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*New Series.* *Whole No. LXXI*

THE

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# THE CANADIAN JOURNAL.

NEW SERIES.

No. LXXI.—APRIL, 1870.


## THE PRESIDENT'S ADDRESS.


BY THE REV. WILLIAM HINCKS, F L S, F B S, Edin.

PROFESSOR OF NATURAL HISTORY, UNIVERSITY COLLEGE, TORONTO


*Read before the Canadian Institute, Jan. 15, 1870.*

The President requests permission to insert in the *Journal* only an abstract of his address, considering a large portion of it as being, though in his opinion suitable at the time, of local and temporary interest; whilst, as he is occupying in another way a portion of the present number of the *Journal*, he would gladly abridge where it seems to him that the full text would be now superfluous.

After acknowledging the honor again conferred upon him, and offering remarks, arising out of the occurrences of the past year, on the condition and prospects of the Institute, expressing regret at the want of union of all the Literary and Scientific Societies of Ontario in one compact body, but in other respects taking an encouraging view of our affairs, he proceeded to speak of the general progress of Science, commenting particularly on matters relating to his own studies. He adverted to the efforts made in Great Britain to obtain from the Government some more efficient aid for the promotion of knowledge; to the interesting and valuable results of recent deep-sea dredgings; to the observations of Darwin and others on the fertilization of plants, in reference to cross-fertilization and the extent of the agency of insects;

to Col. Munro's monograph on the Bambusidae, and Mr. Baker's *Synopsis Filicum* from the papers of Sir W. J. Hooker.

Here he took occasion to remark on the extent to which the combination of species hitherto accounted distinct is carried by these writers, and he conceived that if sub-division has often been carried too far, there is at present a little danger of error in the opposite direction.

A paragraph relating to the Darwinian hypothesis, it is thought proper to give at length.

In the whole field of Natural History, the controversy respecting Darwinianism is still occupying much attention. The new view is defended by several able men of known scientific eminence, whilst those who resist it lie under the disadvantage of being supposed to be influenced more by prejudice than reason. Yet in the sober English mind it cannot be said that the Darwinians gain a rapid or easy victory, and it is quite possible now that even if they cause some change in public opinion, they may by no means secure the prevalence of their own views. There are many minds to which any new doctrine, boldly maintained and pertinaciously urged, seems irresistible. Novelty alone is a strong recommendation, and there is an exceeding pleasure in being carried on by an advancing wave, and seeming to be among the foremost in progressive improvement. It is all very well if the advance is real, but this experience only can test, and history shows us abundant examples of doctrines which have triumphed for a short period, only to pass speedily to the vault of oblivion. Novelty in opinion is neither a recommendation nor an objection. There is far too much yet to be done in the vast fields of knowledge, for it to be admitted as a sign of error. There are too many examples continually occurring of ingenious speculation, unsupported by sufficient evidence, for it to rank as a presumption of truth. A restless grasping after novelty is a serious fault; setting it up as a bar against the examination of evidence is certainly not a less injurious one. If we may implicitly believe a statement in the new periodical devoted to natural science, *Nature*, whilst the English are still discussing the possibility of Darwinianism being true, the Germans have so thoroughly adopted it that it has become the foundation for new systems—the starting point for fresh inquiries. This may appear to most of us to be going somewhat too fast; but then *Nature* may be presumed to be the special organ of the extreme Darwinians, and might be thought to see facts through a somewhat colored medium; and supposing that there is no exaggeration in the statement,

it might have been anticipated, from the general state of opinion in England, that the new hypothesis would there have to work its way through many difficulties which would never occur to those who are imbued with the German transcendental philosophy; and it depends on the light in which we regard that philosophy, whether we are to consider the Germans as enjoying an advantage, or as peculiarly exposed to error. I am obliged to confess that if my reason compelled me to adopt the Darwinian hypothesis, its opposition, as I understand it, to cherished and valued sentiments respecting creative wisdom and goodness, and a perfect divine plan in nature, would cause me great pain. I do not accept this as any reason for not fairly examining the evidence, since, on the whole and ultimately, *truth* or knowledge of what really is, can alone benefit ourselves and our race;—false opinions can never be beneficial or desirable; and nothing can more dignify a frail mortal than the earnest, disinterested, unprejudiced pursuit of truth, on as many subjects as possible, even to the latest period of life. Science has its own sphere, and its own means of inquiry; and if we can learn anything with a reasonable degree of assurance, there can be no doubt that we, or those who follow us here, will enjoy the benefit. But such a feeling as I have acknowledged on the subject may justifiably quicken our perception of objections or difficulties, render us specially cautious in weighing arguments, and guard us against unsound though brilliant speculative plausibilities. Grant it to be proved that species are modified by time and circumstances, and even that incidental variations of offspring may be permanently preserved, it would be very rash, observing the essential differences of type in the grand divisions of organized beings, and the mutual relations of secondary groups as analogous modifications of each more general type, to affirm either that all beings have arisen by gradual change from a primitive element, or that the changes which do or may take place are merely those which happen to be preserved out of an indefinite number which may arise. Nothing is to me more evident than that both seemingly permanent specific and higher differences, and varieties which have no pretensions to permanence, depend on the comparative development of different elements of a common plan, from which it seems to follow both that the non-existence from the commencement of living nature of all the distinct plans of structure, is in the highest degree improbable, and that the tendency of development, sometimes in one direction, sometimes in another, among the same primitive elements, must produce an harmo-

nious system, whilst the preservation of the forms best adapted to a situation amongst a great number of variations arising without order must produce a confused mass of objects having no regular relations, and incapable of being reduced to a common system. Which of these actually prevails in nature, I cannot for a moment hesitate in deciding, and consequently I must maintain that if there is variation it must be within definite limits, and according to a fixed plan, so as to maintain a uniform order and harmony in the whole system. One more observation I may venture upon, that the latest observations of facts lessen considerably the supposed necessity for enormous periods of time to allow of known geological changes, diminishing, therefore, the countless ages which are required by the Darwinians for the production of the existing system of nature.

