NEW AERIAL FOUND TO BE HUMAN BODY

REMARKABLE DISCOVERY ACCIDENTALLY MADE

While Aerial Is Disconnected Captain Receives Concert Music Through Own Body

CINCINNATI.—Radiophone operators have utilized a hundred different things for aerials to be used with their receiving sets, bills of raised umbrellas, tin roofs, the springs of a bed, the rain spouts at the side of a house, and many other devices, all to have answered the purpose satisfactorily. But now the discovery has been made that the human body is an antenna.

Credit for this discovery goes to Captain Donald H. Muse, of the Air Service Reserve. Captain Muse was not making a radio demonstration at the time but simply was entertaining a number of officers with a receiving set he has installed in his quarters.

A concert was being broadcasted over WLW operated by the Crosby Manufacturing Company of Cincinnati. Operators of Radiophones and Captain Muse had tuned in the station. (Continued on page 2)

Radio Is Now Used For Treating Sick

Persons Ill Aboard Ship Can Keep in Touch with Doctors by Phone

LONDON.—American millionaires who are or who fancy themselves ill can now keep in practically constant touch with their pet specialists at home while crossing the Atlantic and can receive "phone treatment." This can be done with the Radiophone. It was inserted, for example, that on the last eastern bound trip of the Baltic line a sick lady was able to talk to the Capo Cod station when she was almost alongside the Liverpool docks. The Marconi company promises in the future a practically 24 hours a day shore to shore service for the whole transatlantic trip.

DYING MAN ListENS TO MUSIC BY RADIO

NEW YORK.—Bigeorge K. Martin, a wounded veteran, stood beside his radiophone with headpiece in position listening to the music. He turned on the gas and inhaled it until dead. Notes written in pencil while he listened are stated that he was a failure for thirty-eight years and did not want to be a burden to anyone. He telephoned to the Radiophone no known.

TOURISTS IN BERMUDA SAVED WAIT BY RADIO

Passengers Are Picked Up on Receipt of Message

NEW YORK.—Radio spared many lives to the Bermudians a three or four day wait for a steamer, when officers of the Royal Mail lines represented the Lusitania and asked to send a Radiophone to Captain Oscar Perone of the steamship Vasa, which was bound for New York from Havre, to call at Bermuda for passengers booked by the Royal Mail Line. Capt. Perone immediately chartered the course and picked up the passengers. This is said to be the first time that such an order has been issued by Radio.

Bonding House Will Broadcast Branches

Predicts Practical Use of Radiophone by Big Business

SAN FRANCISCO, CAL.—The prediction of the promoters of the Radiophone that this means of communication will soon be used by big business firms to keep in touch with their branches was made practical recently when the Bond House of Cyrus K. Ferry & Co. announced its intention of installing Radiophones in each of its ten branches throughout the state.

A life-saving broadcasting station will be erected at the Insurance Exchange building. When this equipment is installed the bond house will broadcast news of bond house and prices several times a day.

CONFERENCE FAVORS A RADIO LANGUAGE

Recently an international conference was held in Paris. The American representative declared that radio may be the means of establishing an international language or code. One of the greatest hopes for the future is the establishment of an international radio language or code. Like Esperanto, it would be taught in all schools.
Extensive Plans Are Being Made For National Radio Exposition

Prominent Government Organizations and Corporation Interests Are Planning to Participate and Offer Exhibits in Immense Affair at Chicago June 20 to July 1

Planes are being perfected for the participation of the army, navy, the Government postal, and Girl Scout, Boy Scout and Manufacturers Clubs. The Radio Corporation of America, the National Broadcasting Company, the american Telephone Equipment Company, the American Telephone Manufacturing Company, in the National Radio exposition to be held in the Letter room of Chicago, June 20th to July 1st, according to plans announced by Mr. W. B. Jones, general manager of the National Broadcasting Company, the American Telephone Manufacturing Company, the Radio Corporation of America, a member of the American Telephone Manufacturing Company's school, is arranging for a contest of amateurs at the national exposition. This contest will settle who is the fastest amateur radio operator, whether man or woman. The contestants will have the opportunity of using whatever apparatus they choose, from one of those that some day may resemble an invention that will startle the electrical world. All those schools that are interested may enter a team of five members, each team to have one operator and a number of followers. Those who exhibit at the show.

Details of the Equipment

The transmitting set consisted of a C. G. vacuum tube transmitter of 200 milliamp capacity. It was built for aerial transmission. A high frequency amplifier 2C 1141 dynatron with a Type H, G, 100,000 volt, 100 volt tube and 17,500 volt voltage regulator capacity was used. A Westinghouse receiving set was used. The wave length was 500 meters and 300 feet and an aerial was used. The weight of the apparatus was 175 pounds. It was hung by a wire from the rear of the room. It was moved to the other side of the room.

The test were in Chicago. E. W. Dambrook, the Radiophone operator, was connected with the American Electric company. The entire display was made up of apparatus of the U. S. Naval Aviation. He is a member of the regular navy but some years ago, was a pilot in a Bomber. Some of the radio opera- tions were watching the nailing races. His dislike for the game is shown by the fact that he chokes the water received world wide.

President Harding Is Enthusiastic Fan

RADIO DIGEST, Illustrated, 112 West Madison St., Chicago, Illinois. Published Weekly by E. C. Bannor, Publisher.

SUBSCRIPTION RATES

Yearly

$6.00...

For Single Copies, 10 Cents

Entry as second-class matter applied for at the post office at Chicago, Illinois.

Copyright 1924, By E. C. Bannor

Contents

Air Conferences and Legacies: New Aerial Found to Be in Human Body; Radio Used for Treating the Sick; Founding House Radio Markets; Filer Uses Radio for Appeal

Plans for National Radio Exhibition, President Harding Is Enthusiastic Fan, Hypnotist Charms Woman by Radio

Marketing Conference Held by Retail Men; Radio Appraoches Business Status; Carlin, The Antenna Brothers

Explanation for Radio Receiving Sets; Hook-Up Sets; Graphically Explained

WOK Broadcast Strips South, Music Tests Marries to Call Friends by Radio

Radio Brodcasting Stations

Editorials

DIFFERENCE BETWEEN AMATEUR AND NECESSITY ORGANIZATION, ETC.

