreal, Quebec.



"The detector tube supreme." Noted for stability, long life, and uniformity. A six-volt standard base tube for any receiving circuit.

Radiotron UV-200 with its long distance reception—clearness—and good volume—is the basis of many a receiver's splendid performance.

Price \$5.00



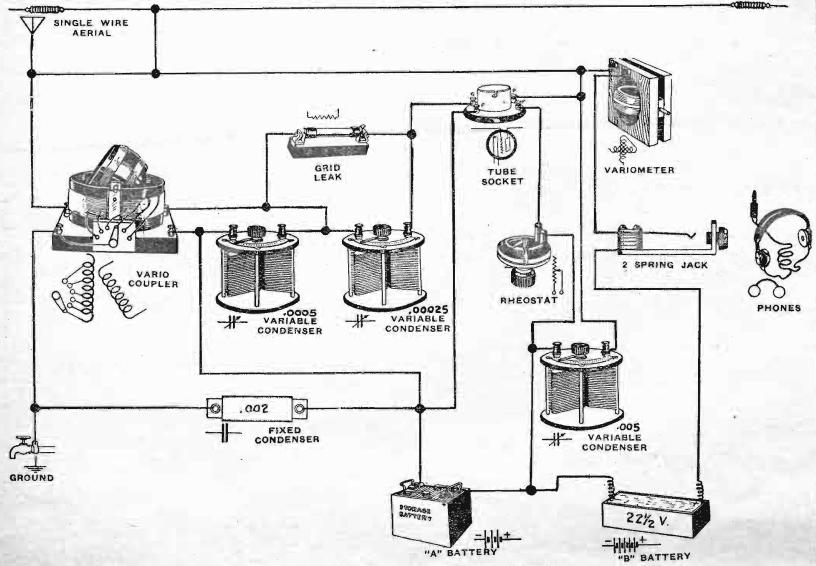
Radio Corporation of America

Sales Offices-Dept. 3002: 233 Broadway, New York District Sales Offices:

10 South LaSalle St., Chicago, Ill. 433 California St., San Francisco, Cal.

Be sure that every vacuum tube you buy is marked RADIOTRON.

REGENERATIVE CIRCUIT IN SIMPLEX DIAGRAM



tive circuit is shown in the Sim-plex diagram. Through a liberal able condenser. use of variable condensers, accurate control of the circuit and increased selectivity is possible.

The grid leak is fixed and has a resistance of 2 megohms, but the grid condenser on the grid side, or capacity effects will is best to have the panel carefully shielded all over with pencil marking and lay it

A soft tube (detector) is recommended with a B battery of only 221/2 volts' pressure.

The circuit has unusually good volume

SPECIAL ON UNITS

Single Tube Webster Receiving Set (Non-Regenerative Type), without head set and tube, in beautiful mahogany cabinet; list price, \$30. Our price, while they [ast, Only \$20.00]

last, Only
The above Webster Receiving Set complete with Baldwin Phones, B Battery, Dry Cells and Tube; list price, \$41.30.
Our special price as long as we have them \$32.50

TRANSFORMERS

Webster Radio Frequency, 5 A-1, wave length 200 to 500; 5 A-2, wave length 300 to 1200; 5 A-3, wave \$3.19

PHONE RECEIVERS

Genuine Master-Baldwin Type C Unit...... 6.00 Genuine Master-Baldwin Type C Double.......12.00

Mico Phones "Sealed-Guaranteed"......

LOUD SPEAKER

Audiophene Loud Speaker (Large Size).....\$22.50 Loud Speaker Cerd, 20 feet, 4 tips, our price...... 1.00

All American, Ratio 1-5

All American, Ratio (-10 ...

POPULAR form of the regenera- be marked. The plate circuit is tuned in order to eliminate the occurrence of body capacity effects.

Home-made Grid Leak

If you are away from home and need a different value in your grid leak or if you want to find out if a different value will change the set, at any time, take is variable. Do not have the rotary plates and the range for long distance work. It a match or similar bit of wood, coat it

across the leak contacts or from grid to filament post. This expedient has kept a set in operation for a week when away from a Radio supply store. It has solved many a squeal and howl, even in the city.



SPECIAL

(IMPROVED MODEL) Direct From Manufacturer to Consumer LOUD SPEAKER

Genuine Wood Fiber Horn (With Unit and Cord)

Entirely eliminates that annoying metallic sound. Positively the only WOOD FIBER HORN on the market today.

10-inch Bell with Standard Attachment; Complete. Height 24 inches. Colors, Black, Mahogany and Olive Green.

Price \$8.00

(For a limited time only.) Delivered to any part of the United States and Canada

EMIL DECLYNE 15 Park Row, Room 2525, NEW YORK CITY Send M. O. or C. O. D. Dept. R. D., Barclay 6298

The B.T. Universal Vernier Tuner



(The Original

is an entirely new instrument, a fitting companion for the real Vernier Condenser.

It has given a new meaning to close tuning in a great many of the most desirable circuits known.

Buy it for results-experiment later if you wish.

Price \$5.00

Our new free booklet will improve your knowledge of tuning. Send 2c for postage and your dealer's name.

BREMER-TULLY MFG. CO., 532 S. Canal Street, CHICAGO, ILL.

COMPLETE STANDARD PARTS FOR MYSTERY MILOPLEX

RHEOSTATS AND SOCKETS MARVEL Rheostat, 6 ohms.....\$ 35 MARVEL Rheostat, 20, 25 and 30 ohms.....45 MARVEL Rheostat, 40 ohms......45 Our Price MARVEL Rheostat, 50 ohms..... Potentiometer, 400 ohms..... Potentiometer, 1,850 ohms, Federal...... 2.20 Standard Sockets, bakelite base, \$1.25..... .75 Na Ald Sockets, 35c; 3 for..... 1.00 (Enclosed in substantial beautiful managany cabinets) Our

VARIABLE CONDENSERS

Variable Condenser, .0005 (Same as 23 plate)\$5.50	3.00
Variable Condenser with Vernier, .0005 (Same as 23 plate)	4.50
Variable Condenser, .001 (Same as 45 plate) 6.00 Variable Condenser, with Vernier, .001 7.50 Walnart Variable Condenser, .00025	3.50 5.00 1.75

VARIOMETERS

Our Price \$4.39 Moulded Variometer \$6.00

5.50

Variometer, All Circuits.. ...

VARIOCOUPLERS

Webster Variocoupler with dial,	List \$4.50	Price \$2.19
Moulded Coupler	5.50	4.19
Moulded Bakelite Variocoupler All-Meter Variocoupler, 150-2600 meter		
All-Meter Variotompier, 150-2000 meter		

GRID-LEAKS

Freshman Grid-Leak with Condenser.\$1.00 \$.79

MISCELLANEOUS	Our
List	
Switch Lever, 1-A, 1½" Radius, 1%" Knob, 18" Shaft\$.75	\$.35
Presto Aerial Superseder, Adjustable; can be attached to electric light socket or telephone	2.00
Rogers Receiving Radiometer; can be used like Radio Frequency Trans- formers	3.00
Combination Socket and Rheostat with Vernier	2.29
B-Metal Ever-Ready Tube Detector, Type B	1.50
B-Metal Type "D" Detector, adjust- able for reflex work	1.00
Hydrometer Perfect	.65

1 Estru Variometer

1 .00025 Variable Condenser 1 Potentiometer

3 3½ inch Dials

1.0005 Variable Condenser 1.002 Phone Cond. 1 Socket, Bakelite base 1 Bakelite Panel, 9x14x1 12 ft sq., brass, bus wire 1 DeForest D.V.-6 Tube

3 Dry Cells

12 ft sq., brass, bus wire

1 Set Readem Bind. Posts ONLY

WIRE

Madera Clear - Speaker

AT LAST-REAL SPEECH-REAL MUSIC-FROM DIE-CAST WOOD HORN



Finished Crystallized Black and Mahogany Complete with unit

Height 12 inches

Diameter Bell 10 inches

ABSOLUTELY GUARANTEED

Natural tone from Radio made possible by a new process discovered! We break down wood to original fibre, forcing it into steel dies under twelve tons pressure.

You and I would not think of making a violin of metal or cardboard, expecting to receive wonderful tones. Why use it for radio horns? Talking machine people gave up metal horns years ago.

The best violins are made of wood, whose fibres are very close together. The tighter the fibres the better the tone quality. We compress fibres closer than they are in any wood.

We Are Responsible Folks. Money Promptly and Cheerfully

Everything in Radio

Write Us

Refunded If You Are Not Satisfied All Orders Mailed Promptly. Parcel Post Prepaid on \$5.00 or Over

Quality Merchandise at Low Prices

\$3.19

Economical Radio House

4600 Lincoln Avenue, Chicago

We Personally Guarantee All Goods

250 ALL THE PARTS R. D.-99 LONG DISTANCE RECEIVER

(See September 29th issue Radio Digest)

Sockets; 3 Rheostats; 2 A. F. Transformers; 2 Double Circuit Jacks; / Open Circuit Jack; / Radiometer; I Variable Grid Leak and Condenser; I .0005 Variable Condenser; 1 .005 Fixed Condenser; 1 75 Turn Honeycomb Coil, Mounted; I Single Coil Mounting: | Set Readem Binding Posts; | Bakelite Panel, 7x16x76. OUR PRICE

"Tri-Coil Reflex" Radio Frequency Transformer

Readem Binding Posts. Set composed of 1 antenna, 1 ground, 1 A Battery+, 1 A Battery+, 2 telephones, 1 B Battery+, 1 B Battery+. \$.75

H. C. COIL MOUNTING

Three Coil Mounting with Dial.....\$5.00 \$3.85 Geared Three Coil Mounting..... 5.00

FREE

Choice of following items on purchases of Five Dollars or over:

Freshman Grid Leak and Condenser

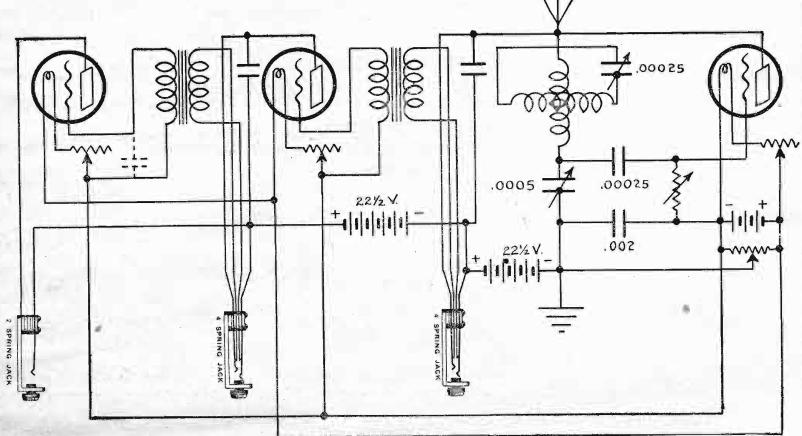
Webster 1-A Dial Knob, 3½ inches, 3/16 shaft WEBSTER SWITCH LEVER

TWO CIRCUIT JACK OPEN CIRCUIT JACK

Further Details of the Famous Miloplex Hook-Up

Part V—How to Add Audio Frequency Amplification

By the Mystery Man



HEN is a circuit not a circuit?

Answer me that, somebody, and win the fur-lined bathtub, because, didn't six somebodies hardly wait until the ink was lry on last week's Digest letters. Each wondering how in (mustn't say the naughty word, mustn't say the naughty word, mustn't say the naughty word) I could call the rotor with a condenser shunting it a circuit, and especially so when it had no physical connection with the set? nection with the set?

Asking that question and expecting an answer is just like asking a barber to "gimme a first class haircut," when you laven't got first class hair. 'Pears like as not I'll have to hogtie and double solder it to a ground lead to put it over. But, yes, sir—it's a circuit and you can hear it work—and that's "Raydeo." Some day, methinks, a merchandiser will spring into the limelight by placing a sign in his window reading "Radio Spoken Here." You know what I mean. But, let's start something. Last week an amplifier was promised, a two-tube job I believe; personally I was going to wait a week in order that you might get better acquainted with your choice of the three circuits offered, but it seems many are clamoring for it, so let's go-very well.

Now, read carefully, three circuits have been given you, out of the three you will pick your pet. Naturally, the bearcat of them all is the King III, yet its operation may have some of you perspiring, yes, and sweating too, as Ole says, therefore take your pick for the present, but try the King. Get him (or is it a her) perking for you like a voice amplifier and I think it will be your choice. There are few, if it will be your choice. There are few, if any tricks in amplifying, but there are some mighty dark alleys you better stay shy of. However, as my friend Carl Meyer says, "If you know your stuff" the rest is easy, or as Charlie Tuska says (pardon the familiarity, Charles), "It's

fying either of the circuits if you know your stuff.

I should know, I worked nine long months finding out; you surely can stick

on the job nine minutes.
"Brownie" has pictured a standard amplifying circuit intentionally leaving out the do-dads I will put in.

Notice that our grid returns (sure, the tail end of the secondary) go to minus

EASTERN COIL SETS

(4 Circuit Tuner)

are now a standard, and in universal use, due to their efficiency in this wonder circuit.

Made as per specifications of Mr. Cockaday, using No. 18 wire with D coil bank-wound.

Complete Assembled Set of \$2.75

Hook-up directions and material list furnished free with each set of coils.

Mail Orders Filled. Dealers Communicate

EASTERN RADIO MFG. CO.

22 Warren Street, Dopt. R. D., NEW YORK, N. Y.

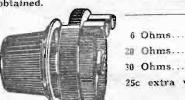
COCKADAY

CIRCUIT

HEN is a circuit not a circuit? no trick to stop a howl (choke it) if you filament, also peek closely and note that Answer me that, somebody, and know how," and I say it's no trick ampli- the rhepstats are connected in the negative A battery lead to filament. Atta boy! Do it just right and don't slip like they

You Must Use





Suitable for enher table or panel mounting. Condensite base, high grade resistance unit, attractive knob. Adjustable shaft to any thickness of panel.

did when the Prodigal Son returned and

Remember where it says, "they fell on his neck;" surely they didn't wear rubbers in those days.

Keep your panel layout for the amplifier down to the last inch of wire; many a real good Radio set has went sputtering along, just because it was loaded with

(Continued on page 14)



Special for October

- Fada Complete markdown parts for the 5 tube

AMPERITE-Automatic Filament Control. Unmounted \$.70.
Mounted \$1.10

Langbein and Kaufman Variometers\$6.00

Langbein and Kaufman Variocouplers\$6.00 We personally consider both these variometers and couplers to be the best on the market.

Our stock consists of a most complete line of all standard radio apparatus. Just let us know what you want and we will ship it to you immediately at regular manufacturers' prices.

All shipments made immediately on receipt of purchase price.

RADIO & MECHANICAL TRADING CORP.



to get the best possible results from your set—no matter what type it is. They guarantee noticeable improvement in the reception



At all good dealers—or direct on receipt of purchase price. Also write for our complete

AMSCO PRODUCTS, INC. 416 Broome Street

REPAIR YOUR VAGUUMTUEES

WD-11-12, UV-199, UV-201-A C-301-A\$3.50 each UV-200, C-300..... 2.75 each UV-201, C-301..... 3.00 each DV-6, DV-6-A 3.50 each

All Work Fully Guaranteed

Quick Service-Repaired Tubes shipped C. O. D. unless accompanied by remittance plus postage.

NEW TUBES

A-299 (Type UV-199) \$ 10 A-401-A (Type UV-201-A) A-12 (Type WD-12)

All the above Tubes guaranteed amplifiers and detectors. Shipped C. O. D., postage prepaid.

ABALENE RADIO, 14 Vesey St., New York, N. Y.

