of air. The upper warm current flowed in a direction parallel to the general trend of the Blue Ridge Mountains and consequently since the general level of the range changes but little, there was no opportunity for cooling by adiabatic expansion as would be the case in a current flowing at right angles to a mountain range. The air of the surface layer was saturated with moisture while that of the warmer air was doubtless considerably drier and hence it was possible for the surface fog and cloud to evaporate as actually happened later in the day.

The morning weather map gives a rather illuminating view of the weather conditions that prevailed at the time of the flight. An area of high pressure with its crest over New England, 30.50 inches, was passing to the eastward over the Atlantic. A dense layer of cloud overspread practically the whole country including the Atlantic coast, altho pressure in the last-named district exceeded 30.40 inches. At Asheville, N. C., light snow was falling with a southeast wind, thus showing that the conditions which existed at Mount Weather were common along the eastern slope of the Appalachians.

The kite flights at Mount Weather have repeatedly shown that the surface winds in areas of high pressure passing off to sea over the Atlantic coast are very shallow, and that at a few hundred meters above the mountain top warmer westerly winds prevail. On the border between the two wind systems there is always a rather thin cloud layer which under favorable conditions may increase in depth and produce rain.

But on the map in question the particular point to which I wish to draw attention is the rise of 20° F. in the surface temperature in Oklahoma, and also in the lower Lake region, while at Mount Weather a layer of warm air, relatively to the surface, prevailed at an altitude of about 500 meters above the station. It is the experience at Mount Weather that horizontally moving air currents having a temperature relatively higher than that of the surface descend rather slowly; thus a warm current, which first appears on the mountain top, has been known to require about twenty hours in the descent into the adjacent valleys, as shown at Trapp, 309 meters lower on the Loundoun side, and at Audley (near Berryville) on the Shenandoah side. It is assumed, therefore, that the surface warming shown on the weather map some distance from Mount Weather is evidence of the descent, during the previous forty hours, of the layer of warm air which was observed at Mount Weather on the day in question. As a matter of fact the warm layer reached the surface at Mount Weather in about twenty-four hours after the kite observation.

A PORTABLE ROTATION PSYCHROMETER.


A form of psychrometer, designed to take the place of the ordinary sling psychrometer where it is impossible to use the latter, such as in thickets or heavily-wooded areas, or in caves where humidity readings are desired, is shown in fig. 1. The instrument consists of a large bevel gear, provided with a crank which drives a small gear. The axis, around which the small gear turns, carries a light steel frame which is revolved by the small gear and to which the wet- and dry-bulb thermometers are attached. This steel frame is so formed as to protect the thermometers, and being constructed of steel bands which are channelled in such a way as to render the instrument sufficiently stiff to resist bending, it is possible to use the instrument in a position where it is not possible to use the ordinary psychrometer. The psychrometer is put in operation by turning the handle, which, through a gear train, causes the steel frame to revolve in such a manner that the thermometers are alternately exposed to the temperature of the air and to the surrounding atmosphere.