THE TIMES-TRAVELER USING RADIO

Radio Travels on Spedility; Radio Indi-rected, THOUSANDS FLOCK TO DETROIT SHOW

Radio Freaks One of the Features of the Big Show

Radio Digest Illustrated

Looking Ahead

Broadcasting Stations of note will be illustrated and described in each issue. Their pages will contain articles from well informed correspondents and parts of the country.

Radio Broadcasting Stations are corrected weekly. Introductions and special features will be of interest to everyone in every station.

Instructions for the Beginner, by Harry J. Marx. Valuable information for the amateur and those who want to gross up their sets useful for every owner of a set.

How to make. A whole page will be devoted to this subject. This year we will have a series of articles on the different methods of operating a station. An exchange of ideas on stations worked out by the amateurs.

BE SURE TO GET

RADIO DIGEST

IT WILL BE HAD TO FIND A COPY ON THE NEWSPAPER STANDS

SUBSCRIBE NOW! IN THE BLANK TODAY

Published Weekly by E. C. Bannor, Publisher, 122 West Madison St., Chicago, Illinois.

Unsubscribe check M. G. for Five Dollars for Our Subscription to Radio Digest, Illustrated

Name...

Address...

City...

State...

[Image 0x0]
RADIO DIGEST ILLUSTRATED

MARKETING MEETING HELD BY RETAIL MEN

Association Considers Plans for Co-operative Broadcasting by Dry Goods Stores

NEW YORK—Special to Radio Digest—The marketing department of the nation's leading stores have apparently considered the possibility of forming a pool of information regarding the direct broadcast of radio programs by means of commercial radio stations. Plans for such undertakings were discussed at a meeting held at the Hotel Pennsylvania on Thursday, April 6.

In advance of this conference the Bureau of Research and Information of the association received an exhaustive analysis of Radio telephone, developed in the United States. The report of the bureau states that there are now in the United States seventy-one licensed broadcasting stations, of which forty-five are commercial. Of the seven, Philadelphia, New York, and Los Angeles, California, are the only cities in which more than one station is operating.

Under normal conditions, it becomes the responsibility of the radio manager to keep in constant touch with farmers, dealers, and farmers' co-operatives. The condition of the weather is of primary importance to radio managers, and the chief obstacle to successful broadcasting is the difficulty of reaching all parts of the country at once. It is estimated that the average radio station can reach about one thousand people, and that the total audience of the country is about fifteen million.

BROADCASTS FASCINATE THE NEWEST RADIO FAN AMONG THE PICTURE FOLKS

In addition to the sale of radio sets for home entertainment, there is a new field of interest being developed in the use of radio for advertising purposes. The possibility of broadcasting commercial messages over the air has been recognized by many advertisers, and a number of companies have already begun to use radio for this purpose.

The National Retail Dry Goods Association is not the only company to be interested in the development of radio. Many radio stations are being formed for the purpose of providing entertainment for the general public. The New York World-Telegram, for example, has recently started a radio station which is devoted entirely to the airing of music and other cultural programs.

The broadcast of radio programs by the New York World-Telegram is an example of the way in which radio is being used to extend the influence of newspapers. The World-Telegram is widely read and its radio station will be an additional means of reaching its readers.

Thank you for providing the text. If you have any specific questions or need further assistance, feel free to ask!
HOW TO OPERATE A RECEIVING SET
SECOND OF A SERIES OF STANDARD EQUIPMENT

Simple Explanation of All Essential Parts and Controls for All Operators. Can Get Broadcasts

Sea Diagram Page 2

The set shown on page 2 illustrates the parts and method of construction of the ingenuous Detector Amplifier. Type A. This set consists of two separate parts, the Type B setting unit and the Type A Wave Regenerative Detector, and the other is the Type DA Detector and Oscillator. This contains the three vacuum tubes with their controlling elements.

Tuning Unit Connections

The two parts are connected together by means of straps on the top and bottom. In addition, the strange detector binding posts are connected together as shown in the illustration. This is the only terminal marked "grid" and marked "control." The second set of two marked "grid" and the marked "control" are connected together and are also the terminals to which the ground is connected. Likewise each set of terminals marked "tickler" are connected, also the fourth set marked "tickler". This complete the connections between the two sets.

The extra terminal on the tunings units is the one to which the speaker leads is connected, and is therefore marked "Amp." This completes all connections on the Tuning Unit.

Detector Amplifier Unit

On the detector amplifier unit we have eight binding posts, the top row have already been accounted for in the connections between the lower fourth are the connections for the batteries, of which we require eight. We need the usual 3 Volt "A" battery and also the 45 Volt "B" battery, with a 24 volt tap. As before, two batteries can be used instead of the one "B" battery, one volt and one 22 volt. Starting in with the lowest terminal, we find that this must be connected to the bottom terminal of the "B" battery and supplies the current for the detector vacuum tube. The detector tube receives the 213 volt signal. This current however is not the one that lights up the tube, but is one that pushes the broadcasting wave through the tube and as well to the detector. This is the current coming from the bottom is the connection for the negative electrode of the detector.

This furnishes the 6 volt currents that Hefw in order to get the detector tube working. It is required to bent up the inside of the vacuum tube, making it easier for the forward wave to pass through the tube and on to the receiver. The fourth binding post in the bottom is connected to the positive side of the detector and supplies the currents for the "B" battery. This circuit the current of the detector tube. This tube will have a very small current to flow out of the bottom or the terminals for the current will have to come back in, very similar to the return pipe of the amplifier circuit.

Head Receiver and Plug

The Head Receivers have a cord, at the end of which we have a round brass terminal called a plug. This plug fits into the three holes at the back of the front of the detector amplifier unit. These holes are called Jacks. These are connections from the set to the receivers. The first hole marked "Amp," the second receiver to the detector part of the set, that is to say the receiver that the receiver set, but are not trying to amplify the sound and the third "Amp," to be used for connecting to human耳. We will not see through glasses but we will see perfectly for the objects near by by enlargement. The amplifier brings the signal to a much higher tone. The second and third holes are marked "Amp," they serve to connect the receiver to the amplifier steps, giving a much higher tone.

