

PRACTICAL CLOUD STUDIES.

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Weather forecasting the world over is done principally by watching the shift and development of the high pressure areas and low pressure areas shown on the daily weather maps. These maps, as is well understood, are prepared from data furnished by simultaneous observations telegraphed at regular hours, usually twice each day, from all stations in the country; and a study of consecutive maps indicates the direction and the rate of movement of the Highs and Lows that appear thereon, and the principal features of weather and temperature that accompany them. In this way the probable weather for a given state or locality is estimated for one or two days in advance and the estimate is issued as the official forecast.

The work of forecasting is complicated by the great variation that occurs in both the direction and the rate of progress of the Highs and Lows and in the distribution of cloudiness and precipitation about the Lows. While the pressure areas in temperate latitudes almost invariably move eastward, their paths may be at almost any eastward angle and may change from one to another on short notice. And their speed may vary from almost nothing to a thousand

miles or more per day. Also, though the distribution of clouds and precipitation about a Low is occasionally symmetrical and uniform, it is nearly always irregular and uneven, and one scarcely sees two maps in ten years that are exactly alike. Especially in the summer half of the year is the arrangement of the clouds and rain of a Low usually very erratic. The showers are generally of relatively small extent, with much clear or partly cloudy sky between, and there is often little or nothing on the map to indicate even approximately what localities will receive rain and which ones will be missed.

Since the occurrence or non-occurrence of precipitation is in many respects and for most people the most important of the weather elements for the larger part of the year, and since rain or snow is always associated with cloudiness, and since this precipitation is usually preceded by certain distinct types of clouds, and attended by other types, and followed by still others, it would seem that a study of the cloud forms and developments and movements ought to yield some assistance to one interested in foretelling the weather. This has resulted in the experience of the writer.

Rain is nearly always preceded several hours, or a day or more, by cirrus or cirro stratus clouds, though sometimes these are obscured by lower clouds and can only be seen through an occasional break in the lower layer. The appearance and movements of cirrus and cirro-stratus should be carefully noted, as these clouds do not always indicate rain. Among numerous types of cirrus indications are the following.

Cirrus spreading rather rapidly from west and thickening toward the horizon usually indicate that a storm is approaching or developing in the west. If the movement of the individual clouds is from the west the storm will probably advance over your locality arriving in about average time. But if under a similar arrangement and appearance of cirrus, the movement of the individual clouds is from S. W. or S. S. W., the approach and passing and departure of the storm will usually be slower, there is likelihood of more rainfall, and the clearing will be delayed longer, than with the first type of cirrus, even though the weather maps in both instances should be alike.

Cirrus or cirro-stratus moving rapidly from S. W. to N. E., or from W. S. W. to E. N. E., and covering or crossing the upper half of the southern sky, will be followed by rain or snow next day four times out of five. (There is one set of conditions under which this rule will not hold). If the movement of cirrus is from nearly due west and crosses only the

southern sky, the chance of rain at your locality is less, as the storm may pass to south of you.

Cirrus in the lower half of the northern sky, having the form that seems to spread outward from the northwest, but at the same time moving from due west, indicate rain to north and northeast of your locality within probably 12 hours. A similar appearance in the north with the cirrus covering the northwest sky and moving rapidly out from the northwest toward the zenith, indicates rain at your locality usually within 12 hours.

Scattered cirrus and cirro-stratus frequently mark or indicate the path to be followed by summer showers. Sometimes cirrus merged with alto-stratus do the same. Alto-cumulus and the higher type of strato cumulus often mark the path of showers to follow. That is, one may quite often know from these clouds that showers moving from the west will pass to north of his locality within 4 to 10 hours; or that they will first develop to the north or northwest and will later overspread his vicinity; or that they are likely to occur only to the southeast of him. Alto cumulus in early morning, moving from west or southwest over or near the zenith, and unaccompanied by approaching storm clouds, indicate thunder showers the following mid-afternoon or evening.

There is one combination and sequence of cirrus and alto-stratus in afternoon and early evening that indicates rain with thunder for the following morning or early forenoon nine times out of ten. This combination has been used successfully in evening to predict rain for the following morning when even the P. M. weather map of the day did not show any storm approaching or developing.

In a similar manner clouds often enable one to know whether an approaching shower is likely to be heavy or light; or when rain now in progress will cease; or whether at the end of one shower another is soon to follow; and numerous other features of interest or value.

The foregoing illustrates what may be done by cloud study. The rules given will apply in the northern half of Illinois and the most of Iowa, and in most of the surrounding states with probably slight modifications. For other sections of middle and eastern United States further changes would doubtless be required, but the same methods could be used to advantage.

To use these suggestions it is of course necessary to be acquainted with the standard classification of clouds. A considerable fund of personal observations and experience is also essential to familiarize one with the cloud types mentioned, as these can not always be accurately recognized from a mere verbal description.

The purpose of this paper is simply to suggest lines along which practical use may be made of cloud observations that any intelligent person with opportunity to view the sky may readily make for himself.
