

XXIX. *Journal of the Weather at Senegambia, during the Prevalence of a very fatal putrid Disorder, with Remarks on that Country.* By J. P. Schotte, M. D.; communicated by Joseph Banks, Esq. P. R. S.

Read May 11, 1780.

S I R,

London,  
Feb. 18, 1780.

HAVING kept a meteorological journal at the island St. Lewis, in the river Senegal, in Africa, during a time when the greatest part of the garrison, and a great number of the inhabitants on the island as well as on the continent, died of a putrid disorder, I communicate the same to you, as I thought this fatal circumstance a sufficient reason to make it acceptable to the Society over which you preside; hoping, that it may afford matter to determine the cause of it, and lead to find out remedies to prevent it in future in the like climates.

Previous to the journal, in order to illustrate it, I think it requisite to make a few remarks on the situation of the island, the country about it, its seasons, the manner and

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time

time in which the disorder appeared and ceased, and the thermometer I have used.

The island St. Lewis, otherwise called Senegal, is situated in  $16^{\circ}$  North latitude, and  $16^{\circ}$  West longitude. It is separated from the island of Soar on the East by the main river, which, on account of the smallness of the creek by which it is formed, is esteemed a part of the continent. It has the Atlantic Ocean on the West, from which it is separated by a small neck of land, or more properly sand, called Barbary Point. This neck of land is in several places not above five or six hundred yards broad. A branch of the river runs between it and the island itself, communicating with the main river above and below the island. It is about a mile in length, seven hundred feet in breadth, and contains five or six thousand black inhabitants. In the months of August, September, and October, it is usually about two or three feet above the level of the river at high water; but there are years in which the whole island is overflowed; in the other months of the year it may be about five or six feet above its level in the highest places. The continent and islands near it are as low, and in many places much lower, being overflowed for the most part during the rainy months; the latter are formed by creeks communicating with the main river, and thickly beset with mangroves.

mangroves. The water of the river is fresh during the rains, but very thick and troubled, the current being so rapid and strong as to stop the flood-tide; but in the dry months the river water is salt, and no other water is to be had, but such as is procured by digging a pit into the sand more or less deep according to the height of the ground into which the water filtrates from all sides, and gathers up to the level of the river. This water is brackish, but as no better is to be had thereabouts, the garrison, as well as the inhabitants, make use of it, except when the river is fresh.

The year is commonly divided by the Europeans as well as the inhabitants into two seasons; *viz.* the rainy and dry; by others called the sickly and healthy season. The rainy or sickly one generally begins about the middle of July, and ends about the middle of October; during this time the wind is generally between the points of East and South, the quarter from which the tornados come. It has been observed, that this season is more or less unwholesome in proportion to the greater or lesser quantity of rain that falls. A tornado is preceded by a disagreeable closeness and weight in the air, (which seems to be much hotter than the thermometer shows it to be); and it is known to come on by the rising of the clouds to the South-east, which by joining grow darker,

darker, so as to make the horizon look quite black, accompanied with lightning and thunder at a distance. The breeze dies away by degrees as the tornado advances, and an entire calm succeeds; the air grows yet darker; animals and birds retire and shelter themselves; every thing is silent, and the aspect of the sky, from whence the tornado approaches, is most dreadful. A violent storm comes on all at once, which is so cold as to occasion the thermometer to fall seven or eight degrees in a few minutes, and strong enough to overset negro huts and vessels, or drive the latter from their anchors, and throw them on shore. The storm abates, and heavy rain follows accompanied with much lightning and strong claps of thunder. Sometimes tornados happen without rain, or at least with very little, but then the storm is more violent and lasts longer. It has been imagined by some, that this kind of storm brings some pestiferous quality with it, because they had observed, that out of a number of people several fell sick in one night after a tornado.

This I have in some degree experienced myself; for in the month of September 1776, feeling myself very well, and having dined as usual, the storm of a tornado suddenly tore down the window-shutters, and blew into the room where I was: about an hour after I had rigors,

and in the evening I had a high fever, which turned out to be a very severe bilious one; but notwithstanding this, it has, in my opinion, no such ill quality, and the above phenomenon may be attributed to the change it produces on the air, and of consequence on the body; it may therefore be considered as the occasional cause of a disorder to which the body was pre-disposed long before.

