U. S. DEPARTMENT OF AGRICULTURE, WEATHER BUREAU,

CO-OPERATING WITH THE

MARYLAND STATE WEATHER SERVICE

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The Johns Hopkins University and the Maryland Agricultural College.

CENTRAL OFFICE, JOHNS HOPKINS UNIVERSITY, BALTIMORE, MD.

PROF. WM. B. CLARK, JOHNS HOPKINS UNIVERSITY, Director.

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VOL. IV, NO. 8. MONTHLY REPORT. DECEMBER, 1894.

The Mechanical Preparation of Soils.*

HON. PROSPER J. BERCKMANS,
President of the American Pomological Society.

Before entering upon the consideration of the above subject, permit me to say that the limits of this paper, selected for your monthly discussions, prevent an elaborate review of the fundamental principles of vegetable physiology and chemistry as applied to agriculture, which it would be absolutely necessary to consider separately, as each of these forms the basis of a subject for subsequent discussions. The whole series would make an interesting volume which might be entitled

"THE ART OF CULTURE."

My remarks therefore must necessarily be somewhat cursory and aimed mainly at opening a debate which will draw out the practical views and experience of our progressive agriculturists. To properly bring the subject before your consideration it is necessary to touch upon several points which are inseparable from it: First, what plants are made of; second, constituents and composition of soils; third, their adaptability to various crops.

1st. The elementary constituents of plants are cells and cellular tissue. A cell may be described as a minute cavity with enclosed walls; these form a network, which by mutual cohesion make up the cellular tissue. Cells vary in size in various plants or in different parts of a plant, some being spherical, others of considerable length and thus form woody fiber, which forms the pith of stems, outer bark, etc., etc.

Cellular tissue is the most important part of a plant; it may be termed its laboratory, because it is there that the active work of its organism is performed.

From the cell springs all new tissue, through the influence of the vital force of air, heat and humidity; and thus the gradual growth of plants is produced. The rate of production of cells depends upon the amount of plant food contained in the soil, as well as the more or less favorable atmospheric conditions; hence in well prepared and fertilized soil the rapidity of their increase is beyond computation. What is called vascular tissue is a modification of cellular tissue, and this consists in long tubes whose object is the flow of sap to that part of the plant in a state of increasing development. The main composite organs of plants are the root, stems, leaves, flowers and fruit, each of these being gradually produced and developed by the increase or expansion of cells. The liquid contents of the vegetable tissues are usually known as sap. This liquid is subdivided into crude sap, which is imbibed by the roots and carried upward through the tubes of the vascular tissue of the stems. Its constituents are gaseous matters derived from the air, and minute earthy matter derived from the soil. As this crude sap ascends it becomes impregnated with soluble assimilated matter of the cells, and on reaching the leaves this transformed liquid becomes elaborated sap.

The food and nutrition of plants is one of the most important functions of the theory of vegetation, and one that must be properly understood in all successful cultivation of our crops, whether

*An address delivered before the Richmond County, Georgia, Agricultural Society. From the Transactions of the Society.

cereals, esculent roots, textile plants, or culinary vegetables. The roots are the principal organs of absorption; this is performed through the spongioles and hair-like prolongations of the exterior layer of cells. The latter are usually termed hair-roots, and it will be readily seen that their increase should be stimulated by the proper manipulation of the soil, as by an increased absorption the rapid growth of the plant is also increased. Plants absorb their food entirely in a liquid or gaseous form; this is called imbibition, and any fertilizing substance added to the soil must first become assimilated with soil water before it can become available as plant food. During periods of drouth when the soil is deficient in moisture this absorption decreases, and consequently the increase of cellular tissue is decreased correspondingly; in other words, vegetation is at a standstill, and these frequent occurrences in our agricultural economy is what we should endeavor to either prevent or lessen. There are numberless topics connected with the structure of plants and their constitution which relate to their successive stages of existence, but these are too multitudinous for the scope of this paper. A sufficient sketch has been given as to the more important parts as relating to the absorption of plant food through roots; absorption through the leaves being controlled by atmospheric conditions.

CONSTITUENTS AND COMPOSITION OF SOILS.

We have in Richmond county a great diversity of soils, from the wonderfully productive alluvial formation of the Savannah River valley to the sandy ridge which borders upon the intermediate uplands, hence we are enabled to successfully grow an extensive line of agricultural products. But let it be remembered that even our naturally rich river lands may become unproductive by continually cultivating the same crop for a series of years. All soils are composed of mineral and organic elements; their fertility depends, therefore, upon the chemical constituents forming their composition, as well as porosity, condition of disintegration and capacity for attracting moisture. In agricultural economy, soils are divided into two main classes: stiff or strong, usually clay or argillaceous, and light or sandy. Each of these admits of subdivisions according to their constituents and the different proportions of plant food they contain, hence their varied adaptability to the perfecting of certain crops. A stiff soil, when containing the proper proportion of clay, alumina, carbonate of lime, carbonate of magnesia, soda, potash, phosphoric acid and humus, is the most fertile and will produce wheat, oats, potatoes, cotton, corn, and in general nearly if not all of our staple crops. Such soil is soft to the touch, of the proper porosity for the easy penetration of roots and attraction of moisture. Such soil requires no fertilizing substances so long as the proportions of the above-named elements are retained; but as either of these constituents decreases, its natural fertility decreases in the same ratio. Loamy soils usually contain more silica and humus and less alumina, peroxide of iron and soda; these are made very productive by the addition of gypsum, and are adapted to a general line of staple crops. Stiff clay soils, usually classed as argillaceous and underlaid with pipeclay of great tenacity, are less desirable for agricultural purposes. Their disadvantages are that they absorb and retain a great deal of moisture; in wet seasons they often become too wet to work, and in periods of drouth they become so hard that the roots can no longer penetrate them; they crack in all directions, and roots perish for want of being properly covered. Such soils are therefore liable to unsatisfactory results, under the influence of great heat or excess of rain. To remedy these disadvantages, proper drainage is first to be considered, next the addition of sand and coarse stable manure; these ingredients having a disintegrating effect, will reduce its tenacity and render it more permeable. To bring such soil to a fair degree of fertility it should contain 40 per cent. of sand and 10 per cent. of humus. The great difficulty consists in properly pulverizing such soils, and this is seldom accomplished until the requisite amounts of sand and humus are provided. Cattle should never be allowed to pasture on such lands during periods of moist weather. The advantages, however, are that when soils of this texture have been properly worked and their tenacity reduced, they retain for a long time the manure which has been supplied in the course of cultivation, and the fertilizing power of these elements is rarely lost during periods of drouth. Sandy or light soils are more easily cultivated, but fertilizing substances are more speedily consumed than in clayey soils; they therefore require to be manured more frequently, and with materials more readily converted into plant food than can be expected from coarse manures necessary for stiff lands. Well decomposed stable manure should always form the basis of all fertilizing elements for our staple crops. Chemical fertilizers, phosphates, potash and lime should, however, always be used as adjuncts. As sandy soils are naturally porous by being disintegrated, deep plowing is not so often necessary as in stiff lands; but owing to the multitude of foul weeds which are apt to overrun light soils, repeated surface cultivation is required. Among sandy soils there exists a great variety of subsoil, hence a general rule cannot be followed for cultivating and mechanical preparation. There are sandy soils underlaid with a hard pan, others with white pipeclay; the surface soil may be of