Tuning Set

In the tuning set we insert the plug in the place of a plug is the armature of the detector built by turning the detector rheostat knob, this controls the amount of current that lights up the Vacuum Tube. Too much current will destroy the vacuum tube, too less current is not enough. Then the dial in the tuning unit; this tune the set, so that we get the proper result of receiving. If broadcasting is going on, and all connections have been made, reception should be heard in the receivers, turn the dial until the sounds are the least. Then turn the small dial in the lower hand corner of the Tuning unit, this will permit a more accurate adjustment for waves, making the tone louder and clearer. If the third dial, in the lower right hand corner of the Tuning unit, is now turned, it will be found that this will help in eliminating other noises that are heard and will bring out the broadcasting much clearer than before.

The receivers are then plugged into the first phase of amplification and the second amplifier rheostat turned to light up the amplifying vacuum tube. As before, too much current will add a lot of noise to the reception without improving the reception. When this is adjusted properly, the receivers can be plugged into the third hole or the "2nd Amp" jack. The Armature of the Amplifier Rheostat Knob may be necessary, as the one knob controls the current to both the amplifying vacuum tubes.

Causé of Faulty Reception

Weak Signals

Open antenna or ground circuit, broken wires inside or outside vacuum tubes, Improper tuning.

Detector defective vacuum tube, Defective amplifier tube, Storage battery polarization reversed.

"B" battery polarity reversed. Insufficient filament current, Defective telephone lead set. Low "D" battery voltage. Antenna too small. Internal resistance receiver too high.

Local noises:


Storage battery leads reversed. Detectors not amplifying vacuum tube. Low resistance of detector telephone lead set.

PUZZLE FIND THE CHAUFFEUR!

The Radio Digest Illustarted

Although gasoline supplies the motive power of this car, it is started, backed up, turned around and guided entirely by radio devices.

Although gasoline supplies the motive power of this car, it is started, backed up, turned around and guided entirely by radio devices.

A Better Variometer

ESTRU LATTICE VARIOMETERS AND VARIO COUPLERS are small compact instruments with no unnecessary mechanism, which makes them easily wired. Maximum efficiency by lumped inductance and low distributed capacity. Provides an accurate and sensitive tuning. Ideal for portable sets and for those who assemble their own, because of easy accessibility.

IMMEDIATE DELIVERY VAROMETER $5.00 VARIO COUPLER $ .450 Mail orders promptly filled

DEALERS: Write for our proposition

NORTHERN RADIO SUPPLY CORPORATION

42 West Washington Street
CHICAGO, ILLINOIS

RHEOSTAT

which gives this control has just been placed on the market.

The picture shows the rheostat mounted on a panel. As can be seen, the momentary switch permits the adjustment to be made from a panel. A double thrower switch is used, and the rheostat is wound with the required length of gal­

nied, non-constricting wire. When the knob is turned, the arm is rotated. This arm carries on it an indented peeler which contact the end of the knob which follows the thread and consequently retains the same resistance. The point to which the arm is threaded, the temper from that end of the resistance wire to the other, reaching it at every point throughout its entire length. The gives the number of adjustment which is absolutely unlimited, and changing the Resistance Tube and also is possible. In order to do away with the necessity of turning the knob, a simple mechanism is provided. This mechanism allows the knob to turn the rheostat as the body makes contact with it, for the thumb is not ground. When the knob is turned in 35, the print is broken. When the knob is turned off, it is broken. The knob may be turned on or off without changing the resistance. This leads great convenience in its operation.

J. E. JENKINS

59 E. Van Buren St. Room 605

CHICAGO, ILLINOIS

IN STOCK TODAY

De Forest "Every Day" Crystal Detector Set, complete with Brindole $2.75 De Forest Radiophone Receiver Set, with "B" battery, "A" battery, and Phonograph... $46

HEAD PHONES

Western Electric $12.00

Tyco $12.00

Vinson "Cats" two-way, $14.50

Crystal Detectors complete, mounted, $10.00

Tuner.... $2.50

Phonograph-Headphono... $1.00

Brachi Headphones... $4.50

Replacing Phonograph Batteries at home... $1.50

$18.50

MONOGRAM RADIO SUPPLY COMPANY

Monroe and Wabash CHICAGO, ILLINOIS

FINDS SISTER BY RADIO

An amateur living at Elgin recently found a long lost sister byRadio. He asked his near friends in other cities to help him and she was located in an orphan home.

Radio New "Speaking Tube"

The Radio "speaking tube" is coming, say architects. New apartments have-installed of speaking tubes, telephones from the main entrance to each suite. The instrument may be connected easily for use as a radio.

IN the reception of Radio signals of all classes, especially continuous wave and distant signals of the closest possible control of the detector tube filament, temperature is extremely necessary. A compact and serviceable
Radio Receiving Sets

To facilitate the receiving of broadcasts and to further the knowledge of new Radio fans in the operation of apparatus, the RADIO DIGEST presents the second of a series of illustrations of standard receiving sets.

Each part is designated and named and its purpose is explained. Many of the new terms that the beginner in Radio hears or reads are given, with an arrow pointing to the part of the unit named. Although the instrument shown herein may not be the one owned by the reader, nevertheless many cloudy points in his mind about the various units of a standard receiving set will be cleared up.

Instructions and full directions for operating and tuning the set shown are given in the first column of page four. Many of the points given there are not only applicable to the set shown, but are valuable for improving the reception on other sets. Below in the three illustrations are shown the front and interior views of a standard receiving set manufactured by the Westinghouse Electric & Manufacturing company, East Pittsburgh, Pa. This set is known as Westinghouse type D A.

The illustration on top is the front exterior view of the set. The photo to the left shows an interior view of the Detector Amplifier Unit containing the vacuum tubes.

The one on the right side is the interior of the Tuning Unit containing the coils and condensers for tuning to proper wave length.
**W O K BROADCASTS STIR SOUTH**

**NEW PINE BLUFF STATION AROSES ARKANSAS FANS TO BURST OF ENTHUSIASM**

Programs Heard All Over Country—Crippled Children Listen In At Local Hospital—Telephone Users Hear Church Services

**PINE BLUFF, ARK.—**Special to Radio Digest.—Of the hundreds of Q. S. A. letters and cards received by the Arkansas Light and Power Company since the establishment of its broadcasting station at Pine Bluff early in March, the one saying: D. O. H.—We admire the way you may say, Arkansaw. We know you are proud of it. We enjoy your concerts hugely, so here’s to Pine Bluff, Arkansaw. C. Y. M. (Morgan), best pleased H. C. Couch, president of the company and responsible for the establishment of the broadcasting station.

