

HOW TO FORETELL WEATHER.

The following manual of the barometer has been compiled by Rear-Admiral Fitzroy:—

A rapid rise of the barometer indicates unsettled weather; a slow movement the contrary; as likewise a steady barometer, which, when continued, and with dryness, foretells very fine weather.

A rapid and considerable fall is a sign of stormy weather and rain (or snow). Alternate rising and sinking indicates unsettled and threatening weather.

The greatest depressions of the barometer are with gales from S.E., S., or S.W.; the greatest elevations, with wind from N.W., N., or N.E., or with calm. Though the barometer generally falls with a southerly and rises with a northerly wind, the contrary sometimes occurs: in which cases the southerly wind is usually dry with fine weather, or the northerly wind is violent and accompanied by rain, snow, or hail; perhaps with lightning.

When the barometer sinks considerably, much wind, rain (perhaps with hail), or snow will follow; with or without lightning. The wind will be from the northward, if the thermometer is low (for the season); from the southward, if the thermometer is high. Occasionally a low glass is followed or attended by lightning only, while a storm is beyond the horizon.

A sudden fall of the barometer, with a westerly wind, is sometimes followed by a violent storm from N.W., or N., or N.E.

If a gale sets in from E. or S.E., and the wind veers by the S., the barometer will continue falling until the wind is near a marked change, when a lull may occur; after which the gale will soon be renewed, perhaps suddenly and violently, and the veering of the wind towards the N.W., N., or N.E. will be indicated by a rising of the barometer with a fall of the thermometer.

Three causes (at least)\* appear to affect the barometer:—

1. The direction of the wind—the north-east wind tending to raise it most; the south-west to lower it the most, and wind from points of the compass between them proportionally as they are nearer one or the other extreme point. N.E. and S.W. may therefore be called the wind's extreme bearings (rather than poles). The range or difference of height shown, due to change of direction only, from one of these bearings to the other (supposing strength or force and moisture to remain the same), amounts in these latitudes to about half an inch (as read off).

2. The amount—taken by itself—of vapour, moisture, wet, rain, or snow in the wind, or current of air (direction and strength of wind remaining the same), seems to cause a change amounting in an extreme case to about half an inch.

3. The strength or force alone of wind, from any quarter (moisture and direction being unchanged), is preceded or foretold by a fall or rise, according as the strength will be greater or less, ranging in an extreme case to more than two inches.

Hence, supposing three causes to act together—in extreme cases—the height would vary from near 31 inches (30°) to about 27 inches (37°), which has happened, though rarely (and even in tropical latitudes). In general, the three causes act much less strongly, and are less in accord; so that ordinary varieties of weather occur much more frequently than extreme changes.

Another general rule requires attention, which is, that the wind usually appears to veer, shift, or go round with the sun (right-handed, or from left to right), and that, when it does not do so, or backs, more wind or bad weather may be expected instead of improvement.

It is not by any means intended to discourage attention to what is usually called "weather wisdom." On the contrary, every prudent person will combine observation of the elements with such indications as he may obtain from instruments, and will find that the more accurately the two sources of foreknowledge are compared and combined the more satisfactory their results will prove.

A barometer begins to rise considerably before the conclusion of a gale, sometimes even at its commencement. Although it falls lowest before high winds, it frequently sinks very much before heavy rain. The barometer falls, but not always, on the approach of thunder and lightning. Before and during the earlier part of settled weather it usually stands high and is stationary, the air being dry.

Instances of fine weather, with a low glass, occur, however rarely; but they are always preludes to a duration of wind or rain, if not both.

After very warm and calm weather a storm or squall, with rain, may follow; likewise at any time when the atmosphere is heated much above the usual temperature of the season.

Allowance should invariably be made for the previous state of the glasses during some days, as well as some hours, because their indications may be affected by distant causes, or by changes close at hand. Some of these changes may occur at a greater or less distance, influencing neighbouring regions, but not visible to each observer whose barometer feels their effect.

There may be heavy rains or violent winds beyond the horizon, and the view of an observer, by which his instruments may be affected considerably, though no particular change of weather occurs in his immediate locality.

It may be repeated that the longer a change of wind or weather is foretold before it takes place, the longer the presaged weather will last, and conversely, the shorter the warning the less time, whatever causes the warning, whether wind or a fall of rain or snow, will continue.

Sometimes severe weather from the southward, not lasting long, may cause no great fall, because followed by a duration of wind from the northward, and at times the barometer may fall with northerly winds and fine weather, apparently against these rules, because a continuance of southerly wind is about to follow. By such changes as these one may be misled, and calamity may be the consequence, if not duly forewarned.

A few of the more marked signs of weather, useful alike to seaman, farmer, and gardener, are the following:—

Whether clear or cloudy, a rose sky at sunset presages fine weather; a red sky in the morning bad weather, or much wind (perhaps rain); a grey sky in the morning, fine weather; a high dawn, wind; a low dawn, fair weather.‡

\* Electrical effects are yet uncertain.

† With watch-hands in the northern hemisphere; but the contrary in south latitude.

‡ Thunder clouds rising from north-eastward against the wind do not usually cause a fall of the barometer.

§ A "high dawn" is when the first indications of daylight are seen above a bank of clouds.

A "low dawn" is when the day breaks on or near the horizon, the first streaks of light being very low down.

