

Pontica, Linn.,] from its killing beasts and especially goats; from the flowers of this plant bees gather a dangerous poison, when it decays in a wet spring. The signs of poisonous honey are: it does not thicken at all, its colour is rather red, its strange smell immediately produces sneezing and it is heavier than harmless honey. Those who have eaten it throw themselves on the ground, trying to cool themselves, for they burst into a profuse perspiration. There are many cures which we will mention in their proper places. But as the danger is great, it may be as well to indicate some at once; such as old mead made of the best honey and of rue, and salt fish taken frequently if it be thrown up. It is certain also that this poison reaches dogs through the excrement, and that they are put in like pain. However it is well known that mead made of it when kept till old is quite harmless, and that women's complexions are not improved by anything better than by this when combined with *costus* (an oriental aromatic plant) and with bruised aloe."

Pliny's Natural History, XXI., 45.—"In the same region of Pontus in the tribe of the Sanni there is another kind of honey which is called *mænonomenon* (maddening) from the madness it produces. It is supposed to be collected from the flower of the rhododendron, with which the woods abound, and when this tribe give the Romans wax as tribute, they do not sell the honey because it is fatal."

Strabo's Geography, Book XII., Sec. 18, (Ed. Teub.) "The Heptacometae (a people of Pontus) destroyed three cohorts of Pompey which were marching through the mountains by putting on the roads cups of maddening (*mænonomenon*) honey, which the twigs of trees produce, for they easily slew the soldiers who were driven mad by the draught."

ART. IX.—ON THE METEOROLOGY OF HALIFAX. BY FREDERICK ALLISON, ESQ.

(Read May 8, 1871.)

JANUARY, 1870, was a month of unusual warmth, more than 7° above the average temperature of eight years, and not approached by any January since 1863. The pressure was great on the whole. Some of its more remarkable peculiarities are noticed in a paper read by me before this Institute in May last. Cloud was rather

scanty, and winds strong from the usual north west quarter. The total precipitation was very large; the rain fall more than supplying the deficiency of snow. We had no fog, five auroras, five hoar frosts, three lunar halos, four gales, and but five days sleighing. The strong east gales at the close of this month have also been fully mentioned last year.

February came nearer the normal temperature. Its whole pressure was very light. I must again refer to last year's paper for notable barometrical disturbances in this month. Cloud far exceeded that of January, and its own average; prevalent north west wind strong; great precipitation, being nearly double the average amount, especially large in rain. There was but one fog, two auroras, and three hoar frosts, two lunar and one solar halo; three gales were felt: that of 9th morning was strong from east, and blew again at night from west. There was sleighing nearly all February, from beginning to 25th.

The following month, March, was very similar in general temperature, but the minimum of the year occurred on the 12th of March. Pressure of the atmosphere still extremely small, with a range rather limited for the season, and not much force of vapour. For this month also some barometrical notes are contained in Proceedings of this Institute for 1870. The brightness of the approaching spring was well defined in March, when cloud was in decided defect. Prevalent wind direction, N. N. W., and mean force great. A decrease in rain and snow fall, but chiefly in former, left total of the two not much above two thirds of average. Wild geese passed on 19th, peach blossomed 24th, and wild pansies 28th. Again one fog, and the large number of eight auroras; five hoar frosts were noted, two lunar halos, three gales were felt—counting those of 17th and 18th as two,—all more or less eastwardly; we had eleven days of sleighing; robins reappeared 30th.

April temperature returned to a figure much above the normal. The minimum was high, $22^{\circ}.6$, and the maximum $66^{\circ}.4$. The pressure mean 29.743 , was but $.001$ below an eight years average; and the monthly percentage of relative humidity, 86.1 , the greatest in 1870, cloud still remains deficient. The prevalent wind was E. S. E., a peculiar direction, and small force. Total preci-

precipitation was a very little below the average; for while rain was in excess, we had less than one inch of snow, and only on two days. Fogs rose to the number of five, auroras five, hoar frosts six, thunder and lightning once—on 12th—first of season. A short gale blew on morning of 20th, from E. S. E.; frogs sang on 8th, and mayflowers were in full bloom 12th.

