THE MOON AND THE WEATHER.
By LEVI W. MEECH.

For many years past the accepted doctrine has been that the moon has no influence upon the weather. On examining the method of Lubbock to establish this conclusion,[1] it appeared that certain terms had been averaged out by defective analysis. For a preliminary trial of a more correct method the observations of temperature given in Dr. Kane's Arctic Explorations, Volume II, pp. 405–425, from September, 1853, to April, 1855, were examined. Adopting as the mean temperature of 1854, —5.01° F. and a range of 76.49° for the station whose location was latitude 78° 37′ N. and longitude 70° 40′ W., I deduced the following formula, representing the temperature in Fahrenheit at any moment for which the sun's right ascension is s and the moon's right ascension m:

$$t = -2.81° + 35.47° \sin (s - 27° 3′)$$
$$-7.20° \sin (2s + 68° 52′) - 4.22° \cos (m - 53° 0′)$$
$$+2.82° \cos (2m - 65° 43′) + 2.73° \cos (m - s + 38° 43′)$$
$$+0.84° (\sin 2m - 2s - 68° 0′)+, \text{etc.}$$

This beginning of a discussion by the astronomic method was made many years ago and after being long mislaid has recently been recovered. The original design was to extend the formulæ of Euler, Poisson, etc., into others in which the substitution of the elements of the current weather would enable us to predict such elements for several days in advance. Possibly, the cycle of nineteen years, or thirty-five years, may be required for data at first—an inviting field of research.

TORNADO AND WATERSPOUT AT NORFOLK, VA., ON AUGUST 6, 1901.
By JAMES J. GRAY, Local Forecast Official.

The following is a report on the waterspout and tornado which occurred at Norfolk, Va., about one mile east of the Weather Bureau office, between 1:10 and 1:20 p. m. of August 6, 1901. The data were collected from Captain Miles of the tug *Mars*, and Capt. H. H. Williamson, No. 302 Marshall avenue, this city.

Captain Miles states that his tug was tied up in the slip near the Norfolk and Western grain elevator. At 1:10 p. m. he observed an eddy, or small whirlwind, form about the corner of the elevator, taking up a cloud of dust and trash from the dock below within its whirl. The whirl grew more violent, and extended to the mass of cumulo-nimbus clouds above; moved east-northeast, up the river, about 700 feet, whipping the water into foam and raising it in its vortex to the height of 15 or 20 feet. At this time the spout seemed to have a diameter of about 8 to 10 feet, and a well defined funnel extended from the cloud to the water. It now changed its course toward north-northwest, and striking the land it rose from the earth, the bottom of the funnel just clearing the housetops. About 600 feet farther on it lowered and struck a pine tree 16 inches in diameter and broke it off 5 feet above the ground; the tree fell in a northeasterly direction. The tornado then moved north-northeast for about 400 feet, tearing up grass and weeds. Reaching Charles street a row of 6 brick houses was unroofed, the roofs thrown to the northeast and the bricks from the top of the walls scattered in a northwesterly direction. This seemed to cause the tornado to rise slightly, but after moving northward for about 300 feet it descended at the corner of Charles and Allen streets, striking an apple tree 17 inches in diameter, which fell in a southeasterly direction. The tornado here changed its course to north-northeast and moved 700 feet, where it unroofed 7 houses on Shelton avenue, throwing all the roofs to the east. It then moved north 800 feet, striking a dwelling and a blacksmith shop, unroofing both; then it rose, moving northward, gradually losing its force and the funnel dissipated.

The tornado was accompanied by the usual roaring, but by no lightning at all. There was no rain during its progress but a downpour of about two minutes duration occurred about five minutes later. A girl was struck by a piece of flying timber and slightly injured.

The diameter of the tornado did not apparently exceed 15 feet at any time. I went over its track and noted carefully the position of the fallen trees and broken timbers. The unroofed houses were not otherwise injured and there were no signs of internal atmospheric expansion, as not a single window in any of the buildings was disturbed at all, so far as I could see. The part of the town over which the tornado moved is thinly settled.

At this office, for an hour or so before 1 p. m., the wind was light southeast, and at 1:10 p. m. it shifted to northwest with a slight squall of 18 miles per hour for a few minutes, when it went back to light northeasterly. The barometer was about normal, falling 0.05 inch from noon to 2 p. m., with unsettled weather and squally conditions.

NOTES BY THE EDITOR.

ORGANIZATION OF THE PHILIPPINE WEATHER BUREAU BY THE UNITED STATES PHILIPPINE COMMISSION.

AN ACT PROVIDING FOR THE ESTABLISHMENT OF A WEATHER BUREAU FOR THE PHILIPPINE ISLANDS, AND APPROPRIATING EIGHT THOUSAND AND SIXTY-SIX DOLLARS AND FIFTY CENTS ($8,066.50), IN MONEY OF THE UNITED STATES, FOR THE PURCHASE OF METEOROLOGICAL INSTRUMENTS AND APPARATUS AND THE INSTALLATION OF THE SAME.

By authority of the President of the United States, be it enacted by the United States Philippine Commission, that:

SECTION 1. A weather bureau is hereby established for the Philippine Islands. It shall be known as the Philippine Weather Bureau.

SEC. 2. The officers of this bureau shall be: A Director, at an annual salary of two thousand, five hundred dollars ($2,500); three Assistant Directors, at an annual salary of one thousand, eight hundred dollars ($1,800) each; and one Corresponding Secretary and Librarian, at an annual salary of one thousand, four hundred dollars ($1,400). They shall be appointed by the Commission.

SEC. 3. The employees of the Weather Bureau shall be:

(a) For the central station, three first-class observers, at an annual salary of nine hundred dollars ($900) each; three calculators, at an annual salary of seven hundred and twenty dollars ($720) each; two assistant observers and an assistant librarian, at an annual salary of six hundred dollars ($600) each; two assistant calculators, at an annual salary of three hundred dollars ($300) each; one first-class draughtsman, at an annual salary of seven hundred and twenty dollars ($720); one second-class draughtsman, at an annual salary of six hundred dollars ($600); one first-class mechanic, at an annual salary of seven hundred and twenty dollars ($720); three assistant mechanics, at annual salaries of six hundred dollars ($600), four hundred and twenty dollars ($420), and

[1] Companion to the British Almanac, 1839, and London Phil. Trans., 1841.