

in Iowa; and connected it with Baron Burek's account of the traditions he found among the Aztecs, of the migration of that race or tribe from the Northeast or Upper Mississippi and Missouri country.

Mr. Coxe described a locality at Baker's Run, on the West Branch of the Susquehanna, where the great freshets of 1863 uncovered ancient hearths and numerous large vases, all of which were soon broken and scattered by the curious.

The minutes of the last meeting of the Board of officers were read.

Dr. Emerson introduced the subject of Lunar Influence, or supposed influence, upon the conditions of wet or dry weather.

ON LUNAR INFLUENCE *upon the Conditions of Wet or Dry Weather,*
by DR. EMERSON.

(*Read before the American Philosophical Society, February 17, 1871.*)

That the moon exerts such an influence, he said, is a very old opinion, widely spread at the present day, and even maintained by many distinguished philosophers. A great deal of attention has been devoted to tabulating atmospheric observations in relation to the conditions of the weather at the quarterly changes of the moon. The results of such laborious investigations have, however, not been found to agree, some reports seeming to favor the existence of lunar influence in producing wet and dry weather, and others, to show that no such influences are exerted by the moon upon the hygrometric conditions of our atmosphere. Among the many who have engaged in investigating this subject I will only refer to the celebrated Italian philosopher Toaldo, whose observations were extended through a period of forty-five years, and to Pilgram, whose observations were extended through a period of fifty-two years. For some reason which I shall not attempt to explain or examine, the conclusions of these indefatigable observers and inquirers *were the very opposite of each other.*

The circumstance which has perhaps contributed most to strengthen the belief in lunar influence upon the weather, is the well known agency exerted by the satellite upon the ocean and atmosphere, in the production of tides and barometrical fluctuations. Both of these phenomena are attributable to the force of *gravitation*, acting between the earth and moon, and giving rise to ocean and atmospheric waves.

The atmosphere surrounding our earth consists: first, of a mixture of permanently elastic gases; and secondly, of a changeable atmosphere of watery vapor, depending for its suspension entirely upon heat. This

theory of an independent atmosphere of vapor owing its suspension to heat alone, was established by Dalton, and is as incontestible as the theory of gravitation established by Newton.

When watery vapor suspended in the air loses the amount of heat necessary for its suspension, or, in other words, when the temperature is reduced to the "Dew-point," vapor is immediately condensed into mist, dew, clouds and rain. Now there is good reason to believe that the moon exerts no appreciable influence, directly or indirectly, upon the temperature of our atmosphere.

Some who have attempted to investigate this point by using reflectors and very delicate thermometers, have been led to the absurd conclusion that the moon's rays emitted cold. The marked depression observed in the thermometers exposed to the lunar rays, was in no wise produced by these, but by radiation of heat from the instruments into a clear sky.

In many parts of the surface of our globe, extensive regions exist in which it seldom or never rains, as in Lower Egypt. But in such places the atmosphere is very dry, and no local causes exist, such as mountains or hills, to interfere with the regular currents of the atmosphere and favor the mixture of strata of different temperatures. Consequently, rain rarely falls.

In other regions, in the Tropics, for example, there are extensive spaces in mid-ocean embracing many thousands of square miles, where the temperatures of the sea and atmosphere remain constantly within one or two degrees of each other, with the atmosphere of vapor close upon the "Dew-point." Here, if anywhere, the moon might be expected to produce changes in the hygrometric conditions of the atmosphere. But for months continued, there is no rain or other proof of lunar influence upon the weather. It is only in the extra-tropical latitudes where many other active agencies exist to disturb the equilibrium of atmospheric temperature, that the advocates of lunar influence assume to find evidence in favor of their views.

The power exercised by the moon upon bodies of water and permanent elastic gases on the surface of our planet, is solely derived from the law of *gravitation*, which exercises no influence, direct or indirect, in suspending or condensing vapor, or controlling the conditions of weather as to wet or dry. These conditions are brought about solely through changes of *temperature*, during the operations of which the moon remains a silent spectator, taking no active part, so far as the condensation of vapor is concerned.

Pending nominations 669, 670 were read.

On motion of Mr. Winsor, the Library Committee were instructed to report upon the subject of completing and publishing the Catalogue of the Society's books and pamphlets.

And the meeting was adjourned.



Emerson, Benjamin Kendall. 1871. "On Lunar Influence upon the Conditions of Wet or Dry Weather." *Proceedings of the American Philosophical Society held at Philadelphia for promoting useful knowledge* 12(81), 17–18.

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