Declining any attempt, on such an occasion, to discuss generally the arguments on the subject, he referred to Dr. Lionel Beale's work on Protoplasm, and in conclusion noticed the work of his son, the Rev. Thomas Hincks, B.A., on British Hydroid Zoophytes, of which he laid a copy on the table for the inspection of the members present.

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## AN ATTEMPTED IMPROVEMENT IN THE ARRANGEMENT OF FERNS,

### AND IN THE NOMENCLATURE OF THEIR SUB-DIVISIONS.

BY THE REV. WILLIAM HINCKS, F.L.S., F.E.S., Edin, &c.

PROFESSOR OF NATURAL HISTORY IN UNIVERSITY COLLEGE, TORONTO, PRESIDENT OF THE CANADIAN INSTITUTE.

Preliminary Note.—In offering to those interested in Botany, and especially in the beautiful tribe of Ferns, through the Canadian Institute, some views and plans which he hopes may not be entirely worthless, the author has thought it desirable, as immediately addressing a Society of very varied scientific pursuits, who could not be supposed to be generally familiar with the subject brought before them, to give a very concise sketch of the progress of the knowledge of Ferns, and of some peculiarities in their structure, which would not have been deemed necessary had the paper come before a society of botanists, but may, he hopes, be excused as not being inappropriate in the actual circumstances.

Ferns, as a distinct group, are well known even to those who pay least attention to the differences among plants, and are much admired both by observers of nature and by cultivators.

Though entirely without flowers, the gracefulness of their varied forms, their feathered clumps of fronds, the curved growth of their young leaves, and the rich verdure often displayed by their mature foliage, early interest us all; and if they have become a peculiarly favorite and fashionable subject of culture for the glass-case in the drawing-room and for the hot-house, green-house and rock-work, this is no more than a homage naturally paid to eminent beauty, elegance and singularity, in a kingdom of nature which abounds in whatever can charm the senses or gratify curiosity.

We must by no means be content to take our ideas of ferns from the few species, beautiful and attractive as they are, which offer themselves to our notice in a climate which is far from being favorable to their growth. Of thousands that are known, whilst a few small tropical islands may yield several hundred in each, the whole of this great Northern continent has only about seventy proper ferns; and fine as some of ours are, they fail to give us any assistance in forming a conception of the sometimes majestic, sometimes airy beauty of the tree ferns, the peculiar gracefulness of the climbing ferns, and the exquisite delicacy of the maidenhairs and the filmy ferns. There is something so specially characteristic in this race of plants, that with all their varieties of form and habit of growth, they have been uniformly recognised as a natural assemblage; and it seems an easy task, even for the least experienced, to distinguish a fern even from those plants which most nearly resemble it; but strikingly as this is the case, the task of reducing the numerous species to genera, tribes and orders, has always been found a difficult one, and is far from being yet satisfactorily accomplished. Upon the genera I shall on this occasion offer no remarks, beyond a review of the principles upon which they ought to be founded; but in respect to the higher groups, as to their order, mutual relations, proper limits, and the most correct and convenient mode of naming them, I propose laying before you the conclusions at which I have arrived, as the result of careful and long continued study, not without the hope of contributing something to the advancement of a favorite section of botanical science, though chiefly by putting into a better and more useful form the labours of others in the same field.

It was early believed that the dust-like substance, as it appeared to the unassisted eye, observed scattered or in masses, on the under surface of the leaves, or, as they are technically called, *fronds* of ferns, was of the nature of seed; but how it was produced, or how the germs were

fertilized, remained to our own times a great mystery; and even respecting the accompaniments and special arrangements of these essential parts, the progress of correct observation was very gradual. The first attempts at forming generic groups were founded only on the general figure of the frond, which never could afford any good results, since we have closely resembling forms of which the fructification is entirely different, and there can be no question which circumstance is most important. Linnæus introduced as a character the shape and position of the heaps or bundles of capsules (now named *sporangia*), to which heaps the name *sori* is assigned. Sir James Edward Smith added the consideration of the membranous cover (called the *indusium*) raised from the surface of the frond, folded back from its edge, or expanded at the termination of a vein, and where it occurs protecting the cluster of sporangia, whilst it has remarkable variations in figure, mode of attachment, and position in regard to the sorus. The importance of this character has led to many applications of it which improved observation has justified. Robert Brown first employed the venation of the frond, though using it rather for sectional divisions than for genera. Presl, and John Smith of Kew, have worked up this subject fully, making it a foundation for genera, which have been extensively adopted by recent writers, though Sir W. J. Hooker, in his great work, the *Species Filicum*, abandons many of them, and receives others only as sectional divisions. He had previously, in the "Genera of Ferns," in publishing the admirable microscopic drawings of Francis Bauer, with many valuable additions, given the characters of many new genera of Brown, J. Smith, Mayer, Presl, &c., without otherwise indicating his opinion than by a caution in the preface against his being supposed to adopt them all; but when he applied himself to his great work on the species, he was led to admit venation only as a character of subgenera or sections. His judgment has great weight, yet it must be acknowledged that the venation affords a striking, intelligible and convenient character, affording very natural sub-divisions; and if any should think that its use for distinguishing genera is inconsistent with the botanical rule that such distinctions must be drawn from the parts of fructification, let him recollect that the whole frond is a secondary growth, devoted to the reproductive function, in which vascular tissue, which had no existence in the primary plant, is introduced, and is so intimately connected with the production of the sporangia that it may well be accounted a part of the system of fructification requiring to be

duly noticed. It may deserve consideration whether the figure and surface of the spores may not be employed with advantage. The structure of the sporangium is certainly of high importance, but gives characters for larger divisions than genera. Much importance has been attached by some writers to the mode of growth of the fronds, whether continuous with the caudex or connected with it by a sort of joint, which would divide the whole assemblage into two great sections; but it appears to me that our experience of this character, in respect to higher plants, is greatly against attaching much value to it, and I cannot think its effect good in respect to natural affinities. I would therefore wholly reject it. In the order of their value, I would rank first characters derived from the sporangia; then those from the sori and indusium, which, with the texture of the frond and general mode of growth, will abundantly determine the alliances, orders and tribes. Minuter particulars respecting the indusium, venation and position of the sorus on the vein, with any other good observations on structure, will duly limit the genera.

