

**THE BAROMETER, THERMOMETER,  
HYGROMETER, AND  
ATMOSPHERIC APPEARANCES AT  
SEA AND ON LAND AS AIDS IN  
FORETELLING WEATHER; PP. 5-66**

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The Barometer, Thermometer, Hygrometer, and Atmospheric Appearances at Sea and on Land as Aids in Foretelling Weather; pp. 5-66 by Thornton A. Jenkins

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**THORNTON A. JENKINS**

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THE  
BAROMETER, THERMOMETER, HYGROMETER,

AND

ATMOSPHERIC APPEARANCES AT SEA AND ON LAND

AS

AIDS IN FORETELLING WEATHER,

WITH

BREIF RULES FOR THEIR USE, AND THE PRACTICAL APPLICATION OF THEIR SEPARATE  
AND COMBINED INDICATIONS

AS

WEATHER GUIDES.

COMPILED FROM THE LATEST AND MOST TRUSTWORTHY AUTHORITIES,

BY

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is much wind. One sees the fog occasionally rolled away, as it were, by wind, but not formed while it is blowing.

18. The expressions "hardening up," "softening," or "looking greasy," are familiar to seamen; and such very sure indications are the appearances so designated that they can hardly be mistaken.

19. The rapid or slow rise of a squall cloud, its more or less disturbed look—that is, whether its body is much agitated and changing form continually, with broken clouds or scud flying about, or whether the mass of cloud is shapeless and nearly quiet, though floating onward across the sky—foretells more or less wind accordingly.

20. An officer of the watch, with a good eye for clouds and signs of changing weather, may save his men a great deal of unnecessary exposure as well as work, besides economizing sails, spars, and rigging.

21. It not unfrequently happens that good and careful seamen tack ship to get to windward of, or to avoid a squall cloud rising in the track of, or approaching his vessel.

#### RULES TO EXPLAIN THE INDICATIONS OF THE INSTRUMENTS.

1. The barometer shows the *pressure of the air*.
2. The thermometer (in the shade) shows heat and cold, or the *temperature of the air*.
3. The hygrometer shows the degree of *moisture* or the *dampness of the air*.
4. It should always be remembered that changes in weather almost always give signs of their coming; for the instruments are affected before the wind actually begins to blow or the rain to fall: thus the instruments may be said to enable us "to feel the pulse" of the atmosphere. It must not be forgotten that the length of time which passes between the first appearance of a change of weather and its actual setting in, is not always the same. It is much greater when a southwest wind is going to succeed a northeast wind, than when the opposite change is going to take place. We shall see further on why this is the case, and also how the appearance of the sky will aid us in forming an opinion as to probable weather.
5. The general principles on which the following explanation is founded, have been laid down by Professor Dove, and may be briefly stated thus:\*

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#### \* "EXPLANATORY CARD.

*"(In south latitude read south for north.)"*

#### "WEATHER GLASS.

"The barometer rises for northerly wind (including from northwest, by the north, to the eastward,) for dry or less wet weather; for less wind, or for more than one of these changes, except on a few occasions when rain, hail, or snow comes from the northward with strong wind.

a. If the level of the mercury in the barometer is about at its average height, viz., 30 inches at the sea-level, and is steady or rising while the weather gets colder and the air becomes drier, northwesterly, northerly, northeasterly winds, or less wind, less rain or snow may, generally be expected.

b. On the contrary, if the level of the mercury falls while the weather gets warmer and the air becomes damper, wind and rain may be looked for from the southeast, south, or southwest.

c. If these rules are broken in any way, there is reason to fear.

d. If the weather gets warmer while the barometer is high and the wind northeasterly, (polar current,) we may look for a sudden shift of wind to the south. On the other hand, if the weather becomes colder while the wind is southwesterly (equatorial current) and the barometer low, we may look for a sudden squall or severe storm from the northwest, with a fall of snow if it be winter time.

e. Slight exceptions to these rules sometimes happen; the commonest are with northeast winds, which sometimes bring rain, sleet, or snow, especially during heavy gales, although the barometer may be rising. On the other hand, when the wind is northeasterly and light and the barometer begins to fall, rain may set in before the wind begins to blow from east or east-southeast.

f. Besides these rules for the instruments, there is one about the way in

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"The barometer falls for southerly wind (including from southeast, by the *south*, to the westward,) for wet weather; for stronger wind, or for more than one of these changes, except on a few occasions when *moderate* wind with rain (or snow) comes from the northward.

"For change of wind toward northerly directions—a thermometer falls.