Worksman Radio Service **NEW YORK** 14-16 Vesey St. Our appreciation of your orders is expressed in the quality of our merchandise and prompt service. VARIOCOUPLERS

VARIOMETERS \$3.50 Workrite \$2.95 8.50 Remler, Molded 4.45 3.50 Fisher, Large 2.65 CONDENSERS \$6.00 Brandes Superior \$5.25 12.00 N. & K., Imported 5.50 5.00 Nerco 2.50 Ambassador 3.89

Complete Parts for Cockaday Sets

including 7x14x3/16 panel. Standard \$12.75 tested apparatus furnished throughout... Mail orders promptly attended to. All orders amounting to \$5.00 or more will be shipped prepaid will ship C. O. D. unless remittance accompanies

Do you Know why the Mu-Rad sells, Mr. Dealer?

Simply because to hear the Mu-Rad is to buy it! One of Chicago's largest radio stores sells the Mu-Rad entirely by demonstration. Their records show that onstration. Their records show that 8 out of 10 demonstrations result in a sale! That's profitable business!

Write for Mu-Rad Franchise

We are the exclusive distributor of the Mu-Rad Receiver in the states of Illinois. Indiana and southern Wisconsin. If your store is in any one of these three states, Mr. Dealer, write us today for details of our special exclusive territory proposition. Winter's here—there's need for

We also carry a complete stock of

WESTERN ELECTRIC CO. GENERAL RADIO CO.

parts. Write for details and discounts.

Chicago Radio Apparatus Company

Jobbers of Good Radio Merchandise General Offices: 407 South Dearborn CHICAGO



Multiple Electric Products Co. Inc RADIO DIVISION NEWARK, N.J. ORANGE ST.

Mary Vogt, circle at lef Radiophans have hear maker organ, broader delphia. This organ

world, and reproduce Miss Vogt can be hear Joe Smith's Martha I

often in front of the re
"The Wave from Lake
experts usually is incl
programs from the po
be heard again Tu

CURRENT WEEK'S PROGRAM OFFERIN

The Week's Headliners on the Air

T IS a week crowded with un-usual and interesting features and anyone hoping to keep up with all of them will have to tune fast from station to station. Tuesday itself offers the Dutch program by the Dutch consulate of Chicago at WMAQ, Morgan L. Eastman's musical guessing contests at KYW, WJZ's lecture on "Radio as a Career," and an international musical program at KDKA.

Wednesday begin early and sit up late, and if you can do it without an earache, get the Calophone concert at WJZ by the phone concert at WJZ by the famous Hungarian musician, Gara Guly (don't ask us what a calophone is); the ten best Foster songs at WHAS; the Californian Trio at KHJ; and if you have a strong heart, Nick Harris' detective stories at KFI.

Musicians! Thursday evening the original composition of Louis Victor Saar will be heard at WJAZ. WGY presents the Knights of Columbus Glee Club. Knights of Columbus Gree Club.
Hawaiian music supersedes jazz
at KDKA. Tune in for Los
Angeles and get the Hollywood
Girls' Quartette at KFI.
Ex-soldiers and sailors will en-

joy the American Legion Night Friday at WJZ. Knights of Pythias will make their vocal appearance at WBAP. Pretty girls will be heard but not seen at WOS in the musical program given by the Williams Woods

Saturday, if the sky is clear, take your Radio out of doors and listen to Prof. J. D. Boon at WFAA on "November Heaven's." After seeing this charming pic-ture of Betty Holmes can you refrain from tuning in to WDAP?
Sunday William Z. Nourse will

read Goodspeed's translations of the Bible fr. KYW. WJAZ anthe Bible fr.... KYW. WJAZ announces the Radio appearance of W. A. Stultz, head of Northwestern University Voice Department.

Monday is Rensselaer Polytechnic Institute Students' Night at WHAZ. The Liszt Chorus promises an excellent program at WGY. If you want to know WGY. If you want to know what to see in the Movie World listen to James A. Nassau at WDAR.

The following stations have announced their intentions of celebrating the birthday of Theodore Roosevelt Saturday night: KDKA, WJAZ, WJZ, WOC.

Tuesday, October 23

KDKA, E. Pittsburgh, Pa. (Eastern, 326), 6:15 p. m., Dinner concert, Grand Symphony Orchestra, David Broudy, director; 7:45, The Children's Period; 8:15, John Ray Ewers, D. D., on his recent trip to Europe; 8:30, International program, Edgar Thompson Male Quartet and Troubadours, Charles Price, tenor; Evan Lloyd, second tenor; Charles Drylie, baritone; Charles Loomis, bass; Thomas Lloyd, guitarist; T. J. Castoria, mandolinist; George Colburn, ylolinist.

riolinist.

KFI, Los Angeles, Calif. (Pacific, 469), 6:45-7:30 p. m.,
Program, Mrs. Emma M. Bartlett, director; 10:00e*
11:00, Courtesy, Dr. Marian T. Whiting.

KGW, Portland, Ore. (Pacific, 492), 3:30 p. m., Woman's program: Talk, Jeannette P. Cramer; 8:00,
"An Agricultural Program for Oregon," Paul V.
Maris; 10:00, Dance music, George Olsen and his

orchestra.

KHJ, Los Angeles, Calif. (Pacific, 395), 12:30-1:15 p.
m., Musical program; 6:45-7:30. The Sandman; 8:0010:00, Burkman Brothers' Hawaiian Quartet; 10:0012:00, Art Hickman's Orchestra.

KSD, St. Louis, Mo. (Central, 546), 8:00 p. m., Song
recital, Mrs. Carlos Hurd; 11:00, Dance music, Sil-

KSD, St. Louis, Mo. (Central, 546), 8:30 p. m., Song recital, Mrs. Carlos Hurd; 1:00, Dance music, Silvernan's Orchestra.

KYW, Chicago, III. (Central, 536), 1:35 a. m., Table talk, Mrs. Anna J. Peterson of Peoples Gas Co.; 2:35 p. m., Studio program; 6:50, Children's Bedtime Story; 8:58, Musical Guessing Contests, Morgan L. Eastman, director. (Send your answers to Station KYW, 1648 Edison Bullding, Chicago); 9:01, American Farm Bureau Foderation: "From Orchard to Table," Charles E. Durst; "A Little Group of Farm Folks at the Crossroads," E. P. Taylor.

WBAP, Fort Worth, Texas (Central, 476), 7:30-8:30 p. m., Concert, Junior Euterpean Club, Mrs. J. E. Cooley, director; 9:30-10:45, Concert, The Old-Time Orchestra.

WBZ, Springfield, Mass. (Eastern, 337), 7:30 p. m., Twilight tales for the Kiddies; Household Management, second lecture, Agnes H. Craig; 8:00, Concert, William Tilton, barltone; Ruby Tilton Kingsley, story for grown-ups, Orison S. Marden.

WCX, Detroit, Mich. (Eastern, 517), 1:30-12:00 midnight, Red Apple Club, William Collins; Bernice Raeburn.

WDAP, Chicago, III. (Central, 360), 1:40 p. m., Con-

Raeburn.

WDAP, Chicago, III. (Central, 360), 1:40 p. m., Concert, Drake Concert Ensemble and Blackstone String Quintet; 7:00, Drake Concert Ensemble and Blackstone String Quintet; 10:00, Frederick W. Agard, tenor; Bob Cougle, pianist; Jack Chapman's Orthon

chestra.

WDAR. Philadelph'n, Pa. (Eastern, 395), (2:00-12:54
p. m., Organ rec. 1, Stanley Theater; Dinner music,
Arcadia Cafe Concert Orchestra; 2:00-3:00, Coucert
Arcadia Cafe Orchestra; Short talks; 4:30-5:55, Song
recital; 7:30-7:45, Bedtline storles by the Dream
Daddy; 7:45-8:00, Dramatic Review by Walter Green-

wDT, New York, N. Y. (Eastern, 405), 12:00-1:00 p. m., Songs and monologues, Fred Whitehouse,

p. m., Songs and monologues, Fied Jack Stanley.

WFAA, Dallas, Texas (Central, 476), 12:00-1:00 p. m., Address, DeWitt, McMurray; 8:30-9:30, Mrs. Otis Holt, singer; William H. McRaven, planist; 11:00-12:00, Miss B. Mann, lyric soprano; Miss Johnnie Davis, pianist. WFI, Philadelphia, Pa. (Eastern, 395), 1:00 p. m.



Bernice Helm, above, pupil of Victor Saar, will give a program with Mr. Sarr at WMAQ Thursday

Dinner music, Meyer Davis Bellevue Stratford Orchestra; 3:00, Educational Talk; 6:30, Dinner music. Meyer Davis Bellevue Stratford Orchestra; 7:00, Talk by Uncle Safety; 8:00, Song recital; 9:00, Allegorical play in one act by WFI players.

WGI, Modrod Hillside, Mass. (Eastern, 360), 3:00 p. m., Amrord Women's Club: "Hospitality Talk." Martorle Drew; Descriptive Musicale; 5:20, "Twilight 7:00; Eunice L. Randall; 6:30, Late news Hashes; 7:00; Well and Control of the C

kee, tenor; Mi Peltier, baritone.

Wednesday, October 24

KDKA, E. Pittsburgh, Pa. (Eastern, 326), 6:15 p. m., Dinner concert, Pittsburgh Athletic Association Orchestra; 7:30, Literary program, Marjory Stewart; 7:45, Children's period; 8:15, Address to Boy Scouts; 8:30, Special program.

KFI, Los Angeles, Calif. (Pacific, 469), 6:45-7:30 p. m., Nick Harris Detective Stories; 10:00-11:00, Instrumental concert.

KGW, Portland, Ore. (Pacific, 492), 3:30 p. m., Children's program, Aunt Nell; 8:00, Oswald Serenaders; 9:00, Business talks, Alexander Hamilton Institute; 10:00, Dance music, George Olsen and his orchestra; Florine Stone, harpist.

KHJ, Los Angeles, Calif. (Pacific, 395), 12:30-1:15 p. m. Musical program; 2:30-3:30, Matinee musicale: 6:45-7:30, Bedtime story, "Unele John"; 8:00-10:00, "California Trio"; 10:00-12:00, midnight, Art Hickmau's Orchestra.

KSD, St. Louis, Mc. (Central, 546), 7:00 p. m., Concert, Abergh's Concert Orchestra; 11:00, Dance music, Rodemich's Orchestra.

KYW, Chicago, Ill. (Central, 536), 11:35 a. m., Table talk, Mrs. Anna JJ. Peterson of Peoples Gas Co.; 6:50 p. m., Children's Bedtime Story; 8:58, Herbie Mintz, planist; Sallie Menkes, accompanist; Mary Lee, soprano; A. W. "Sen Kaney" specialty act; 9:05, Reviews of the latest books, Llewellyn Jones. PWX, Havana, Cuba (Eastern, 400), 9:00-11:00 p. m., Concert, Sam S. Losh, director; 9:30-10:45, Concert, Texas Hotel Orchestra.

WBAP, Fort Worth, Texas (Central, 476), 7:30-8:30 p. m., Concert, Sam S. Losh, director; 9:30-10:45, Concert, Texas Hotel Orchestra.

WBZ, Springfield, Mass. (Eastern, 337), 6:00 p. m., Dinner concert, WBZ Trio; 7:00, "Waves and Wave Metions." Edward H. Goodrich; 7:30, Twilight tales for the Kiddles; "First Aid in Minor Injuries," Dr.

Joseph P. Derby; 3:00, WBZ Trio; Gertrude E. Philbrick, contralto; Cello solos, Mr. LaZazzera; 9:00, Beditime story for Grown-ups, Orison S. Marden.
WDAP, Chicago, 111. (Central, 360), 1:40 p. m., Drake Concert Ensemble and Blackstone String Quintet; 7:00, Drake Concert Ensemble and Blackstone String Quintet; 10:00, John Loring Cook, Jack Chapman's orchestra.

concert Ensemble and Blackstone String Quintet; 7:00. Drake Concert Ensemble and Blackstone String Quintet; 10:00, John Loring Cook, Jack Chapman's orchestra.

WDAR, Philadelphia, Pa. (Eastern, 395), 12:00-1:00 p. m., Organ recital, Stanley Theater; Dinner music, Aradia Cafe Crecert Orchestra 2:00-3:00, Son recital; 4:30-5:55, Piano solos, Edina Fluestone; 30-7:45. Bedtime stories, Dream Daddy, 7:45-6:00, Salesmanship talk, B. Munchweiler; 8:00, Short talks, song recital; dance music, Howard Lanin's Arcadia Cafe Dance Orchestra. Special WDAR features.

WDT, New York, N. Y. (Eastern, 405), 12:00-1:00 p. m., Clarence Williams Blue Five; Eva Taylor, singer; 7:00, Stage and Screen, Charles Reed Jones; Mary Derrell Domin, soprano; George Henninger, accompanist; Joseph C. White, singer; Horace Ruwe, tenor; George Penninger, pianist.

WFAA, Dallas, Texas (Central, 476), 12:30-1:00 p. m., Ross Mason, United States Veterans' Bureau.

WFI, Philadelphia, Pa. (Eastern, 35), 1:00 p. m., Dinner music, Meyer Davis Bellevue Stratford Orchestra; 3:00. Song recital; 6:30, Dinner music, Meyer Davis Bellevue Stratford Orchestra; 7:00, Bedtime stories by Cousin Sue.

WGI, Medford Hillside, Mass. (Eastern, 360), 12:00 m., Selections on Edison, Brunswick, Chickering-Ampice; 5:00 p. m., "Twilight Tales." Eunice L. Randall; 6:00, Late news flashes; 6:45, Girls' Hour: 'Camp Fire Girls." "Big Smoke"; 7:25, "Science Up to Date," Scientific American; 7:30, This week's Judge"; Program, Salvation Army Staff Band.

WGR, Buffalo, N. Y. (Eastern, Standard, 360), 12:30-1:00 p. m., George Albert Bouchard, organist; 4:00, Margaret Blakeslee, violinist; Martha Gomph, harpist; Tea time music, Statler Palm Room; 6:30-7:00, George Albert Bouchard, organist; 7:30, Digest of the day's news; 9:00, Concert, Direction of Ralph Dietterich.

WHAS, Louisville, Ky. (Central, 400), 4:00-5:00 p. m., Selections, Strand Theater Orchestra; "Just Among Home Folks"; Selections, Alamo Theater Organ; 7:30-9:00, The Ten Best Foster Songs, especially arranged and dedicat

Cornwall, baritone; Mrs. Albion S. Cornwall, accompanist; Reading: An Interesting Historical Episode.

WIP. Philadelphia, Pa. (Eastern, 509), 3:00 p. m. Short talks; Dance music; 6:02. Dinner dance music, Jordan-Lewis Orchestra, direction Boh Lewis, 7:00-7:30, Bedtime stories, Uncle Wip.

WIAZ, Chicago, III. (Central, 447.7), 10:00-2:00 a. m., Program, Sherwood School of Music.

WIZ, New York, N. Y. (Eastern, 455), 3:00 p. m., Gill and Poris, blind musicians; 3:30, Dorothy Bradshaw, soprano; 4:30, Toa music, Hotel Commodore Orchestra; 6:00, Peter in Shadowland story, Florence Smith Vincent; 7:30, "Hallowe'en Foods and Fancies," Anne L. Pierce; 7:45, "The Progress of the World." Review of Reviews talk; 8:00, Recital, Josef Wolfe, bartione; 10:15, Violin recital, Julius Richter; 10:30, Galophone concert, Gara Guly, Hungarian musician; 10:45, Julius Richter, Violinist; 11:90, Galophone concert, Gara Guly, Hungarian musician; Ohio (Central, 309), 4:00 p. m., Crosley Forum; Piano solos.