sand of various colors, yellowish, black, white or gray, depending entirely upon the chemical and organic elements which they contain. If the subsoil is impermeable to water, or, in other words, if water stagnates upon the subsoil, thorough subsoiling, draining, either by under drains or surface ditches, must be attended to at first. So long as soil water remains upon the subsoil, all attempts to grow paying crops will be problematical. Sandy lands yielding upon test by washing 60 to 70 per cent. of sand can with annual manuring be kept in a condition of fair fertility. As the proportion of sand increases, more humus and, where possible, clay soil should be added, otherwise during periods of drouths they become mere sterile moving sands. All the lands of this section are naturally devoid of calcareous elements, hence the absolute necessity of adding these ingredients in such proportions as the different soils require. In this section we also find gravelly soils, containing rocks of various texture, such as flint, conglomerate, iron ore, etc. The gravelly lands mixed with rolled sandstones are very porous, and being usually underlaid with red clay, are less liable to ill effects from drouth than either clay or sandy lands. While gravelly lands are sometimes a trifle difficult to cultivate in crops requiring frequent hoeings, they are easily plowed, never become hard, retain manuring elements for a long time, and therefore are among our fertile and desirable soils. They are usually warm and well adapted for early maturing crops, and especially valuable for fruit culture. We must, however, take into consideration that the value of arable soil always has a certain relation to its subsoil. In our hilly and rolling lands the mineral constituents of both surface and subsoil are frequently the same; if there is any material difference it is in the greater or lesser quantity of humus. In the mechanical preparation of our lands we can increase the layer of surface soil by gradually plowing a little deeper every spring or fall. Fall plowing, when lands are to be left fallow during winter, is essential to good agricultural economy; if an inch of the subsoil is brought upon the surface and allowed to be exposed to the action of air and frost it will materially improve the latter. This is especially desirable in level or high table lands where the constituents of the surface and subsoil differ more or less. The arable portion being frequently an alluvial deposit proceeding from the disintegration of rocks from a great distance, and the subsoil of a sandy texture, or the surface soil may be sandy and the subsoil clay, hence an admixture of the two will often ameliorate the arable portion. Still it is unquestionable that some soils lose temporarily some of their fertility if a large proportion of the subsoil is mixed with the surface soil at one time; we should therefore carefully investigate the constituents of both upper and lower strata before plowing too deep at once and mixing the two together. By plowing under the stubble of cow peas a couple of weeks after harvesting the latter, we give to the soil a large dose of humus and nitrogen, and lay a foundation upon which ammoniated and phosphatic fertilizers give the best results. Weeds, crab grass or any vegetable matter plowed under in fall adds to the quantity of humus, porosity and friability of the soil. Again we must not lose sight of the fact that all plants do not succeed equally well in all soils, and while we may have added certain fertilizing substances to a certain soil intended for the production of a given crop, yet the main fertilizing element required to perfect that crop may be deficient and the result a failure. Rational theory therefore teaches us to give one plant such substances as are necessary for its development, and spare those which are not requisite, for the production of other plants that require them.

Sharpsburg, Md., Established as a Meteorological Station.

REPORT OF OBSERVER J. H. DONALDSON.

On October 21st I visited the town of Sharpsburg for the purpose of establishing there a voluntary observing station of the U. S. Weather Bureau and Maryland State Weather Service. Mr. Robert L. Hiberger, a former classmate, kindly volunteered to take the observations and was supplied with instruments. Mr. Hiberger is well qualified for this work and will make a valuable addition to the present efficient corps of voluntary observers. The thermometers were given an excellent exposure on the north side of Mr. Hiberger's residence, while the rain gauge was placed in the center of a large garden, to the rear of the house. On account of its historical record, perhaps some description of Sharpsburg and its environs will be appropriate in this connection.

The town of Sharpsburg is situated in the southern portion of Washington county, Md., and is 12 miles south of Hagerstown, 7 miles west of the foot of South Mountain, 11 miles northwest of Harper's Ferry, and 1 mile from the Potomac river. It lies principally in a hollow, or basin, formed by ranges of hills. The crest of the highest of these hills, on the eastern limits of the town and at the right of the Sharpsburg-Boonsboro turnpike, is occupied by the Antietam National Cemetery. This is a national park of 7 acres, surrounded by a substantial stone wall, and laid out in extensive grass lawns and tree-bordered avenues. It contains

the bodies of 4467 Union soldiers, killed in the battle of Antietam, September 16th and 17th, 1862.

At the entrance to the cemetery stands the superintendent's lodge, an attractive stone structure, flanked on the north side by a small turret or tower. The top of this tower commands a complete view of the Antietam battlefield. From this coigne of vantage the observer beholds spread out before him the field of the fiercest battle of the Civil War. Looking south and east from the tower, one gets a view of the wooded slopes of Elk and South Mountain ranges, the scene of the preliminary engagement known as the Battle of South Mountain, which took place on September 14, 1862. These ranges run nearly north and south. The Elk range begins two miles east of Sharpsburg and runs southwesterly, ending in Maryland Heights, opposite Harper's Ferry. The small valley of several miles in width lying between this range and the South Mountain range is called Pleasant Valley. Between these ranges on the east and North Mountains on the west lies the Hagerstown Valley, more than 10 miles in breadth at this point.

Between the Elk range and Sharpsburg, and a mile distant from the town, runs the Antietam Creek, a narrow winding stream which traverses Washington county from north to south, and joins the waters of the Potomac 3 miles south of Sharpsburg. A road leads out of the town from the south and, running along the base of Cemetery Hill, crosses the creek, a mile distant, over a one-arch stone bridge, now known as Burnside's bridge. On the north side of the creek this road runs along and parallel to the slope of a steep hill; then it turns abruptly to the left, crosses the bridge, and finally takes its former direction along the south bank of the creek. The high hills commanding the approaches to the bridge were held by a part of Lee's army at the commencement of the battle. The Union forces under Burnside succeeded in capturing this bridge, but only after sustaining great loss. The capture of this bridge, and the forcing back of the Confederate line of battle to the limits of the town, came near causing the defeat of the Southern army long before the battle actually ended, but the timely arrival of reinforcements checked the advance of Burnside's men.

Running north from Sharpsburg is the Hagerstown turnpike. A little over a mile distant, on the left of the pike, is seen a small white building; it is the Dunker Church, surrounding which, at the time of the battle, was an extensive wooded area called the "West Woods." On the east side of the road from the church is a large open field called the "Bloody Cornfield," on account of its having been the scene of fierce charges and terrible slaughter during the battle. I remember that I found in this field, as late as 1882, scores of bullets, buttons, buckles, pieces of canteens and shells, and other metallic articles left there by both armies, a proof that the field is well named. Bordering this space on the east are the "East Woods," also the scene of fierce struggles between the contending armies.

