

U. S. DEPARTMENT OF AGRICULTURE.

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REPORT FOR NOVEMBER, 1897.

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MARYLAND AND DELAWARE SECTION  
OF THE  
CLIMATE AND CROP SERVICE  
OF THE  
WEATHER BUREAU.

IN COOPERATION WITH THE  
MARYLAND STATE WEATHER SERVICE.

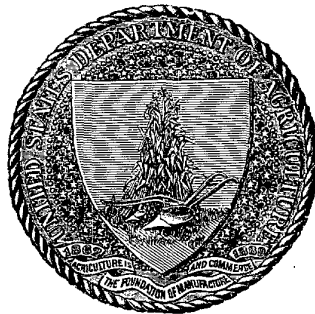
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UNDER DIRECTION OF  
WILLIS L. MOORE,  
CHIEF OF WEATHER BUREAU,

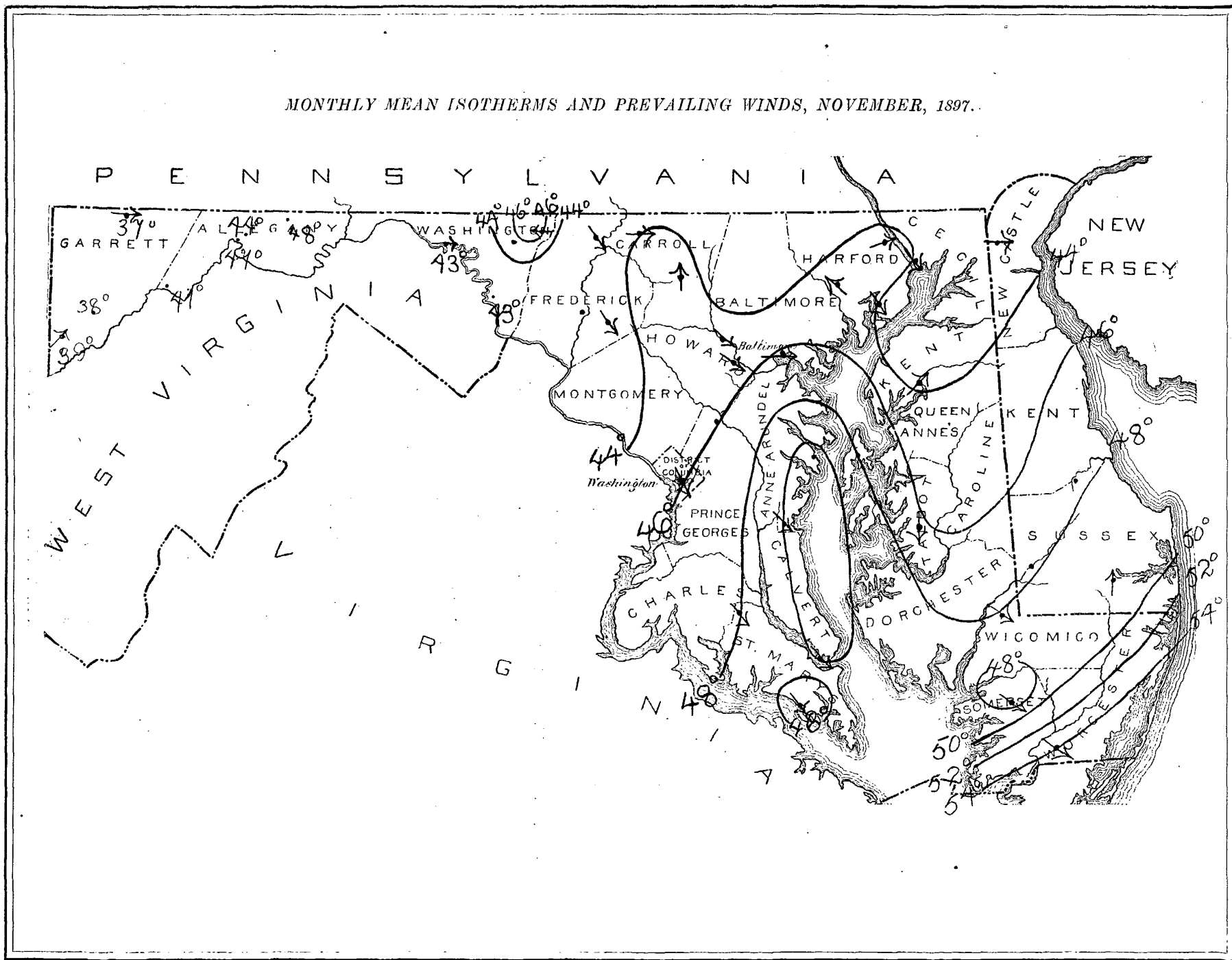
BY  
F. J. WALZ,  
SECTION DIRECTOR.



