"The most dangerous shifts of wind, or the heaviest northerly gales, happen soon after the barometer first rises from a very low point; or, if the wind veers gradually, at some time afterwards.

"Indications of approaching changes of weather and the direction and force of winds are shown less by the height of the barometer than by its falling or rising. Nevertheless, a height of more than thirty (30·0) inches (at the level of the sea) is indicative of fine weather and moderate winds; except from east to north, occasionally.

"The barometer is said to be falling when the mercury in the tube is sinking, at which time its upper surface is sometimes concave or hollow; or when the hand moves to the left. The barometer is rising when the mercurial column is lengthening; its upper surface being convex or rounded, or when the hand moves to the right.

"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 a 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.

"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 thirty-one inches (30·9) to about twenty-seven inches (27·0), 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,

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