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A Science Service Feature

? WHY THE WEATHER ?

Dr. Charles F. Brooks,
of Clark University,
tells of:

COMPUTING THE WINDS ALOFT

With all the variety of the weather, it is remarkable how closely the temperatures, pressures, and winds aloft correspond at one time with those of another when the surface conditions are similar. Dr. C. L. Meisinger of the Weather Bureau has found that if one knows the pressure, wind direction and air temperature at the surface he can compute rather closely the temperatures and pressures at various heights up to a few miles, and by comparing computed pressures at the same levels over different stations he can determine the approximate wind direction and velocity. The methods were worked out from several years of daily observations obtained by the Weather Bureau with kites at seven stations. The results were then applied generally through theeastern half of the United States.

When the wind at the ground is from a certain direction, these observations show that the temperatures up to moderate heights differ from that at the ground usually by a certain amount which varies with the season and the location. Since the density of the air depends largely on the pressure and the temperature the pressure at any moderate height can readily be found by subtracting from that at the surface the weight of an air column of a density called for by the temperature of the air column and the pressure at the ground. When pressures over a number of places have been computed it is possible to find the direction and steepness of the pressure change and so to compute the direction and velocity of the wind aloft.

When such maps pass the experimental stage further improvements in forecasting winds for aviators and in forecasting storm tracks when upper air observations are prevented by low clouds or strong winds may be expected.

(Tomorrow: Conduction Stores Heat in Ground)

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