

which fond fable has attributed this crucial mark, since he bore our Lord on his lowly back. But we may add that in his rat tail, thin mane and largely developed ear, the modern thorough bred also points to the same direction.

Again, it is curious to observe that the blue duns, and Isabella chestnuts, of Mexico, Tartary and Sable Island, are only the sub-colours of all horses; for in clipping horses of all colours, they are reduced—the bays, blacks and browns to the blue dun, whilst the chestnuts, except the very dark, become Isabella; even some white have become dark blue, or have a blue skin, the greys alone seeming unchanged. One may also speculate, if the black races, the first to die out, do not disappear insensibly into the blue tan: this colour being only kept up by grooming and condition, a few days of sun-tan turning the blackest, rusty.

Whether our domestic horse is descended from one original stock, or from several kindred species so nearly allied as to breed together, is a question towards solving which our few remarks, in so limited a period as 150 years, and so small a number as 400, may perhaps do a little; at all events the facts are worth preserving, and as such I have offered them to your attention.

ART. VIII. NOTES ON THE WEATHER AT HALIFAX, N. S., DURING 1863, WITH COMPARISONS OF THE TEMPERATURE OF THAT PLACE WITH SOME OTHER PARTS OF BRITISH NORTH AMERICA. BY COLONEL MYERS.

[*Read March 7, 1864.*]

MY knowledge of Meteorology is so slight, and not possessing the instruments employed in making the various delicate observations, which would have been required to enable me to treat the subject scientifically, the few remarks I have been prevailed upon to offer on this occasion, must necessarily be of the simplest character. They will consist for the most part of the results of a rough record of the weather, kept by me during the past year, and some comparisons of the temperature of this place with that of other parts of British North America.

I cannot vouch for the absolute correctness of my observations, nor claim for them any greater merit than that they have been taken regularly, and without intermission, three times a day. Intending them only for my private use, as a means of comparing the seasons of one year with those of another, as they passed, I have not been particularly exact in noting them; and my instruments, comprising only a common barometer, and day and night self-registering thermometers, are not sufficiently good to ensure the accuracy requisite to make their indications available for any higher purpose than that I had in view.

Desiring, by this preliminary explanation, to avert from my crude and unpretending contribution to the papers of this Institute, the test of a rigid scrutiny, which it is ill adapted to bear, I proceed to state, that, according to my register, the highest temperature in the shade recorded during the past year, was on the 7th July and 3rd August, having on each of those days reached 86° ; the lowest on 4th February, when it was 10° below zero; giving a yearly range of 96° . The highest monthly range was in February, 53° , the lowest in August 34° . The mean temperature of the year was 44° . The hottest month was July; the coldest February.

The highest reading of the barometer during the year was on 5th February, $30^{\circ}.55$; the lowest on 7th January, $28^{\circ}.80$; giving a yearly range of $1^{\circ}.75$.—The highest monthly range was in January, $1^{\circ}.60$; the lowest in July, 60° . The mean barometric pressure for the year was $29^{\circ}.71$.

The most prevalent wind during the year was S. W.; the least prevalent E. N. E. Rain fell on 113 days; snow on 32 days; and there was fog on 41 days.

Aurora Borealis was visible on 62 nights; there were 44 solar, and 14 lunar halos observed.

Thunder and lightning occurred on 15th, 24th and 25th June, on 29th July, 22nd August, and 21st September—lightning was seen without thunder being heard on 21st May, 6th July, and 6th August—thunder was heard without lightning being seen on 8th November.

For most of the following periodic phenomena I am indebted to our President J. M. JONES, Esq. :—

On the 18th March a robin was seen; on 23rd the snow bunting were observed on the common.

On the 14th April butterflies first seen; 15th grass (Timothy) sprouting; 22nd Mayflower in bloom; 25th croak of frog first heard; 28th whirling beetle observed on brooks and ponds, and swallows seen; 30th leaves of moosewood well developed; on the 3rd May beech trees in bud; leaves of the elder opening; spawn of frogs in ponds; on the 9th the red maple, and on the 11th the hachmatac were bursting into leaf, and blue violet in bloom; 16th dandelion in flower, and black flies first seen; 20th the wild strawberry in blossom; Star of Bethlehem in flower, and white throated sparrow first heard; 21st a humming bird seen; 23rd fire-flies first observed.

On 7th June yellow orchis in flower; 21st lilac in bloom; 22nd the ash in leaf.

On the 24th August, plover arrived, leaves of some trees began to turn colour; on the night of 22nd and 23rd there was a heavy gale from S. E., veering at midnight to W., accompanied with thunder and lightning.

On the 6th September red maple turned colour in moist places.

On the 13th October leaves of the ash falling; on the 23rd the birch and balsam poplar, and on the 30th the ash were stripped of leaves.

On the 1st November white butterflies still about; on 6th leaves of the hachmatac turning colour; 12th leaves of apple trees falling.

