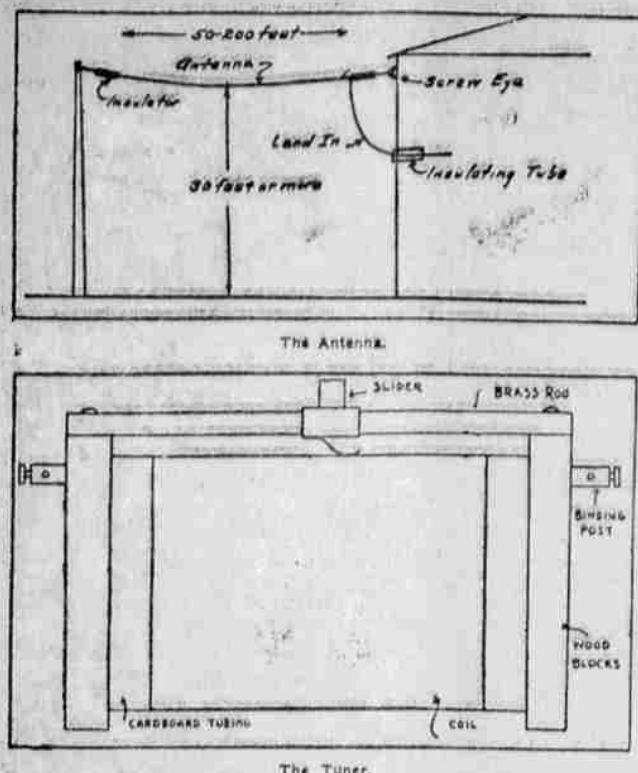




RADIO

HOW AMATEUR CAN BUILD A RECEIVER

Instructions for Setting Up the Antenna and for Assembling the Tuner.

In order to pick up sufficient energy with the simple radio receiving set it is necessary to connect one terminal to an antenna consisting of one or more wires suspended in the air and insulated from all grounded material and the other terminal to a ground, usually the water supply pipe. The height of an antenna used with a small receiver should not be less than 20 feet. As the received energy varies directly as the height of an antenna, the higher the antenna the louder will be the signals or voice produced. The length of an antenna for short wave reception should not be less than 50 feet nor should it be longer than 200 feet. The minimum wave length to which a simple receiver can be adjusted for electrical resonance will be above that used by amateurs if the receiver be connected to an antenna 200 feet or more in length.

A simple radiophone receiver capable of picking up radiophone stations similar to KDKA at East Pittsburgh, can be assembled by a novice for from \$4 to \$15, depending upon the builder's ability to use his hands. If the builder will construct most of his apparatus he will appreciate it much more and probably will understand more about its operation than if he buys a set already made. However, for those who have not the ability or the time to spend constructing their own apparatus the following description will not only give the details as to the construction of each component part of a receiver but also what standard ready-made parts can be purchased and used in its stead.

The material can be purchased at any electrical supply store. In erecting a simple antenna for use with the receiver shown in the diagram, the antenna proper and the lead-in are of stranded hard-drawn copper wire, strand No. 22, costing about 1 cent per foot. The two insulators are of molded material and can be purchased for about 25 cents each. The antenna shown is supported between a house and a pole. It may be found more convenient to support it between a tree and a house, two houses or even between two chimneys on the same house. In bringing down the lead-in, care should be taken that it is kept as far away from grounded material as possible and when bringing it through the wall or under the window into the house it should be brought through some sort of an insulating tube, such as rubber or bakelite.

In making the ground connection the same kind of wire can be used as was purchased for the antenna. You can clean a section of the water pipe thoroughly and solder the ground wire to it.

MAKING THE TUNER

To make a tuner for this receiver, the following raw material will be required:

- 1. Piece of cardboard tubing three inches outside diameter and five inches long, costing about 10 cents.
 - 2. 100 feet No. 22 double cotton-covered magnet wire costing 25 cents.
 - 3. Standard slider (see sketch) for 1/4 by 1/4 brass rod, 40 cents.
 - 4. 1 six-inch length of 1/4 by 1/4 brass rod (square) 20 cents.
 - 5. 2 binding posts (see sketch) 20 cents.
 - 6. 2 circular blocks of wood whose diameter is just equal to the inside diameter of the piece of cardboard tubing and between 3/8 and 1/2 inch thick.
- Some shellac or varnish is also required.

Friendly Advice.

While the gentleman who is next on the program says: "I want to add this word to what has been said," the gentleman who is next on the program is taking his first glass of water.