WMAQ, Chicago, III. (Central, 447.5), 1:00 p. m., Weekly talk, Chicago Ass'n of Commerce, luncheon; 4:30, Program, Cosmopolitan School of Music and Dramatic Art; 7:00, Georgene Faulkner, the Story Lady; 7:30-10:00, Program, Northwestern Alumni Banquet.

WOC, Davenport, Iowa (Central, 484), 12:00 m., Chimes concert; 3:30 p. m., Clyde G. kern, lecturer; 6:30, Sandman's visit; 7:00, Educational lecture for farmers; 8:00, Pipe Organ recital, Erwin Swindell, Margaret Knicl, soprano; 10:00, Artist musical program, Erwin Swindell, director; Ashten Community Band.

WOO, Philadelphia, Pa. (Eastern, 509), 11:00-11:30

Margaret Kniel, soprano; 10:00, Artist musical program, Erwin Swindell, director; Ashten Community Band.

WOO, Philadelphia, Pa. (Eastern, 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, Adelphia Hotel Orchestra; 8:30, Ralph Bingham, humorist, and song recital.

WDS, Jefferson City, Mo. (Central, 440.9), 8:00-9:30 p. m., Old Time Square Dance or "Hoe Down," by "Fiddlers," A. Bryan Williams, director; Address, faculty member of Missouri College.

WTAM, Cleveland, Ohio (Eastern, 390), 8:00 p. m., Concert program, WTAM Orchestra; Vocal numbers, popular entertainers.

WWJ, Detroit, Mich. (Eastern, 517), 9:30 a. m., "Tonight's Dinner":3:00 p. m., Detroit News Orchestra; 8:30, Vocal program, pupils of Mrs. Blanche Lyons.

Thursday, October 25

KDKA, E. Pittsburgh, Pa. (Eastern, 326), 6:15 p. m., Dinner concert, Grand Symphony Orchestra, David Broudy, director; 7:30, Farm program; 7:45, The Children's Period; 8:30, Concert, "Hlo," "Altua," "Honolulu," "Kawaikan," "Kahola," "Aloha," "Ilonolulu Hnla," "Wailand Waltz," "Kalima Love," Kamika Hawaiian Orchestra, Billy Murray, director.

Love," Kamika Hawaman C. Love," Kamika Hawaman C. KFi, Los Angeles, Calif (Pacific, 469, 6:45-7:30 p. m., Courtesy Y. M. C. A.; 10:00-11:00, Hollywood Girls Quartette. KGW, Pertland, Ore. (Pacific, 492), 3:30 p. m., Wom-

an's program; Child Training; 8:00, Dramatic program, Mrs. Doris Smith; 10:00, Dance music, George Olsen and his orchestra: Inez Chamber, violinist; Blanche Friend, accompanist.

KHJ, Los Angeles, Calif. (Pacific, 395), 8:00-10:00 p. m., Program, Redlands; 10:00-12:00, Art Hickman's Orchestra.

KYW, Chicago, III. (Central, 536), II:35 a. m., Table talkh, Mrs. Anna I. Peterson of Peoples Gas Co.; 2:35 p. m., Studio program; 6:50, Children's bedtime story; 6:58, Musical program, Chicago Musical College, Elena DeMaro, director; Herbie Mintz, pianist; Mary Lee, soprano; Sallie Menkes, accompanist; 9:21, Twenty minutes of Good Reading, Rev. C. J. Pernin.

panist: 9:21, Twenty minutes of Good Reading, Rev. C. J. Peruin.

WBAP, Fort Worth, Texas (Central, 476), 7:30-8:30
p. m., Concert, R. H. Cornelius, director; 9:30-10:45, Concert, Will Foster, organist of the First Methodist Church.

Concert, Will Foster, organist of the First Methods Church.

WBZ, Springfield, Mass. (Eastern, 337), 7:00 p. m.,
"Farmer's Night," New England Homestead; 7:30,
Twilight tales for the Kiddies; "The Use of Settling,"
Dr. J. Berg Esenwein; 8:00, Concert, Douglas Steade,
tenor; Benjamin Buxton, accompanist; 9:00, Bedtime
story for Grown-ups, Orison S. Marden.

WDAP, Chicago, Ill. (Central, 360), 1:40 p. m., Drake
Concert Ensemble and Blackstone String
Quintet; 7:00, Drake Concert Ensemble and Blackstone String
Quintet; 10:00, Hugh B. Marshall, tenor; Jack Chapman's Orchestra.

7:00, Drake Concert Ensemble and Blackstone String Quintet; 10:00, Hugh B. Marshall, tenor; Jack Cbapman's Orchestra.

WDAR, Philadelphia, Pa. (Eastern. 395), 12:00-1:00 p. m., Organ recital, Stanley Theater; Dinner music, Arcadia Cafe Concert Orchestra; 2:00-3:00, Concert, Arcadia Cafe Concert Orchestra; 4:30-5:55, Short talks and song recital; 7:30-8:00, Bedtime stories by Dream Daddy.

WDT, New York, N. Y. (Eastern, 405), 12:00-1:00 p. m., Songs, Ruby Cowan, Ella Fuller, Bernie Grossman, Willie White WFAA Dallas, Texas, (Central, 476), 12:30-1:00 p. m., "Why Checks and Balances in Government." O. O. Touchstone; 8:30-9:30, Morning Choral Club, Earle D. Behrends, director.

WFI, Philadelphia, Pa. (Eastern, 395), 1:00 p. m. Dinner music, Meyer Davis Bellevue Stratford Orchestra; 3:00, Piano solos, Loretta Kerk, bass solos, John Vandersloot; 6:30, Dinner music, Meyer Davis Bellevue Stratford Orchestra; 7:00, Bedtime stories by Cousin Sue; 8:00, Boy Scouts radio Corps; 8:30, Song recital; Dance music.

WGI, Medford Hillside, Mass. (Eastern, 360), 12:00 m., Selections on Edison, Bruswick, Chickering-Ampico; 5:00 p. m., "Twilight Tales," Eunice L. Randall; 6:00, Late news flashes; 7:00, "Bits of Wisdom," George B. Beal; Concert, Ampico in the Chickering; Radio Comedy, Amraal Concert Players, F. Chester McDan.

WGR, Buffalo, N. Y. (Eastern, Standard, 360), 12:30-

dall; 6:00. Late news flashes; 7:00. 'Bits of Wisdom,' George B. Beal; Concert, Ampico in the Chickering; Radio Comedy, Amrad Concert Players, F. Chester McDan.

WGR, Buffalo, N. Y. (Eastern, Standard, 360), 12:30-1:00 p. m., George Albert Bouchard, organist; 4:00. Margaret Blakeslee, violinist; Martha Gomph, harpist; Tea time music, Statler Palm Room; 6:30-7:00, George Albert Bouchard, organist; 7:00, Digest of the Day's news, Boy Scout Radiogram, Employment Bulletin, Story from 'The American Boy' magazine, WGY, Schenectady, N. Y. (Eastern, 380), 7:45 p. m., Program, Knights of Columbus Glee Club. WHAS, Louisville, Ky. (Central, 400), 4:00-5:00 p. m., Selections, Strand 'Theater Orchestra; 'Just Among Home Folks'; Selections, Billto Theater Organ; 7:30-9:00, Concert, Carl Zoeller's Melodists; Fonr-minute digest of International Sunday School lesson, Rev. Paul Zwilling; Four-minute Radio Forum talk.

WIP, Philadelphia, Pa. (Eastern, 509), 1:00 p. m., Organ recital, Karl Bonawitz, Germantown Theater Organ; 3:00, Song recital; 7:00-7:30, Bedtime stories, Uncle Wip; 8:00, 'Where to Go and How to Get There.' by Eugene D. Hogle, Scretary Antomobile Chib of Philadelphia; 8:15, Dance music, Ace Brigode and his ten Virginians; 9:00, Organ recital, Karl Bonawitz; 9:30, Short talk.

WIAX, Cleveland, Ohio (Eastern, 390), 8:00 p. m., Concert program, Cleveland Hotel Orchestra; Dance program, N. D. Stannard and his orchostra.

WIAZ, Chicago, Ill. (Central, 447.7), (6:00-2:00 a. m., Program, Louis Victor Saar, ptanist.

WIZ, New York, N. Y. (Eastern, 455), 3:00 p. m., Auditorium concert; 4:00, Two one act plays, Threshold Players, the "WJZ Mattinee Players'; 4:45-5:45, M. Coleman, violinist, F. Jacod, French tenor; 6:00, "Jack Rabbit Stories, David Cory; 8:15 Evening radio organ recital; 9:00, Edison Concert Orchestra.

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gorical player from hemia Opera Thu OneW Thres ers, ' inee Amra WGI; daleni Radar Flav Green ers, W Passin

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GS MARKED BY BRILLIANT FEATURES



WLW, Cincinnati, Ohio (Central, 309), 4:00 p. m., Classical piano selections, Adelaide Apfel; 10:00, Italian program; Tenor solos, Richard Pavey; Conservatory Ensemble; Richard Pavey and Howard Fuldner in duets; Faye Ferguson and Marjory Garrigus in piano duets; Radario, "Poor Maddalena," Maddalena, Janet Flynn; Pierrette, Helen McCoy; Pierrot, Charles Reume; Paolo, Willard Crain; Descriptionist, Julis L. Applegate; Part Two: Popular entertainment.

scriptionist, Julis L. Applegate; Part Two: Popular entertainment.

WMAQ. Chicago, III. (Central, 447.5), 7:00 p. m., Weekly talk, Rockwell R. Stephens, auto editor; Weekly talk to Boy Scouts; Talk on Philately, C. E. Severn; 9:00, Danco music, Hotel LaSalle Orchestra; 9:15, Program, Bush Conservatory of Music.

WOC. Davenport, Iowa (Central, 484), 12:00 m., Chimes concert; 3:30 p. m., Karl G. Stephan, lecturer; 5:45, Chimes concert; 6:30, Sandman's visit; 8:00, P. S. C. Orchestra.

WOO, Philadelphia, Pa. (Eastern, 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; 7:30, Pollce reports.

WWJ, Detroit, Mich. (Eastern, 517), 9:30 a. m., "Tonight's Dinner"; 3:00 p. m., Detroit News Orchestra; 8:30, Detroit News Orchestra; Herbert T. Rice, tenor; Julie Wolpert, pianist; Graeme Gillies, bass; 10:45, Detroit News Orchestra; Graeme Gillies, bass; John Maxwell, pianist.

Friday, October 26

KDKA, E. Pittsburgh, Pa. (Eastern, 326), 6:15 p. m., Organ recital, Lucille Hale; 7:30, Sport talk, Coach Steffen; 7:45, The Children's period; 8:15, Boy Scout program, Richard Vletor; 8:00, Concert, Christine Adams, cellist; Matthew Frey, accompanist; Lucille G. Fulton, planist; Olive Nevin, soprano.
KFI, Los Angeles, Calif. (Pacific, 469), 6:45-7:30 p. m., Lorraine Noble, soprano; 10:90-11:00, Bennett Concert Co.

Concert Co.

KGW, Portland, Ore. (Pacific, 492), 3:30 p. m., "Ideals for Today's Nutrition," Margery M. Smith; 8:15, Studio program. George Olsen and his Orchestra; "Oregon Resources"; 10:30, Hoot Owls with Paulages

fronc.

KHJ, Los Angeles, Calif. (Pacific, 395), 12:30-1:15
p. m., Musical program; 2:30-3:30, Matinee musicale; 6:45-7:00, Children's program, Bedtime story,
"Uncle John"; 7:00-7:30, Organ recital, Arthur
Blakeley; 8:90-10.00, Lecture, Walter F. McEntire;
10:00-12:00, Art Hickman's Orchestra.

10:00-12:00, Art Hickman's Orchestra.

KSD, St. Louis, Mo. (Central, 546), 8:00 p. m., Program, Choir of Central Presbyterian Church, Mrs. Katherine Cowan, soprano; Mrs. Charles H. Austin, contralto; Waldo Finke, tenor; Frank Ingalls, bass; Mrs. Frank A. Neal, accompanist.

KYW, Chicago, Ill. (Central, 536), 11:35 a. m., Table talk, Mrs. Anna J. Peterson of Peoples Gas Co.: 6:50 p. m., Children's Bedtime story; 10:00-11:30, Herbie Mintz, pianist; Mary Lee, soprano; Sallie Menkes, accompanist; A. W. "Sen" Kaney, specialty act.

Menkes, accompanist; A. W. "Sen" Kaney, specialty act.

WBAP, Fort Worth, Texas, (Contral, 476), 7:30-8:30 p. m., Concert, William Cameron & Co. Band; 9:30-10:45, Concert, Knights of Pythias Orchestra.

WBZ, Springfield, Mass. (Eastern, 337), 6:00 p. m., Dinner concert, WBZ Trio; 7:30, Twilight tales for the Kiddies; Current Book Review, R. A. MacDonald; 8:00, Concert, WBZ Trio; Melva Holmes, soprano; Mrs. Eleanor Turner LaZazzera, accompanist; 9:00, Bedtime story for Grown-ups, Orison S. Marden.

WDAP, Chicago, Ill. (Central, 360), 1:40 p. m., Drake Concert Ensemble and Blackstone String Quintet; 10:00, Program, Madame Jean Young; Rosemary Hughes, soprano; George H. Hill, Jr., baritone; Jack Chapman's,

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; 4:30-5:55, Piano recital, Edna Finestone; 7:30-7:45, Bedtime stories by Dream Daddy; 7:45-8:00, Book review by Doris Hyde; 8:00-10:00, Radio play by the Walter Greenough Players; 10:10 p. m., Dance music, Howard Lanin's Arcadia Cafe Dance Orchestra; Special, "Morning Glory Club" features; Song recital, musical comedy stars.

WDT, New York N. Y. (Eastern, 405), 12:00 m., Dr.

"Morning Glory Club" leatures; Song rectail, musical quartet.

comedy stars.

WDT, New York N. Y. (Eastern, 405), 12:00 m., Dr. WBAP, Fort Worth, Texas (Central, 476), 7:00-7:30

field, baritone; Maurice DePaepe, bass; John Naah, tenor.

WOO. Philadelphia, Pa. (Eastern, 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; 7:45, Dinner music, Hotel Adelphia Concert Orchestra; 8:30, Song recital; 9:00, Organ recital, Mary E. Vogt; 10:10, Dance music, Hotel Adelphia French Room Orchestra.

WOS, Jefferson City, Mo. (Central, 440.9), 8:00-9:30 p. m., Program, faculty and stndents of William Woods College.

WMJ, Detroit, Mich. (Eastern, 517), 9:30 a. m., "To night's Dinner"; 3:30 p. m., Detroit News Orchestra; 8:30, Detroit News Orchestra; Anne Campbell, News poet; Ben J, Karkowski, baritone; Katherine Fishel, soprano.

Saturday, October 27

KDKA, E. Pittsburgh, Pa. (Eastern, 326), 1:30 p. m., Concert, Dougherty's Orchestra; 3:00, Pitt-Tech football game; 6:15, Dinner concert, Westinghouse Band; 7:30, Concert for children, Richard Murphy, pianist, Frank Sykes, reader; 8:15, "Navy Day" program, celebrating the birthday of the late Col. Roosevelt; 8:30, Concert, Westinghouse Band; Jack Smalley, baritone; Buth Clark, mianist.

Concert, Westinghouse Band; Jack Smalley, barttone; Ruth Clark, pianist.
KFI, Los Angeles, Calif. (Pacific, 469), 6:45-7:30 p.
m., Eunice Ross, contralto; 8:00-9:00, Filipino String Orchestra; 10:00-11:00, Marta Oatman School.
KGW, Portland, Orc. (Pacific, 492), 3:30 p. m., Children's program, Aunt Nell; 10:00, Dance music, George Olsen and his orchestra.
KHJ, Los Angeles, Calif. (Pacific, 395), 12:30-1:15 p. m., Musical program; 2:30-3:30, Matinee musicale; 6:45-7:00, Bedtime story, "Uncle John"; 8:00-10:00, De Luxe program; 10:00-12:00, Art Hickman's Orchestra.