"For change of wind toward southerly directions—a thermometer rises.

"Moisture, or dampness in the air (shown by a hygrometer,) increases *before* rain, fog, or dew.

"Admiral Fitzroy proposed the following words for barometer scales:

"Rise for northeasterly, NW., N., E.; dry or less wind, except wet from northeastward.

"Fall for southwesterly, SE., S., W.; wet or more wind, except wet from northeastward.

"When rise begins after low,  
Squalls expect and clear blow.

Long foretold—long last,  
Short notice—soon past.

First rise after low  
Foretells stronger blow.

"Also, generally speaking:

"When the glass falls low,  
Prepare for a blow;  
When it rises high,  
Let all your kites fly.

"These rules will suit the southern hemisphere exactly, if we put N. for S., and S. for N. throughout."

which the wind changes, which is very important. It is well known to every seaman, and is contained in the following couplet:

"When the wind veers against the sun,  
Trust it not, for back it will run."

The wind almost always shifts *with the sun, i. e.*, from left to right in front of you. A change in this direction is called *veering*.\*

*g.* Thus, an east wind shifts to west through southeast, south, and southwest, and a west wind shifts to east through northwest, north, and northeast.

*h.* If the wind shifts the opposite way, viz., from west to southwest, south, and southeast, the change is called *backing*, and it seldom occurs unless when the weather is unsettled.

*i.* However, slight shifts of wind do not follow this rule exactly; thus, for instance, the wind often shifts from southwest to south and back again.

6. In Great Britain there are only two quarters from which the wind ever blows for many days together. They are opposite to each other, and are the southwest and northeast. In most other parts of the world the same remark is true as to the two wind-currents, but they do not always blow from the same points as they do in Great Britain. What is it that causes these winds to blow and makes them so different from each other, as they are known to be? The simplest account of them is that the air is always flowing to the equator from the poles and back again. It then forms two great currents; one is called the polar current, as it flows from the pole, and is felt in Great Britain as a northeast wind. The other is called the equatorial current, as it flows from the equator, and is felt there as a southwest wind. The equatorial current blows over Great Britain nearly ten times as many days as the polar current does.

7. The air of the equatorial current has been heated, and so it is light, warm, and moist; while it is blowing, the barometer is low and the weather usually wet.

8. The air of the polar current has been chilled, and so it is heavy, cold, and dry; while it is blowing, the barometer is high and the weather dry.

9. If we keep the idea of these two great currents clearly in our heads, we shall easily understand most of the signs of weather which are noticed.†

10. To know the state of the air, not only barometers, thermometers, and hygrometers must be noticed, but the appearances of the sky must be vigilantly watched also.

11. When the barometer rises, owing to a change of wind, the weather gets colder; while when the barometer falls, owing to a change of wind, the weather gets warmer.

\* With watch-hands in the northern hemisphere; but the *contrary in south latitude*. This, however, is only *apparent*, the wind is actually circulating in the *contrary* direction.

† See Dove's *Law of Storms*: London, 1862.



12. If the barometer be high (above 30 inches) and remain steady for some days, the wind will probably be from some point between north and east and the weather will be dry.

13. If the barometer be low (below 29.5 inches) and remain steady, the wind will probably be from some point between south and west and the weather will be cloudy and wet.

14. If the barometer rises slowly, the weather will become drier and the wind will become lighter and perhaps die away. There may also be local fogs.

15. If the barometer falls gradually, the weather will become wetter and more unpleasant, and there will never be a certainty of having a fine day, though there need not be much wind.

16. In general, whenever the level of the mercury continues steady, there is very little danger of a storm; but when it is unsteady, great care is necessary to avoid being surprised by a squall or serious gale.

17. When the barometer is steady, there is no great likelihood of a storm being near us; while, when it is unsteady, there is great danger of the wind freshening to a gale. This unsteadiness may be due to mere local causes, so that it is at times very hard to say whether it shows that a serious storm or only a slight squall is coming on.

18. A sudden rise of the barometer is very nearly as dangerous as a sudden fall, because it shows that the level is unsteady. In an ordinary gale the wind often blows hardest when the barometer is just beginning to rise, directly after having been very low.

19. When the barometer at any place rises very high (above 30.5 inches) and continues so for some days, it is because there is, so to speak, too much air at the place, and the winds will be very light. A gale can only set in when the wind flows away, and it will not at first be severe at the place.