Starting one-half inch from one end of the cardboard tube wind on the No. 22 D. C. wire within one-half inch of the other end of the tube. Fasten one end of the winding to the tube but allow some surplus wire on the other end for making a connection. After the winding is in place give it a coat of shellac or varnish to hold the turns in place. Assemble the circular-cut pieces of wood in the geometrical center of the square blocks and then shellac or varnish them for the appearance's sake.

When thoroughly dry slip the two end blocks into the wound tube and by means of a few finishing brads driven through the cardboard tube, fasten the end blocks to the wound tube. The slider is to be mounted on top of the coil and should be capable of making contact with any turn of the wire on the tube. In order to remove the insulation from the wire just under the rod where the slider moves back and forth, wrap a piece of sandpaper around a thin piece of wood and using another piece of wood as a guide, sandpaper the insulation from the winding. Drill a hole one-eighth inch in diameter through the slider rod about one-fourth inch in from each end so that the rod can be fastened by screws to the end blocks. After the slider rod is fastened in place see that the contact finger on the bottom of the slider can at all times make good contact with the winding. Mount a binding post on either end of the coil, attaching one by means of a wire to the slider rod and the other to the end of the wire wound on the tube and the tuner is complete. A tuner can be purchased already assembled for about \$3.50 to \$4.00.

LINKING MOVIE AND RADIO

British Scientists Have Some Success in Wireless Transmission of Motion Pictures.

British scientists are reported to have met with more or less success in developing a method of transferring motion pictures by radio. Some months ago a photograph was transferred by wireless from the Copenhagen newspaper, the Politiken, to England, and later from England to a ship in mid-Atlantic, so that the possibility of linking the movies with the new art is not remote.

If perfected the new development of the already versatile art will make it possible for one to see on his own receiving instrument things that are happening at a great distance. For instance, a ship is sinking at sea. Instead of sending a message of the disaster, send a picture that anyone with a receiving set will be able to see just as the present broadcasting programs are heard.

That all sounds remote now, but the telephone was considered even more so, and the wireless, even after Marconi's immortal message had bridged the Atlantic, was generally believed to be akin to the idea of perpetual motion.

TIPS TO THE RADIOIST

- 1. A crystal detector cannot be satisfactorily amplified.
- 2. Insulate ends of aerial wires with several small insulators.
- 3. Whenever possible run aerial wires at right angles to electric light wires.
- 4. The lead wire should be the size of the combined number of wires in the aerial.
- 5. Gas piping makes a poor ground, but the cold water pipe ground is excellent.
- 6. A crystal detector is never as efficient as a vacuum tube detector no matter what instruments are connected to it.
- 7. Within three to five miles from a broadcasting station indoor one wire aerials about 40 feet long stretched from room to room are generally satisfactory with crystal detectors.

Hundreds of Muscles.
The human body has been estimated to contain some 440 muscles. The actions of all these muscles are fully understood and described, but there are probably many other muscles and compound actions of muscles which have not yet been tabulated.

America's Youngest Woman Explorer Returns



Gertrude Emerson, Noted Editor, Visits Buried Cities in Asia

"Miss Marco Polo"—the title earned in the Orient by adventurous Gertrude Emerson, associate editor of "Asia," for her indefatigable explorations—is safe on American soil again, to the infinite relief of her friends.

For this intrepid small person, who is just five feet tall and only weighs ninety-six pounds, went all around the world during the last two years, absolutely alone, on a still hunt for picture and story material for her magazine.

People Courteous Everywhere
Wherever she went, people were solicitous for her safety, but she waved warnings aside and blithely kept on with her exploring. She hunted tigers in Indo-China, and crocodiles in India; she traveled by elephant, camel, sampan, horseback, motor, aeroplane and ocean liner over so many thousands of miles that she lost count of them herself.

She visited Angkor, a buried city of Cambodia, rediscovered by the French in 1910, where only one hundred persons had ever been since. She explored the famous bat caves of the Philippines and took dangerous motor trips across Indian country that was infested with fanatical insurgents. She was the only passenger on a cargo boat going from Port Said to Constantinople, which two months before had been held up by the Turks with reluctant large vessels.

"But I wasn't scared," she offers casually. "An American woman can go anywhere and she's doing it, too, if not in person at least by way of pencil or pen."

American Music Heard 'Round The World

"For instance, there was the zippy little waltz 'Three O'clock in the Morning' to which I danced American dances in Yokohama, Paris, Bangkok and London. Dorothy Terry, an American girl, wrote the words to that, and now it's an international tune, played not only by foreign dance orchestras, but by the natives themselves on their own peculiar instruments."