De Luxe program; 10:00-12:00, Art Hickman's Orchestra.

KSD, St. Louis, Mo. (Central, 546), 8:00 p. m., Program, Missouri Theater.

KYW, Chicago, III. (Central, 536), 11:35 a. m., Table
talk, Mrs. Anna J. Peterson of Peoples Gas Co.; 6:50
p. m., Children's bedtime story; 6:00-8:58, Herbie
Mintz, planist; Harry Giese, planist; Mary Lee, soprano; Sallie Menkes, accompanist; A. W. "Sen"
Kaney, specialty act; 9:05, "Cruder the Evening Lamp,"
Youth's Companion.

PWX, Havana, Cuba (Eastern, 400), 9:00-11:30 p. m.,
Cuban concert, Virginia O-Siel, Dora O-Siel, accompanied by Estrella Heirera, accompanist, and a string
quartet.

Marden.
WDAP, Chicago, III. (Central, 360), 1:40 p. m., Drake Concert Ensemble and Blackstone String Quintet; 7:00, Drake Concert Ensemble and Blackstone String Quintet; 10:00, Harmony Girls: Betty Holmes, soprano; Bob Brown and his ukolele; Fred Rose and his

Concert Finsemble and Blackstone String Quintet; 10:00, Harmony Girls: Betty Holmes, soprano; Bob Brown and his ukolele; Fred Rose and his songs.

WDAR, Philadelphia, Pa. (Eastern, 395), 12:00-1:00 p. m., Organ recital, Stanley Theater; Dinner music Arcadia Cafe Concert Orchestra; 2:90-3:00, Concert of popular classical selections, Arcadia Cafe Concert Orchestra; 4:30-5:35, Short talks; Song recital; 7:30-8:00, Beditine stories, Dream Daddy.

WDAR, Philadelphia, Pa. (Eastern, 395), 2:00-4:00 p. m., Program of all request mumbers, Arcadia Cafe Concert Orchestra; Feri Sarkozi, director.

WDT, New York, N. Y. (Eastern, 405), 12:00-1:00 p. m., Edith J. Craine, Tinkerman and the Winged Taxi; Mulligan's Orchestra; Songs, Victor Oliver and Eli Dawson; May Singhi Breen, banjoist.

WFAA, Dallas, Texas (Central, 476), 12:30-1:00 p. m., "November Heaveus," Prof. J. D. Boon; 8:30-9:30, Old Fiddlers from Renner; 11:00-12:00, MacDowell Sisters, Hawaiian music:

WFI, Philadelphia, Pa. (Eastern, 395), 1:00 p. m., Dinner music, Meyer Davis Bellevue Stratford Orchestra; 3:00, Song recital; 6:30, Dinner music, Meyer Davis Bellevue Stratford Orchestra; 3:00, Song recital; 6:30, Dinner music, Meyer Davis Bellevue Stratford Orchestra; 7:00, Beditine stories by Cousin Sue; 8:00, Dance music; 8:30, Short talks; Song recital; 6:30, Dance music; 8:30, Short talks; Song recital, Curnick; Musical program.

WGR, Buffalo, N. Y. (Eastern Standard, 360), 6:00 p. m., Cate news flashes; 7:30, New England Business Problems, Arthur R. Curnick; Musical program.

WGR, Buffalo, N. Y. (Eastern, Standard, 360), 6:00 p. m., Stelections, Strand Theater: "Just Among Home Folks": Selections, Rialto Theater Organ; 7:30-9:00, George Albert Bouchard, organist; 4:00, Margaret Blakeslee, violinist; Martha Gomph, harpist; Tea time music, Statler Palm Room; 6:30-7:00, George Albert Bouchard, organist Orchestra; Bob Lewis, thrector; 7:00, Bedtime stories, Incle Wip; 8:00, Short talk; 8:15, Artist recital; 9:00, Program of popular songs. Use of program of popular

music, Hotel La Salle Orchestra; Music Chicago Theater.

WOC, Davenport, Iowa (Central, 484), 12:90 a. m., Chimes concert; 3:30 p. m., C. C. Hall, lecturer; 5:45, Chimes concert; 6:30, Sandman's visit; 7:00, "Life and Character of Theodore Roosevelt," Charles Grilk; 9:00, Dance program, P. S. C. Orchestra; V. B. Rochte, baritone.

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

WTAM, Cleveland, Ohic (Eastern, 390), 9:00-11:30 p. m., Dance program.

WJ, Detroit, Mich. (Eastern, 517), 9:30 a. m., "Tonlght's Dinner"; 3:00 p. m., Detroit News Orchestra; 5:00, Football scores.

Sunday, October 28

"World Unity," Mass. Federation of Churches; Musical program, Leo Fenway and Friends.

WGY, Schenectady, N. Y. (Eastern, 380), 11:00 a. m., Church services, St. George's Episcopal Church, Rev. B. W. R. Taylor, pastor; 3:30, p. m., Concert, WGY Symphony Orchestra.

WHAS, Louisville, Ky. (Central, 400), 9:57 a. m., Organ music; 10:00, Church services, Trinity Lutheran Church, Rev. Dr. Ira R. Ladd, pastor; 4:00-5:00 p. m., Concert, auspices of Hazel McClellan.

WHK, Cleveland, Ohio, (Eastern 283), 8:00 p. m., Concert program, WHK Orchestra; Sunday evening sermon, Glenrille Presbyterian Church, Rev. A. H. Limouze, pastor.

WIAZ, Chicago, Ill. (Central, 447.7), 6:00-9:00 p. m., Third program of Artist's series, W. A. Stultz, head of Voice Department at Northwestern University; Elsie Barge, pianist.

WWI, Detroit, Mich. (Eastern, 517), 11:00 a. m., Services, St. Paul's Episcopal Cathedral; 4:00 p. m., Detroit News Orchestra.

Monday, October 29

WDAR, Philadelphia, Pa. (Eastern, 395), 12:00-12:54
p. m., Organ recital, Stanley Theater; Dinner musle,
Arcadia Cafe Concert Orchestra; 2:00-3:00, Song recital; 4:59-5:55, Piano solos; Short talks; 7:30-7:45,
Bedtime stories by the Dream Daddy; 7:45-8:00, Moving picture review by James A. Nassau; 8:00-9:00,
Dance nusic; Short talks; 49:10, Dance music, Howard Lanin and his Arcadia Cafe Orchestra.
WFI, Philadelphia, Pa. (Eastern, 395), 1:00 p. m.,
Dinner music, Meyer Davis Bellevue Stratford Concert Orchestra; 3:00, Concert, Loretta Kerk, pianist;
6:30, Dinner music, Meyer Davis Bellevue Stratford
Concert Orchestra; 7:00, Bedtime stories, by Cousin
Sue.

"Romance of Sterling Silver." Ruth Egge; 7:45.
Musical program, Liszt Chorus; Howard Abel, Jr.,
planist.
WHAS, Louisville, Ky. (Central. 400). 4:00-5:00 p. m.,
Selections, Strand Theater Orchestra; "Just Among
Hone Folks"; Selections, Alamo Theater organ.
WHAZ, Troy. N. Y. (Eastern, 380), 9:00 p. m., Rensselaer Polytechnic Institute Night.
WIP. Philadelphia. Pa. (Eastern, 509), 3:00 p. m.,
Short talk; 6:45, "Radio Baseball Dope." Monte
Cross, old-time player; 7:00-7:30, Bedtime stories,
Uncle Wip.
WLW, Cincinnati, Ohio (Central, 309), 3:00 p. m.,
Special music. Jennie Kehrt; 8:00, Part One: Program, auspices of the Editorial Staff of Methodist
Book Concern; Cincinnati String Quartet; Part Two:
Gladys Woers, soprano; Crosley Theatrical Reviews;
Roger Hill Dance Orchestra.
WOO, Philadelphia, Pa. (Esatern, 509), [1:00-1]:30
a. m., Organ recital, Mary E. Vogt; 12:00-12:55 p.
m., Luncheon music, Wanamaker Tca Room Orchestra; 4:45-5:00, Organ recital, Mary E. Vogt;
7:45, Dinner music, Hotel Adelphia Concert Orchestra;
Robert E. Golden, director; Song recital; 9:30, Orgran recital, Mary E. Vogt,
WOS, Jefferson City, Mo. (Central, 440.9), 8:00-9:30
p. m., Missouri State Prison Dance Orchestra, Hugh
C. Freuch.

Broadcast Music Is No Nuisance, Judge Finds

"Popularity Contest" Causes Phonograph to Lose to Radio

RIDGEFIELD PARK, N. J.—History peats itself in the vindication recently Radio, which was declared not to be a nuisance by Justice of the Peace Fieischmann of this city. The courts were called on years ago to establish the status of the phonograph, and also decided it was not a nuisance.

The decision of Justice Fleischmann came as a sequel to a spirited battle between a Radio set and a phonograph. Audley Walsh has a Radio set equiped with a loud speaker. He entertained the neighborhood, including scores who gathered in the vacant lot across the street, with all the best that could be

plucked from the air.
Louis Vander Pyl, living across the street, was not convincing in his assertion that the Radio was a nuisance, so he set up on his front porch in opposition a phonograph that is alleged to have played the sextette from "Lucia" for eight hours

But Walsh's Radio continued in popular favor and Pyl finally appealed to the Board of Health. Failing to get relief there he went to the Justice of the Peace and asked him to silence the Walsh Radio as a nuisance. Testimony was heard, speeches made by lawyers and everything, and the Justice decided for Radio. It is the phonograph that is silent now.

ROB PAY TELEPHONES TO SUPPLY AMATEURS

Clip Receivers But Quit When Found No Good

BOSTON.-Another brand of thief has arisen in Greater Boston through the wave of popular interest in Radio. Many telephone receivers from public pay stations of the New England Telephone and Telegraph Company have been ripped from their attachments to provide ear pieces for Radio listeners.

The thieves, however, are believed to be inexperienced persons, for, the telephone officials say, the type of receiver in use for telephone sets is practically unfit for

KHJ, Los Angeles, Calif. (Pacific, 395), 10:00 a. m., Church services, First Episcopal Church; 7:00-7:30 p. m., Organ recital, Arthur Blakeley; 8:00-10:00, De Luxe concert recital.

KYW, Chicago, Ili. (Central, 536), II:00 a. m., Central Church service, Dr. F. F. Shannon, pastor; 6:30 p. m., Readings, Goodspeed's Version of Bible, William Ziegler Nourse; 7:00, Sunday Evening Club, Orchestra Hall, Chicago; Special musical program, Choir of one hundred; Edgar Nelson, director.

WFAA, Dallas, Texas (Central, 476), 2:30-3:30 p. m., Radio Chapel Bible Class, Dr. William M. Anderson Jr., pastor; 9:30-10:00, Choristers, Oak Lawn Methodist Church; 10:00-II:00, Dizzy Four Orchestra.

WFI, Philadelphia, Pa., (Eastern, 350), 7:30 p. m., Services Arch Street Presbyterlan Church, sermon by Dr. Edward Macartney, D. D. Organ recital.

WG1, Medford Hillside, Mass. (Eastern, 360), 4:00 p. m., Twilight program: "Adventure Hour," Youth's Companion; Kenneth W. Houghton, baritone; 8:30,

RAMAS H THE

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NEW MILOPLEX CIRCUIT

(Continued from page 11)

enough feet of wire to kill its desire to talk and sing for you. So do some figuring first; drilling the panel isn't a hurry up job.

One of the nicest looking and best performing sets I ever saw or heard didn't have much more wire on it than would make two grown-up hairpins. Wireless, me eye, said the wireman, you're all wires. So do some scheming, fellows, every inch of wire saved may mean another 100 miles of DX. Ground the cores of your transformers. Certainly it helps, and I am not so sure but that grounding your metal socket shells would tickle the general circuit. Read the connection hook-up furnished with most good transformers. P-1 and S-1 don't always go to plate and grid, watch your step, give the transformer a chance, why choke it? Supposing you're now ready to go; may be you're not, but s'posin' anyhow; ten to one, she will start off with a couple of thousand squeaks and scratches that will be bad stuff; I hope she does. Mine did for so long I came near seeking a patent on the idea. And if she does, fixed condensers will save your life. Not any old make, in fact very few makes will do. It's so easy to fake something that looks like a fixed condenser, more people should be in the game, capacities as printed and capacities "as is"-well measure a few; anyway, pay more and get better, more accurate ones.

It's a sure fussy job to tell you just what capacities to use, as every make of transformer requires a separate value, but I can tell you where to place them-then. "let your conscience be your guide."

Shunt the first audio primary with a fixed condenser having a value anywhere from .002 to .006 and the primary of the second with one around .001, at times shunting the secondary of the second audio rather than the primary; suit yourself-Lot's wife did.

After having passed through the bitter, expensive experiences of "Who's Who" in audio frequency transformers, my list of real ones is mighty small. Mercy, how I would like to broadcast from Station BLAH and tell names, but I haven't got a dicense at any rate to say do this, and don't do that. Use low ratios in both the first and second stages, put a high ratio in the first stage if you want to, only remember, I told you not to.

Ratios in an audio frequency transformer are meaningless. High ratios mean absolutely nothing except that other factors entering into the essentials of transformer design back up or support the entention, and if you can keep a high transformer from distorting—well you can; but why get fussy, use ratios not exceeding four or five to one and be happy, and don't think you can kid Plexy by using a copy of a real one. Spend your money for transformers as would for a chicken dinner or should I say chicken's dinner (it's hard to write it without the "s"). Shall you use a grid biasing battery on your amplifiers? Sometimes yes! Sometimes no! The tube you are using determines this point. It's a real helper very often, while again, not so good.

Fooling around with by-passing condensers is not-oh yes, it is too, just about as much fun as listening to a minute man's speech upon "The Satura-tion Point of the Volstead Act." Sometimes he perks and again without apparent design, provocation or malice afore-

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Could you ask for more?

Write for circular giving one, two and three bulb hook-ups of this remarkable circuit. IT IS FREE. Embodies all the advantages of the well

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thought his arguments are as dead as King Tut. By-pass just right, and Plexy talks on like a babbling brook. Do it wrong, and it goes as dead as a schoolhouse on Saturday. Then begins the post mortem and the "Cut and Try" team puts on a howling farce. It's sure a wonderful life to live. I fear few of us will get out of it alive.

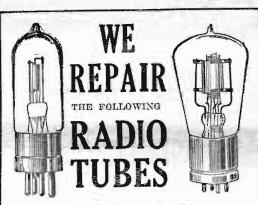
Do a good job; don't parallel grid or plate wiring and keep your wiring short. "How short?" Well, shorter than that, and never mind square corners on your wiring. The shortest distance between two points is a straight line. Quite so, quite so, but a crooked run in a Radio set, particularly if it crosses another, is mighty good practice; it helps to shunt out capacity effects.

Incidentally, a new location for the phones on the amplifier is being experimented with; may be I'll-tell you the story, because discussions by the engineers (or what I think they said) will show up next week.

Who said I lost my cook? I'm still eating, but the present title holder who promised and swore and kidded me into thinking she'd like me for her second husband, if reincarnated, just filed a protest relative and pertaining to my calling her Maggie. Hain't wimmin the fussy cats? I say she filed a protest; as soon as the swelling goes down, I'll probably see the light and use that rolling pin for an inductance form. Therefore, Maggie, an inductance form. Therefore, Maggie, the cook, appears for the last time in the "Fadeout" while the "Closeup" introduces the heroine, my good wife. Her counsel has ever been "Forget it and come to bed." Her sacrilices (that I might pay "Nite owl" lighting bills) are many and often. In my darkest hour of research she has refused to turn on the light, she, my wife, who said she would obey when I coughed up two bucks, a promise and swore. 1 owe her everything and want to be her second husband. You know it was either write the above or not another word about the King Miloplex. saved your life and hope you give me credit (none of the grocery stores will). Well, let's all slap on the two extra tubes and see who's in the air. Next week, the engineers' story, just as 'twas told to me, theories galore and good ones. Let's eat!