It is probable that the best determination of the tribes of ferns is that of Presl, though he was doubtless in error in making Hymenophyllaceæ a separate order (just as Lindley was in giving the same distinction to Danæaceæ), and a few modifications of his tribes may perhaps be desirable, but he seems to have failed in appreciating the higher divisions, and his nomenclature is very objectionable in form, and demands correction. I cannot but wonder that in adopting Presl's arrangement (with a great improvement in respect to higher divisions), in his excellent introduction to Cryptogamic Botany, Mr. Berkeley did not see the necessity for altering the terminations of the names. Lindley's principle of making the names of the larger groups, called by him alliances, and, though not generally received by botanists, very generally natural and of great assistance to students, terminate in *ales*, those of the families called natural orders in *aceæ*, and those of tribes and subtribes in any other convenient form of Latin derivative adjectives, is so manifestly useful and reasonable that it may justly excite surprise that it is not universally adopted, and to extend the law of priority to the terminations of such names is altogether preposterous. Neither Presl nor Berkeley meant to maintain that the tribes of ferns are of value equal to natural orders in other parts of the system; and even if they cannot see the merit of Lindley's plan, it is exceedingly injudicious to set it at defiance, and seemingly attempt to cause confu-

sion by such a violation of it. If the tribes are good, let their names terminate, we will say, in *inæ*, and let the real orders or great families, when determined, bear names in *aceæ*. In Berkeley's book we find the proper distinction laid down between the group containing Liverworts and Mosses, and I am persuaded he is right in adding Charales, which had been placed much lower, and that which contains Horsetails, true ferns, and Lycopodials, fully justifying Endlicher's distinction, adopted by Gray, but not noticed by Berkeley, of Anophytes or Anogens from Acrogens. Here also, in treating of the true ferns, the leading groups, which I regard as true natural orders, founded on the condition of the ring of the sporangium, are fully recognised, whilst the tribes are, as we have seen, derived from Presl's work.

Before further explaining my views of the arrangement and mutual relations of ferns, it seems proper to give a very concise, but, I hope, intelligible account of that grand discovery, which has altogether altered our conception of the nature of ferns, exhibiting them to us as not being, properly speaking, the real plants, but a secondary growth from the fertilized germ cell, by means of which the effect of the reproductive process is marvellously multiplied, and the original plant in which that process is perfected is very early superseded by a more highly developed form, in which gemmation produces countless sporangia, with their spores prepared for growth.

It was long a great botanical puzzle to find anything in ferns representing the stamens in higher plants. It was seen that the sporangia represented capsules, and contained *spores*, a name technically given to bodies capable of growth into a new plant like the parent, yet not, like the seeds of higher plants, enclosing an embryo. These spores obviously resembled those of mosses, which, since Hedwig's time, are known to be the product of fertilization by organs analogous with stamens. Where, then, were the staminodia of ferns? They were searched for diligently, but in vain, and ingenuity seemed exhausted. It was seen that the growing spore expanded itself into a cellular disk, mistaken by some for a sort of cotyledon, from some point in which the plant grew. At length the microscope was applied to the minute examination of this disk, and on its under surface were found specialised cells, some of them bearing abundance of phytozooids or active sperm cells; others again being archegonia, single germ cells, so placed at the base of tubular passages built of cells, as to be accessible to the phytozooids, some of which were even seen to enter the tube, so as to come in contact with

the germ cell. This latter, thus acted upon, commenced growth, assuming the true fern form, its fronds producing in the proper place, according to their kinds, innumerable sporangia, bearing spores by which the same succession of phenomena would be repeated. It seems to follow that the cellular disk, small and unimportant as it appears, is the perfect plant in its most active condition, and that what we know as the ferns constitute a secondary growth, specially devoted to extending the reproductive power by its production of spores; one fertilized archegonium, instead of itself becoming a spore, putting forth a plant producing spores not only in vast numbers but through successive years. Here we see fully displayed the difference, already referred to, between Anogens (Charals, Hepatjeals and Muscals) and Acrogens (Equisetals, Lycopadials and Filicals). In the former the staminodia and archegonia are produced, together or separately, at certain points on the growing plant, and the fertilized archegonium developes a sporangium bearing numerous spores, the prothallus being transient, and the process in perennial species being renewed from year to year: in the latter the staminodia and archegonia occur only in the tissue first developed from the growing spore, called the prothallus; and the product of fertilization is not a sporangium, but a plant bearing numerous sporangia with their spores as long as the plant subsists. It seems plain enough that this distinction is of such importance as to be properly regarded as the sign of a class; and thus, giving that rank to Thallogens also, we have three classes of the flowerless plants, Cryptogamia of Linnæus, Acotyledones of Jussieu The classes named, though well distinguished each from the others, and all of them of great extent, offering important variations within themselves, are so strongly bound together as spore-bearing plants, and as being destitute of vascular tissue, except in the case of the secondary growth in Acrogenæ, where that tissue is of a special kind, differing in its nature and arrangement from that of higher plants. that any system not plainly recognising this connection of the three classes, as well as their differences, must be pronounced unnatural. Jussieu's three great divisions—Acotyledoneæ, Monocotyledoneæ and Dicotyledoneæ—though, of course, as any knowledge of nature would lead us to anticipate, there are transition forms near the boundaries, are real natural divisions, confirmed by a variety of important characters; and his names, both in right of priority and as being derived from the principal character, ought to be preserved; but these divisions cannot be compared with *classes* in the Animal kingdom. They represent the sub-

kingdoms or branches; and to obtain a truly natural classification of plants, we must determine within each well marked assemblages, corresponding with the position of classes, under which will stand the alliances and orders or great families, so as to embrace the whole kingdom. At present we will confine our attention to the sub-kingdom, Acotyledoneæ, and to its highest class, Acrogenæ, of which we have noted the common characters. It manifestly contains three of those divisions which Lindley denominates *alliances*, and as custom in Botany has otherwise appropriated the term *order*, we can perhaps do no better than to adopt his name. Here, then, beginning with the lowest structure, we have,

1st. *Equisetales*, with sporangia dependent from the peltate scales of little strobili: spores surrounded by a membrane splitting spirally into two bands. Stems branched, articulated, with fimbriated sheaths at the joints, and the branches whorled around them. One order. Equisetaceæ.