"One of the chief aims of WOK is to put Arkansas on the Radio map," Mr. Couch said in commenting upon the card. "If we succeed in letting a thousand radio fans in the middle and southwestern states know that the correct pronunciation of Arkansas is Arkansaw, it will be a good thing."

That the station has already turned the ears and ears of thousands of Radiophone owners toward Pine Bluff and Arkansas is conclusively proven by the letters and cards that pour into the station daily. One large filing cabinet is already jammed with them and the accumulated notes which are sent at their homes when they are asked for details of the station, its programs and other information.

**SEND OUT ALL OVER COUNTRY**

WOK is one of the largest telephone broadcasting stations in the South or Southwest. When conditions are favorable its programs cover 35 states from North Dakota to the Mexican border and the Gulf and from Colorado to North Carolina. Among the receiving stations that have reported listening in regularly to WOK concerts are: Kenos, N. D., Livonia, Mass., Barnard, N. Y., West End, Wla., Lottinville, N. C., West Bend, Ind., Chicago, Jackson, Miss., and hundreds of others closer to Pine Bluff.

**ARKANSAS HOSPITAL:**

Arkansas was established there were less than a dozen first class receiving sets in operation in Arkansas. Within a month the number had increased to scores and inside of six weeks the station was being deluged with long distance calls from cities throughout the United States and Louisiana, asking the station to "sear up" the page of its programs sheet in the edition of the local newspaper the next day.

**CRIPPLED CHILDREN HEAR CONCERTS**

Soon after station WOK was established, Mr. Couch donated to the children's ward at a local hospital a vacuum tube detector set and from this point on the Ward was maintained for poor children by the Rotary Club of Pine Bluff. The Ward's director, Dr. O. V. Couch, who was given the receiving set has brought more happiness into the ward and the lives of the children than any other single invention. The Arkansas Light and Power Company have been donated for it according to nurses in charge.

"To watch those children listen in on one song after another is well worth every effort to get the set," Mr. Couch said after attending a concert there. "I was so impressed by one little girl who had lain in bed many months with a horrible disease that she could not lift her head that when a head set was clamped to her ears and she heard the first radio program, the eyes lighted up and she entificd sort what her name said was the first time in weeks. She was so eager that we had to have her change about with the others, so she listened in for the rest of the concert."
PARSON MARRIES 'EM BY RADIO

CHURCH BROADCASTS MARRIAGES

SHREVEPORT, LA.—Special to Radio Digest.—Marriage by Radio is one of the tasks set for the powerful broadcasting station being installed in the new half million dollar building of the First Baptist Church at Shreveport, Louisiana, according to Dr. M. E. Dodd, the pastor.

Dr. Dodd says a marriage of this kind will be just as legal as any, and the ceremony can be made as solemn as if the pastor were present. This plan will permit a couple to have their wedding solemnized by the pastor of their choice who may be many hundreds of miles away. The tendency of the groom to arrive late for the wedding is the only obstacle seen by Dr. Dodd, and he believes this can be provided for.

First Church Station

This church will be the first in the world to operate in its own plant a powerful broadcasting station. The equipment is partly installed and will be in operation probably early in May.

The station will have a normal radius of 1,500 miles, but under favorable weather conditions can be picked up from coast to coast, and by ships many hundred miles at sea. It will use a 300 watt set, sending on a 360 meter wave length. The call number has not yet been assigned.

Suspend Lofty Antenna

The antenna will be suspended between the 10-story tower of the church and a steel tower built on an office building nearby. It will consist of four copper wires and the necessary spreaders, and will be 125 feet long and 100 feet above the ground.

The receiver will be in the pulpit, and will be connected with the motor generator on the eighth floor of the tower and the antenna by wires running under the flood and up the elevator shaft.

Broadcast Other Churches

Several hundred churches in this section that are without pastors or that have services only once or twice a month have installed or are planning to install receiving sets, to take advantage of the broadcasting of religious services from the church.

Mother to Bear Pastor

Mrs. Lucy Williams Dodd, mother of the pastor, will hear her son preach at her little home in Trenton, Tenn., four hundred miles away. Mrs. Dodd, nearly 80 years old and an invalid, has not heard her eloquent son in more than two years. She recently expressed the fear that she would never hear him preach again. This was the suggestion that led to the installation of the broadcasting station.

World's Largest Baptist Church

This church, one of the largest Baptist churches in the world, was dedicated Sunday, April 22. It was built at a cost of $550,000. A main building of four stories and a ten-story tower contain 51,000 square feet of floor space, with a total seating capacity of 8,000.

The tower provides quarters for a Sunday school of 3,000, and a roof garden accommodates 2,000 people. "Outdoor services, concerts and socials will be held here during the summer."

A 13-bell chime, of which the largest bell weighs 3,000 pounds, located on the ninth floor of the tower, will furnish a daily feature of the broadcast program.

View of tower First Baptist Church at Shreveport. Roof garden to right of tower. Dr. M. E. Dodd (insert)
Radiophone Broadcasting Stations

Corrected Every Week. Form Copyrighted by RADIO DIGEST, 1922

Explanations—In the following tabulation, RADIO DIGEST will attempt each week to make it easy for the reader to hear all the broadcasting stations in his vicinity. Hence the alphabetical classification, by states and then by cities, is used. Stations whose schedules of operating hours are known (those having C, N, F, and I marks in the Program column in the tabulation) are listed at the end of the table, alphabetically by city, in the order of the time used in the city in which the station listens in. Time, in the following list of stations having schedules, is always given as Central Standard Time unless otherwise indicated. The stations are listed alphabetically by state, and are numbered, as an index to the foregoing table.

Your Directory—To aid the listener and to help him realize full benefit from his receiving station, RADIO DIGEST has compiled the following list of the stations classified by state, alphabetically by city, and then alphabetically by name of the station. These stations are designated by the following abbreviations used in the "Program" column of the tabulation:

- C—city
- N—news
- F—financial
- I—information
- M—market
- R—radio
- L—lecture
- D—drama
- S—symphony
- W—weather
- P—police
- B—business
- T—time
- O—opera
- M—music
- S—sermon
- J—jazz
- H—health
- F—flirtation
- F—fun

A. G. L. San Francisco, Calif. 
B. H. F. Denver, Colo.
C. O. G. Washington, D. C.
D. F. A. New York, N. Y.
D. R. W. Boston, Mass.
D. E. R. Los Angeles, Calif.
Who Hears Broadcasting Stations

TWO STIMULUS long distance receiving, RADIO DIGEST ILLUSTRATED is starting a contest with its station number 360. We hope our readers will write to us about the broadcasting stations at a distance you consider remarkable, send in their details to this publication, care of the Broadcast Editor.