(TO BE CONTINUED.)

A steady hum in the headphones is not always caused by "alternating currents." It is often due to an open circuit somewhere.



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Review of Books

Experimental Wireless Station. By P. E. Edelman. Simple directions are given in this book for making Radio equipment for the transmission of messages over long distances. Price, \$3.

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

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Radio for the Amateur. By A. H. Packer and R. R. Haugh. The underlying principles of Radio thoroughly explained in simple language and understandable illustrations. This book will teach you how to construct and operate a receiving set successfully. Price, \$1.50.

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Simple Explanation of Radio for Everybody

Chapter IV, Part I-Inductances-Fixed and Variable

By M. W. Thompson

THE following article is the fifth 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 V - Condensers - Fixed and

Chapter VI-Vacuum Tubes.

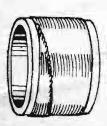
Chapter VII-Antennas and Grounds.

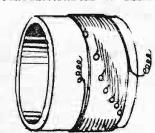
Chapter VIII-Regeneration.

Chapter IX-Audio Frequency Ampli-

Chapter X-Loud Speakers.

THEN considering inductances we must, first of all, divide them into two groups—those used in circuits in which the current alternates or oscil-





Figures 15 and 16—Bank-wound inductance, showing how turns overlap, and single-layer inductance tapped and wound on solid tube

lates at Radio frequencies, and those in which the current varies at audible frequencies. Taking up the coils used to handle Radio frequencies, we must again subdivide and consider these inductances is those used to provide inductance in a circuit and those used to transfer energy from one circuit to another.

The end toward which all manufac-turers of coils are striving is to produce a unit that will provide the greatest inductance in the smallest possible space. At first thought this sounds very simplemerely use fine wire, a small core and wind the wire compactly—but there are several factors which make this method impossible. Opposing the passage of Radio frequency currents through a coil of wire is the element known as "effective Radio frequency resistance."

Skin Effect

This element is made up of the ohmic resistance of the wire and the "distributed capacity" of the coil. Every piece of wire offers olimic resistance to the passage of a simple direct current; if alternating current passes through it, the resistance increases as the frequency is raised due to "skin effect." a term used to indicate



Figure 17—Correct or bank-wound method of making inductances

the fact that the current travels on or near the outside surface of the wire. Since at very high Radio frequencies the current utilizes only a small fraction of the total cross-sectional area of the wire and disregards the center, it is equivalent to having a wire of small diameter. Because

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only near the circumference, as great a circumference as possible should be provided to keep down resistance. To provide more surface or "skin," braided or stranded wire is frequently used and in labora-

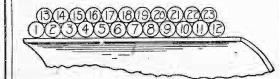


Figure 18-Incorrect method of winding inductances of more than one layer

tory apparatus a type of wire called "litzendraht" is employed. Litzendraht is made up of many fine individually insulated wires twisted into a cable. At wave lengths between 150 and 600 meters, however, the difference in efficiency between a coil wound with solid wire and one wound with "litz" is so small that the average experimenter may disregard it and use solid wire on his inductances.

Distributed Capacity

We come now to "distributed capacity," which is the second detrimental factor to be reduced to a minimum. When winding a coil it is intended that the currents travel in at one end, follow the wire around and around the coil, and out at the opposite end. Could a coil be made in which the high frequency current would do this, many problems would be solved. As stated in a previous chapter, any two



Figure 19-Bank-wound coil divided into

conductive surfaces placed close together but not touching, form a condenser. Any distributed capacity between turns is high two turns of a coil which are close to- but as there are few turns, the total ca-

have current flowing across from turn to becomes a serious factor when many turns turn all along a coil. Thus, much of the efficiency is lost, as our coil provides inductance only because of the current traveling around and around. That current which jumps across does no work and is

Since every inductance and capacity form a circuit which has a "natural period" or frequency at which it oscillates easily, our distributed capacity, in con-junction with the inductance of the coil forms such a circuit. This unintended circuit absorbs energy from the incoming ignals, wastes it and adds to the "effective frequency resistance." Miniature condensers are formed not only by the

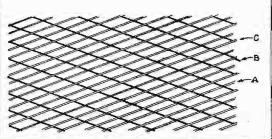


Figure 20—Honeycomb duo-lateral winding, in which A is hottom, B middle and C top layer

insulation between turns but by the material on which the coil is wound; so, to reduce resistance as much as possible, three things should be done: First, the wire used should be as large in diameter as possible, compatible with compactness; second, turns should be spaced, and turns with a large difference of pressure (potential) should not lie close to one another; third, as little solid material such as wood, bakelite, formica or other com-pound, as possible should be used to sup-port the wire.

Single-Layer Coils

The simplest form of inductance is the Such a coil is short single-layer coil. shown in Figure 15. In this coil all turns are parallel and close together and the distributed capacity between turns is high,

the Radio frequency current will travel gether constitute a condenser and, because pacity is not very great and such a coil there is a difference in voltage or electrical pressure between turns, we actually 500 meters). Distributed capacity only

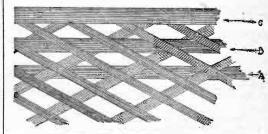


Figure 21—The Giblin-Remler winding in which A is bottom, B middle and C top layer

are necessary for the reception of signals on wave lengths over 500 meters. It will be noticed on this coil that taps are taken off every few turns. Taps are bad practice. If we are using only that amount of turns between one end and the fourth tap, there will be absorption of energy by that part of the coil between the fourth ap and the other end of the coil, due to the oscillating circuit formed by distributed capacity and inductance. Whenever possible, only those turns necessary to reception should be wound on a coil. In everyday practice, this loss of energy in unused turns is accepted as a necessary

Distributed capacity may be kept down and inductance kept high by winding a coil so that the diameter is greater than the length of the winding. The best ratio is 2.5 to 1; that is the diameter should be two and one-half times the length of the coil for maximum efficiency, but there (Continued on page 18)



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Vol. VII

Chicago, Saturday, October 27, 1923

Are We Coming to This?

Heat, Light and Power May Be Plucked from the Air AN ENIGMA that has been a scientific dream for years is the transmission of power through the medium of the ether. This means that the electric light wires and long distance high tension systems eventually will be done away with and the subscriber will be able to take his lighting current directly from the air. We may be very near that time or very far from it, but should this happen there will be a considerable saving for most of us.

Hydroelectric power may thus be developed in any art of the country and sent by Radio to any other part. The first cost of the generation of the power will be comparatively small, and with the upkeep of an expensive transmission line eliminated, electricity may be fur-

nished for almost nothing.

Some experimental trials have been made with pleasing results. Power was sent through the air for a short distance. This shows that the scheme has, at least, the earmarks of possibility.

Give Your Applause by Letter

Comments on Broadcast Programs Appreciated

THE BIG season for Radio reception is now with us and in making up programs for those who listen the directors of various stations are largely influenced by the letters they receive commenting on the artists and

their programs.

If those who listen in nightly to the various stations would only take the time to write to the manager or artist and tell their wishes and desires, it would guide and enable the manager to give them the kind of programs and the kind of artists they are eager to hear. It would also help in varying the programs. Telephone calls are appreciated, but it is the written word that is passed on to the artists who perform over the Radio that helps most. This written applause is tangible evidence to them of the Radio audience's appreciation of their

It is not easy for an artist to stand before a microphone and give the best he has to an unseen audience, knowing that when he has finished there is not forthcoming a welcome applause that he would receive from an audience visible to him. Artists who come to a station and give their services and their talent are affording pleasure to millions of people. It would seem little enough to ask of those who are enjoying this entertainment, with no cost whatever, to write and state their pleasure at what they have heard.

Drama for Broadcasting

Who Are the Greatest American Playwrights? WHAT is the greatest American drama?

What are the ideals of America, and what is

Americanism?

The great play of any age is that play which crystallizes most artistically the dominant ideas of its time. The soul of a nation is revealed in its art. A poem, a novel, a painting, a drama becomes popular because it touches sympathetic emotions. In spite of Nietsche the great test for value remains with the popular voice. Not that momentary applause of the mob-which lasts but a day, to be sure—but that perpetual approval of well balanced human intelligence is to be considered as the popular voice. Many and many a monumental work of art did not become popular overnight.

There is a form of patriotism which is more heroic than that displayed on the battlefield. It is that form which endeavors to create from the noblest sentiments of a nation's soul a living philosophy of every day existence. And when an artist is able to portray in his work characters actuated by such worthy aspirations, he has caught the spirit of his times and placed his name amongst the very rare, but nevertheless true historians. Who, then, are the great American playwrights, and what are their best works? Radio may bring the unknown to the front and into the limelight.

RADIO INDI-GEST

The Rhyme of the Rabid Radiot

(In two parts. Part Two will appear next week.) The snow was falling, flake by flake,
The hour was falling, flake by flake,
And I was trying hard to make
My crystal oscillate.

No sound disturbed the wintry air Except the ticking clock, I tore my locks in deep despair, When—Hark! I heard a knock!

Then quickly to my door I ran, I opened it, and lo!
In came an aged, aged man—His gait was stiff and slow.

"Old man," cried I, "What brings you here?" He answered slowly, "Fate!" I started, and he said "Draw near, I've something to relate.

"Long years ago I bought some wire—"
He smiled, "I'll not forget—"
Drawing his chair before my fire—
"My home-made crystal set.

"At first—it's best to take down notes—I wound my coil—now hush!
Upon a box of Quaker Oats,
But all I got was mush.

"And every night and every day I toiled at it in vain—
At last I threw my junk away, And started in again.

"This time I bought a vacuum light, Some dials, condensers three, A socket too, but still each night Was silent night to me.

"I bought a variometer And wired it to the plate, And then I was quite certain, sir, It would regenerate."

(To be concluded.)

ANN TENNA.

A-B-C Lessons for Indigest Beginners Chapter XVIII-We Always (?) Get Passes BY GOSH

IS for the shows You never go to see, But hear them all by Radio, Because the seat is free.

Our Own A. & Q. Dept.

Dear Indi: What mesh screen do you use in the Stebbins Souper Degenerative?

Answer: With the Stebbins Souper Degenerative we personally use a smoke screen.

Witty Sir: What to do when my B battery goes dead? Answer: Inform the lodge it belongs to and hold a neral.

Vena Good.

Dear Indi: How much change should I get back out of a fifty dollar bill after purchasing a two step amplifier? Answer: None after you get the loud speaker, extra tubes and batteries to go with it.

Honorable Sir: One of the ladies living in my apartment building hangs her washing on my antenna just when I want to listen in. How can I overcome this trouble? Answer: That's easy. Move into another building.

"Gone But Not Forgotten"

Loud the wailings and deep the means, For the departed one in the House of Jones. Into the corner of every room, Seemed to creep the terrible gloom. On the table the casket lay, The spirit gone, forsaken, away.

'Twas no wonder the family could but weep,
When they found their "A" was fast asleep. H. K. C.

INDI-GEST KINKS? SEND A DOLLAR-

HERE are many little Indi-Gest kinks worked out in the home that would hamper your fellow Radio-knut and cause him much worry. Indi-Gest is very much interested in securing such material and is willing to accept a dollar for each kink printed. Send a stamped envelope so rejected copy may be returned. Under no circumstances will the dollar be sent back.

back.
INDI-GEST KINKS DEPARTMENT

No Grid Leak

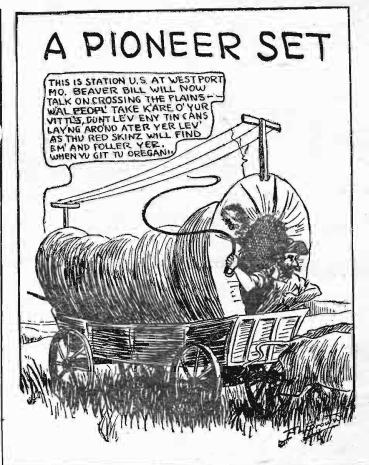
My girl keeps a Radio pinned to her pinny,
With a high wire clothes line she calls her Aunt Tinney,
A screw-driver shoved in the top of her boot,
And a brace of drill bits with the brace that they suit.

When she talks it's of aerials, flivvers and coils, Of feed-backs, inductances, static that spoils, Of shunts, microfarads, of meters and dials, Of hook-ups and circuits, and Radio trials.

By day she's too busy with solder and wires, At evening so quiet her company tires. She meets my advances with unfeigned reluctance And likes all her loving by distant inductance.

Oh! woe unto me while this Radio lasts. My heart for companionship hungers and fasts.

For once when I asked her if she'd be my bride,
She answered, "My Honey—comb coil beats the slide." STEP-DOWN BILL.



Condensed

By DIELECTRIC

Members of the A. R. R. L. decided to contest with Old Sol recently in getting from the east to the west coast of the United States, with the gratifying result of beating the sun to it. This is quite a feat when you stop to consider that the average daylight range for amateur transmitting stations is hardly more than one hundred miles. D. McR. Parsley, operator of station 4FT, at Wilmington, N. C., made an early start with the rising sun, reaching Los Angeles with his message just one hour and twenty-five minutes later. It was only necessary to relay the message twice on its trip across the continent.

The longest Radio circuit in existence is now in operation and it is said to be more efficient than many circuits covering much less distance. It is more than one-sixth the way around the world between the New York station and that in Warsaw, Poland, yet communication is had direct via Radio. To Poland this means much, as she is now freed of relying on messages relayed through other European countries; politically advantageous as well. We are in direct touch with most of the civilized world through the use of this modern medium, bringing with it a feeling of closer contact, socially and commercially.

It really begins to seem like old times when you can move the dials and bring in speeches and music from some banqueting hall where noted speakers are addressing groups of men and women. The other evening WEAF broadcast Lehigh University's alumni meeting in New York City, which included addresses by Schwab, Wickersham and others and a splendid musical program, giving it also to Radio audiences of WOO, KDKA and KYW. This feature of relaying a broadcast program is one of the very great attractions to Radiophony. It enables thousands who cannot attend, to hear what is said by prominent leaders in letters, science and industry. Think of the educational value of that.

Tests of remote control of airplanes and autos by Radio are made every little while with complete success in practically every instance. One of the latest demonstrations was made at St. Louis during the army, navy and marine flying contest, at which time an auto, built to resemble a bug, was made to move all over the field at the will of the Radio operator. The importance of this amusing exhibition is easily seen when its application to army maneuvers is considered. Without a pilot and directed solely by Radio, an army plane was made to fly over a field at Dayton, O., being brought safely to earth again when the test was over. If the same thing could be applied to small boys, we would not have to lose half a program hunting up our lost progeny.

What has been suggested in these columns as a possibility for the future appears to be drawing nearer all the time. We all know that certain stations are able to reach listeners in at some distance nightly and in a very satisfactory manner. Many smaller stations are less reliable in this respect. The first mentioned may consider that Radio audiences will wish to depend on them for entertainment, so build other powerful stations to cover adjacent territory.

Scores in the world series have been given us by several stations so that we could follow the progress of this exciting sporting event, for millions are interested who never actually attended a single one of these contests. Station KYW, in addition to giving this feature and the city baseball series, will broadcast from Stagg Field, University of Chicago, the results of each football game played there and announce the outcome of contests on other gridirons. I can always depend on a call from a friend of mine Saturday evenings to get the report of football games. One more season and he'll have a set of his own.