2nd. *Lycopodiales*. Sporangia exannulate not dependent.

Orders:

1. Marsileaceæ: sporangia radical multilocular.
2. Lycopodiaceæ: sporangia axillary, bi or tri-valvate.
3. Ophioglossaceæ: sporangia bivalvate connate on the edge of the contracted fertile frond. Aestivation straight.

3rd. *Filicales*. Sporangia more or less annulate, aestivation circinate.

Orders:

1. Osmundaceæ: sporangia with the ring obsolete or imperfect.

   Tribes:

   1. Marattiinæ: ring obsolete, sporangia more or less confluent.
   2. Schizaeinæ: ring terminal.
   3. Osmundinæ: ring imperfect.

2. Cyatheaceæ: Sporangia with the ring oblique or eccentric.

   Tribes:

   1. Gleicheneinæ: sporangia sessile or nearly so, bursting longitudinally.
   2. Hymenophyllinæ: fronds cellulari-reticulate.
   3. Cyatheinæ: sporangia pedicellate, bursting laterally.

3. Polypodiaceæ: Sporangia with the ring vertical and complete.

* Sori naked.

† Sori indefinite on certain parts of the frond.

Tribes:

1. Taenitidinæ.
   Sori intra-marginal, linear, extending to the interstices.
2. Haemionitidinæ.
   Sori on the veins.
3. Acrostichinæ.
   Sori over the surface or some portion of it.

† † Sori definite.

Tribes:

1. Vittariinæ.
   Sori in a marginal groove.
2. Grammitidinæ.
   Sori elongated, scattered.
3. Polypodiinæ.
   Sori round, scattered.

* * Sori indusiate.

° Indusium underneath the sorus.
Hypindusiatæ.

Tribes:

1. Davalliinæ.
   Sori marginal, indusium cup-shaped or bivalvate.
2. Dicksoniinæ.
   Sori submarginal or scattered, terminating a vein; indusium lateral bivalvate.
3. Peraneminæ.
   Sori round, scattered; indusium lobed or fringed.

°° Indusium covering the sorus with lateral or central attachment.
Epindusiatæ.

Tribes:

1. Adiantinæ.
   Sori marginal.
2. Asplenniinæ.
   Sori scattered, elongated.
3. Aspidiinæ.
   Sori scattered round.

I have not noticed, in this arrangement, a group called Parkeriaceæ, and usually enumerated in what I have called the order Osmundaceæ. My reason is, that this very small tribe seems to me to be founded on unsatisfactory data. There are but two genera. In one of these (Ceratopteris) the annulus is so nearly complete, being also vertical, that there is little pretence for placing it among the Osmundaceæ. In Parkeria the annulus apparently occupies a very small space on the sporangium, but as far as it goes it has the jointed appearance very perfectly, and in Bauer's figure it is a little more extended, and shows more trace of a band round the sporangium than in Hooker's own figure. The aquatic habit and the very curious spores common to both, forbid any separation of Parkeria from Ceratopteris. I conclude, therefore, that though exhibiting transition characters, such as occur everywhere in nature, they ought to stand among the completely annulate ferns, and, on account of the indefinite naked sori on the veins, should be placed in Hemionitidinæ. This is the only tribe which I have thought it necessary to add to those already characterised, but it seems to me well distinguished, and required to complete a system of analogies among the tribes which is very pleasing and interesting. It was indeed noticed as a sub-tribe by Presl.

The numerous proposed genera of Polypodiinae, most of which are entirely abandoned by Sir W. J. Hooker, present great difficulties. I have myself no doubt of the propriety of admitting as characters the more definite distinctions of venation, and indeed where there is any distinct natural group, we should gladly seize upon any tolerable technical character to set it apart under a distinct name, but some of the proposed genera rest on so slight a foundation that they cannot be sustained. A careful revision of this part of the subject by some writer possessing extensive materials and cautious judgment, not so much afraid of transitional forms or so strict in his adherence to the great old established genera often equivalent with tribes as now understood, as Hooker, yet prepared to exercise a rigid scrutiny into the merits of proposed

genera by the application to them of sound and well considered principles is greatly to be desired. Of the few forms which Hooker has admitted as sub-genera or sections, there is one which he himself condemns as wholly without sufficient distinctions, receiving it as he states on the authority of eminent men who regarded it even as a good genus. I refer to Phegopteris Presl, for adopting which I cannot see any reasonable pretence. Yet Prof. Eaton, in Gray's Manual, last edition, not only acknowledges it as a genus but even places it close to Aspidiinae at some distance *from Polypodium*. This change I must strongly condemn, at least until I am informed of some reason for it, which has hitherto escaped my attention. There was something plausible in the idea that Struthiopteris and Onoclea represented a special mode of forming the fertile frond, one in Polypodiinae, the other in Aspidiinae, but as Hooker declares that he has seen the indusium of Struthiopteris, the two must now stand next to one another, separated only by the venation. Their reunion in one genus in the face of so great a difference in the fronds seems hardly admissable, though consistent with Hooker's course in other cases. But to what tribe do they really belong? Mettenius, the first observer of the indusium of Onoclea, describes it as proceeding from underneath the sorus and forming a sort of broken cup, in strict conformity with which is Hooker's figure in the 'Genera' from his own observations. This being so, Onoclea cannot belong to Aspidiinae, as the position given it by Hooker would seem to imply, and which is the common opinion. Still less does it approach Aspleniinae, where Presl places it. It seems certainly to belong to the Hypindusiate section of Polypodiaceae, and apparently to be nearest to Peraneminae, as the cup-like indusium is ragged and somewhat split in the margin. It may be doubted whether Cystopteris belongs to Aspidiinae, though I do not see where to place it better. The name may be called in question. Bernhardi's genus had remained in neglect until it was adopted by Sir J. E. Smith, who thought fit to correct what he regarded as a bad kind of name, by an alteration which retains the author's idea but gives it a better form. Had this improved name (Cystea) been accepted it would have been better, and at that time the change might easily have been effected, but Sir J. E. Smith's death followed closely on the publication of his fourth volume containing the ferns. Succeeding botanists have not supported him, and we have since been flooded with so many names of the same kind quite

equally objectionable, that it is no longer practically useful to struggle against them. Only let it be recollected that Phegopteris, Dryopteris, Thelypteris, Oreopteris, were formed in the early times, and when Pteris was not a genus but an old general name for a fern, and they have all been received only as specific names. The objection therefore did not apply to them, and compounds of received generic names being justly condemned, Sir Jas. E. Smith was right in his objection to Cystopteris, and in his position had good authority for changing it. The correction has failed through the wrong judgment of others, but the law of priority has no application in such a case, and respect is due to the learning and taste of the great botanist, who would in time have checked an evil practice.