The dampness of the atmosphere during this season is so great that it is more or less perceptible in every thing. Leather, wearing apparel, and books, grow mouldy. Polished metals grow rusty. Sea salt, sugar, and other saline substances, which were perfectly dry before, melt; and the meat of cattle killed in the evening is spoiled the next morning, so as not to be fit for use.

Calms are very frequent and disagreeable on account of the musquitos and other insects, which then quit their retreats from among the mangroves and marshes, and spread over the face of the country.

The dry or healthy season begins commonly about the middle of October and lasts to the middle of July. It is called dry, because then it hardly ever rains, or at least but very seldom; and healthy, in opposition to the sickly one: for though pleurifies and peripneumonies will happen in the months of December and January, and  
fluxes

fluxes in the months of April, May, and June, few people die, which, when compared with the numbers that die in the other season, justifies the denomination. When the rains cease, the wind shifts its quarter, and is for the most part East or North-east in the morning; but as the Sun rises on the horizon, the wind changes more and more towards the North, till about noon, sooner or later, it gets to the West of North, which is called sea-breeze, and is very refreshing, though it happens sometimes, that as the Sun falls again on the horizon, the wind will shift again towards the East, and continue there all night. This wind blows sometimes very strong, and is always excessively hot, drying up the lakes and pools, which had been formed by the heavy rains and the overflowing of the river, and producing in such as partake of sea water, a fine sea salt in large crystals, not unlike fossil salt. In the months of February, March, April, May, and June, the wind blows almost constantly from between North and West, called sea-breeze, except now and then a day or two it will be East, which when it happens in April makes it excessively hot, the Sun being then in and about the zenith of Senegal, heating the vast plains of sand over which this wind is to pass before its arrival there, which, reverberating the received heat, may contribute to increase it; for I have observed, that the

same month in the river Gambia was not hotter than any other wind, owing in all appearance to the difference of the soil of the country, which is not sandy like that of Senegal. I think it is the dust of the sand raised by this wind which makes the atmosphere look hazy. I myself saw in the year 1775, in the month of April, in a morning preceded by an Easterly wind, such a dust imitating a fog in the air, that one could not see above twenty yards.

The weather grew calm, and about eleven o'clock in the forenoon the atmosphere grew clear by depositing a brownish impalpable dust, which covered every thing near a line in thickness. The same thing I observed at sea from on board of a vessel in the month of March 1775, at the distance of about five or six leagues from the land near the latitude of Senegal. The wind having blown East in the night, I found in the morning the sails, shrouds, and deck, covered with an impalpable dust. The description given by the learned Dr. LIND <sup>(a)</sup> of the Harmattans of the Coast of Guinea, seems to agree with the East wind at Senegal in almost every respect, except that the damp vapour in the former is not perceptible in this, for it dries every thing that will admit of it. Water poured on the floor of a

(a) Essay on the most effectual Means of preserving the Health of Seamen.

room for the purpose of cooling the air, is dried up in an instant, and there is some effect on the thermometer placed in such a room. Salt, sugar, and the like substances, which are half melted by the damp air during the rainy season, dry again in a few days into hard lumps. Such household furniture as is made of wood, though it has been ever so well seasoned, shrinks and grows loose where joined, or splits and cracks where glued. It dries and parches the skin of the white people as well as the blacks, and makes it sometimes as rough as any clear frosty weather in Europe would. The sky is commonly clear and without clouds; but the atmosphere is hazy, which, in my opinion, as I have already observed, is occasioned by the dust, perhaps in conjunction with vapours arising from the surface of the earth and waters. These vapours, though not to be seen in the open air, I have perceived by their shadow upon white walls, arising from pools which were close to them; but the air being so dry they are absorbed by it, and no more perceptible as vapour. That the evaporation must be very great when this wind blows, the method the blacks have of cooling water will evince. They fill tanned leather bags with it, and hang them up in the Sun; the water oozes more or less through the leather, so as to keep the outward surface of it wet, which, by its quick and con-



tinued evaporation, occasions the water within the bag to grow considerably cool.

This wind is in general not reckoned unwholesome, either by the inhabitants or Europeans, though it feels very disagreeable, and by depriving the body of its thinner fluids may be looked upon as the immediate cause of some diseases, and the pre-disposing one to others. When it sets in sooner or later in the month of October, it is considered by the inhabitants as producing a cessation of the sickly weather, and the beginning of healthier. In the months of December and January, when the Sun is at its greatest distance, it makes the weather feel very cold in the nights and the mornings.