The mean temperature of May was a little lower than average. On the 30th the great heat of $80^{\circ}.2$ was attained. The mean pressure was not far from normal, but rather weak, and the Hygrometrical means were decidedly small for the season. The month was also very free from cloud, and wind force less than usual. With these conditions it is not surprising to find the rain fall deficient. An eight years average gives 4.33 inches; this May only 3.19; snow fall was inappreciable; and fair days twenty one, or six above average. Of fogs we had four, auroras six, hoar frosts two, thunder and lightning on 9th and 12th; humming birds were seen 18th, cherry blossomed 23rd, and the whole spring was rather advanced; the latest snow fell on 24th, melting as it fell.

June, compared with this month in past years, was not unlike May, compared with its predecessors: being slightly cool, somewhat low in pressure, and decidedly bright. The month was still more dry than the foregoing, only 1.69 inches of rain falling. The force of wind had previously been estimated. Now, having received and placed in position an Anemometer, (Robinson's improved,) I was enabled to measure the velocity, which in June gave a mean of only 8.8 miles per hour, with a resultant direction (calculated from direction and velocity) of south 70° west; three fogs were present, two auroras, no frost—the latest this season, both at five feet above ground and on surface—coming on 24th May. Thrice was thunder heard, and lightning visible on two occasions, from beginning of 20th to end of 21st, both being frequently heard and seen; one solar halo, one lunar corona; white lilac bloomed 7th, the purple 8th, the apple on 6th, and white hawthorn 7th, red clover blossomed 6th, the horse chestnut 2nd, the honeysuckle 11th, strawberries were ripe 20th, peas blossomed 17th, grass mowing began 30th; the whole season was now decidedly early.

July was a warm month, $1^{\circ}.85$ above the average ; on the 24th the thermometer reached $91^{\circ}.5$ and the 25th was excessively hot ; mean of six observations on that day $75^{\circ}.27$, being the warmest of any day recorded in Halifax in at least twelve years. Mean pressure continued low, and largely composed of force of vapour ; the want of cloud was very marked, and winds light—mean velocity being only 8.1 per hour—resultant direction south 69° west. Rain is not usually abundant here in July, but this had more than any of the summer months of 1870—3.21 inches, or an excess over the average of 1.02. I record four fogs, six auroras, thunder once, and lightning twice, two lunar coronas, and two rainbows ; blossoms and fruits were still early.

As the summer progressed the relative heat was maintained, and August in some respects closely resembled July, the pressure, 29.659, being almost identical, and amount of cloud one tenth less ; the atmosphere was sensibly more dry however ; the wind had veered farther northward, resultant direction north 77° west, and mean velocity increased to 10.5 miles per hour ; but 2.20 inches of rain fell, scarcely two thirds of calculated average ; number of fogs was three, auroras five, thunders three, and lightnings three, one lunar halo and one lunar corona. The advance of the season, in animal and vegetable life, proceeded at about same rate as before remarked.

The temperature of the year made a greater decline than usual in September, which month had a mean temperature of $57^{\circ}.20$, or $7^{\circ}.68$ below August. The atmosphere never descended to the freezing point, but on 30th 32° were registered by grass minimum thermometer. The average date of first appearance of this phenomenon is 19th September. Mean pressure did not yet reach its normal. Hygrometric results were about as usual, with still a great deficiency of cloud, and wind not strong generally, resultant direction was north 15° west, and mean velocity 10.6 miles per hour ; rain was .50 short ; three fogs were observed, three auroras, one hoar frost, as noted above, one thunder and lightning, two lunar halos, and one solar corona, one rainbow, three gales. In the gale of 4th wind reached 70 miles per hour, from six to seven a. m. The progression of temperature brought the usual signs of declining summer, at a date quite as early as customary.