"The ship's orchestra played it on my way over from London and when I got home, a phonograph in a near-by apartment greeted me with the familiar."

"It's three o'clock in the morning. We've danced the whole night through. And daylight will soon be dawn—just one more waltz with you." "It was hard for me to realize that I was really at home again."

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Churches

All church notices must be in the hands of the editor by 4 p. m. Friday afternoon.

Presbyterian Church—The quarterly communion service will be held Sunday morning at the regular hour of worship to which celebration of the members of the church are urged to be present. This is in recognition of the fact that the Master. In the evening a timely message will be given by the pastor and to this evening hour all are most cordially invited. The Sunday school and the Young People's Society will meet at their regular hours for study and Christian training. Let us honor the Lord—W. C. Day, Minister.

First Methodist Episcopal Church—"The True Source of Strength, Social National, Institutional and Individual" will be discussed in the sermon in the forenoon service. This service will open at eleven o'clock and close promptly at noon. Good music and hearty fellowship are characteristic of this church. You will be made welcome. Bible school at 9:45. Parents are urged to come to the Bible school with their children. Let not the temptation of the attractive out-of-doors keep you away from worship and Bible study. Claude Conner, superintendent. Epworth League at seven o'clock. Mrs. Vera Wattenberg will be the leader. The topic, "What the League Does for Me." Harvey Carter, president. It will be a pleasure to all of Mr. Hinton's many friends to learn that he will be with us Sunday and will deliver an address at the evening service. Your former pastor will speak on some phases of the very important work in which he is now engaged, the evangelism work. You will hear something forceful and up-to-date on this subject. Come!—G. H. Quigley, Minister.

Christian Church—The Children's Day Program will be given at the Bible School hour. This service will merge into the preaching service, with the children on the choir platform instead of the regular choir. We are hoping to see everyone who is enrolled in the Bible school at this combined service. Christian Endeavor at seven and evening preaching at eight. The pastor is dealing, in the evening service, with some of the things that bother in Bible study. The financing of Hebrews 13:4-6; 10:26-27; Matt. 12:1-12, will be given conscientiously in the study Sunday evening.—O. W. Jones, minister.

Church of Our Lady of the Valley—Sunday Communion Mass at 7 o'clock. Communion day for the men of the parish. Parish Mass at 9 o'clock. Hamill's sermon on gospel of the day. Evening devotion at 7:30, consisting of prayer and appropriate music to the Holy Hour. A cordial invitation is extended to all to attend these services.—A. F. Loomer.

First Church of Christ, Scientist—Corner of First and Washington. Sunday morning service at 11 o'clock. Subject, "God the Only Cause and Creator."

Sunday school at 9:45 a. m. Wednesday evening meeting at 8 o'clock. Reading room open to the public every Monday, Wednesday and Saturday from two to four. All are welcome to attend our services.

LATTER DAY SAINTS—Regular services at the Tabernacle. Sunday school commences at 10:30 a. m. Sacramental services at 12:15 o'clock p. m. Mutual Improvement Association, Sunday at 7:30 p. m. Priesthood and Relief Society meeting at 7:30 p. m. Primary association at the tabernacle Tuesday, for

children, 4 p. m. Primary association on north side at the little chapel, for children, Thursday at 4 p. m. Religion class at tabernacle Thursday at 2:30 and 4 p. m. Religion class at the chapel on north side at 2:30 and 4 p. m. Tuesday. Regular choir practice at the Tabernacle Thursday at 7 p. m. The public is cordially invited to attend any or all of our services.—David I. Stoddard, Bishop.

St. Peter's Episcopal Church—Corner Fourth Street and O Avenue, June 4th is Whit Sunday—a day of the Christian year kept in memory of the gift of tongues at the Jewish feast of Pentecost. It is the birthday of the church and loyal church folk ought to be in their pews on this day. There will be the usual services except that there will be the Holy Eucharist at 11 o'clock. There will be the regular monthly meeting of the Parish Vestry at 8:15 Monday evening at 7 p. m. Regular business meeting of St. Andrew's Brotherhood will follow this at 8 p. m. The Woman's Guild will meet at 8:15 p. m. Wednesday afternoon at 2:15 p. m. Keep the church program in mind.—Jos. W. Griffin, Rector.

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Chief Redfeather, direct from a ten weeks' engagement at Grunman's Theatre, Los Angeles, will appear at the Arcade tonight and Sunday. Don't miss hearing him. 6-3-11

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