The putrid disorder, which proved so fatal to the garrison and the inhabitants of Senegal, made its appearance in the beginning of August. The preceding month of July had been remarkably healthy; though the weather was very hot and sultry, there were only three soldiers in the hospital for slight venereal disorders; but we learnt by some black messengers, who came from Goree, that there was a fever raging there, which had carried off numbers of the French garrison and inhabitants of the island, and we thought ourselves very happy not to partake of their fate. On the second of August one of the soldiers, who was in the hospital for a gonorrhoea, being  
1 cured,

cured, was discharged. The fourth of August he was again reported to me as very sick in the barracks. I went to see and found him in a high fever with the worst symptoms. I ordered him to be carried to the hospital, where he died the third day, with all the symptoms of the greatest putridity. The orderly man of the hospital was seized on the sixth of August with the same disease, and died the ninth. One of the venereal patients, who remained still in the hospital, was taken with the same fever, and died a few days after. Some of the soldiers of the fort, having access to the hospital to visit their sick comrades, took the contagion, and spread it through the whole garrison. I am apt to believe, that the disorder was brought to Senegal by the black messengers from Goree; for I understood that one of them had died soon after his arrival in Senegal, and it may be, that the soldier who died first of it got the infection from them; for it is probable, that being discharged the hospital on the second of August, and having leave to take a walk on the island on the third, he had been in company with some of these black messengers, or in the huts where they resorted, for the sake of hearing some news from Goree, where he was acquainted. It may perhaps be observed, that the soldier taking the contagion on the third of August, it could not make so rapid a progress as

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to manifest itself the next morning in the highest degree; but this I intend to support by the following cases. One of the surgeon's mates dressed a blister on the back of a soldier, ill of the disorder, with a digestive softened with oil of turpentine: having done, he came into the surgery, and looked quite pale, telling me, That the soldier's back had smelled so putrid and offensive, that it had made him quite faint and sick at the stomach. He took some tincture of bark and bitters, and went home, when a fever, with a train of the worst symptoms, made its appearance in the evening, and he died the third day. Another gentleman, who was sent for by the said surgeon's mate in the morning of the second day of his illness, and requested to draw up a will for him, arrived while I was present. He spoke with the patient for a few minutes, and then took me aside, saying, That there was a certain smell about the room, which made him faint and sick at the stomach, and that he should be obliged to retire; he did, but in the evening was seized with the fever and all its bad symptoms, went through several of its stages, but recovered. A black boy, who had been waiting on the said surgeon's mate during his illness, was taken with the same disorder, and died of it in a few days. I could produce several other cases to strengthen what I have advanced concerning the quick appearance

appearance of the disorder itself after the contagion had taken place, but I think the three related ones sufficient.

The cessation of this contagious disease may be dated from about the middle of September. Governor CLARKE, who died the 18th of this month, concluded the dreadful scene. He had avoided the communication with all sick people, but did not hesitate in admitting my company. I was the only one who dined with him for several weeks; and as I was continually among the sick in the hospital and on the island (of the former of which I gave him a return every morning) I might probably have conveyed the infection to him in my cloathing, though I was not affected myself. A few people died in the months of October, November, and December; some of relapses of the same fever, and others of severe fluxes and abscesses in the liver, in which the disorder had terminated. It is remarkable, that a fleet of merchant-men, under convoy of a sloop of war, which left Senegal on the fourth of August, and failed for England, had, by what I could learn, been entirely free from this disorder; neither did it reach as far as the river Gambia, for the garrison at Fort James in that river enjoyed a pretty good state of health during all this time, and lost only two men, who died of fluxes.

The thermometer I have used is FAHRENHEIT'S made by WILLCOX and COYSGARNE. It has been compared, since my arrival in England with one made by RAMSDEN, and found to be about three-fourths of a degree lower. It was placed in the fort at Senegal, in a room two stories high with a blank ceiling, and above that a bevil roof covered with slate: this room was not exposed to the Sun but at its rising and setting, it being sheltered from it by other buildings, when high on the horizon. I am sorry that I had not begun to keep the journal of heat and weather two or three months sooner, for the satisfaction of the curious in natural philosophy; but as it required a degree of leisure which I had not, being obliged to attend to my duty, and as I observed nothing extraordinary either in the heat or weather, and imagined that journals of this kind, and of this country, might have been published in Europe long before now, I neglected it, but was tempted to keep it when the fatal disease made its appearance.