I shall conclude this paper with a note in respect to the proper naming of our Canadian Aspidiinæ, which is called for by the differences of opinion and practice amongst our best botanists. Without presuming to condemn the course pursued by others, I may venture to explain and defend that which, not without careful consideration, I have myself followed. Dr. A. Gray, in a former edition of his valuable Flora of the Middle and Northern United States, which is employed by so many of our Canadian botanists, divided our Aspidiine ferns between Dryopteris (Bory) and Polystichum, employing this last name in the limited sense now generally given to it, for Aspidiinæ with a centrally attached indusium and free forked venation. Lastrea has been generally adopted in preference to Dryopteris, otherwise this method seems to me the right one; but the learned author, in his later editions, has recombined these genera with Aspidium. In a recent number of the *Canadian Naturalist*, a much esteemed friend, who is learned in the literature of ferns, as well as an enthusiast in their study in their native haunts, and an excellent judge of their minutest variations, attempts to restore Polystichum in Roth's sense, which would include all our Aspidiinæ, except Cystopteris and Onoclea, if indeed this genus belongs to Aspidiinae. He thinks Roth's name has the right of priority, the date of the Flora Germanica being the year previous to the part of *Schrader's Journal* containing Swartz's paper establishing the genus Aspidium. It is generally thought, though these eminent botanists worked independently, and might each justly claim originality, that Swartz's paper was communicated before the

publication of Roth's Flora.* At all events, Swartz's name has thus far almost universally prevailed; and the genus, as defined by him, needing sub-division, Polystichum has been adopted for a well marked portion of it, an arrangement which it would be very inconvenient now to disturb. Sir W. J. Hooker, refusing to accept venation as a generic character, limits Aspidium to species with a centrally attached indusium, and adopts Nephrodium for those with a kidney-shaped indusium attached at a point in the margin; but he gives Polystichum as a sub-genus or section of Aspidium, in the sense already explained as including free fork-veined species with a centrally attached indusium, and he employs Lastrea in like manner as a sub-genus of Nephrodium. I have already said that I cannot admit the objection to the use of venation as a generic character in ferns, and I think the distinguished author of the "Species Filicum" would have done better had he raised his sub-genera to the rank of genera. His method, however, practically marks the distinction and employs the names. I cannot think that any number of botanists will sanction the restoration of Polystichum in its original sense, as taking the place in a great degree of Swartz's Aspidium, since the other genera, as proposed by Roth at the same time, to complete his view of this group of ferns, hardly can be received; and if we admitted Polystichum as entitled to supersede Aspidium, our first business, in the present state of our knowledge, would be to sub-divide it into better limited genera, at the risk of causing inextricable confusion. In its more limited sense, Polystichum is needed, and our Flora affords fine examples of it. I would strongly recommend the adoption of the name Lastrea for the free-veined Aspidiinæ with a kidney-shaped indusium attached by a lateral point, and Polystichum for free-veined Aspidiinæ with a peltate or centrally attached indusium, believing this plan to be justified on scientific principles, and practically the most intelligible and convenient.

* I am aware of no ground whatever for the assertion made, I think too hastily, in the paper referred to in the *Canadian Naturalist*, that "Swartz copied Roth throughout, borrowed his genus, calling it Aspidium," &c. Swartz's Aspidium is not coextensive with Roth's Polystichum, and so far as I can trace the evidence, his paper was written without knowledge of Roth's work.

# CANADA IN THE BODLEIAN.

BY HENRY SCADDING, D D,

HONORARY LIBRARIAN OF THE CANADIAN INSTITUTE.

Having a prolonged access to the famous Bodleian Library at Oxford, a short time since, I decided, while in the enjoyment of the much-valued privilege, to obtain a view of as many volumes as possible of early travels likely to contain references to Canada, and, in particular, to the neighborhood of the present site of Toronto. I found several works that I had never seen before, containing matter of the kind desired; and I made a number of excerpts from them. I did the same afterwards in the magnificent library of the British Museum. Whilst pursuing my researches in the Bodleian, I lighted on a folio volume of Academic exercises of the year 1761, principally in the Latin and Greek languages, productions of members of the University of Oxford, on the occasion of the death of George the Second, and the accession of George the Third. The title of the book in full was "Pietas Universitatis Oxoniensis in Obitum Serenissmi Regis Georgii II, et Gratulatio in Augustissmi Georgii III, inaugurationem. Oxonii, è Typographeo Clarendoneano. MDCCLXI."

By a superscription of this nature, the cry of the old heralds on the demise of the Crown was of course instantly suggested—"Le roi est mort! Vive le roi!"—and one expected to find in such a record the griefs, real and simulated, for the royal luminary just departed, plentifully mixed with prudential salutations to the young sun in the act of rising above the horizon. It was apparent at a glance that such an expectation was well-founded; and naturally the interest in a collection of pieces of the character indicated would have been limited, had not another circumstance happened to excite curiosity. On turning over the leaves, the eye was caught by words that looked strange in the midst of Latin and Greek texts, however familiar in a plain English guise. I saw "Canada" recurring again and again, and "America," and other names to be read on maps of this western hemisphere, but inconceivable as appertaining in any way to the dead tongues of Greece and Rome. The explanation was this: the conquest of Canada had taken place just before the decease of George the Second. The academic versifiers of 1761, therefore, made a point of celebrating that

event and turning it to great account in their panegyrics of the reign just closed, introducing allusions to the same also in their loyal aspirations for the glory and fame of the new King.