The receiving station hearing a given broadcast program at a specified distance, will, if ample evidence is submitted, win the contest. When another receiving station breaks the distance listed, it will supersede the listing of the first station.

Caution! Don't send in your "see unless you are actually it is a real record.

—Broadcast Editor.
Radio Phonies Travels on Speedily

The Advance ment of Radiophony as Others See It

Even though Radiophony is still in its infancy, it has already been accomplished must be considered. The effect it has had upon the public has been very d
dr
d}
ful and the Journal (Providence, R. I.) mentions this side line to Radiophony as follows:

"Will it not prove to be one of the modern fact ors that will tend to make the life of the people in this en tional place in this country? Something of the sort is intimated by the writer in the comment that, while most modern entertainments are calculated to limit the number of people away from home in the evening, Radiophonic makes them in.

Again Radiophony reaches into other walks of life, but the peculiar part about it is the fad does not generally it takes the crowds. Collectively speaking the News (Brockton, Mass.), says:

"Radio will exert a powerful influence upon the press, the pulpil, the schools and the theater, but it will not supplant the printed page. Talkative habits will be cultivated and be more critical. It will demand higher standards. There will be a beneficial evolution of the press, pulpi, school and theater in which the inferior and the millsubscribe will be eliminated. Radio broadcasting carries with it respondi

It is impossible for one to say something aloud to be heard by thousands will desire to say something worth while and to say it well."

More than a quarter century ago a fascinating prophecy of Mark Twain from the year 1899. In one chapter of the book the "Rip Van Winkle" of the narrative is taken to the music room where he is asked to make known his choice from a very long 24-hour program. The Times (Brockton, Mass) says on this:

"The hostess indicated an organ piece and made me sit down comfortably, and, crossing the room he merely paused, one or two seconds and at once the room was filled with the music of a grand organ," It was such an incredible prophecy that the book was classified in the Library of Congress, and as radiophony has had its development occurred that in many libraries it still is fiction. Yet this is only 1899, 1879, and by 1922, the era of prediction is reached, who dares to foretell the achievements of man?"

To what extent Radiophony will reach in the commer cial fields and how it will be used in the transmission of power the Chicago Journal expresses its opinion in these words:

"The layman feels that the possibilities of Radio are all but limitless, and no expert has arisen to prove him wrong. All Radio work means the transmission of power. At present that power is used to light and heat, but the day is not far distant when we may expect to see this power, in all its uses, in every department of life."

Accordingly, if this can be done, it will work a revolution in human affairs perhaps greater than any yet achieved. It will mean that power can be developed in any favorable region, and sent where needed without the expense of wiring. Per fect such an arrangement, and the man no longer will be limited in his movements by the necessity of real millions. He will live where he pleases, and have the power on which his industries are fused brought to him through the 'wireless air.'"

Also along the same lines the Daily Ledger (Toledo, Ohio) says:

"Just what the limit of Radiophony may be there is no one brave enough to hazard an opinion. Today it is possible to talk to a friend far away across the sea and travel the continents and oceans. Will it be possible to some day talk to neighboring places? Would it be any more im possible than what the Radiophony of today would have been considered a few years ago? It is predicted that the time is coming when the power will be transmitted by Radio."

Regarding the speed with which Radiophony has taken its place in the world, the News (Newburyport, Mass.), makes this statement:

"The country is taking up Radiophony with fever. The enthusiasm for this invention reminds us of the furor with which the people started selling automobiles."

But why should it cost so much?"

Town Council Using Radiophone

Ohio City Installs Transmitting Instrument

In A LEADING city in Ohio a councilman proposes to install a sending outfit to broadcast the council's pro ceedings.

This is an excellent idea, too, for state legislators and congress. Open the session to the public; let everybody with a receiving set listen in. The council can make public debate and interest, and would have considerable effect on the law makers.

Community Sets Race Expo

Club Members Buy Set and Run Hall

One of the latest innovations in Radiophony is a "community set." It has found great favor in some localities and radio people are able to own a set in their homes. A club is organized and the mem bers contribute to a fund for the purchase of a good receiving set. A few men take an interest and a member ships card entitles the holder and his family to the evening reception of broadcasting.

Non-members to the club are assessed or charged an admission fee. In this way the organization pays its ex penditures for a fine entertainment and also develops a community spirit.

Radio Digest Illustrated

E. C. RAYNER, Publisher

123 S. Wabash Avenue

TELEPHONE TELEGRAPH PHONE 266-8585

CHICAGO, ILLINOIS

New York Office

453 Fifth Avenue Building

Detroit Office

21 Revised Building

Subscribe for $6.00

PUBLISHED WEEKLY

SUBSCRIPTION RATES

Yearly

$2.50 | Foreign $4.00

Single Copies, 10 Cents

Entry as second-class matter applied for at the postoffice at Chicago, Illinois, under the Act of March 3rd, 1879.

In a remarkable field where every city and town is anxious to get into the wireless traffic there will be many opportunities for advancement. These opportunities may be taken into the courts for settle ment. The priority of inventions may be claimed as well as the priority of the use. The law has not yet given any regulations for the transmission of wireless signals. The Wireless is an asset for these ex cerpts. The work of the courts will be in accordance with the opinions or statements made in connection with radio apparatus. The town will be entitled as it comes to you.

No. 4

Difference Between Amateur and Novice

Misunderstandings Concerning the Word Amateur

Radio presents a new phase to the word "amateur." The term seems to be a key word in the new art.

There are many amateur Radio experts who could instruct many of the so-called professionals. How ever, there are no small number of dabblers who think they know something about Radio and have been mis taken "amateur." The people say that they would like to go back to the good old days. Who would want to go back to those days! Those days are behind us.

There is a line to be drawn between amateurs and nov ice; an amateur should have a good, solid knowledge of the fundamentals of the art.

Organization a Great Factor for Radio Fans

Form a Society and Aid Radiophony

Some of the larger cities where there are many persons with a receiving set listen in. This is very much to the advantage of Radiophony. A society, for example, is much better than any other thing toward the elimination of inter ference by observation of the society rules and regula tions.