It has been observed by Dr. LIND<sup>(b)</sup>, that in that country a great change in the weather has little or no effect on the barometer. I have remarked the same at Fort James Gambia in the year 1776, for I found from the fourth of February to the last of April, that the alte-

(b) Essay on Diseases incidental to Europeans in hot Climates.

ration the weather produced on the barometer was so little as hardly to be perceptible. The equality of the weather during this time (which is part of the dry season in which the sky is always clear and without clouds, though the different winds produce sensible changes in the atmosphere) may perhaps account for it; but Governor CLARKE, who had a barometer placed in one of his rooms in the fort at Senegal, told me, That the greatest changes in the weather during the rainy season had so little effect on that instrument that it was hardly worth notice.

I beg you would do me the honour to present these remarks, with the annexed journal, to the Royal Society, if you find them to contain any thing worthy the notice of that illustrious body.

I have the honour to be, &c.

1778	Hour.	Therm.	Wind.	Weather.	
Aug. 10	11	82	NNW	Clear.	
	2	83	NNW	A tornado coming on, which lasted an hour.	
	4	81	NNW	Lightning to the Southward.	
	8	81	NNW	Lightning and thunder to the Southward.	
	11	6	80	N	Clear.
		9	81	N	Clear.
		4	83	W	Lightning and thunder with rain.
	12	8	81	W	Clear with lightning.
		6	76	NNE	Thund. lightn. and rain during the whole night.
		11	80	S	Clear.
		3	82	N	Clear.
	13	8	82	—	Calm and clear.
		7	80	SE	Small rain.
		11	82	SSW	Cloudy with Sun-shine; close and moist.
		4	83	W	Clear.
	14	9	81	W	
		7	80	W	Cloudy with small rain.
		11	82	W	Cloudy.
		4	83	W	Cloudy.
		9	82	W	Cloudy.
15	7	80	NNW	Cloudy.	
	5	83	W	Cloudy.	
	9	81	W	Cloudy.	
16	7	80	SW	Clear.	
	11	82	NW	Clear.	
	3	83	NW	Clear.	
	9	82	N	Clear.	
17	7	79	S	Cloudy.	
	10	80	W	Cloudy.	
18	7	80	S	Cloudy.	
	12	82	NE	Thunder and rain.	
	2	78	W	Thick and misty.	
	8	79	WSW	Hazy.	
19	7	78	ESE	Clear.	
	11	81	S	Clear.	
	4	84	NW	Cloudy with Sunshine.	
	9	82	—	Calm and clear.	
20	7	79	S	Cloudy.	
	4	84	W	Cloudy and thunder.	
	9	82	W	Cloudy and rain.	

1778	Hour.	Therm.	Wind.	Weather.	
Aug. 21	7	79	SSE	A great deal of rain.	
	1	78	SW	Cloudy and hazy.	
	4	78	SW	Cloudy and hazy.	
	7	80	S	Cloudy and showers of rain.	
	22	6	78	SW	A great deal of rain.
	23	7	78	—	Calm and clear, a great deal of rain the night before.
		2	81	SW	Cloudy.
		9	80	NW	Clear, lightning to the Eastward.
	24	7	79	N	Cloudy.
		12	82	NNW	Clear.
2		82	—	Thunder, a tornado coming on from the East.	
9		81	—	Calm and cloudy, a tornado with rain three hours before.	
25		7	78	—	Calm, a heavy tornado with rain last night.
26	1	81	N	Cloudy.	
	4	81½	N	Cloudy.	
	10	81	N	Clear.	
	7	80	N	Clear.	
	11	80	E	Clear, a tornado with rain two hours before.	
	1	81	—	Calm and clear.	
	11	82	N	Clear.	
	27	7	78	E	Mifty, a great deal of rain the night before.
	11	78	SE	Cloudy, now and then rain.	
	3	80	SE	Cloudy.	
28	7	78	SW	Mifty and drizzling rain.	
	2	82	SW	Cloudy.	
	6	81	SW	Cloudy.	
	9	80	W	Cloudy.	
	29	7	80	W	Cloudy.
30	1	81	NW	Cloudy, blowing hard.	
	7	80	NW	Cloudy, the air very thick.	
	10	82	SE	Thick and hazy.	
	2	83	WSW	Hazy.	
	8	82	W	Hazy.	
31	7	78	NE	{ Thick and rain; a tornado last night, with a deal of rain, thunder, and lightning; before the tornado came on it was excessive close.	
	3	83	E	Cloudy.	
	9	83	—	Calm, cloudy, and very close; lightning all round the horizon.	
	Sept. 1	7	80	W	Cloudy.
Sept. 1	3	83	WSW	Clear.	
	9	82	W	Clear and fine.	