Nearly half-way between the National Cemetery and the "East Woods" runs the "Sunken Road," or "Bloody Lane," the latter name being applied after the battle. This road leaves the Sharpsburg-Boonsboro turnpike at the foot of the hill occupied by the cemetery, and about a half-mile east of the hill crest. Running in an irregular northwesterly direction, it joins the Hagerstown pike between the town and the Dunker Church. The Confederate forces stationed along this road met with terrible disaster, nearly every man being killed. Northeast from the tower, and on the crest of the hill beyond the Antietam Creek, is a substantial brick house. This is the Pry mansion, used as headquarters during the battle by General McClellan.

A few yards distant from the superintendent's house, inside the National Park enclosure, was formerly a rock from which General Lee, it is said, watched the movement of the troops during the battle. His headquarters was a tent pitched in a field at the western limits of the town and on the right of the Shepherdstown road. Many claim that the Grove mansion, in the public square of the town, was used by General Lee as headquarters, but, as a matter of fact, he held only a temporary council of war in this house while the battle was in progress.

The battlefield is fast becoming dotted with small monuments inscribed with the names of the killed and marking the position of different bodies of troops during the battle. The driveway, running from the cemetery to the Norfolk and Western Depot, and forming the main street of the town, has been made a well macadamized national road by the Government.

The population of Sharpsburg in 1890 was 1163, a decrease of 97 since 1880. A considerable proportion of the people derive a livelihood from agricultural pursuits; a number are engaged in operating boats on the Chesapeake and Ohio Canal. The land in the vicinity is limestone with a subsoil of clay, and contains iron ore in many places. The principal farm products are wheat, corn, oats, and hay, cloverseed and fruit. Wheat is the most important production of this section, and for this crop the county stands among the first in the Union, the total yield being nearly a million and a half bushels annually. Its dairy and poultry products are also notable. Every farm has its large apple orchard, and plums, cherries, grapes and small berries are abundant. In the past few years it has been discovered that a belt of land extending along

the foot of South Mountain is well adapted for the raising of peaches. The trees are set out in groves along the mountain slopes.

The climate is well adapted to health and the production of industrial energy. The average temperature for the spring months is 52 degrees, and the total precipitation is from 9 to 12 inches; for the summer months the temperature averages 75 degrees, and the precipitation amounts to from 12 to 15 inches; for autumn the average temperature and total rainfall are about the same as given for spring; for the winter months the temperature averages 32 degrees, and the amount of rainfall is from 6 to 9 inches. The annual mean temperature is 52 degrees, and the total yearly rainfall is from 38 to 43 inches.

Miscellaneous Notes.

During the past two months the number of meteorological stations has been increased by the addition of the following: Burkittsville, Mr. J. Paul Slifer, observer; Frederick, Mr. W. A. Lantz, observer; Jewell, Mr. Joseph Plummer, observer; Johns Hopkins Hospital, Baltimore, Mr. W. L. Woods, observer; Sharpsburg, Mr. R. L. Hiberger, observer; Westernport, Prof. O. H. Bruce, observer.

Observers are requested to forward their meteorological reports promptly, to prevent delay in the issue of this publication.

Forms should not be mailed later than the 3rd of the month succeeding the one for which they are the record, and it would be better to forward them on the 1st.

If the computation of sums and means has been the cause of the frequent late receipt of some reports, it is requested that they be omitted.

Review of the Month—November.

WEATHER.

Low and High Areas.—Maryland weather was influenced by eleven low areas and seven high areas during the month of November.

On the 1st, a high area was overlying the Middle and South Atlantic States and the weather was, for the most part, fair on that day and the next.

On the 3rd, rain was quite general, as a storm which, originating in northern Texas on the 1st, passed from the Lake region to the St. Lawrence Valley.

The 4th was generally fair, the low area having passed to the eastward. During the night of the 4th a severe storm developed on the southeast coast of New Jersey, and though it traveled northward at a comparatively rapid speed, it caused quite general rains in Maryland on the 5th.

Colder weather with brisk and light northerly winds followed the departure of the storm and the approach of a great high area from the west. This high area made its appearance to the west of Oregon on the 2nd. It moved slowly eastward, and on the 5th occupied the central portion of the United States. The cold and generally fair weather of the 6th and 7th, which was caused by this area, would have continued considerably longer had the area progressed, at the usual rate of speed, in an easterly direction.

It settled toward the Gulf, however, and then traveling eastward to the coast of the Carolinas, allowing a storm (which developed near Keokuk, Ia., on the 7th) to pass directly eastward, and across Maryland and Delaware on the 8th. Reaching the coast, this storm remained there, causing rain in Maryland and Delaware, until it was succeeded, on the 10th, by a depression which followed closely the great waterway of the North, the chain of great lakes, terminating with the St. Lawrence river and the Gulf of St. Lawrence.

The rains of the 8th, 9th, and 11th were followed by fair weather until the 17th, with the exception of showers in southern and eastern sections on the 14th, due to a storm that passed over the St. Lawrence Valley on that date. This fair weather was due to two succeeding areas of high barometric pressure, the first appearing north of Montana on the 8th and disappearing east of the Florida coast on the 13th, while the second overlaid the Pacific Coast States from the 10th to the 13th, and then skirting the southern border of the country, disappeared east of the Georgia coast on the 16th.

A storm passed eastward across Canada on the 16th, but Maryland was out of range, except in two spots of small area; showers fell at Cumberland and La Plata. During the last-mentioned period the cold weather naturally continued, the coldest occurring on the morning of the 12th, when freezing temperatures were general.

The rains of the 17th were caused by a secondary of the preceding storm. This secondary passed northeast on the 17th. Under the influence of these two areas the temperature rose above the normal for the second time during the month.

A few local showers fell on the 18th and 19th, as a storm passed eastward over Canada. The 20th was fair and colder, under the influence of a high area from the west, the centre of which passed across Maryland on the 20th. The showers of the 21st were caused by another storm which traveled along the northern border of the country. Warmer weather came with this storm, and the high area, on its southern

border, was the cause of the succeeding fair weather of the 22nd, but it failed to lower the temperature.

The last rains of the month, approaching general in character, fell on the 23rd. They were occasioned by a storm from the Missouri valley whose center passed over Canada on that date. With this depression there was a considerable rise in temperature, as would be expected.

During the remainder of the month two other storms passed across Canada, but their southern limits were north of Maryland. The weather was dominated by two large high areas, the last one bringing, besides its share of fair weather, the coldest weather of the month. Minimum temperatures were recorded as follows on the morning of the 29th: Deer Park, 2; Sunnyside, 6; Oakland, 8; Westernport, 15; Grantsville, 15; Boettcherville, 16; College Park, 16. Upper Marlboro, 17; Cumberland, 17.

Temperature (degrees).—Monthly mean (for entire territory covered), 41.3, being 2.7 below the normal; highest monthly mean, 46.8, at Solomon's; lowest monthly mean, 33.4, at Deer Park; highest temperature, 72, at Easton, on the 3rd; lowest temperature, 2, at Deer Park, on the 29th; greatest local monthly range, 63, at Deer Park; least local monthly range, 40, at Fallston; monthly mean range, 49.4; monthly mean maximum, 50; monthly mean minimum, 33.