While the volume was at hand, I rapidly made selections of passages containing the names that had arrested my attention, as a visitant from Canada, with one or two other passages possessing some interest of a cognate character. These memoranda, though absolutely of little value, I am desirous nevertheless of depositing, where, at all events, they may be consulted, should the exigencies of a Canadian student hereafter require authority for a Latinised or Grecised form of an American local proper name. I do not suppose that the old "learned" tongues are going wholly to die out amongst us. Such a result will be prevented by the select few who, it is not to be doubted, will, in a certain average, here as elsewhere, always emerge from the general community, possessed of a special aptitude for the mastery of languages. For the sake of those, comparatively few though they may be, who shall evince especial talent for linguistics, ancient and modern, our Canadian schools and colleges and universities will never cease to maintain a supply of instructors and guides. Nor, on the score of essential knowledge, in respect to the composition of modern English speech, and in respect to the nomenclature adopted in every department of science, would it be safe wholly to omit means and appliances for acquiring familiarity with what used prœminently to be called the learned languages. We conceive too that the literature appertaining to those tongues ought not to be left out of any plan of general education, for the further reasons, as well set forth lately by the accomplished Inspector of Schools for the Province of Ontario, in his annual Report (p. 12), that "it gives enlarged views, helps to lift the mind above a hard materialism, and to excite interest and sympathy in the experiences of human life."

Our extracts may also serve to add a touch or two to the general picture of the times of George the Second. An interest in regard to the era of that King has of late been revived in the public mind—a period of English history that had become misty in the retrospect of the generality. One of Thackeray's lectures on the "Four Georges" brought back George the Second and his surroundings to the popular imagination for a passing moment. The republication a few years back by Hotten, of Wright's "Caricature History of the Georges," contributed to the same result—a work containing "Annals of the House of Hanover, compiled from the squibs, broadsides, window-

pictures, lampoons and pictorial caricatures of the time," and accompanied by nearly four hundred illustrations on steel and wood. Since then a series of papers entitled "Historical Sketches of the Reign of George the Second," in successive numbers of Blackwood, has reawakened the curiosity of the reading public on the same subject. Of the sketches in Blackwood, Mrs. Oliphant is the writer. They are now published in collected form, and have been reprinted in the United States. In Mrs. Oliphant's volume, significantly enough, no chapter is devoted to the King himself, but one is given to the Queen, as being, in point of sense, the better man; George's good genius, while she lived, saving him and probably the nation from serious calamity. Sir Robert Walpole is sketched as "The Minister" of the era. Sir Robert has also lately been evoked from the shades for the contemplation of the modern public by Lord Lytton, in his rhymed comedy of "Walpole, or Every Man has his Price." Next we have Chesterfield, portrayed as "The Man of the World" of the period; with pictures of Pope as "The Poet;" of John Wesley as "The Reformer;" of Commodore Anson as "The Sailor;" of Richardson as "The Novelist;" of Hume as "The Sceptic;" of Hogarth as "The Painter." Chapters are devoted likewise to the Young Chevalier and Lady Mary Wortley Montagu. In depicting this remarkable group, no special occasion presented itself for delineating the denizens of the colleges and halls of the universities, engaged at their literary work. The notes here offered will give a momentary glimpse of them thus employed. It is in another relation that they are referred to in the sketch of Wesley, "The Reformer." Wolfe's career, in which we in Canada naturally feel a peculiar interest, was brilliant but very brief; otherwise we might have expected a chapter to have been assigned to him as "The Soldier" of the day. He also, or at least his name and fame, will come repeatedly before us in the course of our Oxford extracts. Of the whole era to which our attention is thus directed, it has been said, by a writer on the same subject in a late number of the *Quarterly Review*, that it was "a time of order without loyalty; of piety without faith; of poetry without rapture; of philosophy without science. In one word, it was an age without enthusiasm." But then, as the same writer adds, "the absence of enthusiasm is not necessarily fatal to the existence of a high sense of duty; a quiet, unobtrusive, religious spirit; an honest, if not a very profound, inquiry into the problems of human life, and the sources of human knowledge: while it is eminently favorable to that polished,

if cynical, literature which, while it makes emotion unpardonable, at least makes cant impossible." There was some enthusiasm, however, as we shall see; but it was of a barbaric, piratical cast; an enthusiasm, too, fortunate enough under the circumstances; for, it being too late to give heed to Polonius's wise rule, "Beware of entrance to a quarrel," the only thing left to be done was to adopt the residue of his precept—

"—— but being in,
Bear 't, that the opposed may beware of thee."

From her connection with Hanover through the Georges, England was much mixed up with the internal disputes of Europe; and so was brought, all the more frequently, into direct collision with her ancient Gallic foe. The national enthusiasm of the era accordingly took the form of hostility to France, and an idolatry of the statesmen who could best devise plans by means of which the commerce and power of France might be destroyed. In church and state, this spirit was rampant, conventionally if not really. In the seats of learning it was carefully cherished in the youth of the land; and not the least carefully, as our extracts are about to show, by the masters of colleges, by the professors and tutors—

"—— in the Attic bowers,
Where Oxford lifts to heaven her hundred towers."

It was not, however, while casually examining the volume in the Bodleian that I for the first time had experienced some surprise at suddenly seeing the new amidst the old—Canada and America mixed up with Latium and Hellas. Some years ago I happened to become the possessor of an old copy of the *Periegesis* of Dionysius. This is a Geography in Greek hexameters, quite Homeric in style, and very pleasant to read. Its author Dionysius was a Greek of Alexandria, and was employed, Pliny says, by one of the emperors, without specifying distinctly which, to make a survey of the Eastern parts of the world. He is supposed to have lived about the year A.D. 140. For the sake of distinguishing him from other notable persons bearing the same name, he is known from the title of his book *Periegesis*, as *Dionysius Periegetes*, *i. e.* the Cicerone, *Valet de place*, or Guide to remarkable localities.

