

An increase of density from an addition of carbonic acid would increase proportionally the amount of heat absorbed, the absorptive power of this gas being 90 times that of the atmosphere. The presence of aqueous vapor also increases the absorptive power.

The winds are a means of distributing heat and moisture, and thus tend to equalize the temperature of the globe. But, at the same time, they make local areas of extreme heat and cold, of extreme precipitation and dryness.

(2) **Surface movements of the winds.** — For theoretical views and details on this subject, reference should be made to meteorological treatises, the remarks here being confined to a few general facts. They illustrate well the dependence of effects on the east-west characteristics of the earth derived from its rotation.

In general, the courses of the winds are nearly coincident with those of the great oceanic currents, and it is held by many that the winds are the motive power of the currents. In the tropics, the prevailing course of the winds is from the eastward (these winds being called the trades), and in the higher temperate latitudes from the westward. There is a tendency to calms (1) along the equator; (2) in mid ocean between the parallels of 25° and 35°; and (3) about the poles; but the equatorial area of calms is sometimes in part a region of a counter-current.

The trades strike the east side of the continent, and then, bending away from the equator, curve around to become the westerly winds. And the reverse is true for the westerly winds; but where they strike the west side of a continent, only part of the wind may be deflected toward the equator and the rest curve around poleward; and when so, the former gradually warms up, since it goes toward warmer regions, and the latter loses heat because going into higher latitudes. These two parts vary in their relative amounts or force according to the trends of the coast-lines or form of the land.

The Indian Ocean makes an exception under the system, because the region there existing to the north of the equator is occupied by a continental mass, Asia, which pushes the circuit to the south, the winds that blow there from the eastward corresponding to the trades of the other oceans.

(3) **Distribution of moisture.** — The capacity of air for moisture — that is, its power of taking up moisture without a loss of transparency — varies with the temperature. When saturated, a loss of heat causes condensation, and thence, mist, clouds, rain. On the contrary, an increase of heat increases capacity for moisture, and the wind, instead of dropping moisture, gathers moisture from the surface it passes over.

In the south Pacific the wind from the west is a cold wind, charged with moisture derived from the ocean; as it divides on striking South America it becomes in its northern branch desert-making, in its southern, rain-giving. The branch going north passes into regions of increasing warmth, and the wind gathers up the moisture beneath and makes the desert region of