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? WHY THE WEATHER ? Mailed December 1, 1930

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SOUNDING BALLOONS

The weatherman sends up small balloons with nothing attached to them for the purpose of observing the movements of the winds aloft or of measuring the height of low clouds for the benefit of aviators. The balloons for wind observation are called "pilot balloons" and those that measure cloud heights are called "ceiling balloons."

The "sounding balloon" is a more elaborate affair. It carries up a light set of weather instruments that make a continuous record of the temperature, humidity and barometric pressure. The balloon gradually expands as it rises, on account of the decrease in air pressure with altitude, and finally bursts; usually many miles above the earth. The apparatus then falls to the ground, anywhere from a few miles to hundreds of miles from the place of ascent. The instruments are enclosed in a wicker case to break their fall and the American type of balloon has a parachute attached to it for the same purpose. A tag attached to the apparatus offers a reward for its return. In fairly well populated countries fully 90 per cent of the instruments, with their records, are eventually recovered, though sometimes after long delay.

There are several varieties of sounding-balloon. One designed for use at sea is equipped with an auxiliary balloon, which does not burst, and a float. After the fall of the apparatus the instruments are held suspended between the auxiliary balloon and the float above the surface of the water. The U. S. Weather Bureau uses a "limited-height sounding balloon," which is automatically deflated after reaching a moderate height, instead of bursting, in order to facilitate recovery; also a "free-rising captive balloon," which is attached to a light steel wire, by which it is drawn down after the desired height has been reached.

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