The amateur transmitters should show a willingness to cooperate with the receiving stations around them, in such an arrangement, of course, it is necessary to have some common ground. The amateur who has privilege the same as the transmitters. Radiophony is becoming one of the most important of the society's rules and regula tions.

The amateur transmitters should show a willingness to cooperate with the receiving stations around them, in such an arrangement, of course, it is necessary to have some common ground. The amateur who has privilege the same as the transmitter. Radio is becoming one of the most important of the society's rules and regulations, and it will require a great deal of cooperation between the various users to avoid serious complications. That is one reason why the evening reception of broadcasting.

The sky is already filled with signals and from present indications the crowding will be kept up for an indefinite period. For this reason an organization can do much to relieve the congestion of the air and bring about an understand ing between so many and receivers, quiet hours, interfer ence and like problems.

Tuning Fork Cuts in on House and Senate

Representative Brevard, Detroit, has a simple wireless ideas. Wants to set bench-bucking Radio broadcaster in House and Senate as anybody with tuning fork can hear into nation-saving conversations. As if the unemployment situation wasn't bad enough as it is.

When the Call Comes "E. A." Supper time, Corner grocer installs magnetovox and says it draws more using wireless than old fashioned free cracker barrel. Beer-and-light-wine advocates draft educational bill to establish poor men's clubs equipped with amplifier, horns and biggest-in-city speakers. Anti liquor League favors amplifiers but against secession. Congressmen talk so much about it that Cincinnati, St. Louis and Minneapolis aerial propellers start back to Munich movement.

The Radio Ballad

By Burton Braley

Radio O'Grady and Timothy Brady

Sure were an up-to-date pair.

She was a pretty and, witty young hoy.

He was a lusty deacon.

They were a couple of Radio sharks,

So when they'd part for a while

Tim would impress his concluding remarks After this manner and style: "I will not say more.

Ring me by Radio,

Call me up every now, our own,

You are my home.

Radio O'Grady.

Ring me by Radiophone!"
How to Make Sixty Cent Receiving Set

Radio Kinks

Radio Digest is interested in any of those little kinks that every amateur discovers in his workshop. Sometimes it's a How to Make Article, or a little tip in operation of the set, known to use parts that are not thought of, perhaps some new hook-ups that haven't been published yet. Send them in, with full details, sketches and diagrams if necessary. One Dollar will be paid for every one published. If a self-addressed stamped envelope is included, rejected copy will be returned. Work must be original, however, and not copy from others. Radio Kinks Department, Radio Digest 123 West Madison St., Chicago, Ill.

LONG DISTANCE RECEIVING SET

Now that many of the public having Radio sets are listening in on the commercials, a station usually comes on the air with "Mark this time" and "Listen to this station." It is an amateur's ambition to be able to copy the code and to receive trans-Atlantic messages. As most of the stations look around at the short wave regenerative receiving sets in the circuit shown, using duo-lateral coils numbered 169, 165, 161, 155, will be found very good for long distances.

The letter A represents the aerial, G the ground, CI the grid condenser, CC the condenser, and the variable trimmers. Each PLATE MADE OF OPELE.

MAKE YOUR OWN LOOSE COUPLER

Necessary Information for Making the Parts

The loose coupling is more difficult to make yet it is far superior to the tuning tube. A loose coupling is easier to be used with the loop coupler and there is greater selectivity and less interference in the power station. The signals will be a little stronger and broadcast sounds will be received without trouble. In fact, the loose coupling is an improved turning coil. There are two windings on a loose coupler: the primary and the secondary. The primary is wound on a large tube and with large wire, the secondary is wound on a small tube. The smaller tube is made of steel so that it will hold the windings in place.

ordinary winding is a tapped winding, that is, it is cut at certain places about four inches in length. Insulated wire is used, about 14 or 16 gauge. It is tapped every one-half inch. The end of the winding is brought to a tap, so that there will be eight taps for the four-inch winding. Use five of these as one half of a and use five of these as one half of a.

There are no more taps taken off than necessary. Instead of bringing the tap out on the primary coil or shell, make a tap on the outside of the tube. Also the end of the secondary coil must be fitted with a wooden head carrying the knob and switch points which are connected to the tapped points of the wires or sections. It is more convenient to bring the taps from the head from the inside than from the outside of the tube. Two brass rods connect the winding with two binding posts on the base. There are two brass rods for the tube to slide on. The primary should be suitably mounted on an end of the board. The other end rests on a base which may be a contact point. The exploded shells of the cover. The reason for bringing the taps out on the inside of the tube is that it must slide in the primary coil and the coil must be set in the way and outside taps will not permit this being slid within the tube. Also the end of the secondary tube must be fitted with a wooden head carrying the knob and switch points which are connected to the tapped points of the wires or sections. It is more convenient to bring the taps from the head from the inside than from the outside of the tube. Two brass rods connect the winding with two binding posts on the base. There are two brass rods for the tube to slide on. The primary should be suitably mounted on an end of the board. The other end rests on a base which may be a contact point.

EXPLORER SHIELDS USED FOR SWITCH POINTS

The explorer is a piece of a caliber rifle make a cheap and efficient switch point. The idea is to use a large, metal plate 3 by 6 inch from the panel. The wires are cut and shoved into the shell, and the ends are cut to the "off" and "on" points. This will make a good strong connection.

The reason for using the shells for the "off" and "on" points is to eliminate the confusion which sometimes results if the wires are not connected properly. The switches are connected to "load" in contact sets. The idea is to have a shell that can be used when the shell does not protrude through the panel so no connection is formed from them. These switch points will give good service for an indefinite period.

Radio Digest Illustrated
Radio Digest ILLUSTRATED

Characteristics of Vacuum Tube Amplifiers

By Benjamin F. Miessler

PART III

Let us take a simple radio tube with a typical characteristic curve such as that shown in Figure 1A. The anode is given in this part, and connect it in the circuit shown in Figure 2. There are numerous connection schemes for this circuit, all of which are equally practical. One of these is shown in Figure 3A.

This is a conventional two-circuit receiver with rectifier and telephone couples. The terminals of the secondary circuits are driven by devices for converting radio frequency currents into sound waves in the ear. Also, it must be remembered that, in order to maintain the necessary sensitivity and all attention concentrated upon the operating characteristics of the purely electron tube devices and circuits.