Precipitation (in inches.)—Average, 2.03, being 1.59 below the normal; greatest amount, 3.34, at Sunnyside; least amount, 0.50, at Boettcherville. The greatest fall of snow during the month, in Maryland, 10.7 inches, is reported by the observer at Sunnyside. The next greatest fall, 9.2 inches, is reported by the observer at Oakland. Grantsville, situated in the northern part of the same county, reports 3 inches. Baltimore, Bachman's Valley, Sharpsburg, Taneytown, Mardela Springs, Fallston, Burkittsville, and Wilmington, Del., report a trace, only.

Wind.—Prevailing direction, northwest. Total movement in miles, Philadelphia, Pa., 7720; Baltimore, Md., 6213; Washington, D. C., 5585; Norfolk, Va., 6598.

Thunderstorms.—At Charlotte Hall, on the 23rd; at Cherryfields, on the 23rd; at Easton, on the 23rd; at Mardela Springs, on the 23rd; at Solomon's, on the 23rd.

Hail.—At Bachman's Valley, on the 30th; at Fallston, on the 10th; at Upper Marlboro, on the 29th; at Woodstock College, on the 10th, 30th.

Sleet.—At Boettcherville, on the 30th; at Bachman's Valley, on the 30th; at Burkittsville, on the 30th; at Grantsville, on the 30th; at Sharpsburg, on the 30th; at Sunnyside, on the 30th; at Wilmington, Del., on the 30th.

Fog, dense.—At Bachman's Valley, on the 23rd; at Baltimore, on the 2nd, 21st, 23rd; at Burkittsville, on the 24th; at Millsboro, Del., on the 5th, 21st, 22nd; at Wilmington, Del., on the 22nd, 23rd.

Auroras.—At Burkittsville, on the 21st; at Fallston, on the 20th; at Millsboro, Del., on the 3rd, 29th.

Halos, solar.—At Fallston, on the 7th.

Halos, lunar.—At Fallston, on the 12th; at Millsboro, Del., on the 2nd, 7th, 9th.

Coronae, lunar.—At Wilmington, Del., on the 13th.

Notes by Observers.

Boettcherville.—On the night of the 26th, a severe wind-storm occurred, coming from the South. During the first part of the night it was clear and calm, with the temperature below freezing; but at 1.30 A. M. there was a noise as if a train of cars were approaching, and by 2.45 A. M. the wind was estimated to be blowing at the rate of 50 to 60 miles per hour.

Burkittsville.—25th, very heavy wind-storm, lasting all day; considerable damage done.

Jewell.—More rain needed; springs are still running feebly; some wells have not yet increased in water; the soil is a little moist near the surface, but while digging some post-holes I found it very dry at a depth of about two feet.

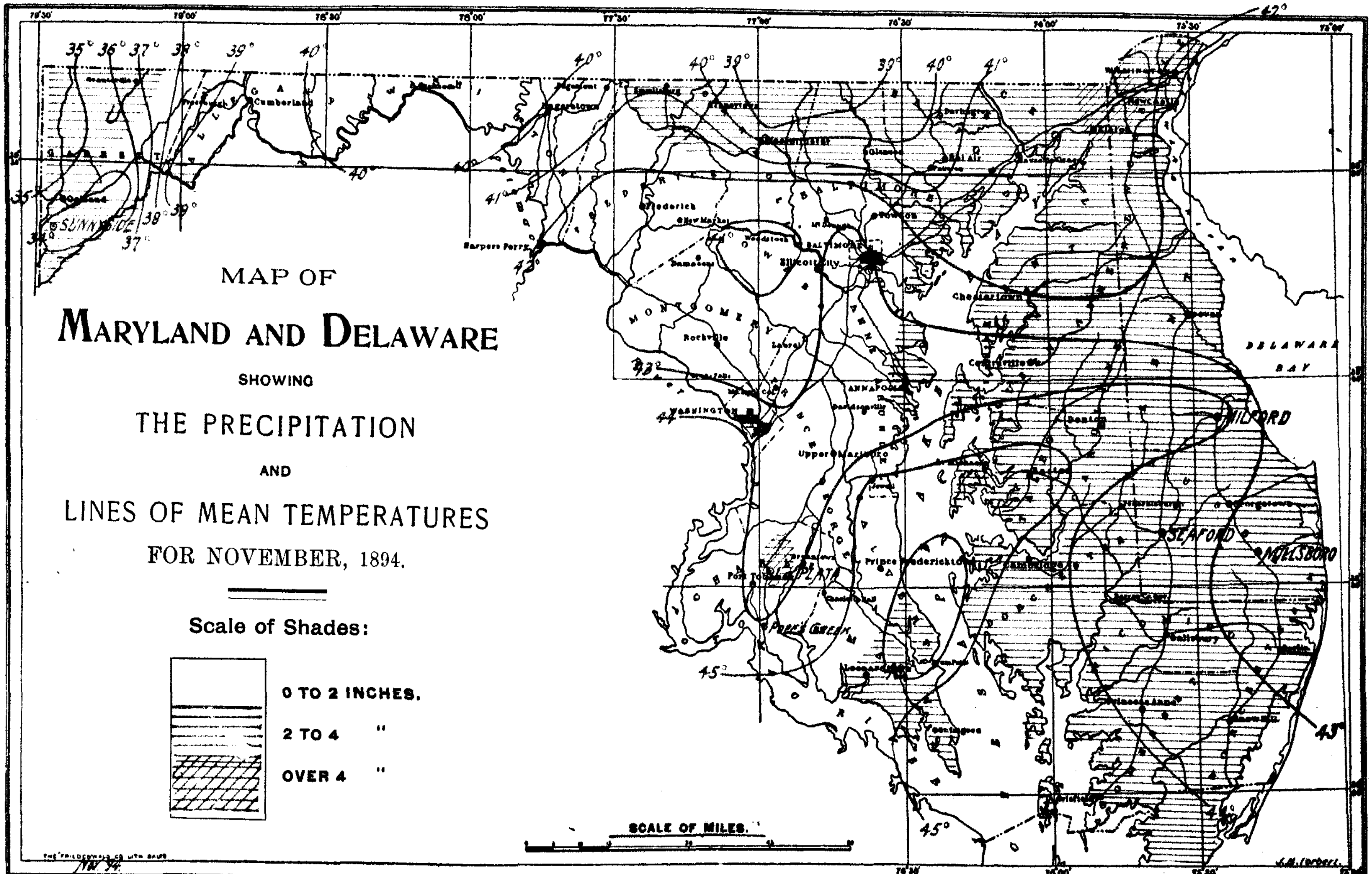
Mardela Springs.—10th, 12th, 26th, 29th, ice; 5th, wild geese noticed going southwest; 7th, snowbirds seen; 5th, 25th, a trace of snow; 20th, 28th, cold wave. Mean relative humidity, 70.4 per cent. November was 6.3 degrees colder and drier by 1.77 inches than the average for the past six years, from 1888 to 1893 inclusive.