On turning over the leaves of my old copy of the *Periegesis*, for the first time, I was startled at observing a sub-division of the poem headed in good Greek, Περὶ τῆς Ἀμερικῆς ἢ τῆς ἐπὶ δύσιν Ινδικῆς γῆς., *i. e.*, "Concerning America or the West Indies;" and a few lines down

appeared the familiar name of our own Dominion, expressed in Greek characters, and helping to form a foot in a Homeric hexameter of excellent rhythm. On closer inspection I discovered that Dionysius had found an Oxford continuator in the person of a writer on Geography rather eminent in his day, Edward Wells, who, intending his edition of the *Periegesis* to be of practical use in the work of education, and to be committed to memory like the rules for the gender of nouns and the conjugation of verbs in the common grammars of the day, not only corrected the matter of Dionysius Periegetes, but also added to his poem some hundreds of lines, likewise in excellent Homeric Greek, descriptive of the portions of the earth disclosed to the knowledge of men since the days of Columbus. I transcribe as a specimen some of the lines which refer to America. It will be seen that Canada, Quebec, Hudson's Bay, Boston, New York and several other familiar cisatlantic names, wear a singular asp in the guise in which they here appear. We are to observe that when our pseudo-Dionysius wrote, Canada was still a French possession, and the territories down to Florida were English.

Ἀμερικὴν ἰσθμὸς διατέμνεται ἄνδιχα γαίην
Στεινὸς, καὶ νοτίου πόντου μέσος ἠδὲ βορείου,
Ὃν ῥά τε τὸν Δαριηνὸν ἐπωνυμίην ἐνέπουσι
Τοῦ δ' ὕπερ, Ἀμερικὴ τετανυσμένη ἐστὶ βορείη,
Νέρθε δὲ τοῦ, νοτίη· ἐρέω ταπρῶτα βορείην.
Ἀμφ' ἀκτὰς βορεήτιδας, Ὑδσονίῳ ἐπὶ κόλπῳ,
Ἔνθα νέη τέταται Καμβρὶς, νέη ἔνθα Βρετανίς.
Ἐξείης Φραγκῶν πεδίον νέον ἐκτετάνυσται,
Ἀμφὶς εὐῤῥείταο Κανάδου αἰπὺ ῥέεθρον·
Οὕνεκά μιν θ' ἑτέρως γαίην καλέουσι Κανάδην·
Ἐνθάδ' ὑπὲρ ποταμὸν Κηβεκκίδος ἐστὶ πτόλεθρον.
Κεῖθεν ὑπὲρ ῥηγμῖνα βορειάδος ἀμφιτρίτης,
Ἀγγλῶν μακρὰ νότονδε νέμονται ἔκγονοι ἀνδρῶν·
Οἱ μὲν ναιετάουσι νέης λιπαρὸν πέδον Ἀγγλης,
Ἐνθάδ' ὑπειράλιον Βοστωνίδος ἐστὶ πτόλεθρον·
Οἱ δέ τε χῶρον, ὠδὲ πτόλιν Ἠβοράκοιο νέοιο·
Οἱ δὲ νέης πέδον ἀμφότερον ναίουσι Ἰέρσης·
Οἱ δέ τε του Πέννου γαίην παρος ὑλήεσσαν,
Ἐνθάδ' ἐϋκτίμενον Φιλαδελφίας πτολίεθρον.
Οἱ δ' αὖθις πεδίον καὶ ἐπώνυμον ἄστυ Μαρίας·
Οἱ δέ τε παρθενικῆς τὸδ' ἐπώνυμον οὖδας ἀνάσσης,
Ἐνθάδ' ἐπωνυμίην Ἰακώβου ἐστὶ πτόλεθρον·
Οἱ δέ τ' ἐπίκλησιν Καρόλου πέδον ἠδὲ πτόλεθρον,
Ἀγγλιακῶν ὑπὲρ ἠπείροιο πανύστατοι ἀνδρῶν.
Ἐξείης γαίη παραπέπταται ἀνθεμόεσσα
Ἐς νότον, ἠχί περ ἀγχίαλος δόμος Αὐγουστίνου.

1004—1029.

That is to say: "The land of America an isthmus, narrow, and midway between a southern and a northern sea, cuts in two: it, moreover, men surname the Darien: above it expands the Northern America; below it, the Southern. I shall speak first of the Northern. On the boreal coasts that line the Hudsonian Gulf on the one hand, extends a new Wales; on the other, a New Britain. Then next expands the Franks' new domain, on both sides the fair flowing Canada's deep stream, whence men call it, in other words, the land of Canada. There on the river is the city of Quebec. Thence southward far, along the boreal Amphitrite's shore, are distributed the descendants of English men. Some of them inhabit the fertile soil of a new England; there on the shore of the sea is the city of Boston; some of them, the country and city of York the new; some of them, the twofold region of a new Jersey; some of them, the once sylvan land of Penn—there is the well-built city of Philadelphia. Others of them again inhabit the soil and city named from Mary; and others, the area named from a virgin queen. There is the city surnamed of James; and others, the soil and city named from Charles, the most remote on the continent, of English men. Next is spread out to the south the land of Flowers, where upon the seaboard is Augustine's dwelling."

It will be noticed above, in the eleventh line, that the name "Canada" is applied to the river St. Lawrence; and the statement is made that "the surrounding country takes its name from the river." An occasion will arise in the course of the present paper to make some observations on this and some other points in the extract. The usage of designating the St. Lawrence as the great river of Canada, was for a time in vogue among early writers. Again: at line 1303, we have an enumeration of the islands appertaining to the American continent. The lines relating to Newfoundland are given, the name of the "fair-flowing" *Canada* occurring therein, again as designating the St. Lawrence,

> Νῦν δ' Ἀτλαντιακοῦ εὐρὺν ῥόον ὠκεανοῖο
> Μακρὰ σὺ νηὶ ταμὼν ἐς Ἀμερῥίδα γαῖαν ἵκοιο·
> Ἐνθάδ' ἐπὶ προχοῇσιν ἐϋῤῥείταο Κανάδου,
> Νῆσον ἀπειρεσίην νέον εὕροντ' ἔκγονοι ἀνδρῶν
> Εὐρωπηείων, πέδον ἰχθήεσσιν ἐραννόν·
> Ὠρύεται γὰρ τ' ἀμφὶ μαλ' ἰχθυόεσσα θάλασσα.
>
> 1303—1308.

