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**U. S. DESIGNS SIMPLE
RADIO SET**
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This is the fourth of a series of articles by Frank George, wireless expert, explaining the principles of radio.

BY FRANK GEORGE

(Checked and Approved by Radio Section, U. S. Bureau of Standards)

Any receiving instrument that will receive radiograph messages will also receive voice.

It is estimated that there are 700,000 receiving instruments throughout the country, and that installations are increasing at the rate of more than 500 sets a month. To receive radiograph and radiophone messages no license is required.

Commercial radio sets cost from \$25 for an instrument that will receive messages over a radius of 25 miles to \$250 for a set that will

paratus can be made by any one; only a few of the parts need to be purchased.

The essential parts of the set are the antenna, a lightning switch, ground connections, the receiving instrument and phones. Ordinary telephone head receivers are used. The antenna is simply a 75-foot length of copper wire suspended outdoors at a height of 30 feet from the ground.

Simple Construction

The lightning switch prevents damage to the set by lightning and also serves as a lightning rod for the house. The tuner, panel and crystal detector comprising the receiving instrument are all home made.

The tuner is fashioned out of an oatmeal box and some copper wire; the crystal detector is simply a tested crystal, a cork and some screws and wire, and the panel on which switch, arms and contract screws are mounted is a piece of wood from a packing box.

BUREAU OF STANDARDS.

catch messages from almost any distance. Any amount of money can be spent on the set in the purchase of highly sensitive parts.

A radiophone receiving set that can be constructed for \$6 to \$15 has recently been designed by the United States Bureau of Standards in connection with the boys' and girls' radio club work of the Department of Agriculture. This set will enable one to hear messages sent from medium power sending stations within an area of about ten miles.

Under favorable conditions high power stations sending on 200 to 600 meter wave lengths can be heard within 50 miles. The ap-

Details of construction are contained in a circular which may be obtained on request from the United State Buerau of Stanards, Washington.

A more improved set designed by the Bureau of Standards for demonstration purposes in the nearby reception of messages from high power stations is shown in the illustration. The complete set weighs only 20 pounds and, including the aerial, can be packed in a box one foot square.

(In his next article, Frank George will tell ho wa small tube permits the hearing of radio waves.)