On the 2nd December there was a heavy gale from W. S. W. veering to N. W., which caused much damage on shore and at sea; 9th a silver-thaw; on the night of 21st a meteor of remarkable size and brilliancy was seen in several parts of the Province; on 26th a double lunar halo was observed. High winds prevailed this month, weather mild, and winter late in its approach, attributed by some to the Gulf stream taking a more northerly direction than it has hitherto done. And this theory would seem to obtain support from the circumstance of seaweed, peculiar to the Gulf-stream, having been found on this coast and at Sable Island; of the severity of the winter at places to the westward, and even to the southward of us, where the stream could have no influence; and of

an unusual current in this part of the Atlantic Ocean, which, in thick weather, when no observations could be taken, has swept vessels far out of their course to the northward, causing, as in the lamentable instances of the steamers "Anglo Saxon" and "Africa," disaster and loss of life.

It may not be uninteresting now to compare, as I proposed, the temperature of this place with that of other parts of British North America; and in the first place I will refer to a paper by Dr. Smallwood, Professor of Meteorology in the University of McGill College, published in the November number of the "*Canadian Naturalist*," 1857, in which it is stated, "that the temperature of the air in the vicinity of Montreal for the previous seven years, exhibited a yearly mean of $41^{\circ}.56$; that the highest temperature in the shade on record there was $100^{\circ}.1$, and the lowest $36^{\circ}.2$ below zero, giving a climatic range of $136^{\circ}.3$; the hottest month is July, and the coldest February. * * The song sparrow, the harbinger of the Canadian spring, generally makes its appearance the first week in April; frogs are first heard about the 23rd of April; shad are caught the last week in May; fire-flies are first seen about 24th June, and the snow-bird generally makes its first appearance about 20th November; swallows about 18th April; winter generally sets in about the latter week of November, or the first week of December, and is ushered in by a fall of snow from N. E. by E. and this is the point from which the Canadian winter storms come. Rain generally comes accompanied with a wind from S. S. W. or S. E. and also from N. E. by E. There are generally a few days of that poetic season, the Indian Summer, in November—

"The year's last lovely smile,
That comes to fill with hope the human heart;
And strengthen it to bear the storms awhile,
Till winter's days depart."

The months of April, May and June, bring returning summer; the nights of July and part of August are generally oppressive, the temperature often remains at 70° during the night; but the Canadian autumn is very pleasant."

Comparing these periodic phenomena with our own, it would seem that the winters in Montreal set in, and break up, rather earlier than with us.

Meteorological registers which I have had an opportunity of examining, shew that the mean annual temperature at Halifax for 1860 was $43^{\circ}.5$; 1861— $42^{\circ}.7$; 1862— $43^{\circ}.9$; and 1863— $44^{\circ}.5$. At Newfoundland for 1855 it was $40^{\circ}.9$; 1856— $41^{\circ}.5$; and 1858— 40° . At Kingston, Canada West, for 1856 it was $41^{\circ}.5$; 1857— $43^{\circ}.7$, and 1858— $43^{\circ}.1$. At Montreal for 1857 it was $40^{\circ}.58$; 1858— $40^{\circ}.06$; 1860— $43^{\circ}.42$; and 1861— $41^{\circ}.72$.

It may here be observed that in the yearly mean at these several places, there is a very remarkable uniformity of temperature; the difference between any of them extending to only about 4° in all the years we have been noticing; but, on examining the yearly range, it will be found to vary considerably.

We have seen that at Montreal during a septennial period it is noted at $136^{\circ}.3$, at the same place in 1859 it was $141^{\circ}.3$. At Kingston C. W. the range in one of the above named years reached $117^{\circ}.5$.; at Newfoundland 101° ; while at Halifax it has not exceeded 100°

As the registers from which these data have been gathered are not (with one or two exceptions), for the same years, nor in complete succession, a perfectly accurate result from the comparison of these places cannot perhaps be arrived at; but I think it may fairly be assumed that the temperature of Halifax is the most equable among them; and indeed it would not be difficult to prove, from statistics, carefully compiled for the information of the authorities at the War Office, and from other sources, that Nova Scotia enjoys a climate, equal, if not superior to that not only of the other British Provinces on this continent, but of any of our colonies. Our winters are not too severe, our summers not too hot; and though we cannot boast much of our springs, the loveliness of our autumnal weather is not, I believe, to be surpassed in any part of the world.

The fine specimens of our fruit and other productions of the soil, which have been exhibited in England, have convinced people there that Nova Scotia is not the hyperborean region they had long supposed it to be; and the more the excellence of the climate of this country, and its other advantages are understood abroad, the greater will be the inducement to the emigrant to bend his steps

to our shores. No means for making them better known ought to be neglected, and I look forward sanguinely to the time, when this Institute may essentially promote this desirable and important object by sending forth, at stated intervals, a series of Meteorological observations from an establishment of its own, furnished completely with accurate standard instruments.