BALTIMORE, MD.:  
WEATHER BUREAU OFFICE.  
JOHNS HOPKINS UNIVERSITY.

1897

MONTHLY MEAN ISOTHERMS AND PREVAILING WINDS, NOVEMBER, 1897.



U. S. DEPARTMENT OF AGRICULTURE,  
**CLIMATE AND CROP SERVICE**  
 OF THE  
**WEATHER BUREAU.**

Central Office,  
 WASHINGTON, D. C. }

WILLIS L. MOORE,  
 Chief. }

IN COOPERATION WITH THE  
 MARYLAND STATE WEATHER SERVICE.

**MARYLAND AND DELAWARE SECTION,**

F. J. WALZ, Section Director,  
 BALTIMORE, MD.

**VOL. II.**

**BALTIMORE, MD.**

**No. 11.**

**HIGHS AND LOWS.**

[By N. R. TAYLOR, Observer, in the Monthly Weather Review.]

Those who make a study of the weather maps issued by the United States Weather Bureau will doubtless read this article with at least passing interest. Although it is not an easy matter to write intelligently upon a scientific subject without scientific words creeping in, yet it is the intention to make this article plain without imperiling the subject, and to avoid all terms that would tend to confuse. Besides the lines representing barometric pressure in inches and temperature in degrees, the maps contain the words "High" and "Low" every map showing at least one of each. These highs and lows are the most conspicuous features on the maps, and, it might be added, the least understood by the casual observer. A whole chapter could be written upon the weather conditions represented by the lines, or curves, inclosing high and low areas, but this paper will suffice to give the reader a general idea of their importance in forecasting the weather. As the words high and low imply, one is the opposite of the other, and they are used on the weather maps to designate the centers of those areas over which a relatively high or low reading of the barometer is observed. These areas of pressure are inclosed by isobaric lines, and include that part of the country over which the pressure is highest or lowest, as the case may be, when compared with other sections, and their centers are located where the greatest or least barometer reading has been observed. It will be seen that the words "High" and "Low" are comparative terms, hence when a high or low pressure is noted on the border of the territory covered by the weather maps, their areas are not sufficiently defined to admit of their centers being accurately located, in which case the highest or lowest pressure observed is quoted, and the isobars are then in the form of short curve. The lines running through places of equal pressure, showing the different barometric heights, are aptly illustrated by the contour lines employed by civil engineers to mark the relative altitudes of various points. A glance at a few characteristics of highs and lows and their effects upon the weather conditions will show their importance from the forecaster's point of view. A high, from the time it first appears, moves in a general easterly direction over well known tracks, with a velocity dependent upon the

conditions surrounding it. Sometimes, however, its movement is so sluggish as to be hardly perceptible, and it hangs over a section of the country with a persistency that both surprises and confuses the forecaster. These are cases rare, and one noticing a high charted on this morning's weather map may look for it tomorrow at a point farther east, and so on, until it moves out of range of the Weather Bureau stations. An area of high pressure when once formed can be counted upon to last for some time. This being so, and from the fact that air is continually flowing out from all sides as surface winds, it is evident that to maintain its characteristics air must be supplied from some source in proportion to that which flows out. Hence it would seem that in the higher strata of the atmosphere air must be moving inward and sinking downward, thus making it reasonable to believe that the pressure in the upper regions of the air is least above the spot where it is greatest on the earth's surface. During the summer months areas of high pressure are characterized by dry weather; the days are warm, bright, and cloudless. The nights are cool, with clear and brilliant skies; and as the dry air aids radiation from the earth's surface, the temperature quickly cools to the dew point, and heavy deposits of dew occur, and sometimes frost. Under these conditions the daily range of temperature is generally much greater than at other times. Areas of high pressure during the winter months are more decided in their characteristics; they move with greater speed, and as the days are short and insolation weak, they are generally attended by low temperatures. Cold days and colder nights prevail. The blizzards that sweep with icy breath over the West and Northwest, the marrow-chilling northers of Texas, and all the cold waves are first located within areas of high pressure, and, as they advance with the frosty breath of colder climes, the forecaster notes their position and studies their progress. As has been stated, the low is the the opposite of the high, and it plays an equally important part in our weather changes. The air in the center of an area of low pressure being rarer, and consequently lighter than under ordinary conditions, tends to disturb the equilibrium of the surrounding air, causing it to expand and rush toward the low. The term "cyclone" was originally applied to lows and storm areas for the reason that it was believed the wind blew around them in circles, but since the science of meteorology has advanced, it has been demonstrated that the wind blows in toward the low's center in a spiral curve with a velocity dependent upon the gradient or steepness of the depression. As the center of an area of low pressure remains the lowest in spite of the fact that the surface winds are pouring in from every direction, the logical deduction is that the air must rise around the center and flow out from above, thus making an inward and upward whirl, or eddy, of the atmosphere. The eddy, however, is not stationary but is always moving, sometimes increasing in strength as it advances and again spreading out and becoming less intense. The weather changes associated with a low are proofs of its being an eddy of ascending air from the fact that on its approach clouds are formed, the temperature rises, and often rain accompanied by high winds, occurs. Then

