

A Science Service Feature

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? WHY THE WEATHER ? Mailed September 23, 1932

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MEASURING UPPER WINDS

The measurement of the "winds aloft" for the information of aviators by means of pilot-balloons -- small free balloons carrying no basket or instruments and observed from the ground during their flight -- is now a routine practice in all civilized countries. Writing of such observations as made in the United States west of the Rockies, where balloons are regularly sent up at 25 places, mostly at intervals of six hours, T.R. Reed, of the U.S. Weather Bureau, says:

"When this work was first undertaken runs were made only once or twice a day, but, with the advent of night flying, pilots and transport companies besought the Weather Bureau for nocturnal information, too. Night runs present difficulties, because to follow the balloon after dark by means of theodolite observations required that it be illuminated. The problem was solved by suspending a very small paper lantern inclosing a tiny tallow candle a few feet below the balloon. The gleam emitted by the lantern was sufficient to permit of tracing its ascent for a considerable distance, and success appeared to have been achieved. But it was short-lived. The fire hazard in many parts of the Far West prompted the inquiry as to whether these lanterns, when they ultimately came down, might not be the innocent cause of grass, brush, and even forest fires. This danger led to the abandonment of the paper lantern during the dry season in the Far West, and the substitution of very small electric lights operated by diminutive dry cells."

As an indication of the value of these measurements, Mr. Reed tells of a case in which a pilot, making a flight from San Francisco to Los Angeles, was advised that a northerly gale was blowing at a height of 10,000 feet. By flying at this height and taking advantage of the strong following wind he made the trip in two-thirds the scheduled time. The same day the wind at a lower level was blowing from the south. Pilots were informed of this fact by the Weather Bureau, and north-bound trips were accordingly made at the low level, also well within schedule time.

"The air," remarks Mr. Reed, "does not limit us to one or two highways, but gives us the choice of a wide variety, so that if one is bad it is often possible to find one that is better."

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