October was decidedly a warm month, with a mean temperature $48^{\circ}.14$. The mean pressure was $29.825.005$ higher than January,—and the highest monthly mean in 1870. Elastic force of vapour $.294$, and relative humidity 82.8 . There was still a want of cloud, though October is frequently a bright month in Nova Scotia. In wind there was an evident increase of average force, the mean velocity being 12.45 miles per hour, with a resultant direction north 42° west. The rain fall was heavy, and more than twenty five per cent above the average, though coming on few days; $.8$ of inch of snow fell; we had no fog except for half an hour early on 31st; three auroras were marked, hoar frost on 7th and 24, three lunar halos, hail on 26th, and a rainbow same day; there were three gales from N. W., S. S. W., and S.; first frost 26th, the atmosphere having been above 32° one hundred and fifty five days, since May 24th; first snow 29th, first measurable snow 31st.

Mean temperature of November still remained above the average, while the whole pressure of the atmosphere was small, and fell much from that of October. This pressure was composed largely of force of vapour. November, generally a cloudy month, was rather less so than usual this year. The resultant direction of wind was nearly due west, being north 87° west, and the mean velocity in miles per hour receded nearly to that of September— 10.75 per hour. Rain fell to a depth of 5.67 inches, which is just one inch above the average; and 7.7 inches of snow fell, which is almost double the usual amount. There were three fogs, five auroras, two hoar frosts, three lunar halos, and a corona; three gales were felt from N. W., S. S. E., and S. E.; meteors night of 14th.

The winter began very mildly; December having a mean of exactly 30° or $3^{\circ}.61$ over the average temperature. In this mild month pressure was naturally very low, force of vapour and relative humidity comparatively high. The mean clouding was large, and considerably more than any other month in the year. Winds were not strong on the whole, the mean velocity being 11.6 miles per hour, resultant direction north 76° west. Rain was much above the average, and snow below, though the latter contained more water than is usual; so that the total precipitation was large. But one fog was present, three auroras, seven times hoar frost, four

lunar halos, and two coronæ; we had four days of sleighing. The thermometer did not fall nearer 0 than $4^{\circ}.6$ on Christmas Eve.

Annual results are thus briefly summed up: 1870, mean temperature $44^{\circ}.67$. Above average $1^{\circ}.33$. Maximum heat, $91^{\circ}.5$; minimum, $-7^{\circ}.3$; annual range, $98^{\circ}.8$; mean maximum, $53^{\circ}.57$; mean minimum, $35^{\circ}.92$; highest daily mean, 75° ; [lowest daily mean, $7^{\circ}.17$; mean daily range, $17^{\circ}.61$; greatest daily range, $41^{\circ}.7$; mean pressure, (corrected,) 29.684; below average, .074; maximum pressure, 30.484 in October; minimum pressure, 28.455 in January; whole range, 2.029; highest daily mean, 30.347; lowest daily mean, 28.694.

The mean elasticity of aqueous vapour was .278, and mean humidity 78.3.

Mean cloud was 5.4, which is 0.6 less than a four years average; N. W. wind prevailed, with an estimated mean force of 1.8, or 0.3 below eight years average.

We had 48.27 inches of rain, 4.81 above the average. This fell on one hundred and sixteen days, against one hundred and eleven days in 1869, and one hundred and twenty three days average of eight years; 78.9 inches of snow fell, which is 6.6 inches more than the average, and 13.4 inches more than 1869; number of days of appreciable snow was thirty six, eleven less than usual, but nine more than in 1869. The total precipitation, of rain and melted snow added, reached 57.19 inches, 5.66 inches more than the average, and 2.66 above the preceding year; of fair days, or those entirely free from measurable rain or snow, there were two hundred and twenty nine; two hundred and four is the average number.

