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? WHY THE WEATHER ? Mailed July 30, 1931

By Charles Fitzhugh Talman,
Authority on Meteorology.

MEASURING UPPER WINDS WITH SMOKE

One day during the siege of Quebec, in the year 1759, a west wind was blowing with such strength that some of the ships engaged lowered away their top-masts and boats were rowed with great difficulty to windward. When, however, a bomb burst over the town the smoke was observed to remain in nearly the same place for a quarter of an hour, showing that the air was calm at the level of the explosion. It is not recorded that anybody was inspired by this episode with the idea of utilizing the smoke from bombs as a means of measuring the movements of the winds aloft but today this method of measurement is familiar to meteorologists.

An anti-aircraft shell is generally employed for the purpose. During the world war these shells were nicknamed "Archies," and the measurements were therefore said to be made by means of "Archie bursts." The shell fuse is set so that the explosion occurs at a predetermined altitude, and the movement of the smoke is observed in a graduated mirror. As the height of the burst is known, the actual speed of drift can be computed from such an observation.

As bursting shells are dangerous, their use for this purpose is not applicable everywhere in time of peace. A harmless substitute for the shell burst is an artificial cloud discharged from an airplane at the desired altitude and observed in the same manner from the ground.

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21st and Constitution Ave.
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