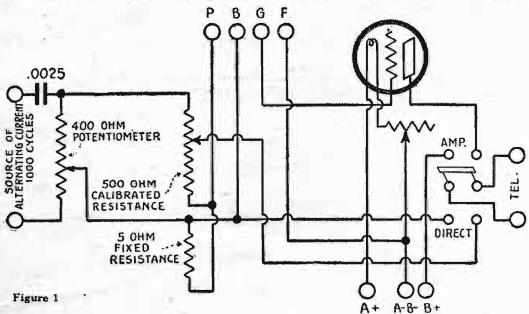
Comparing Efficiency of Various Transformers

How to Make a Test to Determine Value in Set

By H. J. Marx

that is being sold over the counter. The apparatus than the quality type. prospect of getting rich quick has lured With the inauguration of this season.

the collection of haphazard apparatus got the inefficient and poorly designed



Radio apparatus of all types and descriptions. Some were wise and employed designers that knew something of the subject; others copied the designs of established makes, while still another class just made up stuff to sell. As might be expected, the old line manufacturers in related industries that took up Radio as a side line, thought too highly of their reputation, and therefore placed the design of apparatus in the hands of competent enai-

The ultimate results showed an assortment of all types, qualities and prices in apparatus. Naturally, the carefully de-signed apparatus was higher-priced than

-Improved-

Ground Clamp

men from all fields into the making of the tendency toward discrimination has become more apparent. Not only is the consideration, but he is displaying a decided "show me" tendency. Even the high-

> the increasing demand for methods of testing and comparing of apparatus. This is especially true of any parts that the fan

> question of cost losing much of the fan's priced apparatus must undergo sharp scrutiny and test before approval is vouchsafed. The effect of all this is illustrated in

DUPONT PYRALIN

Nath. Baldwin Head Set Type C Perfect



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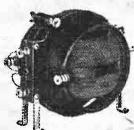
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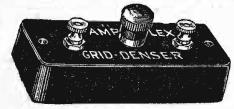
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SOME DIFFERENCE



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sults."
Dallas Times Herald: "Works like a charm."
"Radio": "We desire to congratulate you on manufacturing such an excellent product."

Greater Distance Sharper Tuning Loud and Clearer Signals

PRICE ONLY \$1.25

At your dealers—otherwise send price and Grid-Denser will be sent immediately.

Amplex Instrument Laboratories

HE rapid development of the Radio the others. The uneducated public, judgis not so likely to try to construct himself, industry has been the main factor in largely on the price basis, more often making the question of proper selection of greater importance.

Transformer Problem

Tube analysis has been demanded and described-the next step has been the transformer problem. Few fans anxious to sit down and make audio frequency transformers. The prospect of having to count the required number of turns in the primaries and secondaries. running from 10,000 to 60,000 and over, is not an attractive one, leaving alone consideration of the requirements of proper winding for minimum capacity reactions; and selection and construction of laminated steel for cores doesn't improve the situation.

For these reasons, fans buy their transformers but want to know which ones are the best. In order to try them out for comparison, they require a test that will not lead them into a series of calculations in advanced mathematics and a technical knowledge possessed only by electrical engineers. The test must be fair and give a comparative value of efficiency under operating conditions. It is not intended as a laboratory analysis, but a sufficient guide to give the fan an idea as to what results he may expect from various types.

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I can use some radio close-outs to feature in a special radio sale. Particularly interested in standard advertised lines but might consider other items if high-grade. Address,

MID-WEST RETAILER, BOX N-300, RADIO DIGEST

Reinartz Coils

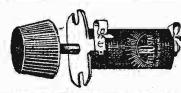
Improved coils made to cover new wave lengths. Coil with 21 taps, price \$1.00; with 16 taps 90c. Coil mounting and circuit diagram included. Mailed postpaid upon receipt of money order. Dealers write

KINLEY RADIO CO., Box 185, Detroit, Mich.

Test Circuit

An effective circuit for a test outfit for transformers is shown in Figure 1. It will be noticed that the circuit makes use of the transformer in a normal stage of audio frequency amplification. The test consists of impressing an oscillating current on the main circuit through a fixed condenser and a potentiometer. By means of a double pole, double throw switch this current is thrown into a pair of receivers direct or forced to pass through the stage of amplification first. By increasing the resistance (500 ohm calibrated) the tone through the amplifier is reduced until it matches the tone direct. Under these conditions, the voltage amplification of the

(Continued on page 20)

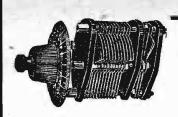


YOUR set is probably bringing in DX stations you never hear because your rheostat cannot control your filament action. The Fil-Ko-Stat gives infinite adjustment and enables you to magnify the weak stations and bring them in strong and clear.

Full resistance 30 Ohms, adjusted to ALL TUBES. "Avoid the use of in-ferior powdered carbon rheostats."

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COMPLETE

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, 23 switch points and nuts, 6 switch stops and nuts, 8 binding posts, 2 3" dials, 1 variable grid leak, 1 .002 MFD. phone condenser, 23 feet bus bar wire, 1 high-grade panel ALREADY DRILLED AS PER DIAGRAM \$10.95\$ and complete instructions.

Two-Stage Audio Frequency Amplifier—Parts complete in every detail for this Circuit—\$11.00

		CONDENSERS	
3 11 13 17 23 43	Plate Plate Plate Plate Plate Plate	Variable; value \$2.50	.05 .20 .20 .35 .35
13	Plate		.75
23	Plate		1.00
43	Plate		1.25
Ho	nevco	Coll Mountings	.98
Do	uble		1.06
Tri	ple C		2.46
Re	inartz		3.38

AUDIO FREQUENCY TRANSFORMER
—Designed for use with W. D. 11 Tubes,
list, \$4.50; price. \$2.75

BALL BEARING INDUCTANCE SWITCH—value, 75c; special......\$.25 V. T. SOCKETS-Nickeled, brass sleeve, com-

EXTRA SPECIAL—Telephone 3000 Ohms Head-sets; \$9.00 value; reduced to............. 3.50

Vernier Dial Adjuster. List, 35c; special..... .25

FLEWELLING CIRCUIT

EVERY PART COMPLETE

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 3" dial and 1 high grade panel ALREADY \$11.95

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MULTIPLE POINT INDUCTANCE SWITCH with Knob and Dial (15 Switch Points)...\$1.45 LIGHTNING ARRESTERS approved by un-

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Every article advertised above is guaranteed by the manufacturer and by us—Mail orders filled immediately—transportation PREPAID on all orders of \$5.00 or over east of the Mississippi River. Send cash, check or money order—absolutely no goods sent C.O.D.

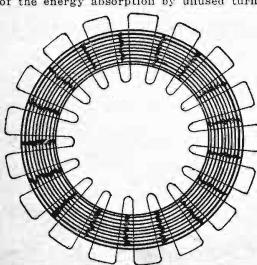


RADIO FOR EVERYBODY

(Continued from page 15) is no serious harm done if this ratio ap-

proaches 1 to 1.

Bank Winding In their efforts to reduce distributed capacity and effective resistance, manufacturers and engineers have developed some remarkable methods of winding, a few of which are shown in our illustrations. Figure 16 shows a "bank-wound" coil and Figure 17 gives a cross-sectional view to make clear how the turns are laid on. Let us say there are to be 24 turns. If our coil is wound in two layers as shown in Figure 18, it not only is longer, but the potential or pressure difference between adjacent turns is high and there is tremendous loss through distributed capacity. Between turns 1 and 24 there is the potential difference developed by 24 turns. If, however, we wind our coil as shown in Figure 17, it is shorter, and between any two adjacent turns there is only the potential difference developed by four turns, as between 5 and 9 or 20 and 24. Bank-winding is not at all difficult, is far more efficient than a long single layer or the double layer of Figure 18.
As stated before, tapping is bad because of the energy absorption by unused turns



-Spider-web coils are wound on a slotted disk; the wire is laid in the slots, cross-ing itself from one side to another

hich sknown as "dead end effect." reduce this, it has been found good practice to wind bank-wound inductances as snown in Figure 19, and throw the sections entirely in or out of the circuit by switches. Thus when the right-hand section is in use it is not connected in any way to the remaining sections and, as they are some distance away, they absorb little energy.

Honeycomb "Duo-Laterals"

Honeycomb coils are an excellent means of obtaining inductance with low loss. A close-up of a section of a "honeycomb duo-lateral" coil is shown in Figure 20. The word "honeycomb" refers, of course, to the little cells formed by the criss-crossing wires; the word "duo-lateral," however, needs some explanation. In our drawing, three layers are shown with A as the lower layer, B the middle and C the outermost layer. The turns of layers

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turns of layer A would be directly under the turns of layer C. To get them further apart, the C turns are wound to come between the turns of layer A, which innovation is known as "duo-lateral" winding. This coil is excellent because the turns of the adjacent layers A and B cross at a considerable angle, resulting in small distributed capacity; turns in the same layer as well as turns in parallel layers are well separated by the duo-

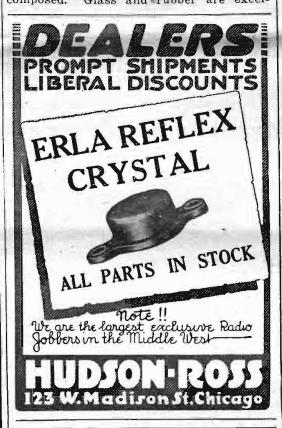
lateral winding.

The Giblin-Remler Figure 21 shows the Giblin-Remiler

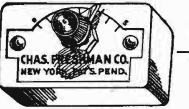
It was developed method of winding. after the honeycomb appeared in the belief that greater inductance could be obtained without materially increasing the distributed capacity. Between the honeycomb and the Giblin-Remler coils there is practically no difference in efficiency and the average of ten samples of one would probably be the same as the average of ten samples of the other.

In Figure 21, the diagonal lines represent yarn, while the horizontal lines show turns of wire. Five turns are wound as shown by A; then the parallel groups of yarn numbered 1, then the five turns B; then the groups of yarn numbered 2; then wire we call C. On top of C would be another layer of yarn, the turns running parallel to the two turns, and this alternate laying on of diagonally wound yarn and horizontal turns of wire can be continued to make a compact coil of considerable inductance with low losses. The inductance is increased by winding the wire in groups of five turns and keeping all groups parallel, and the yarn separates wire groups, keeping down the distributed capacity losses. Spider Webs

A fourth method of winding is the "spider web," as shown by Figure 22. Here, the paralleling and close proximity of turns has been kept down, but solid Solid matter, material is introduced. which separates two metal surfaces or wires between which there is condenser effect, is known as the "dielectric" and there is more or less dielectric loss depending upon the material of which it is composed. Glass and rubber are excel-



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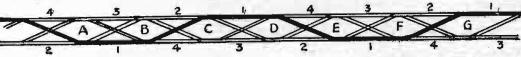
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106 Seventh Avenue

positions are also excellent insulators, but of thin material is utilized and radial slots

A and C are parallel and separated by lent insulators and have low dielectric and it, in turn, introduces distributed caturns B. In the ordinary honeycomb, the losses; bakelite, formica and other compacity, but probably not as much as would solid dielectric. An edge view of a Sickles coil ls shown in Figure 23. At points A, their dielectric losses are comparatively high. Wood is a poor insulator and its dielectric losses are high. But to get lowest layer, number 4, comes in from lowest layer, number 4, comes layer, number 4, comes layer, number back to our "spider web"; a circular form the left above spoke A, passes below both A and B, then across and above C and D, are cut from the circumference inward then across and below E and F. Turns to provide fan-shaped sectors. An uneven 3, 2 and 1, when laid on, follow this same number of sectors are provided so that practice (above two spokes, across, below after the first layer of wire is wound on two spokes), but do not all cross at the



Air is the only dielectric and the distributed Figure 23—Sickler winding looking at the edge. capacity is low

second layer will be on the opposite sides of sectors to the nearest portions of the When the third layer is first layer. placed on the form, its straight portions will be on the same sides of sectors as are the straight portions of the first, but they will be separated by a distance which is the diameter of the wire used. Such a coil has an excellent ratio between inductance and loss but seems limited to use on shorter wave lengths, as a coil of many turns would have an impractical diameter and be unwieldy.

"Sickles" Coils

Another form of winding these flat or 'pancake" coils is the Sickles method. This coil is wound on a form consisting of a hub with radiating spokes which are later removed leaving only the wire. While the losses due to solid dielectric are eliminated, an adhesive, such as collodion, must be used to bind the turns together



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the form, the wire of the second layer same places nor pass around the same will cross the wire of the first in the adjacent pairs of spokes. The result is slots, and the straight portions of this may be used only on the shorter wave lengths because of the impossibility of winding colls of large diameter with such mechanical strength as to be practical.

Summing Up There are other methods of winding (Continued on page 21)

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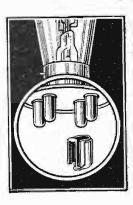
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Audio Amplification for the Flewelling Set

Two Stages of Audio Frequency Added for Volume

By E. T. Flewelling

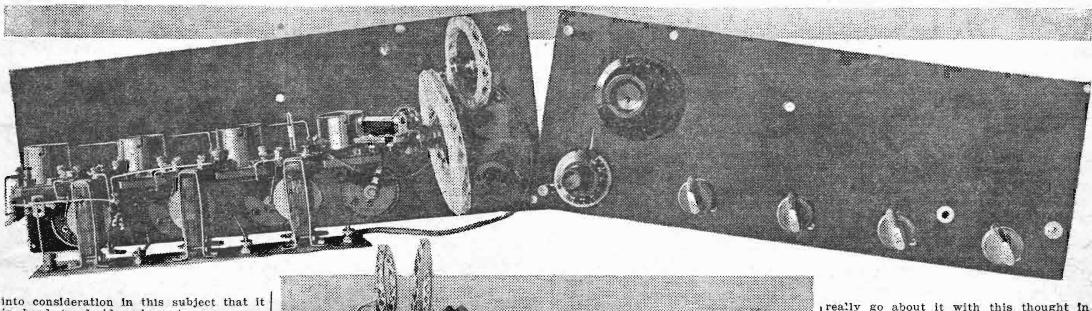
audio amplifier for the Flewelling circuit may be built, I believe that our

THILE it is the purpose of this ar- tone will immediately become very far more exactness in the building, it was can take the necessary parts and build a ticle to describe how a suitable blurred; if indeed one can hear it at all decided to construct these experimental Radio set complete with three stages of readers will find that most of the notes will be entirely applicable to audio amplification for any Radio set.

There are so many things to be taken that our conditions as this and the reception was stages were successful, then two conditions as this and the reception was stages would also be correct. We found that an amplifier could be made or ruined understand what was said by the announcer. To this set was added jacks to ment of the parts or the wiring.

through the various squeaks and howls. amplifiers in three stages, knowing that A three step set was built under just such if three stages were successful, then two We found

audio amplification and obtain very much greater volume and much cleaner-cut reception than we have often seen in two stage amplifiers, these matters are worthy of observance. It is surprising how short the leads between parts can be made if we



is hard to decide where to commence. The writer has been so impressed during very exhaustive tests with audio amplification by the effects caused by arrangefication by the effects caused by arrangement of wiring and particular parts used, that perhaps this end of the subject should be taken up first. Let us consider first the type of transformer to use. Of course, we cannot name any specific types of apparatus, so that I will be unable to be of any assistance to our readers on this point. It was quite well demonstrated during the tests spoken of above that satisfactory operation of an amplifier was not in general obtained with transformers of a high ratio, that is, transformers in the 10 to 1 or 6 to 1 class. Better results can be obtained with transformers of a ratio of 5 to 1 or less. The reason is that the high ratio transformer has so many turns of wire on its coils that its im-pedance and resistance value are such as to unfavorably affect the grid and feedback conditions. There are so many Radio sets using amplifiers that show traces of this trouble that it might be well here to show how it may be recognized.