1778	Hour.	Therm.	Winds.	Weather.
Sept. 2	7	81	SW	Clofe and cloudy.
	1	83	W	Hazy.
	5	84	NW	Thunder towards the South-east.
	9	84	NW	Lightning towards the South-east.
3	7	81	SE	Clofe and cloudy; last night calm and very clofe.
	11	84	E	Clear.
	5	85	SW	Cloudy.
	9	82	W	Cloudy.
4	7	80	W	Cloudy.
	11	80	W	Showers of rain with thunder.
	9	81	NW	Cloudy.
	7	80	NW	Cloudy.
5	12	83	NW	Cloudy.
	9	82	NW	Cloudy.
6	7	81	—	Calm and cloudy.
	2	84	W	Cloudy.
	4	84	SE	A tornado with rain.
	9	82	—	Calm and hazy.
7	7	81	SW	Cloudy.
	1	82	SW	Cloudy.
	5	84	—	Calm and clofe, a tornado coming on from the SE.
	9	80	SW	The tornado ceafed, cloudy and damp.
8	6	78	S	Cloudy.
	12	83	S	Hazy and cloudy.
	9	82	NW	Hazy and cloudy.
	7	82	SE	Cloudy and clofe.
9	11	83	SW	Cloudy.
	6	84	W	Hazy and clofe.
	9	83	W	Cloudy.
	7	82	SE	Cloudy.
10	3	83	W	Cloudy.
	5	85	NW	Clear.
11	7	82	NW	Cloudy.
	5	83	N	Cloudy.
	9	82	N	Cloudy.
	6	80	N	Cloudy.
12	12	82	N	Cloudy.
	5	83	NW	Cloudy.
	9	82	NW	Cloudy.
	6	80	N	Cloudy.
13	3	83	N	Cloudy.
	5	83	N	Cloudy.
	9	81	NW	Cloudy.

1778	Hour.	Therm.	Winds.	Weather.
Sept. 14	7	81	SE	Cloudy and thick, last night very close.
	12	83	SW	Cloudy and hazy.
	2	83	SW	A tornado coming on from the East.
	9	79	—	Calm, from three o'clock till now heavy rain.
15	7	79	SE	
	11	82	S	Cloudy and rain now and then.
	5	82	W	Cloudy and rain now and then.
16	9	82	W	Close and cloudy, lightning towards the East.
	6	81	E	Cloudy, the night very close.
	10	76	N	{ Two hours before a tornado from the East, with a deal of wind and cold rain.
	2	82	S	Cloudy.
17	9	81	—	Calm, cloudy, and close.
	7	81	NNW	Clear, last night excessive close, and millions of musquetos.
	12	83	NW	Clear.
	5	84	NW	Clear.
	9	82	NW	Clear.
18				
19	7	82	—	Calm, the night before very close.
	10	84	—	Calm, a tornado coming on from the Eastward.
	1	81	E	Clear, two hours ago a tornado with but little rain.
	5	84	NW	Clear.
	8	84	—	Calm and clear, the air filled with musquetos.
20	7	81	N	Clear, the night before quite calm.
	1	84	W	Clear.
	9	84	W	Lightning to the Eastward.
21	7	81	E	{ Cloudy, last night a tornado with a great deal of wind, but not much rain.
	2	84	E	Cloudy.
	5	85	E	Cloudy.
	9	84	E	
	8	79	E	Cloudy.
22	1	85	—	Calm and clear.
	5	85	W	A tornado from the East.
	11	84	NW	Clear.
	3	84	NW	Clear.
	9	83	NW	Clear.
24	7	82	S	Cloudy.
	10	84	SW	Hazy.
	3	87	—	Calm and clear.
	9	85	NNW	Clear.