comes clearing weather, a sudden shift of wind, and a sharp rise of barometer, all showing that the storm has passed and that a high, with its quota of fair weather, will soon move in and assume control. Like the restless billows of the ocean, the atmosphere is ever surging and pursuant to the wise and economic laws of nature, compensates us with clear and sunny skies for the days that were dark and dreary.

\* \* \*

**CLIMATOLOGY OF THE MONTH.****ATMOSPHERIC PRESSURE—IN INCHES AND HUNDREDTHS.**

Monthly mean at Washington, D. C., 30.15; at Baltimore, 30.13; average, 30.14; highest, 30.60 at Washington, on the 18th, and at Baltimore, on the 28th; lowest, 29.36 at Washington, on the 9th.

**TEMPERATURE—IN DEGREES FAHRENHEIT.**

The monthly mean (entire territory), 45.0, is 1.3 above the normal.

The highest monthly mean was 54.0, at Pocomoke City.

The lowest monthly mean was 38.0, at Deer Park.

The highest temperature recorded during the month was 80, at New Market, on the 15th.

The lowest temperature recorded during the month was 8, at Grantsville, on the 24th.

The greatest local monthly range was 61, at Deer Park.

The least local monthly range was 38, at Chestertown.

The greatest daily range was 45, at Sunnyside, on the 4th, and at Port Deposit, on the 8th.

The least daily range was 0, at Chestertown., on the 22d.

**PRECIPITATION—IN INCHES AND HUNDREDTHS.**

The monthly average (entire territory) 4.69, was 1.56 above the normal.

The greatest amount was 8.43, at Bachman's Valley.

The least amount was 1.59, at Pocomoke City.

The greatest amount in twenty-four hours was 4.42, at Bachman's Valley, on the 1st and 2d.

The average number of rainy days, 12.

**WIND.**

The prevailing direction was from the northwest.

The total movement was 3,462 miles, at Baltimore, and 5,212 miles, at Washington, D. C.

The maximum wind velocity was 47 miles per hour from the northwest, at Washington, D. C., on the 16th.

**MISCELLANEOUS.**

*Thunderstorms.*—Bachman's Valley, 26; Cherryfields, 9; Green Spring Furnace, 2, 26; Mardela Springs, 9; Millsboro, Del., 1; Newark, Del., 9; St. Charles College, 27; Smithsburg, 16; Solomon's, 9; Sunnyside, 2, 11; Taneytown, 26.

*Frosts, killing.*—Bachman's Valley, 4; Charlotte Hall, 13, 14, 18, 19; Cherryfields, 13; Easton, 18, 19, 25; Fallston, 7, 12, 13, 14, 17, 18, 19, and later days; Green Spring Furnace, 12, 13, 14, 17, 18, 19, 20, 24, 28, 30; Jewell, 13, 14; Mardela Springs, 4, 7, 14, 18; Mt. St. Mary's College, 14, 18, 19, 28, 30; New Market, 14, 18, 25, 27; Princess Anne, 7, 17, 18, 19, 25; St. Charles College, 13, 14, and later; Sharpsburg, 14, 18, 28; Smithsburg, 25, 28, 29, 30; Solomon's, 13; Taneytown, 28; Woodstock, 4, 14.

*Frosts, light.*—Easton, 4, 20; Green Spring Furnace, 4, 5; Mardela Springs, 19; Mt. St. Mary's College, 13; Princess Anne, 24, 28, 30; St. Charles College, 5; Smithsburg, 12, 13, 14, 17, 18, 19, 20; Woodstock, 12, 21.