20. When the barometer is very low (below 29.0 inches) and continues so, there may be calm and even dry weather for a short time, what is called a "pet day" or "weather breeder;" but there is great danger of a serious storm, because the air will try to force its way into the district where the readings are low and increase the pressure there. The storm will probably be worst where the barometer has been the lowest.

21. The air of the equatorial current is lighter than that of the polar current, and so southerly winds will begin to blow aloft before they are felt below, while the northerly winds will begin to blow below. Accordingly, southwest winds give much more warning of their coming than northeasterly ones. The southwest wind will show itself first by long streaks of cloud at a great height, called "mares' tails," or, when the gale is very near, by driving scud.\*

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\* "Mackerel skies and mares' tails  
Make tall ships carry low sails."

22. Signs of weather, such as those first noticed, are very important to any one watching for changes, as they will often enable him to confirm the opinions formed from the behavior of his instruments.

23. The change from a clear sky to a cloudy one almost always begins with the appearance of long streaks of cloud, which show the track of the wind in the sky. At night, we often see rings around the moon when such clouds as these are observed. If they stretch right across the sky, forming what is called a "Noah's ark," we know that the wind above us has set in in earnest, and that wet weather is sure to follow.

24. The reason that the air clears and that mountains look near just before rain is that, after a long spell of dry weather, there is a great deal of dust in the air; and when the air gets damp, as it does just before rain, the moisture settles on the dust and makes it sink, leaving the air clear.

25. In the morning, the sun is to the east of us; and the clouds which occasion the rainbow are to the west, and therefore likely to come over us. In the evening, if we see a rainbow, it must be in the east, and the sun must be shining in the west; hence the saying:

"A rainbow in the morning  
Is the sailor's warning;  
A rainbow at night  
Is the shepherd's delight."

26. However, after a wet day, the whole of the sky often clears at night. This is not a certain sign of fine weather. The clouds may, and often do, form just as heavily after sunrise next morning.

27. Thunder-storms almost always occur when the weather is hot for the season; they are generally caused by a cold wind coming over a place where the air is much heated. They do not cool the air; it is the wind that brings them which makes the weather cooler. If a thunder-storm comes up from the east, the weather will not be cooler after it. This will not happen till another storm comes up from the west. Thunder-storms are more violent the greater the difference of temperature between the two currents of wind which produce them.

28. If in winter the barometer suddenly rises very high and a thick fog sets in, it is a sure sign that the southwest and the northeast winds are "fighting each other." Neither of them can make head against the other, and there is a calm; but there is great danger of such a state of things being followed by a bad gale.

29. The changes shown by the instruments in stormy weather are like those just described; but they take place more quickly and are greater when they come.

30. In winter, after a prevalence of easterly winds, if the barometer begins to fall and the thermometer to rise, a gale which commences to blow from southeast will veer to southwest, while the barometer falls

constantly. As soon as the wind passes the southwest point, the barometer begins to rise, a heavy shower of rain falls, and a strong west-northwest or northwest wind may follow; after which, the sky clears and the weather becomes colder.

31. In some rare cases, this northwest wind may be followed by a north or northeast wind.

32. If the wind "backs" from northwest toward west and southwest and continues strong, the bad weather is almost sure to continue.

33. The (northeast) polar storms do not "veer" to the same extent as the equatorial (southwest) winds; they very seldom change their direction more than two or three points, while the shift of wind *with the sun* through six or seven points is very common in the case of southwest storms.

34. A fall, with the thermometer low, for the season and place, foretells snow.

35. Exceptions to these rules occur when a northeasterly wind, with wet, (rain, hail, or snow,) is impending, before which the barometer often rises (on account of the *direction* of the coming wind), and deceives persons who, from that sign only, (the rising,) expect fair weather.

36. When the barometer is rather below its ordinary height, say down to nearly 29½ inches, (at the sea level,) a rise foretells less wind, or a change in its direction toward the north, or less wet; but when it has been very low, about 29 inches, the first rising usually precedes or indicates strong winds, at times heavy squalls, from the northwestward, northward, or northeastward, *after* which violence, a gradually rising glass foretells improving weather—if the thermometer falls. But, if the warmth continue, probably the wind will back, (shift against the sun's course,) and more southerly or southwesterly wind will follow, especially if the barometer rise is sudden.

37. 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.

38. 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 *steady height* of more than 30.0 inches at the level of the sea is indicative of fine weather and *moderate* winds, *except occasionally* those from east to north.

39. 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.

40. A rapid and considerable fall is a sign of stormy weather with thunder and lightning, and rain, hail, or snow. Alternate rising and sinking indicates unsettled and threatening weather.