1778	Hour.	Therm.	Winds.	Weather.	
Sept.	25	7	82	E	Hazy and thick; at three o'clock this morning a heavy tornado, with a great deal of rain, thunder, and lightning.
		11	84	E	
		2	87	SE	Hazy.
		5	88	SE	Hazy.
		9	84	NW	Clear.
	26	5	—	—	A tornado from the E. with a great deal of rain.
		8	79	E	Clear.
		4	84	—	Calm.
		8	84	—	Calm, plenty of musquetos.
	27	9	83	N	Clear.
		2	85	N	Hazy.
		4	84	N	Hazy.
		8	84	N	Hazy.
	28	6	83	—	Calm and hazy.
1		85	SW	Hazy.	
5		86	—	Calm and hazy.	
8		84	W	Hazy.	
29	7	82	W	Hazy.	
	1	85	NW	Hazy.	
	9	84	N	Clear.	
30	7	82	N	Clear.	
	1	84	NNW	Clear.	
	5	85	NNW	Clear.	
	9	84	NNW	Clear.	
Oct.	1	8	81	N	Clear.
		1	84	N	Clear.
		9	83	N	Clear.
	2	6	79	N	Clear.
		11	83	NNW	Clear.
		9	83	—	Calm and hazy.
	3	8	80	E	Cloudy and hazy.
		12	80	E	Hazy.
		9	81	E	Hazy.
	4	6	76	SE	Cloudy.
		1	81	SE	Cloudy, a few drops of rain now and then.
	9	81	—	Calm and cloudy.	
5	6	79	—	Calm and clear.	
	1	82	W	Calm and clear.	
	9	82	W	Cloudy.	

1778	Hour.	Therm.	Winds.	Weather.	
Oa.	6	79	WSW	Cloudy, an hour before a tornado with rain and thunder.	
	11	77	SE	Cloudy, 3 hours before a tornado with cold rain.	
	2	77	W	Cloudy.	
	9	79	N	Cloudy.	
	6	76	N	Clear.	
	1	80	N	Clear.	
	5	81	N	Clear.	
	9	81	N	Clear.	
	7	80	N	Clear.	
	10	82	N	Clear.	
	5	84	N	Clear.	
	9	83	N	Clear.	
	7	81	N	Clear.	
	11	85	N	Clear.	
	12	87	NNE	Clear.	
	9	83	N	Clear.	
	10	7	80	W	Cloudy.
	11	82	W	Cloudy.	
	1	83	SW	Cloudy.	
	9	82	N	Cloudy.	
	11	6	80	—	Calm and cloudy.
	11	82	N	Clear.	
	2	84	N	Clear.	
	9	83	N	Clear.	
	12	6	80	NNE	Cloudy.
	12	82	NNW	Cloudy.	
	9	82	N	Clear.	
	13	6	79	N	Clear.
	2	82	N	Clear.	
	9	82	N	Clear.	
	14	6	79	N	Clear.
	10	80	N	Clear.	
	4	81	N	Clear.	
	15	6	77	N	Clear.
	2	81	N	Clear.	
	9	80	NNW	Clear.	
	16	6	78	N	Hazy.
	12	79	N	Clear.	
	5	82	W	Clear.	
	9	81	W	Clear.	

1778	Hour.	Therm.	Winds.	Weather.
Oct. 17	6	79	W	Hazy, a heavy dew last night.
	12	82	—	Calm and hazy.
	9	81	W	Hazy, a dew.
18	6	79	W	Clear.
	12	82	W	Clear.
	6	83	W	Clear.
19	9	83	W	Clear.
	6	78	NNW	Clear.
	2	82	WNW	Clear.
20	9	80	NW	Clear.
	7	78	N	Clear, a heavy dew last night.
	2	82	NNW	Clear.
21	9	80	N	Clear.
	6	78	N	Clear.
	2	82	NNW	Clear.
22	9	80	NW	—
	7	79	NW	—
	1	81	N	Heavy dew last night.
23	8	80	N	Clear.
	6	76	N	Clear.
	11	82	NE	—
24	9	81	W	Dew.
	6	78	NW	—
	2	86	NE	Dufty.
25	3	88	E	Dufty.
	4	90	NE	Dufty.
	5	92	E	Dufty.
	8	87	E	—
	7	81	N	Clear.
26	11	86	E	Dufty.
	3	92	E	Dufty.
	4	92	E	Dufty.
	9	83	N	—
27	8	77	NE	—
	4	85	N	Clear.
	9	81	N	Clear.
28	6	79	E	—
	9	84	N	Clear.