Days wholly or partly foggy were twenty nine,—in 1869 there were thirty six fogs; fifty three auroras were observed,—in 1869, thirty nine; thirty three times was hoar frost formed,—in 1869, 37 times; on ten days we had thunder, and on eleven days lightning, generally together; these numbers in 1869 were eight and seven; I saw twenty six lunar halos, and three solar halos,—in 1869 but twelve of the former and none of the latter; hail fell but once, both in 1870 and in 1869; and four rainbows were noticed in each year. Last year there were forty five days of sleighing, and in

1869 fifty days; the first snow flakes were ten days later than average, and the latest since 1863; first measurable snow, however, was ten days early; the first frost twelve days late, and about four days longer than the average.

Thanking my hearers for bearing with the recital of these figures, I turn for a little while to another phase of meteorology, not more important than statistics,—less so indeed in the sense that a superstructure depends for support upon its foundation,—but more generally interesting. A gale on the 4th September, 1870, is mentioned in the above record, and probably not forgotten in Halifax, as one of the most severe storms ever experienced here. This was a cyclone, as proved by the following facts:

The 3rd September was damp and sultry. Between 9 p. m. and midnight Barometer fell one-tenth; wind S. S. E., fifteen miles per hour. 4th, 3.40 a. m. fine rain driven by a 4lb S. E. wind, Barometer falling faster, and temperature high and almost steady; 4.5 a. m., the ball opened with a vivid flash of lightning, quickly repeated and followed by low grumbling thunder. The wind now rapidly increased, with violent showers, till 6 a. m., from same quarter; rain then measured .19 inch, and fell subsequently in light dashes. At 6 o'clock the Anemometer was revolving at 57.9 miles per hour, force 17.3 lbs per square foot. During the next hour the gale, still S. E., was at its height here, completing 65.7 miles in that time, with some gusts at rate of 70 miles. It was in that period that the chief damage was done here; the carriage factory on the common unroofed, and many trees, fences, &c., blown down. These accidents are not to be wondered at, when it is remembered that the wind was occasionally exerting a pressure of fully 24.5 lbs. on every square foot. With some variations wind was less after this, veering towards south. At 10 a. m. it was due south, and a comparative lull was experienced from 10½ to 11 a. m. Barometer corrected for altitude, and reduced for temperature, reached the minimum, 28.952 at 9½ a. m. At noon the gale was partially renewed from S. W., and though declining, blew strongly till 5 p. m., when direction was from W., rate 34.8 miles per hour, Barometer 29.542, and rose another tenth in succeeding hour. Sky clear at 5½ p. m., when gale had passed.

A fog next morning. All the chief features I have mentioned agree perfectly with the theories of Redfield and Reid, embodied by Dove, and the observations of numerous men of science. Note especially the sudden Barometrical decrease, the shift of wind with the sun, and comparative lull as the hurricane's centre was nearest to Halifax. The lightning flash, succeeding the rain, speaks for the electric consequence of the latter.

Let us pass on to consider this storm at other points in and near Nova Scotia. From Glace Bay, Mr. Poole (whose valuable record I have just had the honour of reading) sends me the following notes: 4th September, 1870, 8 a. m. corrected Barometer 29.740; 3 p. m. 20.333, wind 11 a. m. S. E., 50 miles per hour.

noon	S. E.	68	“	“
1 p. m.	S. S. E.	74	“	“
2	“ S. S. E.	84	“	“
3	“ S.	86	“	“
4	“ S.	72	“	“
5	“ S.S.W.	65	“	“
6	“ S. W.	55	“	“
7	“ W.S.W.	46	“	“

Rain from 9 a. m. till noon = .36 inch.

From farther north an officer on board H. M. S. “Valorous,” then in Charlottetown harbour, sent this report:

Barometer 4th Sep., 4 a. m., 29.97; noon, 29.01; midnight, 29.73. Wind, 4 a. m., S. E., squally, 3

8	“ E.	4 to 7
noon,	S. b. E.	5 to 8
4 p. m.	W. b. N.	5 to 8
8	“ N. W.	2 to 3

During the evening the wind there was variable both in force and direction, swinging back even to west. “Force according to Beaufort's scale”—where 8 represents a “fresh gale.” At 9 a. m. the “Valorous” “dragged and got up steam;” at 10 a. m. “weighed and shifted berth.”