Weather of January at Baltimore in past years.

The following data, compiled from the Weather Bureau records at Baltimore, Md., for the past 23 years, for the month of January, should prove of value and interest in anticipating the more important meteorological elements, and the range within which such variations may be expected to keep for the coming month.

TEMPERATURE.

Mean or normal temperature, 34°. The warmest month was that of 1880, with an average of 43°. The coldest month was that of 1893, with an average of 25°. The highest temperature was 73°, on the 13th, 1890. The lowest temperature was —6°, on the 1st, 1881.


MAP OF
MARYLAND AND DELAWARE
SHOWING
THE PRECIPITATION
AND
LINES OF MEAN TEMPERATURES
FOR NOVEMBER, 1894.
Scale of Shades:
0 TO 2 INCHES.
2 TO 4 "
OVER 4 "
SCALE OF MILES.
DELAWARE BAY
MILFORD
SEAFORD
MILLSBORO
SUNNYSIDE
LA PLATA
POPES CREEK
Cumberland
Hagerstown
Frederick
Rockville
Washington
Baltimore
Ellicott City
Annapolis
Chestertown
Upper Marlboro
Salisbury

Meteorological and Weather Signal Display Stations of the Maryland State Weather Service.

Stations.	County.	Meteorological Observer.	Displayman.
Annapolis	Anne Arundel	J. E. Abbott.	W. M. Abbott.
Appleton	Cecil		W. C. Henderson.
Bachman's Valley	Carroll	J. M. Myers.	
Baltimore		G. N. Wilson. J. H. Donaldson. A. T. Brewer, *Ass't Editor of Monthly Report.* R. C. New, *Ass't Editor of Weekly Bulletin.*	
Bel Air	Harford		N. N. Nock.
Bel Alton	Charles	Walter Cox.	
Boettcherville	Allegany	F. F. Brown.	
Bradshaw	Baltimore		B. F. Taylor.
Buckeystown	Frederick		A. W. Nicodemus.
Burkittsville	Frederick	J. P. Slifer.	
Cambridge	Dorchester		Samuel Leman.
Charlotte Hall	St. Mary's	J. Francis Coad.	
Cherryfields	St. Mary's	J. Edwin Coad.	
Chestertown	Kent	Hon. M. deK. Smith.	
Cumberland	Allegany	Howard Shriver. E. T. Shriver.	
Darlington	Harford	Prof. A. F. Galbreath.	
Deer Park	Garrett	S. P. Specht.	
Delaware City, Del	New Castle		W. E. Reybold.
Denton	Caroline	F. C. Ramsdell.	
Dickerson	Montgomery		W. H. Dickerson.
Distributing Reservoir, D. C		Col. G. H. Elliot.	
Dover, Del	Kent	Jno. S. Jester	Philip Burnet.
Easton	Talbot	Henry Shreve	Henry Shreve.
Fallston	Harford	G. G. Curtiss, A. M.	
Frederick	Frederick	McClintock Young, W. A. Lantz,	W. T. Delaplaine.
Frederica, Del	Kent		Miss E. V. Newnom. Miss L. T. Frazier.
Garey P. O.	Howard		Walter Dorsey.
Glyndon	Baltimore		J. J. Dyer.
Grantsville	Garrett	J. S. Miller	T. H. Bittinger.
Great Falls	Montgomery	Col. G. H. Elliot.	
Hampstead	Carroll		H. H. Meals.
Hartly, Del	Kent		Miss C. A. Forde.
Havre de Grace	Harford		W. S. McCombs.
Johns Hopkins Hospital		W. L. Woods.	
Kenton, Del	Kent		W. S. Arthurs.
Kirkwood, Del	New Castle	J. S. Carnagy.	
La Plata	Charles	J. S. Turner	J. S. Turner.
Laurel, Del	Sussex		E. D. C. Hegeman.
Lonaconing	Allegany		J. J. Robinson.
Mardela Springs	Wicomico	A. E. Acworth	L. A. Wilson.
Marshall Hall	Charles	F. H. Deal.	
McDonogh	Baltimore	H. Pender.	
Middletown	Frederick		G. C. Rhoderick, Jr.
Milford, Del	Kent	J. Y. Foulk	J. Y. Foulk.
Millsboro, Del	Sussex	Rev. L. W. Wells.	
Mt. St. Mary's	Frederick	J. A. Mitchell, A. M	Jos. H. Martin.
Newark, Del	New Castle	Prof. Wm. H. Bishop	
Oakland	Garrett	J. Lee McComas, M. D.	J. L. McComas, M. D.
Odenton	Anne Arundel		E. B. Watts.
Princess Anne	Worcester	Jas. R. Stewart.	
Pocomoke City	Worcester	R. M. Stevenson	R. M. Stevenson.
Pope's Creek	St. Mary's	George Dent.	
Receiving Reservoir, D. C.		Col. G. H. Elliot.	
Rising Sun	Cecil		E. A. Reynolds.
Rockville	Montgomery		Emmett Dove.
Salisbury	Wicomico		L. W. Gunby.
Seaford, Del	Sussex	H. L. Wallace	H. L. Wallace.
Sharpsburg	Washington	R. L. Hiberger.	
Smyrna, Del	Kent		A. D. Yocum.
Snow Hill	Worcester		Purnell & Vincent.
Solomon's	Calvert	W. H. Marsh, M. D.	
†Sparrow's Point	Baltimore		Md. Steel Co.
Sunnyside	Garrett	John G. Knauer.	
Sykesville	Carroll		J. S. Hyatt.
Upper Marlboro	Prince George's	J. B. Perrie.	
Washington, D. C		S. W. Beall.	
Western Port	Allegany	Prof. O. H. Bruce.	
West Friendship	Howard		Postmaster.
Westover	Somerset		E. D. Long.
Wilmington, Del	New Castle	F. C. D. McKay	Wm. Lawton.
Woodsboro	Frederick		G. F. Smith.
Woodstock College	Baltimore	T. J. A. Freeman, S. J.	
*Birdsnest, Va	Northampton	C. R. Moore.	
*Norfolk, Va	Norfolk	Jas. J. Gray.	
*Warsaw, Va	Richmond	C. H. Constable.	

**Stations of the Virginia State Weather Service. † Whistle signals only.*

PRECIPITATION (rain and melted snow).

Average for the month, 3.20 inches. Average number of days with .01 of an inch or more, 13. The greatest monthly precipitation was 6.42 inches, in 1892. The least monthly precipitation was 0.88 inch, in 1872. The greatest amount of precipitation recorded in any 24 consecutive hours was 1.90 inches, on the 8th and 9th, 1879, and on the 4th, 1886. The greatest amount of snowfall recorded in any 24 consecutive hours (record extending to winter of 1884-5 only) was 5.5 inches, on January 12, 1893.

CLOUDS AND WEATHER.

Average number of clear days, 8; partly cloudy days, 13; cloudy days, 10.

WIND.