1778	Hour.	Therm.	Winds.	Weather.	
Oct. 29	6	78	N	Clear.	
	11	84	NE	Dufty.	
	1	90	NE	Dufty.	
	2	92	NE	Dufty.	
	9	83	NNW	—	
	30	6	78	N	Clear.
		12	86	NE	Dufty.
		9	83	NW	—
	31	8	81	W	Hazy.
11		82	W	Hazy.	
4		84	NW	Hazy.	
9		85	—	Calm.	
Nov. 1	6	80	NNE	—	
	1	84	NNW	Cloudy.	
	5	83	N	Thunder and rain.	
	9	9	83	N	Cloudy.
		7	80	N	Hazy.
	2	1	90	NE	Dufty.
		4	91	ENE	Dufty.
	9	9	87	NNW	—
		7	80	NNE	Dufty.
		12	90	NNE	Dufty.
	4	4	92	NNE	Dufty.
		9	85	NNW	—
		7	80	—	Calm.
	11	82	NNW	Clear.	
		5	83	NNW	Clear.
		9	82	NNW	Clear.
	5	9	82	NNW	Clear.
		7	78	NNW	Clear.
		11	85	N by E	Clear.
	1	1	80	NNW	Clear.
		9	81	NNW	—
		6	77	NW	Clear.
	3	82	NNW	Clear.	
		9	80	NW	Clear.
		6	78	NNW	Clear.
	7	11	79	NNW	Clear.
		9	80	NW	Clear.
		8	79	SW	Thick and cloudy, dew last night.
	11	84	W	Hazy.	
		9	80	W	Hazy.

1778	Hour.	Therm.	Winds	Weather.
Nov. 9	7	80	—	Calm.
	1	89	NE	Duffy.
	4	91	NE	Duffy.
	9	84	N	—
10	7	78	NNE	—
	11	85	NE	Duffy.
	4	91	NE	Duffy
11	9	83	NNW	—
	6	76	NE	—
	2	91	E	Duffy.
	5	89	N	—
	9	82	E	—
12	7	76	—	Calm. Note, that from this date forward the sky
	2	89	E	and atmosphere have been always clear, when
	3	92	E	the wind blew from between North and
	9	83	NNE	West; but when it blew from between North
13	7	78	E	and East, the atmosphere was more or less
	2	90	E	hazy and the sky clear, except on those days
	9	84	NNE	where there are particular remarks.
14	6	76	ENE	
	2	90	NNE	
	9	83	NNE	
	7	75	NE	
15	4	87	NNE	
	9	82	NNE	
	6	75	NNE	
16	1	86	N by E	
	3	90	NNE	
	9	81	N by E	
	7	75	NNW	
17	11	81	N by E	
	4	82	NNW	
	9	80	NNW	
	6	75	NNW	
18	1	79	NNW	
	2	82	NNW	
	6	74	NNW	
19	12	79	NNW	
	2	79	NW	
	9	76	NNW	
20	7	74	NNW	
	11	76	NNW	
	9	78	NW	

1778	Hour.	Therm.	Winds.	Weather.		
Nov.	21	7	73	NNW		
		1	85	NNE		
		3	88	NNE		
		9	79	NNW		
	22	6	73	NNE		
		1	84	E		
		2	84	NW		
	9	78	NNW			
		23	6	73		NNE
			1	84		E
	2		84	NW		
	9	78	NNW			
		24	6	70		E
			4	81		NE
	5		79	NNE		
	9	78	NNE			
		25	6	69		ENE
			12	74		E
	5		76	E		
	9	74	NE			
		26	6	63		E
			4	75		E
	9		72	E		
	6	64	E			
		27	12	74		E
			6	74		NNE
	9		72	NNE		
	6	64	E			
		28	1	75		E
			9	74		E
6	64		E			
	29	11	72	E		
		4	77	N by E		
9		72	NNE			
6	64	E				
	30	1	75	E		
		9	73	NNW		
Dec.		1	6	64	E	
	11	72	E			
	2	80	E			
	9	73	N			



1778	Hour.	Therm.	Winds	Weather
Dec.	2	6	64	E
		1	79	E
		4	77	NNW
		9	73	NNW
	3	6	64	E
		11	76	E
		1	79	E
		9	75	NNW
	4	6	65	NE
		1	78	E
		9	74	NNW
		6	67	NE
	5	2	77	E
		5	76	NNW
	6	6	68	NE
		1	74	NNW
		4	73	NNW
	7	6	68	NNE
	8	7	70	NE
		1	76	NNE
		9	73	N
	9	7	70	NNE
		12	72	NNE
		2	76	NNE
		9	72	NE
	10	6	66	E
		11	76	E
		1	80	NE
	11	7	68	E
		1	79	E
		2	80	NNW
		9	74	NNW
	12	7	65	NE
		11	70	E
		4	80	E
		9	73	N
	13	7	66	NNE
		11	76	E
		3	80	E
		9	74	NNW