The hope that others more competent than myself, might follow it up, was my chief inducement to take this feeble step towards awakening an interest here in a branch of science so useful to almost every class of people. An acquaintance with it is, in some measure, a necessity to the physician, the traveller, the mariner, and the farmer. To the observer of nature it opens a field of unbounded delight, where, in the fierce storm, the appalling lightning, and awful thunder, he may contemplate the Almighty power of the Creator, and in all the complicated arrangements constituting what is termed climate, he may trace beauty of design, carried out with infinite wisdom and benevolence. The philosopher too, will find much to engage his attention in the examination of phenomena connected with Meteorology, as yet very imperfectly understood: and, to bring the difficulties surrounding them to a satisfactory solution, may baffle the utmost exertion of his intellect and ingenuity. In this as in other sciences great strides have been made of late years, and among the philanthropic efforts to render it beneficial to mankind, Admiral Fitzroy's system of storm signals, now so well organised in England, stands conspicuous. All who feel an interest in our fishermen and sailors, would hail with joy the establishment of such a system along our coasts, by which these hardy men, "who go down to the sea in ships and occupy their business in great waters," might be warned of approaching storms, and saved from disaster and loss.

In a paper on Meteorology, by Professor Henry of the Smithsonian Institute, published in the *Canadian Naturalist* of August 1859, is shown what is being done in this branch of science in the neighbouring States. We learn from it, that the Institute had distributed several hundred meteorological instruments over the country; that there are 350 observers in the United States, who make observations three times a day, and that it was expected

these observations would be carried on at sea also, to arrive at satisfactory results. He gives the following account of the method of observation pursued each day at the Smithsonian Institute.—“They have a map of the United States hung upon a board, with pins stuck through it at the points where the observers of the Institute are stationed. The Institute has daily reports by telegraph from many of these points. Each morning an assistant hangs a cord on the pins, to indicate the state of the weather—black, if raining; green, if snowing; brown, if cloudy; and white, if fair. All storms travel east, and thus they are enabled to predict with great certainty the condition of the weather twelve hours in advance.”

Mr. Glaisher and other æronauts, by observations during their perilous ascents, of electrical phenomena, formation of clouds, &c., are making valuable additions to the stock of meteorological information; and an extract, from an article in “*Orr’s Circle of the Sciences*,” gives some idea of what is expected to be accomplished through the agency of meteorology:—“Professor C. P. Smith, the astronomer royal of Scotland, has caused the electric telegraph to work in meteorology. A wind dial, at the one extremity of a wire, is made to turn another simultaneously at the other extremity. The time will come when all large towns will have buildings devoted to these observations, and in which dials will be seen in every direction, some labelled Edinburgh, others Liverpool, Dublin, London, Paris, York, &c., and where the public will be enabled to see the direction of the wind, at the same instant, at most remote places. The benefit to the farmer and the navigator will be great from such an arrangement. Were such stations to be thickly scattered throughout the country, every change of wind, and every shower, could be traced and recorded, and a knowledge imparted, the benefit of which could not be sufficiently appreciated * * * * our knowledge of meteorology would then make rapid advances; laws of the weather would be unfolded; and predictions of coming changes, which are now mere guesses, as often wrong as right, would be based upon truth.”

Yet when all this and much more shall have been attained, how far will man still be from an adequate and perfect conception of the works of the Almighty, or of their wonderful adaptation to supply

the wants, and promote the happiness of his creatures,—the beneficent purposes for which he intended them. The laborious enquirer may toil up the ladder of knowledge, but, climb as high as he can, there will be still a step above him, and the more he becomes sensible of his inability, with his finite capacities, to reach the crowning summit in this world, the more firmly will he be convinced, (to use the appropriate words of one of the writers of the *Bridgewater Treatises*,) “that he is destined for a future state of existence, where his nature will be exalted, and his knowledge perfected, and where the great design of his Creator, commenced and left imperfect here below, will be completed.”

ART. IX. ON THE FLORA OF CANADA. BY GEORGE LAWSON,
PH. D., LL. D., PROFESSOR OF CHEMISTRY IN DALHOUSIE
COLLEGE.

[*Read March 7, 1864.*]

THE author laid before the Institute a Synopsis of the Canadian Flora, embracing a list of all the flowering plants and ferns that had been observed in Canada, with habitats in detail, showing the distribution of each species separately. The list, which was too lengthy to be printed here, was prefaced by a few remarks on the general features of the Canadian flora. After a brief discussion of the question of origin of species, with reference to Mr. Darwin's theory, which Dr. LAWSON deemed insufficient to meet the wants of the case, it was observed:—

Humboldt, with his great power of generalization, and true appreciation of the poetry as well as the science of nature, summed up the results of all our botanical statistics when he said, “The carpet of flowers and of verdure spread over the naked crust of our planet is unequally woven; it is thicker where the sun rises high in the ever cloudless heavens, and thinner towards the poles, in the less happy climes where returning frosts often destroy the opening buds of spring or the ripening fruits of autumn. * * * Thus we see variety and grace of form, mixture of colours, and generally