Correct Amplification.

An amplifier operating with transformers of the high ratio type will quite often sound furry or have the "tin horn" sound that is so objectionable. Almost invariably the clear-cut sharp resonant note amplifier will be one using transformers of low ratio, or at least transformers that are wound with larger size wire than is ordinarily used on a high ratio transformer. That the above is so is easily demonstrated by adding a third step to the usual two step amplifier, when the

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control the filament, that is, we could plug in on the second step or the third step, lighting the filaments by the insertion of the jack or putting them out upon its withdrawal. The addition of these jacks demonstrated that they were not a success, because after their installation we were unable to understand anything that was said.

These notes regarding the ratio of the transformers the writer believes to be extremely important to heed in constructing an amplifier; and the above might be summed up by the simple statement that in general low ratio audio frequency transformers are preferable and recommended, while the use of filament control jacks is not advisable.

Wiring the Set

Another extremely interesting thing, and really of vital importance in the construction of an amplifier, is the matter of wiring the set. During our tests, probably fifty amplifiers were built, and because three stages of amplification demanded



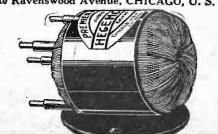
Ask your Dealer about HEGEHOG"

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

1 to 10.... Premier Electric Company 3810 Ravenswood Avenue, CHICAGO, U. S. A.



We have always been strong advocates of short leads and the elimination of all unnecessary parts and wiring in dealing with Radio sets, and we find that invariably the best operating amplifiers are those that followed along those lines. By the use of reconstructed sockets, transformers, terminals and home-made tuners, condensers, etc., the writer has been able to make amplifiers that are so free from feedback conditions that any amateur builder might follow this rule with every assurance of success.

Short Leads in Set

The foregoing, as we said, is so important that great care should be taken that the points given be considered. It does seem that, if an inexperienced amateur really go about it with this thought in mind, and I think that those who build their amplifiers as here advised will thor-(Continued on page 20)



THE PERFECT SYNTHET C CRYSTAL DETECTOR, SENSITIVE OVER ENTIRE SURFACE. No Hunting for "Spots." Loud and Clear. Endorsed by thousands of satisfied users. Sensitiveness Guaranteed. 50c Price, Mounted 50c 14 K. GOLD SPERSENSITIVE RUSCNITE CATWHISK. R. Permanent. Will 25.

RUSONITE REFLEX CRYSTAL. Manufac-Will tured Expressly for Reflex Circuits. Will Stand Up Under Heavy Plate Voltage. Guaranteed. Price, Mounted. \$1.00

Order from your dealer or direct from RUSONITE PRODUCTS CORP.
15 Park Row New York, N. Y.

Super Values-

Flewelling Circuit Complete

	_	
	List Price	Our
7 x 9 Radion Panel	1.15	\$.9
23 Plate Var Condensers	3.00	1.5
3 .006 Mica Condensers	3.00	2.0
C. R. L. Var Grid Leak	1.85	1.3
Two Coll Honeycomb mount adjust-		
able with knobs	4.00	2.5
50 Turn Honeycomb Coil	1.54	1.0
75 Turn Honeycomb Coil	1.54	1.0
One tube socket	1.00	.4
Klosner vernier rheostat with dial	1.50	1.0
One three inch Dial	1.00	.2
8 Binding Posts	.80	.4
Baseboard for Mounting	.75	.4
Complete Instructions for Assembly and Wiring	.50	.5
Regular Price	21.63	
	-	

OUR PRICE \$1320

Reinartz Circuit Complete

1	Remartz Circuit Cor	npie	te
		List Price	Our Price
	Genuine Reinartz Coil endorsed by	11106	11106
- 1	John L. Reinartz and bearing his		
	signature. The only genuine coil		
	for this circuit on the market. All		
	others are imitations	2.50	\$ 2.00
П	One 7x10x Radion Panel	1.25	1.00
- 1	National Bakelite Socket	1.00	.40
1	Klosner Vernier Rheostat with dial.	1.50	1.00
Т	Two 23 Plate veriable condensers	1.30	1.00
т	at \$3.60 each	6.00	3.00
п	Switch Points and Nuts		
Т	Six Switch Stop Points and Nuts.	.80	.40
1	Examination Points and Nuts.	.40	.20
1	Freshman Grid Leak and Condenser	1.00	.65
т	Seven Binding Posts	.70	.35
1	25 ft. Tinned Bus Bar	.50	.30
	3 Switch Levers with knobs	.75	.35
п	One Baseboard for mounting	.75	.40
1	One Fixed Phone Condenser	.40	.25
	One Single Jack	1.60	.25
н	Blue Prints with complete instruc-		
Т	tions for assembly and mounting.	.50	.50
1	Damilan Deia	10 00	
	Regular Price\$	19.05	

OUR PRICE \$1

All the necessary screws, nuts and miscellaneous small parts which are necessary to complete the set are included in the above prices. Any part in either of these circuits may be purchased independently at the advertised cut prices.

LOUD SPEAKERS

60.00 Western	Electric X Type	10-A\$ 10-D\$ R-3	44.00	25.00 25.00 22.50	Atlas Trinity Belcant	Master Amplitone / Type A-1 to	19.50 19.50
			_				

						. 20.00
List		Our Price	List Price	CC	NDENSERS	Our Price
86.00	BRANDES	\$5.25	\$1.80 3	PLATE	VERNIER	\$.90
7.00	FEDERAL	5.50	5.50 43	PLATE	VERNIER	2.50
List	TUBES	Our	3.00 23	PLATE	PLAIN	1.50
Price		Dining	2.80 43	PLATE	PLAIN	1.90
55.00	RADIOTRON U. V. 200	\$3.95				
6.50	CUNNINGHAM C. 300	5.75	AU	JDIO	TRANSFORME	RS
6.50	CUNNINGHAM C. 301-A	5.75	List			Our

6.50 CUNNINGHAM C. 301-A. 6.50 RADIOTRON W. D. 11 6.50 CUNNINGHAM C. 11 6.50 CUNNINGHAM C. 12 6.50 CUNNINGHAM C. 12 6.50 RADIOTRON U. V. 199 6.50 CUNNINGHAM C. 299 Price Price Price \$4.50 ALL AMERICAN, 3 to 1 Ratio. \$3.95 4.75 ALL AMERICAN, 5 to 1 Ratio. 4.10 4.75 ALL AMERICAN, 10 to 1 Ratio. 4.10 7.00 AMERTRAN 5.55 7.00 FEDERAL No. 65 5.55

ALL Mail Orders Shipped Promptly.

Send Money Order, including Postage

Write for Our Catalogue

HANES-ZENER CO., 3 West 29th Street, New York City The RADIO MAIL ORDER HOUSE-Known for Low Prices

TESTING TRANSFORMERS

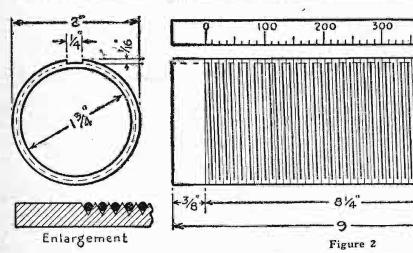
(Continued from page 17. transformer and tube becomes approximately a factor of the ratio of the 5-ohm resistance to the total amplifier resistance, which includes the 5-ohm fixed. For example, if the calibrated resistance, when

the tone is balanced, reads 295 ohms, the voltage amplification is $295 + 5 \div 5 = 60$. The purpose of the potentiometer is to

If chromel "C" 29 gauge resistance wire is used at 5 ohms per foot, 500 feet will be required. Don't use this wire for any other connections, however. In connecting from the end of the winding to any binding post copper wire should be used.

A slide and bar is then added. The slot in the tube permits contact with the resistance wire, which lies under the outside surface of the tube.

This calibrated resistance will come in



control the initial volume when connected | very handy for other uses, which will be directly to the phones. This direct tone must not be too loud, or adjustment is In comparing two transformers, the tubes must be taken in consideration as they will vary with different tubes.

The Source of Current
The oscillating current can be a buzzer circuit or where more critical tests are desired the frequency should be controlled and determined in order to make tests for values at various frequencies and thus determine whether the amplification factor remains constant. A variation for different frequencies indicates distortion will result in reception.

Parts Required

The parts required are all standard, with the exception of the calibrated 500ohm variable resistance. The 5-ohm fixed resistance can be made by winding 1 foot of Number 29 gauge Chromel "C" resistance wire on a small spool, taking care that adjacent turns do not touch. This wire has a resistance of 5 ohms per foot. The Calibrated Resistance

The calibrated resistance can be constructed by any fan. A suggested plan is indicated in Figure 2. A hard rubber tube (bakelite or fiber may also be used), 2 inches in outside diameter, %-inch wall, and 9 inches long. It is threaded in a lathe (24 threads to the inch) to within % inch

The wire is wound in the threads. The diameter at which the wire is wound will be about 11% inches. Each turn has a resistance of 2525 chms. Then 127 turns sistance of 2.536 ohms. Then 197 turns are required. Whether the turns required measure 81/4 inches in length, as shown, is not important, but the calibration guide should be made on the basis of the actual length of the winding from start to finish.

Cockaday Coil Set \$2.50

Including full size blue prints of panel layout, omplete picture hookup, and fully illustrated intructions for construction and operation.

Coils are fully assembled, made exactly as specified by Mr. Cockaday, D coil bank wound. Far more efficient than any home made coils.

Standard parts for this sensational circuit—panel, coils, condensers, verniers, variable resistance, vernier rheostat, socket, double jack, dials, switch, contact points, posts, busbar wire, sphagetti, etc. (no tubes or phones)

Complete for \$11.65 Postage additional on all shipments send No Money. PAY THE POSTMAN All Goods Shipped Parcel Post C. O. D.

RADIO SURPLUS STORES HELENA, MONTANA

discussed later

Radio Boosts Wire Industry Radiophans have opened a lucrative field for wire manufacturers. One firm turns out 7,500,000 feet of stranded wire for aerials a month. Seven strands of hard drawn copper, supplied from as many spools and one strand of cotton from another are fed into the automatic strander machine. A cotton string center often is used as a base for the winding to make the wire rounder, so that it presents more surface for picking up the Radio waves, and stands greater stress.

This wire came on the market quite some time after the solid copper wire, owing to the fact that the government absorbed about all that was manufactured. Airplanes during the war used stranded wire about 500 to 600 feet long trailing behind for an aerial. At each landing a new wire was usually secured before the next flight as it usually became tangled in the air or in landing. More than 20,000,000 feet or 200,000 one-hundred foot aerials were thus utilized during the war. Stranded wire was utilized because of its greater efficiency and flexibility.



mended by the inventor including the now

Famous SPLIT VARIOMETER

DEALERS ONLY Write for Dope

We are the largest exclusive radio jobbers in the middle west.



AUDIO AMPLIFICATION

(Continued from page 19)

oughly agree with me that the idea is a correct one.

We have taken photographs of a three stage set that has been taken apart, built and re-built so many times that it is indeed a veteran, but it is believed that these photographs, shown with this article, will be of value to the fans, as they show what can be done with ordinary apparatus and a few tools. It might also be of interest to state that this set can be entirely taken down and reassembled in a little over half an hour; that its volume is attested to by the fact that with a Chicago station thirty miles away on an ordinary loud speaker, we are able to understand every word spoken 200 yards away.

By referring to the photograph, you will notice that the grid plate leads of the tube sockets to the transformers are simply short pieces of strap brass that have been drilled to take the binding posts, and if it were possible, we would have mounted the socket directly on the transformer posts and done away with any kind of a lead. We were unable to secure transformers that had a long enough binding post for this, however.

We have in the set filament control jacks so that by using them or cutting them out, we could note the effect upon the set. It is sufficient to say that their use makes the set practically worthless, whereas with them cut out, the set operates as stated above.

THE UNITROL (Control) Broadcast Receiver

A Real One Tube Set. Made of best material throughout. In a Real Cabinet, with hinged top. High grade mahogany finish, hand rubbed. At a Real price. Will ship C. O. D.

Postage paid east of Rocky Mountains \$11.90

Set is Fully Guaranteed. Wonderful Distance Reported by Enthusiastic Users. Dealers: Write for our proposition, Some territories still open for bona fide Radio Dealers.

To the Experimenter and the Man Who Builds His Own: Write for Our Bulletin of Parts at Bargain Prices. Standard Merchandise Only.

Abalene Radio

105 Auduben Ave. New York, N. Y.

Checking Summer Static

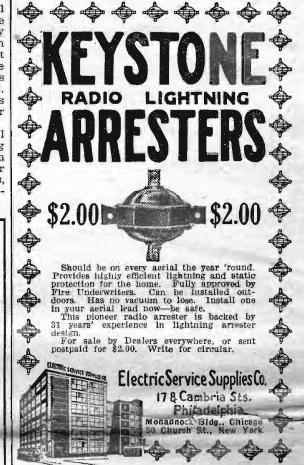
The following are a few things which may be done to reduce the effect of static on a receiving set:

Use a low, short single wire antenna. Employ an indoor aerial which in most

cases brings in the local stations clearly and distinctly. Use a crystal detector instead of a vacuum tube. This is particularly recommended where one or two stages of Radio

Covered wire is considered better than bare wire for an aerial, for the reason that the latter is subject to corrosion and in that state offers a certain amount of resistance to Radio frequency currents.

frequency amplification precede the de-



The "A" Battery's Power in Your Radio Receiving Set

THIS IS NUMBER TWO OF A SERIES

THE sole purpose of the "A" Battery in your Radio Receiving Set is to furnish current to heat the filaments of the

And this can be done satisfactorily only by an "A" Battery that supplies an adequate steady current.

Anticipating the popularity of the dry cell tube in Radio, and realizing that it required a Dry Cell capable of standing up under service conditions differing from what dry cells are called upon to meet in other fields, the National Carbon Company developed the Eveready Radio Dry Cell specifically for this new use.

A dry cell gives its maximum service only when designed especially for the work it is intended to perform. There are for dry cells several uses which are so alike that one type of cell serves for all. This is the field covered by the ignition or general purpose dry cell.

The conditions encountered in Radio are different from the conditions grouped together under the term "general purpose." And while the general purpose dry cell performs well as an "A" Battery, it was found possible to produce a Dry Cell "A" Battery capable of delivering more service

Thirty years of dry cell experience and an immense research organization resulted in the superior Eveready Radio Dry Cell. One of the outstanding features of this special cell is that while it will last much longer when used as an "A" Battery, it is no larger than the standard dry cell.

The increased service life of the Eveready Dry Cell "A" Battery greatly offsets the slight increase in cost; so this battery is not only the best, but it is the most economical you can buy. "The Story of Eveready Dry Cell Radio 'A' Batteries," which tells how to use Dry Cells to the greatest advantage with the various dry cell tubes now available, will be sent to you free on request.

The "A" Battery gives power to your Radio Receiving Set. Eveready Batteries—especially made for Radio—serve better, last longer, give better results.

Note: This is number 2 of a series of informative advertisements which will appear in this magazine. They are designed to help users get the most out of their Batteries and their Radio Sets. If you have any battery problem, write to G. C. Furness, Manager Radio Division, National Carbon Company, Inc., Thompson Avenue and Orton Street, Long Island City, N. Y.



POWER

for Your Radio Set

Eveready Dry Cell Radio "A" Battery (No. 7111)

Directions and wiring diagrams on the jacket tell just how to use this battery with the different dry cell tubes.

This special Radio Cell is also available in two and four cell multiple batteries for receiving sets employing from two to four WD-11 or WD-12 tubes.

Other Radio Batteries

Eveready Storage "A" Batteries — best suited for filament heating of all Radio Tubes not especially designed for dry cells. The quality storage battery with the long life plates, \$15 to \$20.