*Hail.*—Cumberland, 28; Green Spring Furnace, 2; Mardela Springs, 14; Mt. St. Mary's College, 11, 17; New Market, 11; Seaford, Del., 15; Sharpsburg, 11.

*Ice.*—Charlotte Hall, 18, 19, 24, 25, 28, 30; Easton, 24; Seaford, Del., 13; Solomon's, 13; Woodstock, first ice, 13.

*First snow.*—Bachman's Valley, 12; Baltimore, 23; Chestertown, 23; Easton, 23; Millsboro, Del., 23; Mt. St. Mary's College, 12; Newark, Del., 23; Seaford, Del., 12; Sunnyside, 9; Taneytown, 23; Woodstock, 23.

*Fogs.*—Cherryfields, 5; Easton, 5; Green Spring Furnace, 21; Jewell, 5; Laurel, 5; Mardela Springs, 4, 5; Millsboro, 5; Princess Anne, 5; Smithsburg, 29; Solomon's, 5; Taneytown, 9; Woodstock, 5, 16.

*Sleet.*—Bachman's Valley, 29; Boetcherville, 14, 29; Flintstone, 29; Green Spring Furnace, 29; Mt. St. Mary's College, 29; New Market, 29; Sharpsburg, 29; Smithsburg, 29; Taneytown, 29.

*Halo, lunar.*—Cumberland, 30; Millsboro, 8, 9, 10, 30; Mt. St. Mary's College, 5, 10, 17, 19, 30.

*Halo, solar.*—Green Spring Furnace, 18, 19; Jewell, 14, 18; Mt. St. Mary's College, 25.

*Corona, lunar.*—Solomon's, 8.

*High winds.*—Bachman's Valley, 9, 12; Baltimore, 9; Easton, 12; Green Spring Furnace, 9, 12, 16; Jewell, 9; Laurel, 12, 13; Smithsburg, 26; Taneytown, 9; Van Bibber, 26; Washington, D. C., 16.

*High tide.*—Cherryfields, 1.

*Aurora.*—Green Spring Furnace, 26.

\* \* \*

**REMARKS BY OBSERVERS.**

Snow flurries occurred on several days at Cumberland, but not enough fell to make the ground white.—HOWARD SHRIVER.

First killing frost at Cherryfields on the 13th.—J. E. COAD.

First killing frost at Easton on the 18th; first general freeze at Easton on the 24th.—HENRY SHREVE.

First ice on the morning of the 24th at Solomon's.—W. H. MARSHALL.

First ice at Woodstock on the morning of the 13th.—T. J. A. FREEMAN.

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**LATE REPORTS.**

Summary of reports received too late for insertion in the current monthly report:

*Receiving Reservoir, D. C.*—For June 1897, mean temperature 70°.8; total rainfall 3.21 inches; greatest amount in twenty-four hours 1.20; number of rainy days 11.

*Laurel, Prince George Co.*—For October 1897, mean temperature 58°.2; highest 90°, on the 1st; lowest 32°, on the 18th and 31st; greatest daily range 45°; total rainfall 4.54 inches; greatest amount in twenty-four hours 2.05, on the 19th and 20th; number of rainy days 9; clear days 14; partly cloudy 8; cloudy 9.

Climatological data for Maryland and Delaware, November, 1897.

Table with columns: Stations, Counties, Elevation, Length of record, Temperature (Mean, Departure from normal, Highest, Date, Lowest, Date, Greatest daily range), Precipitation (Total, Departure from normal, Greatest in 24 hours, Total snowfall, Number rainy days), Sky (Number clear days, Number partly cloudy days, Number cloudy days, Prevailing direction of wind), Observers. Includes sections for Western Maryland, Northern-Central MD., Southern Maryland, Eastern Maryland, and Delaware.