Several observers have kindly forwarded reports of this storm, but our present purpose will be accomplished, and time best suited, by reference to observations from a point S. E. of this. On board

the S. S. "Robert Lowe" at sea, Lat. $43^{\circ}2'$ N., Long. $65^{\circ}3'$ W., "the night" (of 3rd—4th Sept. 1870) "was very dark, and the wind from E. via S. to W., must have been at its height quite equal to, if not exceeding the velocity given in the accompanying paper"—say 25 lbs—"The sudden and fitful gusts were of enormous force, more resembling the escape of steam from a high pressure engine than anything else. Our Barometer reached at 4 a. m. 28.700." "Steaming head to wind throughout the storm our drift would not exceed a radius of seven miles." These four sets of observations alone clearly shew a general E. N. E. direction of the storm path. Lowest Barometer, "Robert Lowe," 4 a. m.; Glass Bay, 3 p. m.; or a distance of about 250 miles in 11 hours—23 miles, nearly, per hour was this cyclone travelling; but its speed, it may be noticed, was accelerated as it progressed eastward. This has been noticed in cyclones in the north temperate zone before, (see Dove's Law of Storms,) and I wish now to draw particular attention to this fact. We cannot speak confidently of the rate of velocity sustained across the Atlantic, without any ocean observations; but reasoning from what we do know of this particular storm, and from comparison of other known storms, this cyclone was due (or rather its south eastern edge) in the Bay of Biscay on the evening of the 6th.

Now let us transport ourselves to that locality, and off Cape Finisterre we find a British squadron cruising on that evening. Shortly after 5 p. m. the Admiral Sir Alexander Milne had left the turret ship *Captain*, and had gone on board his own flag ship. A wind and boisterous sea were rising; at midnight a gale was upon them; and before 1 a. m. of the 7th September the "*Captain*" had foundered, with more than a hundred gallant souls. Many of them, from the Commander Burgoyne of the *Victoria Cross* to the noble young Gordon the midshipman, too well known in Halifax for me to dwell on this episode. Much has been said and written of the construction and loss of this ship; but it is with the external cause of that loss—the gale—that this paper has to do. Unlike the pattern of the iron clad its formation could not have been avoided; but its advent could have been anticipated. Let the meteorological system now finding favour have been carried to completion, and let the

Transatlantic telegraph have flashed from this coast or from Newfoundland to Ireland the presence of the storm on this side, and its probable oceanic path,—Valentia might have warned Brest and lower stations, and the officer in command of a trial squadron, “looking for a gale of wind,” would scarcely have failed to communicate daily with the French or Spanish coast for signals, and to take additional precautions if aware of the approach of a cyclone.

I must not conclude without alluding to the probability of the General Government giving encouragement to the system of meteorological observations which the Director of Toronto Observatory, Mr. Kingston, and myself, have been for some time urging upon them and the Canadian public.

ART. X.—ON THE METEOROLOGY OF CALEDONIA MINES, LITTLE GLACE BAY, CAPE BRETON. BY H. POOLE, ESQ., M. E., *Superintendent of Mines.*

(Read May 8, 1871.)

THE accompanying record of the weather, observed in 1870, is in continuation of the meteorological registers forwarded for the previous years back to 1867 inclusive.

The Barometrical readings are a little lower than in former years. The highest reading being 30.560 on 1st January, and the lowest 28.460 on the 1st February, being an extreme range of two inches.

The mean temperature was 41.75, or 1.70 degree warmer than the mean of the previous three years. The mean at night being 1.78 warmer, and at day 1.50 warmer than the mean of previous years. The coldest night was only 2.5 below zero on 13th March, and the hottest day was 89.5 on 24th July. Only three nights marked below zero, though previous years had marked six, fifteen and seven. The nights of frost were one hundred and eighty three, being the average of former years, but the degrees of frost were only 1499 against 1794, 2486, and 2171 degrees of former years.