1778	Hour.	Therm.	Winds.	Weather.
Dec. 14	7	67	E	
	11	76	E	
	3	83	E	
15	9	76	N	
	7	71	E	
	1	78	E	
16	5	86	E	
	19	79	NNE	
	7	71	E	
17	1	81	E	
	2	84	E	
	9	75	NNW	
18	7	69	NE	
	2	75	NE	
	4	78	N	
19	19	72	N	
	7	64	NE	
	2	84	E	
20	4	79	N	
	9	73	N	
	6	65	NE	
21	1	80	E	
	9	75	NE	
	6	62	NE	
22	2	80	E	
	9	75	NNE	
	6	64	NE	
23	1	73	E	
	2	75	E	
	9	71	NNW	
24	6	64	NE	
	9	71	NNW	
	6	64	E	
25	12	78	E	
	2	81	NNE	
	9	73	NNW	
26	7	66	E	
	2	78	E	
	5	77	NNE	
	9	72	N	

1778	Hour.	Therm.	Winds.	Weather.	
Dec.	5	7	63	NE	
		1	73	E	
		2	74	E	
		9	70	N	
	26	7	58	NE	
		11	68	E	
		3	72	NNW	
	27	9	67	N	
		7	60	NE	
		2	74	N	
	28	9	68	N	
		7	62	NE	
		12	73	E	
	29	2	72	NNW	
		9	70	NNW	
6		70	E	Foggy and thick, drizzling rain.	
7		70	N	Small rain.	
11		72	E		
1		75	E		
30	9	72	N	A few drops of rain.	
	6	67	N	Thick and foggy, with a few drops of rain.	
	12	71	NNW	Thick and foggy.	
	4	73	N	Foggy.	
	9	70	N		
1779					
Jan.	1	7	64	NE	
		1	76	E	
		4	80	NNW	
		9	72	NNW	
	2	7	63	E	
		11	68	NNW	
		3	71	NNW	
	3	9	69	NNW	
		6	64	NNW	
		11	70	NNE	
	4	3	70	NNW	
		9	69	NNW	
		6	63	N	
	5	12	73	E	
		9	70	NNW	
		6	60	N	
		9	69	NNW	

1779	Hour.	Therm.	Winds.	Weather.
Jan. 6	6	63	N	
	11	70	NNW	
7	4	72	NNW	Foggy.
	9	70	NNW	
	6	62	N	
8	2	71	NNW	Cloudy and thick, lightning and rain laft night.
	9	70	NNW	
	7	67	NE	
9	4	70	NNW	Foggy.
	9	69	NNW	
	7	67	N	
10	4	70	N	
	9	70	N	
	7	67	N	
11	7	69	N	
	1	70	NNW	
	4	71	NNW	
12	9	69	NNW	
	7	67	N	
	2	70	NNW	
13	4	70	NNW	Dew laft night.
	9	69	NNW	
	7	68	N	
14	2	70	NNW	Dew laft night.
	4	71	NNW	
	9	69	NNW	
15	8	68	N	Dew laft night.
	1	69	NNW	
	4	69	NNW	
16	9	68	NW	Dew laft night.
	9	68	NNW	
	11	69	NNW	
17	4	70	NNW	Heavy dew laft night.
	9	69	NNW	
	7	67	N	
18	11	68	NNW	
	4	69	NNW	
	9	69	NNW	
19	7	67	N	
	1	68	NNW	
	4	69	NNW	
20	9	68	NNW	
	9	68	NNW	

1779	Hour	Therm.	Winds	Weather.
Jan. 18	7	66	NE	
	12	70	NE	
	4	73	NE	
19	9	71	NE	
	7	63	NE	
	11	68	NE	
20	4	72	NE	
	9	69	N	
	7	59	NE	
21	11	70	NE	
	4	75	NE	
	9	69	N	
22	7	60	N by E	
	1	73	NE	
	4	75	NE	
23	9	67	NE	
	6	58	NE	
	12	70	NE	
24	4	75	NE	
	9	67	NE	
	6	58	NE	
25	12	69	NE	
	2	71	NE	
	9	67	NE	
26	6	59	NNE	
	6	55	N by E	
	12	67	NE	
28	4	70	NE	
	9	65	NE	
	6	56	NE	
	6	55	NE	
	11	66	NE	