The prevailing winds have been from the northwest. The highest velocity of the wind was 48 miles, from the west, on the 30th, 1894.

Comparison of summer and winter temperatures at Baltimore, Md., from 1870 to 1894.

Mean winter temperatures.		Mean summer temperatures.	
1870-71	37.4	1871	75.7
1871-72	34.5	1872	78.8
1872-73	33.6	1873	76.6
1873-74	38.5	1874	75.8
1874-75	32.4	1875	74.7
1875-76	38.9	1876	77.1
1876-77	32.2	1877	77.0
1877-78	41.7	1878	75.5
1878-79	32.8	1879	75.3
1879-80	41.4	1880	76.4
1880-81	31.6	1881	75.8
1881-82	39.5	1882	75.2
1882-83	35.7	1883	74.8
1883-84	37.5	1884	74.8
1884-85	33.8	1885	76.3
1885-86	33.6	1886	73.2
1886-87	36.2	1887	76.0
1887-88	34.0	1888	74.7
1888-89	35.8	1889	74.0
1889-90	44.5	1890	77.6
1890-91	37.9	1891	72.5
1891-92	37.4	1892	76.2
1892-93	30.7	1893	74.6
1893-94	36.8	1894	75.9
Mean winter temperature	36 2	Mean summer temperature	75.6

NOTE.—In the above table, winter includes the months December, January and February; summer, the months June, July and August. Of the winter 1870-71, only the mean of the months January and February is included.

DAILY PRECIPITATION FOR NOVEMBER, 1894.

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Tot
Sunnyside	...	...	.34	...	.44	.49	.15	.22	†	.14	...	†	.12	...	T	...	...	.55	...	T	...	...	.45	...	.02	...	...	...	...	.42	3.34
Oakland	...	...	...	.02	.10	.50	.32	.10	.02	.19	...	...	...	...	...	...	.54	...	T	...	...	...	.36	...	T	...	...	...	...	.15	2.30
Deer Park	...	.33	...	.20	...	...	.10	...	...	...	...	...	...	...	...	...	.50	...	...	...	...	...	...	...	...	...	...	...	...	...	1.13
Grantsville	...	...	.30	...	...	.50	.35	...	...	.10	...	...	...	...	...	...	.55	...	...	...	...	...	.22	...	...	...	...	...	...	.40	2.32
West'nPort	...	...	...	T	...	...	...	...	...	...	T	...	...	...	...	...	.15	...	...	...	...	T	2.00	...	...	...	...	...	...	T	2.15
Boettcherv	...	.20	...	T	...	...	†	.10	...	T	...	...	T	T	...	...	.20	...	T	...	...	...	T	...	...	...	...	...	...	T	.50
Cumb. (a)	...	.22	...	.05	...	...	?.19	...	...	...	...	...	...	...	...	.17	...	...	...	...	...	...	...	...	...	...	...	...	...	.08	.71
Cumb. (b)	...	.22	...	.05	...	...	.19	...	...	...	...	...	...	...	...	.17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	.63
Sharpsburg	...	...	.89	...	.21	...	...	.01	.14	...	...	...	...	...	...	...	.14	...	...	...	...	...	T	...	...	...	...	...	...	.02	1.41
Burk'tsvle	...	...	.98	...	.27	...	T	.06	...	.18	...	...	...	T	...	...	.13	...	...	...	...	.05	...	...	...	...	...	...	...	.09	1.73
Mt St.M'y's	...	...	1.31	.27	...	...	...	.06	...	.17	...	...	...	...	...	...	.08	...	...	...	...	...	.07	...	...	...	...	...	...	.05	2.01
Fred'k. (a)	...	†	1.08	...	.25	...	...	.04	...	.11	...	...	...	...	T	...	.08	...	...	...	...	...	...	.04	...	...	...	...	...	T	1.60
Fred'k. (b)	...	.83	...	.20	...	...	...	...	...	.14	...	...	...	...	...	...	.08	...	...	...	...	...	...	...	...	...	...	...	...	.21	1.48
Taneytown	...	...	1.10	...	.34	...	T	...	.31	...	...	...	...	T	...	T	.17	...	...	...	...	...	.09	...	...	...	...	...	...	.10	2.11
Bach. V'y	...	..	1.30	...	1.04	..	T	T	.03	T	...	T	...	...	...	...	.28	...	...	...	T	...	T	...	...	...	...	...	...	.08	2.73
Woodst. Col	...	...	.85	...	.21	...	...	.16	T	.02	...	...	...	...	...	...	.14	...	...	...	.09	...	.06	...	...	...	...	...	...	.02	1.55
Baltimore	...	...	.64	...	.30	...	...	.53	.10	T	...	...	...	...	...	...	.03	.02	...	...	.26	...	.08	...	...	...	...	...	...	.02	1.98
Fallston	...	†	.85	...	.49	...	†	†	.33	.09	...	T	...	...	...	...	.11	...	...	...	.20	...	.02	.05	...	...	...	...	...	.08	2.22
Darlington	...	..	.85	...	.69	...	...	.25	.25	...	...	...	...	...	...	...	.16	...	...	...	.20	...	.14	...	...	...	...	...	...	.15	2.69
Great Falls	...	...	.92	...	.02	.01	...	...	.52	...	...	...	...	...	...	...	...	.06	...	...	.16	...	...	...	...	...	...	...	...	...	1.69