1 Mean of 7 a. m. + 2 p. m. + 9 p. m. + 9 p. m. + 4.

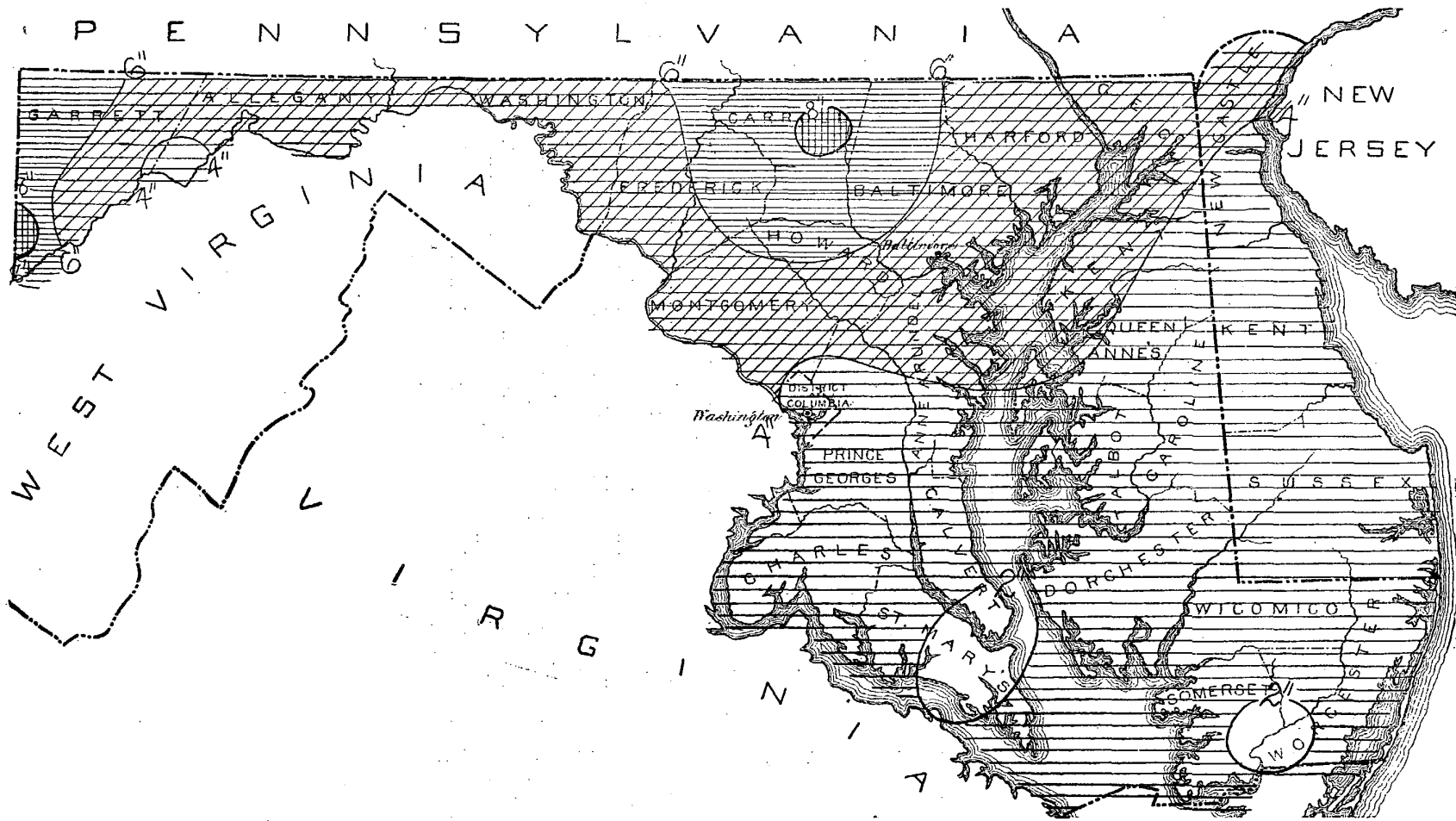
2 Mean of 8 a. m. + 8 p. m. + 2.

3 Mean of 7 a. m. + 2 p. m. + 2.

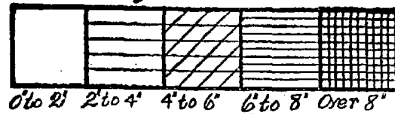
Maximum and minimum temperatures for Maryland and Delaware, November, 1897.

Table with columns for Stations (1-31 and Monthly mean) and rows for various locations including Annapolis, Cherryfields, Denton, Hagerstown, etc. Each entry shows maximum and minimum temperatures.

TOTAL PRECIPITATION, NOVEMBER, 1897.



Scale of Shades.



Daily precipitation for Maryland and Delaware, November, 1897.

Table with columns for Stations, Day of month (1-31), and Total. Rows are categorized by region: WESTERN MARYLAND, NORTHERN-CENTRAL MARYLAND, SOUTHERN MARYLAND, EASTERN MARYLAND, and DELAWARE. Each station lists daily precipitation values and a total for the month.

† Trace, when precipitation is less than 0.01 inch.