Eveready "B" Batteries - the life of your

Eveready"Three"Battery-3 cells, 3 purposes.

Manufactured and guaranteed by NATIONAL CARBON COMPANY, Inc.



Simple Hook-Up Brings in Distance

Tuned Regeneration Is Made by the Variometer

After experimenting with the different hook-ups for some time I have selected the one shown in the illustration to give the best results. I have tested it thoroughly and found it to be a winner. Sum-

WORKSHOP KINKS? EARN A DOLLAR-

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

Radio Digest, 123 W. Madison St., Chicago

mertime reception of the DX stations WSB, WHAS, WSAI, WCAE, KDKA, WLW, WGY, WBAP and WFAA, show its ability along that line. It combines great selectivity with ease of control, extraordinary signal strength, and low cost due to small number of parts required.

The hook-up may need some explanation, but a little study will show it to be much simpler than it appears at first glance. L-1 is a 60-turn tapped inductance, wound on a tube of such diameter that the rotor of the variometer will turn into it. The coll is tapned every 5 turns starting with trame, but otherwise its construction is of no importance providing it is of reliable make. L-1 is fastened close to the side of the variometer so the rotor will act as a tickler feedback. This arrangement provides double regeneration, tuned regeneration being accomplished by the variometer with its rotor also functioning as a feedback to L-1. The variable condenser should not be much larger than in 11 plate and should be vernier equipped; in fact, it would be best to have all the controls so equipped. The value of the constants is not important and those shown are optional.—Newell N. Jones, Griswold, Iowa.

Stranded Aerials

As we all know, stranded wire cables are more efficient than the solid copper wire aerials.

The wind blowing a stranded wire cable causes the strands to grit together and short-circuit themselves upon one another constantly changing the resistance and also capacity of the wire.

If the fan will take the trouble, upon

installing a stranded wire aerial, to solder It every 2 feet (a good big drop of solder firmly binding each strand together) his difficulties when tuning a station will be overcome. Stations will not squeal and howl on a critical adjustment so easily, or die down until they are hardly audible.

My aerial is 100 feet of stranded wire stretched between two trees, and I find this method of soldering every 2 feet increases its efficiency on critically adjusted stations 1,000 percent.—A. L. Krauth, Quincy, Ill.

PATENT ATTORNEYS

PATENTS. Booklet free. Highest references. Best results. WATSON E. COLEMAN, Patent Lawyer, 624 F Street, Washington, D. C.

TWO SUPERSENSITIVE CIRCUITS

TWO SUPERSENSITIVE CIRCUITS

(Both Copyrighted)

My Highly Improved Relnartz 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 sats from my blueprints and specifications, price 50c, or with a perfect and complete double wound spiderweb coil, \$8.00 by mail. No other windings used. Paoto 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 imitated the most. Thousands are in use.

My W. D. II 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.

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.

AUXILIARY TUNER

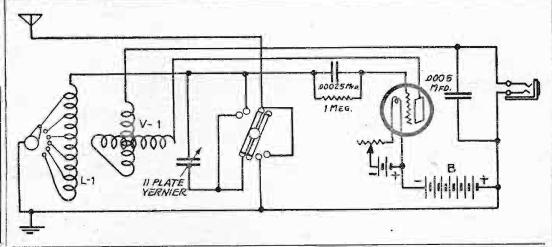
This new instrument connected to your present receiving set with one wire enables you to easily bring in both the long and short wave stations which you cannot get with your present equipment. It also enables you to eliminate that local interference so you may listen to distant stations.

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

These instruments are easy to build, easy to operate. Everything clearly shown.

S. A. TWITCHELL 1925 Western Avenue, Minneapolis, Minn.

SELECTIVITY WITH EASE OF CONTROL



RADIO FOR EVERYBODY

(Continued from page 18)

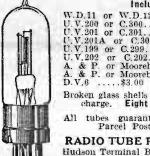
coils; in fact, a new one seems at this time to be brought out weekly, but the five discussed are distinctive and each is a departure from other previously used methods. Summing up this discussion, then, we are trying to keep inductance high and effective Radio frequency losses low; we try to make coils whose diameter is greater than the length; we keep turns with large differences of potential as far away from each other as possible; we space turns and separate layers; we avoid parallelism.

For the wave lengths used by amateurs and broadcasting stations then, we have five types of coils, four of which are probably of equal efficiency and one of which, the single-layer coil, is easy to wind but of slightly lower efficiency. For the higher wave lengths such as are used by ships, commercial and government stations, there are the three types—bank-wound, Giblin-Remler and duo-lateral hon-eyecomb. For short waves, one uses either honeycomb or Giblin-Remler coils of 25, 35, 50 or 75 turns; for medium wave lengths there are coils of 100, 150, 200, 250, 300, 400 and 500 turns; for wave lengths from 12,000 meters to 21,000 meters there are coils of 750, 1,000, 1,250 and 1,500 turns.

In the second half of this chapter on inductances we will see how coils are combined to form units known as variocouplers, variometers, transformers, etc., and will consider there, also, coils used to handle currents varying in strength at audible frequencies.

(TO BE CONTINUED.)

WE REPAIR All Standard RADIO TUBES Including



V. D.11 or W. D.12 \$3.50 U. V. 200 or C.360 ... 2.50 U. V. 201 or C.301 ... 3.00 U. V. 201A or C.301A ... 3.50 U. V. 202 or C. 209 ... 3.50 U. V. 202 or C. 202 ... 3.50 A. & P. or Moorehead Det. 2.75 A. & P. or Moorehead Amp. 3.60 D. V. 6 ... \$3.00 D. V. 6 A. 3.75 Broken glass shells replaced—No extra charge. Eight Hour Service. All tubes guaranteed and returned Parcel Post, C. O. D.

RADIO TUBE REPAIRING CO. Hudson Terminal Bldg., 30 Church St. Room 327-E, New York City, N. Y.

Latest Radio Sensation

Has Become Indispensable PRIMARY SECONDA SECONDARY AND CONDENSER



VERNI-TUNER

(Trade Mark)

Saves Space - Labor - Money HANDSOME APPEARANCE FINEST WORKMANSHIP MORE SELECTIVE— THAN ANY OTHER COUPLER

For all regenerative circuits, for Horne Combined Tuned Radio Frequency and Reflex, also Reinartz, Flewelling, Cockaday, etc.

FREE BOOKLET of 14 Latest Circuits with each Verni-Tuner

At your dealer or postpaid on receipt of purchase price. Write for leaflet.

HORNE ELECTRIC & MFG. CO.
Mercer & Colgate Sts. Jersey City, N. J.

Tubes and Their Care Amplifier tubes become "soft" with use. This means that they lose their original vacuum, and become less effective as amplifiers. Detectors that are already soft absorb air and lose their natural sensitiveness. But these changes come about gradually. The four contact prongs on the base of the tubes should be brushed occasionally with fine sandpaper. same effect can be produced by twisting the sockets while they are in position. This movement sweeps the prongs back and forth on the spring clips and wears away any corrosive film present.



ON APPROVAL FOR 30 C ZOBEL-STEIN LABORATORIES 322 9TH ST. BROOKLYN, N.Y. South 2650

Ratio of Transformers Used in Amplification

When employing two stages of audio-frequency amplification it is advisable in the first stage to use an amplifying transformer having a high ratio of secondary to primary turns, such as 9 to 1. For the second stage, however, a lower ratio is best suited for satisfactory reception; in this instance the ratio of secondary to primary should be about 4 to 1. The adjustment of a third stage of amplification is so critical that it is not recommended for general use.—Peter J. M. Clute, Schenectady, N. Y.

Coating for Coils

After wire is wound in spider web form, or on tuners, in cylinder shape, a good coating of collodion applied on the wire by painting or dipping will protect the insulation from absorbing moisture, which would cause leakage. Spider web coils should not be dipped in paraffin or painted with shellac, because such covering decreases the efficiency of the set.

MARVEL

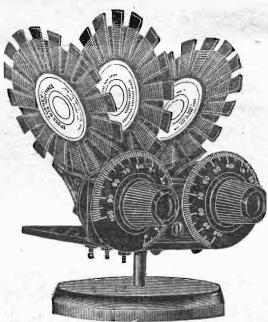
AT THE MERCHANDISE AT THE PRICES QUOTED

AT THE GUARANTEE \$18.00 WESTINGHOUSE RECTIGON CHARGER STORAGE BATTERIES. Guaranteed for 2 Years \$17.00 6 V. 60 AMP. \$21.00 6 V. 80 AMP. ADVANCE B BATTERIES

\$1.75 22½ V. SMALL \$3.00 22½ V. LARGE \$4.25 45 V. SMALL \$5.50 45 V. LARGE AERIAL WIRE, 7 Strand
TINNED COPPER, 100 FT. COILS.
\$6.00 BRANDES SUPERIOR PHONES.
\$5.00 CAMCO GRAND PHONES.
NERCO PHONES
\$3.00 SOLDERING IRON. GUARANTEEU.
\$30.00 MUSIC MASTER LOUD SPEAKER,
GENUINE
FREE with every purchase of \$10.00 and over, a small 22½ voit 3 Battery.
Verschooling descriptory.

Merchandise absolutely guarantees by manufacturers. Remittance must include postage, Send for free monthly price list,

MARVEL RADIO SPECIALTY CO. 132 Nassau Street, Dept. R. D., NEW YORK



TRADE MARK REGISTERED

Announcement

TURNEY'S FAMOUS Spider Web Plex Tuner

now available for mounting in the cabinet with two Dial Vernier control on the panel.

Three genuine Turney Spider Web Coils with

their wonderful tuning value in absolutely practical shape

ELIMINATES VARIOCOUPLER AND VARIOMETER CLOSEST APPROACH TO ZERO TUNING EXTREME SELECTIVITY COVERS ALL BROADCASTING WAVE LENGTHS

Spider Web Coils have the approval of EVÊRY RADIO ENGINEER, Û. S. Bureau of Lighthouses, Millions of Radio Fans, Every Magazine Published.

Stand 25c extra

Packed with 4 Hookups-3 for Tube and 1 for Crystal Sets

TRISTAN SALES CORPORATION

DEPARTMENT E Sole National Distributors

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NEW YORK

O. P. Smith Co., 205 W. Harrison St., Chicago, Ill. C. L. S. Holmes Co., 601 Boston Block, Minneapolis, Minn.

Questions and Answers

Feature Circuits

(4913) OAG, Mechanicsville, N. Y.

I think you will admire my frank statement that lately I find nothing in your paper. What is the matter?

I have taken practically every single issue of your paper since you started publishing, and have liked it very much, and have preserved these copies for future vanced and experienced are classed as 'passé.''

However that may be, Radio Digest in the intent to be truly helpful and worthy of the confidence of its readers has no dis-

position to impose upon them untried and unproven "new circuits." It is, in gen-

The Questions and Answers department is purely a service department and the publishers would like to have your assistance in helping to keep it up to the highest standard; therefore when asking questions please make out your queries on a separate piece of paper and write on one side only. Do not mix your questions with other material; write that on a separate piece of paper. Each one must go to a different department. Then, too, we have so many who fail to put their name and address on each sheet. Please remember this when you write your letters, and also to enclose a stamped self-addressed envelope. Unsigned letters are not answered. The Radio Digest does not consider it good business ethics to furnish hook-up diagrams of any standard manufactured receiving sets.

reference, but since you finished up with Flewelling, you haven't anything of any value in the hook-up line. How come?

I take every Radio weekly, and monthly publication on the market, and until lately have enjoyed yours as well as any, but not lately, so spruce up. I prefer now to any.

I take -, and can get more value out of their paper than out of yours, and that should not be.

Why don't you give us a write up complete, constants and all of the Grebe CR-12, the Sleeper Monotrol, the Melco Supreme with the Telos Variotransformers, and such stuff of some value. The reginerative 1, 2 and 3 circuits are passé now that we are developing into 6 and 8 tube sets, and would appreciate some good tuned Radic frequency hook-ups.

Grimes inverse duplex is interesting, too, in preference to the ordinary reflex, but what we are all most interested in is the Grebe CR-12 as disulged by the I happened to miss a couple of the series and am out of luck and shall depend on By p Digest to do son hing for us in respect. Push-pull a. lifiers with - matched split transformers is good stuff, too; let's hear something on these developments.

A .- That you find "nothing" in our pubdication is a broad statement. We do admire your frank assertion of what you may consider to be a truth. We like constructive criticism. However, we are certain that your expression is individual and not in accord with the general testimony from our readers.

In your demand for the more complicated circuits you must not forget that Radio Digest has not ceased to cater to a constantly increasing number of readers

YOU CAN'T BUY THEM

YOUR BELLEVIS

eral, our purpose not to make public through our service any circuit which will not bear favorable comparison with the standard American receiver. When a new circuit can take the same number of tubes and show equal results, we consider that it is then time to proceed to investigate it further. Miracles do not happen overnight. And the science of Radio reception is not revolutionized in a day. The miracle, after all is said and done, is the patience of any service which is willing to bear upon its surface the nonsense of believing so.

Too much is being published at the present time for the sole purpose of advancing particular manufacturing interests. This s not our policy; we strive to be impar-

Further, in the matter of detail descrip-

HAVE YOU SEARCHED FOR

Aeriola Sr. Style Tuner Unit, 150-600 Meters
Hi-Power Transformer with Split Tapped Winding
Neutralizing and Tuned R. F. Cir. Transformers
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ufacturing houses in America. JUST OUT The new 1924 The new 1924

Model F

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receivers on the market at the price. Why not act right now andget a pair? It'll mean getting the maximum from broadcast-

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ed-Head

Complete

This is the standard 3,000 ohm "Red-Head." The 1924 Model F has eleven improved features. Sensitive and fine-toned; alu-

'Red-Head"Jr. Complete The Junior Model has

most of the quality features of the standard Model F here described. The resistance is 2,000 minum case; famous brown-redear caps; military headband; highohms per set instead of value.

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who find great interest and service in tion of trade sets and apparatus it is not is a decided drop in the effectiveness of those circuits which to the more ad- our policy to elaborate. We do not con- the set. Would not recommend it. sider such within the spirit of our serv-It does not to Radio Digest seem ethical in view of the heavy advertising campaign entailed in placing an article on the market that it should encroach upon the legitimate rights of the manufacturer.

There is not the least animus in us in this matter and we are after all confident that we do continue to merit your interest.

Reinartz Coils

(4743) CHM, Jackson, Mich.

Will you be so kind as to answer the following questions-would there be any advantage in winding the primary and grid circuit of a Reinartz coil on a separate spider web coil from the plate circuit and arrange them so that the coupling could be loosened or closed (as they do with honeycomb coils)? Would it be any advantage to wind all three circuits on separate coils?

Can the Hazeltine Neutrodyne Radio frequency be applied to the Reinartz cir-

A .- While greater selectivity may be obtained in the method you suggest there

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Name Address.

The Hazeltine Neutrodyne principle may be applied to any circuit but it is of doubtful advantage to the Reinartz.

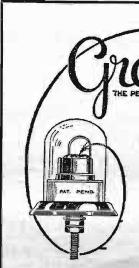
Loud Speakers

(4798) TJ, Estewau, Sask., Canada.

I am putting on a stage of audio frequency and would like a little informa-

Can I operate a loud speaker 4,000 ohms resistance on a one stage circuit, or will a 1,500 ohms be enough to operate my set satisfactorily?

A .- Answering your inquiry we are advising that a loud speaker of either 4,000 or 1,500 ohms will operate on a one stage circuit, although the latter will afford the greater volume. It is, however, found necessary usually to use two stages for best results.



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Radio Editor N. Y. Tribune

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—W. D. 12 or Erla Audio or
Radio Transformers
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Rheostats
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