

by teletype from the seven centers to other airports and landing fields and will also be broadcast to aircraft in flight from a rapidly extending network of radio stations maintained by the Department of Commerce.

The Weather Bureau's program provides for the establishment of pilot balloon work at some additional stations, including Albuquerque, N. Mex., Cincinnati, Ohio, Dallas and Del Rio, Texas, Elko, Nev., and North Platte, Nebr.

Outside of continental United States, the Bureau is increasing its airways service in Alaska, where a new first order station is being organized at Nome. Pilot balloon work is being included at both Nome and Fairbanks. All of the Bureau's service in Alaska is under the general supervision of the station at Juneau.

A beginning is being made also in the organization of service for flying activities in the Hawaiian Islands. This service will include a chain of inter-island stations from which reports will be transmitted by radio to Honolulu, there to be made available for the information of pilots flying from one island to another.

In addition to these extensions of its program of *service*, the Weather Bureau is continuing its investigations with kites, captive, pilot and sounding balloons and airplanes (through cooperation with the Navy Department), and is now engaged also in studies of ice formation on aircraft, turbulence or gustiness and other problems.

The Bureau's appropriation for all these lines of activity is \$1,400,000, in addition to the funds provided for its general service to the public.—*W. R. Gregg.*

### CEILING BALLOONS

At the weather stations operated along flying routes by the United States Weather Bureau one of the routine observations consists of measuring the ceiling, or height of low clouds, when present. At night this is accomplished by making an angular measurement of the position of a spot of light thrown on the base of the clouds. In the daytime "ceiling balloons" are used.

The latter are about the size of toy balloons and are colored red or purple in order to make them more readily visible against the background of clouds. They are inflated with hydrogen until just capable of supporting a weight of 40 grams. The correct lift is secured by attaching the balloon during inflation to a small metal cylinder weighing 40 grams and stopping the flow of hydrogen when this cylinder is just lifted from its support.

A balloon having this lift rises at a fairly constant rate averaging 6 feet a second, so that by noting the length of time elapsing after its release before it disappears in the clouds, the observer can determine the height of the cloud base. As, however, the balloon does not reach a constant rate of ascent until it has risen to a certain height—the first part of the ascent being much faster than 6 feet a second—tables are furnished the observers showing the heights corresponding to each half-minute of the balloon's upward journey.—*C. F. Talman*, in *Why the Weather?* (Science Service).