Annapolis	...	...	.63	...	1.10	...	...	.43	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2.16
Jewell	...	...	.56	...	.20	...	...	...	.25	...	...	...	...	...	...	...	...	...	...	...	.43	...	T	...	...	...	...	...	...	T	1.44
Dist. R.,D.C	...	...	.72	...	...	.22	...	...	.14	...	...	...	...	...	...	...	...	...	...	...	.15	...	...	...	...	...	...	...	...	...	1.23
Rec. R., D.C	.07	...	.78	...	.09	.18	...	...	.32	...	...	...	...	...	...	...	...	.04	...	...	.17	...	...	...	...	...	...	...	...	...	1.65
Wash., D. C.	...	...	.64	...	.20	...	...	.23	.09	T	...	...	...	T	...	...	.04	.01	...	...	.17	...	.12	...	...	...	...	...	...	.02	1.52
Col. Park	...	...	.59	...	.24	...	...	.32	.10	...	...	...	...	...	...	...	...	.03	...	...	.22	...	.10	...	...	...	...	...	...	...	1.60
Up. Marlb.	...	...	.71	...	.21	...	...	.23	T	...	...	...	...	...	...	...	.10	...	...	...	.24	...	.14	...	...	...	...	...	...	T	1.63
La Plata	...	1.10	...	...	...	...	...	.50	...	...	...	...	...	...	...	.20	...	...	.20	...	...	...	...	...	...	...	...	...	...	...	2.00
Bel Alton	...	...	.06	...	.20	...	...	...	.30	...	...	...	...	...	...	...	...	...	...	.40	...	...	...	...	...	...	...	...	...	...	.96
Pope's Cr'k	...	†	.55	...	.35	...	...	...	...	...	...	...	...	...	...	...	.30	...	...	...	...	...	...	...	...	...	...	...	...	...	1.20
Solomon's	...	...	.99	...	.06	...	...	.01	.38	...	...	...	...	.20	...	...	.22	T	T	...	.32	...	.17	...	...	...	...	...	...	T	2.35
Charl. Hall	...	...	.50	...	.15	...	...	T	...	...	...	...	...	.50	...	...	T	...	...	...	.50	...	...	...	...	...	...	...	...	...	1.65
Cherryfields	...	...	.65	...	...	.08	...	...	.27	.05	...	...	...	.36	...	...	...	.55	.01	...	.28	...	.02	.11	...	...	...	...	...	T	2.38
Chestert'n	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Denton	...	...	†	1.25	.36	...	...	.30	...	...	...	...	...	.21	...	...	...	.10	...	...	.45	...	...	...	...	...	...	...	...	...	2.67
Easton	...	...	1.36	...	.33	...	...	...	.24	...	...	...	...	.20	...	...	.18	...	...	...	.41	...	.05	...	...	...	...	...	...	...	2.77
Mardela Sp.	...	...	.76	...	.25	...	...	†	.15	...	...	...	...	.52	...	...	.48	.01	T	...	.26	...	.37	...	...	...	...	...	...	...	2.80
Pri'cess An.	...	.42	.18	...	T	...	...	...	...	...	...	...	...	.50	...	...	.88	...	T	...	.20	...	.11	...	...	...	...	...	...	...	2.29
Poc'm'k Cit	...	...	1.02	...	.13	...	...	...	.08	...	...	...	...	.24	...	...	...	.32	...	...	.33	...	*	...	...	...	...	...	...	...	2.12
Wilm't.Del.	...	...	.97	...	.67	...	...	.24	.09	.06	...	...	...	.06	...	...	.14	...	...	...	.53	...	.02	...	...	...	...	...	...	.12	2.90
Newark, Del.	...	†	.87	...	.57	...	...	.30	.08	...	...	...	...	...	...	...	.24	...	...	...	.36	...	.08	...	...	...	...	...	...	.19	2.69
Dover, Del.	...	.	1.30	...	.47	..	...	†	.17	...	...	...	...	.13	...	...	†	.25	...	...	.46	...	.10	...	...	...	...	...	...	...	2.88
Milford,Del	...	...	.99	...	.33	...	...	†	.42	...	...	...	...	...	...	...	.32	T	...	...	...	...	.04	...	...	...	...	...	...	.02	2.12
Seaford,Del	...	...	.82	...	.22	...	...	†	.22	...	...	...	...	.45	...	...	†	.31	...	...	.27	...	.06	...	...	...	...	...	...	...	2.35
Millsb'o,Del	...	...	.48	...	.16	...	...	.14	...	...	...	...	...	.36	...	...	.20	.55	...	...	.36	...	.10	...	...	...	...	...	...	...	2.35
Bs.Nest,Va.	...	...	.80	...	...	...	...	...	T	...	...	.15	...	.25	...	...	...	T	T	...	.05	.05	...	...	...	...	...	...	...	...	1.30
Norfolk,Va	...	...	.69	...	T	T	...	...	T	...	...	...	...	.11	...	...	...	.01	...	...	.05	...	T	T	...	...	...	...	...	...	.86
Warsaw,Va	...	...	.96	...	...	...	...	...	.31	...	...	...	...	.31	...	...	...	.32	...	...	.38	...	...	.15	...	...	...	...	...	.02	2.45
Phila. Pa.	...	...	1.29	...	.58	...	...	.29	.06	.10	...	...	...	.09	...	...	.24	.01	.01	...	.39	...	.06	.01	T	...	...	...	...	.13	3.26