Figure 3.

Note here then in Figure 4 we have, during the reception of electro-magnetic waves, a simplified circuit diagram showing the telephone as the receiving device. Because of its sensitivity and low resistance, the ear will respond to frequencies of approximately 20,000 vibrations per second, which is considerably below the lowest Radio frequency currents into direct current pulses arriving at the rate of approximately 750,000 per second. This will at once be recognized as the same circuit as that shown in Figure 4, with the addition of a battery and potentiometer in the circuit of the vacuum tube.

In order to secure a desired normal anode potential, a heating battery may be used. If the filament potential were not the same as the normal potential, the anode potential could be superposed on the heating potential. In this case the potential of the heating battery may be used. If the filament potential were not the same as the normal potential, the anode potential could be superposed on the heating potential.

if such a continuous wave is modulated, each wave form of the current which represent the potential on the anode with respect to the cathode. Each wave form tends to flow in the current is given by Figure 1B. The characteristic curve for modulations of the same form is approximately preserved, but the amplitude of the wave form is of such a nature that it produces a cut-off effect. The wave form of the current, which actually flows depends upon the nature of the wave form throughout each period. If the current is the rectified impedance of the anode circuit, then the current in B would be an approximately sinusoidal wave form. If, however, in the telephone, the rectified impedance for the given frequency is high, the separate high frequency currents show the tube acts as if some such wave form as that given in Figure 1B which represents a steady unidirectional current.

The manner in which high frequency alternating potentials are smoothed out the inertia effects of inductance in electrical circuits, or of vibrational inertia in physical bodies such as telephone filament, may be illustrated by analogy for water and in a water basin.

The block would not jump forward at the height indicated by the dotted line, because the block is held down into some such form as that given in Figure 4. In Figure 4 were converted via the secondary circuit to the anode and to the negative terminal of the heater battery, and then possess zero potential with respect to the cathode and to the negative terminal of the heater battery. This produces a cut-off effect. The wave form of the current, which actually flows depends upon the nature of the wave form throughout each period.
Simple Instructions for the Beginner
By Harry J. Marx

The Duo-Lateral Honeycomb Coils

Honeycomb Convention

Much has been said of the value of the honeycomb coil circuit. They have lost
some of their popularity more due to lack of knowledge in their operation and applica-
tion to Radio circuits than to any dis-
advantage that they possess. What other
piece of apparatus is as flexible that it can be
used for a wave length range of 10 to
6,000,000, or more, simply by
a few adjustments? The writer recommends every set of coils that are required for
reception.

The Coils

Figure 1 illustrates the symbol in which it is commonly used for connecting
honeycomb coils. Figure 2 is an illustration of the coil as sold with a current shunt. The
advantage of the honeycomb coil is the fact that it offers a very compact unit that
is used for tuning or loading as the case may be.

Formerly, honeycomb coils were simply wound in hexagonal layers, but the
theory was found, however, that this increased the distributed capacity, a condition that
is undesirable for radio work. The later development is what is now called the
duo-lateral wound coil, by which is meant that the windings stack back and forth.
From side to side, so that each layer as it lays on the one below crosses it at an angle
does not run parallel. These coils have been standardized with a core hole of
two inches in diameter and one-inch width. The outside diameter varies with the num-
ber of turns, running from 24 to 4 inches. If one wants to increase the wave
length, naturally it is necessary to increase the number of turns.

The Mounting

Coils can be obtained either mounted or unmounted, as desired, and the position of the
mounting is illustrated in Figure 4. These mountings, how-

ever, can also be obtained in a two-coil
mounting for tickler circuits. The
following diagrams for a three-coil mounting is
shown in Figure 5.

Theory of Operation

When using the honeycomb coil mount-
ing, advantage is taken of the same elec-
trical phenomenon as in the case of the
loop coil used in the vari-compensator.
Mainly, the oscillating current flowing through the honeycomb coil acts as the
primary creates magnetic lines of force
as shown in Figure 3-A. The magnetic
lines of force flowing through the core of the honeycomb coil used as a secondary
will induce magnetism in this current. Now, as the
angle is changed between the two coils as shown in Figure 3-B, the number of
magnetic lines that flow through the core
may be varied by the variable condenser. The
angle varies or controls the strength of the
induced current. Instead of tapping
primary and secondary a number of
honeycomb coils of different windings are

used. If one wants to increase the wave
length, naturally it is necessary to
increase the number of turns.

The table below illustrates the various
wave lengths and their corresponding wave
lengths for a three-coil mounting as shown in Figure 5.

Table No. 1

Wave Lengths

<table>
<thead>
<tr>
<th>Metres</th>
<th>Primary Coil</th>
<th>Secondary Coil</th>
<th>Ticker Coil</th>
</tr>
</thead>
<tbody>
<tr>
<td>150 to 200</td>
<td>2.5</td>
<td>4.0</td>
<td>4.2</td>
</tr>
<tr>
<td>200 to 250</td>
<td>3.0</td>
<td>4.5</td>
<td>4.7</td>
</tr>
<tr>
<td>250 to 300</td>
<td>3.5</td>
<td>5.0</td>
<td>5.2</td>
</tr>
<tr>
<td>300 to 400</td>
<td>4.0</td>
<td>5.5</td>
<td>5.7</td>
</tr>
<tr>
<td>400 to 500</td>
<td>4.5</td>
<td>6.0</td>
<td>6.2</td>
</tr>
<tr>
<td>500 to 600</td>
<td>5.0</td>
<td>6.5</td>
<td>6.7</td>
</tr>
<tr>
<td>600 to 700</td>
<td>5.5</td>
<td>7.0</td>
<td>7.2</td>
</tr>
<tr>
<td>700 to 800</td>
<td>6.0</td>
<td>7.5</td>
<td>7.7</td>
</tr>
<tr>
<td>800 to 900</td>
<td>6.5</td>
<td>8.0</td>
<td>8.2</td>
</tr>
<tr>
<td>900 to 1000</td>
<td>7.0</td>
<td>8.5</td>
<td>8.7</td>
</tr>
</tbody>
</table>

Table 1 shows wave lengths for a three-coil mounting.

Crystal Detector Set

Figure 6 gives the hook-up diagram of the double honeycomb crystal detector
set. The tuning is controlled by the varia-
tible condenser shunted across the secondary coil.