Soft-looking or delicate clouds foretell fine weather, with moderate or light breezes; hard-edged, oily-looking clouds, wind. A dark, gloomy, blue sky is windy; but a light, bright blue sky indicates fine weather. Generally the softer clouds look, the less wind (but perhaps more rain) may be expected; and the harder, more "greasy," rolled, tufted, or ragged, the stronger the coming wind will prove. Also, a bright yellow sky at sunset presages wind; a pale yellow, wet—and thus by the prevalence of red, yellow, or grey tints the coming weather may be foretold very nearly; indeed, if aided by instruments, almost exactly.

Small ink-looking clouds foretell rain; light scud clouds driving across heavy masses show wind and rain, but, if alone, may indicate wind only.

High upper clouds crossing the sun, moon, or stars in a direction different from that of the lower clouds, or the wind then felt below, foretell a change of wind.\*

After fine clear weather the first signs in the sky of a coming change are usually light streaks, curls, wisps, or mottled patches of white distant cloud, which increase, and are followed by an overcasting of murky vapour that grows into cloudiness. This appearance, more or less oily or watery, as wind or rain will prevail, is an infallible sign.

Usually the higher and more distant such clouds seem to be, the more gradual, but general, the coming change of weather will prove.

Light, delicate, quiet tints or colours, with soft, undefined forms of clouds, indicate and accompany fine weather; but gaudy or unusual hues, with hard, definitely-outlined clouds, foretell rain, and probably strong wind.

Misty clouds forming or hanging on heights show wind and rain coming, if they remain, increase, or descend. If they rise or disperse, the weather will improve or become fine.

When sea-birds fly out early, and far to seaward, moderate wind and fair weather may be expected; when they hang about the land or over it, sometimes flying inland, expect a strong wind with stormy weather. As many creatures besides birds are affected by the approach of rain or wind, such indications should not be slighted by an observer who wishes to foresee weather.

There are other signs of a coming change in the weather known less generally than may be desirable, and, therefore, worth notice—such as when birds of long flight, rooks, swallows, or others, hang about home, and fly up and down or low, rain or wind may be expected. Also when animals seek sheltered places, instead of spreading over their usual range; when pigs carry straw to their sties; when smoke from chimneys does not ascend readily (or straight upwards during calm), an unfavourable change is probable.

Dew is an indication of fine weather; so is fog. Neither of these two formations occurs under an overcast sky, or when there is much wind. One sees fog occasionally rolled away, as it were, by wind; but seldom or never formed while it is blowing.

Remarkable clearness of atmosphere near the horizon, distant objects, such as hills, unusually visible, or raised (by refraction †), and what is called "a good hearing day," may be mentioned among the signs of wet, if not wind, to be expected.

More than usual twinkling of the stars, indistinctness or apparent multiplication of the moon's horns, haloes, "wind dogs,"‡ and the rainbow, are more or less significant of increasing wind, if not approaching rain, with or without wind.

Near land, in sheltered harbours, in valleys, or over low ground, there is usually a marked diminution of wind during part of the night, and a dispersion of clouds. At such times an eye on an overlocking height may see an extended body of vapour below (rendered visible by the cooling of night) which seems to check the wind.

Lastly, the dryness or dampness of the air, and its temperature (for the season), should always be considered, with other indications of change, or continuance of wind and weather.

THE SHOOTING STARS observed at Rome in August, 1860, by Father Secchi attained their maximum on August 10, when 124 were seen. The number on the 9th was fifty, and on the 11th twenty-five only. The months of August and November are remarkable for the abundance of these meteors.

THE ACTION OF ALCOHOL, CHLOROFORM, &c., on the nervous system has been investigated by MM. Lallemand, Perrin, and Duroy, who have laid an account of their experiments before the French Academy of Sciences. They state their conviction that alcohol, chloroform, ether, and amyline act directly upon the nervous system; while carbonic acid and carbonic oxide act directly on the blood, which they modify, and thereby determine secondarily the phenomena of insensibility. This agrees with the opinion of M. Flourens, who stated long ago that in ordinary asphyxia the nervous system loses its power under the action of black blood (blood deprived of its oxygen); but in etherisation the nervous system loses its power, at first, by the direct action of the single agent which determined it.

THE WOURALI POISON (now called Curare) is affirmed by M. Vella of Turin to be the true physiological antidote to strychnine. He states that he has demonstrated this by experiment upon animals who had received strychnine into the stomach and the veins. The terrific convulsions were overcome by injections of the curare. A dog received into the jugular veins two milligrammes of strychnine and fifteen milligrammes of curare. On being put at liberty the animal ran about the laboratory without suffering from convulsions or muscular relaxation.

ARSENIC IN COLOURED PAPERHANGINGS.—Professor Schrotter has read a report to the Imperial Academy of Vienna on certain papers taken from rooms, the inhabitants of which had suffered from deleterious exhalations. He found that one hundred square yards of a green paper contained nearly 70 grains (5.1 grammes) of regulus of arsenic, representing 29.4 grains of arsenious acid, and that the red papers also contained a large proportion of this dangerous substance. The Academy of Sciences at Munich is also engaged in investigating the subject.

\* In the tropics, or regions of trade winds, there is generally an upper and counter current of air, with very light clouds, which is not an indication of any approaching change. In middle latitudes such upper currents are not so frequent (or evident) except before a change of weather.

† Such refraction is a sign of easterly wind.

‡ Fragments or pieces (as it were) of rainbows (sometimes called "windgalls") seen on detached clouds.