NOTE.—"T" indicates a trace of rain or melted snow. † Dates on which rain fell, but not measured until next observation.
* Rain fell, but no measurement made.

MONTHLY SUMMARY OF REPORTS FOR NOVEMBER, 1894.

STATIONS.	COUNTIES.	Altitude above sea in ft.	Latitude.	Longitude.	TEMPERATURE.								Total Precipitation.	Clear Days.	Fair Days.	Cloudy Days.	Rainy Days. (.01 in. or more)	Prevailing Wind.
					Monthly Mean.	Mean of Max.	Mean of Min.	Max.		Min.		Monthly Range.						
								Degrees	Date.	Degrees	Date.							
WESTERN MARYLAND.																		
Sunnyside	Garrett	2440	39°20′	79°21′	33.6	42.0	25.3	68	2	6	29	62	3.34	13	3	14	10	S. W.
Oakland	Garrett	2380	39 24	79 18	34.9	43.5	26.5	66	4	8	29	58	2.30	13	10	7	10	S. W.
Deer Park	Garrett	2457	39 25	79 13	33.4	43.0	23.9	65	2	2	29	63	1.13	....	....	....	....	.....
Grantsville	Garrett	.....	39 45	79 10	37.0	44.5	29.5	67	2	15	20, 29	52	2.32	10	7	13	7	S. W.
Western Port	Allegany	.....	39 28	79 2	39.2	48.7	29.7	67	2	15	28	52	2.15	...	....	....	....	.....
Boettcherville[1]*	Allegany	.....	39 39	78 48	39.8	.....	.....	70	2	16	29	54	.50	....	....	....	....	.....
‡Cumberland (*a*)[1]	Allegany	650	39 39	78 46	42.0	....	.....	67	16	19	29	48	.71	....	....	....	....	.....
Cumberland (*b*)	Allegany	700	39 39	78 45	38.6	46.1	31.1	68	2	17	28	51	.63	14	9	7	4	.....
NORTHERN-CENTRAL MD.																		
Sharpsburg	Washington	.....	39 25	77 45	41.2	48.8	33.7	67	2	20	29	47	1.41	14	7	9	6	.....
Burkittsville	Frederick	.....	39 25	77 35	42.2	50.0	34.3	66	2	21	29	45	1.73	16	7	7	7	W.
Mt. St. Mary's[1]*	Frederick	720	39 43	77 20	41.6	.....	.....	*67	2	22	20	45	2.01	....	....	....	....	.....
Frederick (*a*)	Frederick	280	39 24	77 18	42.2	49.9	34.5	69	23	22	30	47	1.60	....	....	....	....	.....
Frederick (*b*)	Frederick	280	39 24	77 18	43.0	50.6	35.3	67	2	24	20, 29	43	1.48	17	6	7	5	N.W.
Taneytown	Carroll	.....	39 40	77 9	....	.....	.....	....	.....	....	.....	....	2.11	....	....	....	....	.....
Bachman's Val[1]*	Carroll	.....	39 37	76 55	38.5	.....	.....	62	2	19	29	44	2.73	22	2	6	5	S.
McDonogh	Baltimore	535	39 23	76 44	k43.3	k51.8	k34.8	66	2	21	20	45	....	....	....	....	....	.....
Woodstock Col	Baltimore	400	39 19	76 51	41.0	49.5	32.6	66	2	18	29	48	1.55	17	6	7	8	W.
Baltimore		179	39 17	76 36	43.4	49.7	37.0	70	2	24	29	46	1.98	16	8	6	9	N.W.
Johns Hopkins Hos		.....	39 17	76 36	42.6	50.0	35.2	70	22	22	29	48	....	....	....	....	....	.....
Fallston	Harford	450	39 31	76 24	40.4	.....	.....	61	1	21	29	40	2.22	10	12	8	13	N.W.
Darlington	Harford	300	39 39	78 45	41.4	49.3	33.6	63	2	20	29	43	2.69	21	0	9	8	N.W. S. W.
Great Falls[6]*	Montgomery	.....	39 0	77 14	43.0	....	.....	65	2. 23	19	29	46	1.69	....	....	....	....	.....
SOUTHERN MARYLAND.																		
Annapolis	Anne Arund'l	20	39 58	76 30	43.8	50.7	36.9	69	2	25	20	44	2.16	....	....	....	....	.....
Jewell	Anne Arund'l	....	38 45	76 37	45.1	55.5	36.7	70	2	21	29	49	1.44	16	10	4	4	N.W.
Dist. Res., D. C.[5]*		.....	38 52	77 0	43.2	.....	.....	63	23	21	29	42	1.23	....	....	....	....	.....
Rec. Res., D. C.[5]*		.....	38 52	77 0	43.4	.....	.....	65	2	20	29	45	1.65	....	....	....	....	.....
Washington, D. C.		112	38 52	77 0	44.0	51.4	36.5	68	2	21	29	47	1.52	19	5	6	9	S.
College Park	Pr. George's	.....	38 58	76 56	42.4	52.7	32.1	70	26	16	29	54	1.60	....	....	....	....	.....
Upper Marlboro	Pr. George's	.....	38 47	76 45	a43.7	a53.7	a33.7	69	2	17	29	52	1.63	18	8	4	6	N.W.
Marshall Hall	Charles	.....	38 42	77 8	....	.....	.....	....	.....	....	.....	....	....	....	....	....	....	.....
La Plata	Charles	....	38 32	77 0	42.6	53.7	31.6	70	23	20	28	50	2.00	...	....	....	..	.....
Bel Alton	Charles	....	38 26	77 1	c45.2	c55.5	c34.9	71	4	24	28	47	.96	....	....	....	....	.....
Pope's Creek	Charles	....	38 22	77 1	44.0	53.6	34.5	70	1	22	29	48	1.20	....	....	....	....	.....
Solomon's	Calvert	20	38 19	76 27	46.8	54.3	39.2	70	3, 17	26	29	44	2.35	13	4	13	8	N.W.
Charlotte Hall	St. Mary's	.....	38 28	76 38	a44.0	a52.4	a35.7	70	17	20	19	50	1.65	16	12	2	4	N.W.
Cherryfields[2]	St. Mary's	....	38 11	76 24	44.8	.....	.....	....	.....	...	.....	....	2.38	13	7	10	10	N.W.
EASTERN MD. AND DELAWARE.																		
Chestertown	Kent	80	39 13	76 4	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	....	....	.....
†Denton	Caroline	42	38 47	75 41	45.7	56.9	34.5	80	2	25	20	55	2.67	....	....	....	....	.....
Easton	Talbot	35	38 42	76 6	45.4	56.0	35.9	72	3	21	29	51	2.77	16	5	9	7	W.
Mardela Spr.	Wicomico	25	38 30	75 39	43.1	52.0	34.2	70	2	21	29	49	2.80	16	6	8	9	N.W.
Princess Anne	Somerset	.....	38 10	75 35	43.7	54.3	33.1	70	2, 3, 17	21	30	49	2.29	13	14	3	7	S. W.
†Pocomoke City	Worcester	37	38 5	38 38	48.7	60.7	35.8	79	3, 17	21	29	58	2.12	15	11	4	7	N.W.
Wilmington, Del.	Newcastle	115	39 44	75 33	42.8	50.1	35.6	70	2	23	29	47	2.90	12	10	8	10	N.W.
Newark, Del.	Newcastle	.....	39 40	75 37	40.1	47.8	32.4	69	2	19	20	50	2.69	15	4	11	8	N.W. S. W.
Kirkwood, Del.	Newcastle	.....	39 35	75 41	c39.0	.....	.....	....	.....	....	.....	....	....	18	0	12	....	.....
Dover, Del.[3]	Kent	40	39 10	75 30	42.6	49.7	35.4	68	2	24	30	44	2.88	18	5	7	9	N.W. S. W.
Milford, Del.	Kent	.....	38 45	75 25	44.7	54.4	35.0	71	2	22	30	49	2.12	22	1	7	7	N.W.
Seaford, Del.	Sussex	.....	38 40	75 35	43.0	52.0	34.0	69	2	20	29	49	2.35	....	....	....	....	.....
Millsboro, Del.	Sussex	.....	38 44	75 15	42.4	51.4	33.5	71	17	20	30	51	2.35	17	5	8	8	N.W.
‡VIRGINIA.																		
Birdsnest[1]*	Northampton	.....	.....	...	48.0	.....	.....	76	3	27	29	49	1.30	6	12	12	4	N.W.
Norfolk		.....	.....	.....	49.4	56.7	42.1	73	3	29	29	44	.86	15	9	6	4	W.
Warsaw	Richmond	.....	.....	.....	45.4	54.8	35.9	74	17	24	29	50	2.45	10	15	5	7	N.
‡PENNSYLVANIA.																		
Philadelphia		.....	.....	.....	42.0	48.3	35.8	69	3	22	20	47	3.26	14	5	11	13	N.W.
AVERAGES Western Maryland		.....	.....	.....	36.6	44.6	27.7	....	.....	....	.....	56 0	1.77	12.5	7.2	10.2	7.8	S. W.
Northern-Cent'l Md.		.....	.....	.....	41.8	50.0	34.6	...	.....	...	.....	45.2	2.10	16.6	6.0	7.4	7.8	N.W.
Southern Maryland		.....	.....	.....	44.1	53.4	35.2	...	.....	....	.....	47.7	1.67	15.8	7.7	6.5	6.8	N.W.
East. Md. and Del		.....	.....	.....	42.7	52.0	34.3	....	.....	....	.....	48.8	2.57	16.3	5.6	8.1	7.2	N.W.
Entire territory		.....	.....	.....	41.3	50.0	33.0	....	.....	....	.....	49.4	2.03	15.3	6.6	8.0	7.4	N.W.

* Extremes of temperature from observed readings of dry thermometer. A numeral following the name of a station indicates the hours of observation from which the mean temperature was obtained, thus:

[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. [5] Mean of 7 a. m. + 2 p. m. ÷ 2.

The absence of a numeral indicates that the mean temperature has been obtained from daily readings of the maximum and minimum thermometers. Letters of the alphabet are used to denote the number of days that are missing from record; for instance, "a" denotes 1 day missing. An italic letter following the name of a station indicates that two or more observers, as the case may be, are reporting from the same station. ‡ Omitted in computing averages. † Received after report had gone to press and therefore omitted in computing averages and in preparing map.