Circuit Diagram

Three Coils and One Step Amplifier

Be Careful of Your Vacuum Tubes

Be careful of your vacuum tube. It is
a very delicate instrument and is also
expensive, at least too expensive to break
very often. An audio or in other words
detection tube is an instrument too
important to be experimented with. A tube
is more fragile than any electric light bulb,
and, certainly everyone knows how
It is to break an electric light. You
can judge then how easy it is to accel-
derately break your tube.

A blow out of the vacuum tube is the
thing that haunts many an amateur who
has blown out-tube with his V.T.

It is not wise to overdrive a tube contin-
ously, as its life will be seriously cur-
tailed. It is a much better plan and more
convenient to operate two tubes in parallel

than it is to force one tube to deliver a
current out-of-tube that is rated for; in fact
good vacuum tube will result from burning
the tubes slightly below normal brightness.

If the filament of a vacuum tube gives
up, the filament will reduce the operating
life, as the deflection of the electrons becomes
less. By operating the filament at 85 per cent
of its rated voltage, the life will be doubled.

When first testing the circuit, or when
the set has not been operated for some
time, it is wise to cut down all voltages
to one-third of the normal voltage. This will
reduce the possibility of burning out the
tube through a wrong connection which has
been overlooked, as a fault will be
detected before the damage is done.
Radio and Audio Frequency Amplification

J. M. H.—Enclosed find a drawing of a resonant circuit consisting of a variable condenser and one stage audio amplifier. Please inform me whether this circuit is correct and what range could be gotten. At the present time I am using one stage of audio amplification but can not get the required range. Please send me some suggestions.

I am also sending another circuit using a one stage radio amplifier and one stage audio amplifier. These circuits are in use and are working very well and are in the right circuit but the frequency range is correct and what range could be gotten. At the present time I am using one stage of audio amplification but can not get the required range. Please send me some suggestions.

A.—Your circuits 1 and 2 are all right but do not use a variable condenser. Number 3 doubt very much whether you will get the range you desire. From the information that you furnish I can not estimate just why you should not get better results, let me have more information on the use of your aerial, locality, etc. In your question is that you expect to get much with the number 3? My aerial will be 140 ft. long. Do you think it would be best to supplement my aerial with one recently mentioned in the Digest? Your aerial should be 100 ft. long. Will this set pick up any stations that are within a radius of 50 miles of you? I fear you will not.

I.—I am afraid you are expecting too much from the aerial set that you are using, although under good conditions you can get 200 miles. If you do not get regular reception at all, I fear you will not. You want reliable reception over that distance.

Vacuum Tube Socket

V. B.—Please tell me how to connect a vacuum tube socket which has four terminals.

Potentiometer

O. A. M.—Will you please show me the connections for the following hook-up?

A.—The potentiometer is shown EDGE'S make-up number 163. Do not use a variable condenser. Your wire is too short. If you use a variable condenser you will get no satisfaction.

A.—The aerial with the 40 foot feed is the best that can be gotten. You will require a very efficient receiver, provided of course, that you have the necessary apparatus.

I. L.—I would suggest that you read over answer 3 to my question. Will you please have some good books on Radio for the beginner which can be ordered from B. M. C. in Chicago? I.—The aerial with the 40 foot feed is the best that can be gotten. You will require a very efficient receiver, provided of course, that you have the necessary apparatus.

J. M. H.—I refer you to answer 3 to my question. Will you please have some good books on Radio for the beginner which can be ordered from B. M. C. in Chicago? I.—The aerial with the 40 foot feed is the best that can be gotten. You will require a very efficient receiver, provided of course, that you have the necessary apparatus.

J. M. H.—I refer you to answer 3 to my question. Will you please have some good books on Radio for the beginner which can be ordered from B. M. C. in Chicago? I.—The aerial with the 40 foot feed is the best that can be gotten. You will require a very efficient receiver, provided of course, that you have the necessary apparatus.

Questions and Answers

When "stumped" write the Question and Answer Department, RADIO DIGEST, 123 West Madison Street, Chicago, III. A self-addressed envelope should be enclosed ALWAYS, as not all answers can be published. Only those of general interest will be printed in these columns. Other questions will be answered by mail.

When your question is of a highly technical nature and cannot be readily explained, send sketches and diagrams with it. Don't be afraid to give as many details as possible; these communications cannot be answered simply because of insufficient data.

All letters should be addressed to the Question, and Answer Department and pertain to nothing but questions on RADIO. HAVE PATIENCE, your letter will be answered in the order that it is received, unless it requires special research on the part of our engineers.

Recently, inquirers of a trained staff of Radio Engineers are at the command of every reader of RADIO DIGEST. Don't hesitate to send in your troubles and let RADIO DIGEST worry about them.

RADIO DIGEST, however, reserves the right to refuse to answer any question which might lead to litigation.

An Invitation

When "stumped" write the Question and Answer Department, RADIO DIGEST, 123 West Madison Street, Chicago, III. A self-addressed envelope should be enclosed ALWAYS, as not all answers can be published. Only those of general interest will be printed in these columns. Other questions will be answered by mail.

When your question is of a highly technical nature and cannot be readily explained, send sketches and diagrams with it. Don't be afraid to give as many details as possible; these communications cannot be answered simply because of insufficient data.

All letters should be addressed to the Question, and Answer Department and pertain to nothing but questions on RADIO. HAVE PATIENCE, your letter will be answered in the order that it is received, unless it requires special research on the part of our engineers.

Recently, inquirers of a trained staff of Radio Engineers are at the command of every reader of RADIO DIGEST. Don't hesitate to send in your troubles and let RADIO DIGEST worry about them.

RADIO DIGEST, however, reserves the right to refuse to answer any question which might lead to litigation.

An Invitation

When "stumped" write the Question and Answer Department, RADIO DIGEST, 123 West Madison Street, Chicago, III. A self-addressed envelope should be enclosed ALWAYS, as not all answers can be published. Only those of general interest will be printed in these columns. Other questions will be answered by mail.

When your question is of a highly technical nature and cannot be readily explained, send sketches and diagrams with it. Don't be afraid to give as many details as possible; these communications cannot be answered simply because of insufficient data.

All letters should be addressed to the Question, and Answer Department and pertain to nothing but questions on RADIO. HAVE PATIENCE, your letter will be answered in the order that it is received, unless it requires special research on the part of our engineers.