That is: "Now speeding in thy bark afar, across the wide stream of the Atlantic ocean, come to the American land. There at the vast outlet

of the fair-flowing stream Canada, the offspring of European men have newly found an island of untold extent, a soil beloved of fishers, for round it roars a sea especially abounding in fish."

In the edition from which I have made the above extracts, the whole of the *Periegesis*, the continuation included, is accompanied by notes in Latin, and also by a line-for-line Latin version, after the manner of Clarke's Homer, in former days. As in the case of the work just named, the Latin verbatim rendering, especially of compound terms, and stock epithets, is amusing. But with this the reader need not be troubled. Simply as a specimen which will recall the grotesque kind of help that a few years back was considered necessary for students in their acquisition of Greek, I transcribe four lines, in which the familiar word *Canada* quaintly occurs:

> Deinceps Francia nova extenditur,
> Utrinque ad pulchriflui Canadæ altum fluentum:
> Quapropter ipsam etiam terram aliter vocant Canadam,
> Ubi super fluvium Quebeciæ est oppidum. 1011–1014.

The humorous parody of this kind of elucidation of a Greek text, in one of Bishop Heber's youthful pieces, still preserved in his collected works, will probably be remembered, in which he speaks of

> —κλεινήν Λυκίην ἢ Βίλστονα ἢ Βρεμίχαμον,
> Χαλκόπολιν, φίλον οἶκον ἀγάνορος Ἡφαίστοιο.
>
> 512–516.

accompanying the same with a version in the usual harsh, corduroy kind of Latin:

> — nobilem Lyciam, aut Bilstonem, aut Bremichamum
> Æris-civitatem, charam domum ob-virtutem-mirabilis Vulcani.

and illustrating all by elaborate Latin notes, after the manner of Brunck, Hermann and Dawes; showing, for example, that here it was impossible the Asiatic Lycia could have been meant as some critics insanely contended; but that *Wolverhampton*, "civitas a *lupis* nomen habeus," was the place, inasmuch as the author is speaking of English towns, or Bilston, and Bremicham (Birmingham), the latter a city, as the supposed obscure Greek poet speaks, "devoted to the manufacture of brass, and the home beloved of the very manly Hephæstus."

We now proceed to give our excerpts from the volume in the Bodleian. The pieces contained in that folio are not, as will be seen, the crude exercises of junior fledglings in the university. The occasion

was so grave and dignified that it was deemed worthy to call forth the literary powers of the seniors, of professors and fellows and heads of colleges. Nevertheless, all the exercises have about them more or less of the school-boy ring, and in some of them possibly may be detected a tone not uninspired by a view of the substantial bounties at the disposal of the personages addressed or referred to.

Our first specimen will be from a copy of Ovidian hexameters and pentameters, by the Vice-Chancellor himself, Dr. Joseph Brown. The selection was made for the sake of the allusion to the recent conquests in North America, and the rather bold assignation to our St. Lawrence of the style and title of an Indus: "Each Indus," the Vice-Chancellor says, "is now subject to the power of Britain." The other must be the Indus proper, or else poetically the Ganges; and the allusion is to the virtual conquest of all India by the victories of Clive. Under this impression the extract was made. The sense may be different, as is noted below. The young King is thus apostrophised:

O Princeps Auguste! vide quæ pondera Famæ
Sustineas, et quæ poscat avitus honor.
Aspice quæsitos alio sub sole triumphos;
Accessit regnis Indus uterque tuis.
* * * * * *
Conciliare animos, populo imperitare volenti,
Illa sit ambitio, palma sit illa Tibi.
Hæc tua bella geras, certos habitura triumphos,
Civilis rixæ Victor et invidiæ.
Seditio procul absit, et illætabile murmur,
Atque omnes æquo fœdere jungat amor:
Tene magis salvum populus velit, an populum Tu—
Sola sit hæc nullo lis dirimenda die.

"O august Prince! see what a burden of glory thou sustainest, and what demands the honours gained by thy grandsire entail! Behold under another sky triumphs won! Each Indus now is added to thy realms. To conciliate hearts, *to rule a willing people—let this be thy* ambition, this thy prize! Victorious over civil strife and envy, let such be thy wars, destined to a sure triumph. Avaunt sedition and joyless complaint! let love unite all in one just league! Let this be the sole question—never to be decided—whether thy people most wish thee well, or thou thy people!"

In the composition of Dr. Musgrave, Provost of Oriel, who also chose the elegiac couplet, we have Canada and the St. Lawrence intro-

duced. These names occur in an address to the shade of the deceased King, George the Second, thus:

Te penes arbitrium pelagi; Tibi, sospite classe,
Neptunus gemini contulit orbis opes.
Te Canadæ tremuére lacus, Laurentius ipse,
Auspice Te, placidas volvit amicus aquas;
Quique tenent Nigrim Mauri, quique ultima Gangis
Littora flava, tuo colla dedére jugo.

"With thee was the control of the sea: on thee, thy fleet kept safe, Neptune conferred the wealth of two hemispheres. Before thee the lakes of Canada trembled: under thy auspices the St. Lawrence itself, now a friendly stream, rolled down its waves appeased. The swart Moors, as well those who possess the Niger, as those who possess the scorched shores of the far Ganges, yielded their necks to thy yoke."

The allusion to "Niger" is to the capture, a year or two previously, of the forts St. Louis and Goree, on or near the river Senegal.

The Rector of Exeter College, Dr. F. Webber, contributed some Alcaic stanzas. There is in the extract here given no reference to local names on this side the ocean. But we have in it a clever working out of the setting-and-rising-sun metaphor. He speaks of the recent royal death, and the recent royal accession, in these terms:

Inter triumphos Georgius occidit!
Nec clarior sol oceano subit,
Cum flammeo splendore præbet
Indicium reditûs sereni.

At, uno adempto Lumine patriæ,
En surgit alter Georgius, altera
Lux! et sui Regis renidet
Auspiciis recreata Tellus.

"Amidst his triumphs fell our George! And never more brilliantly set sun in ocean, when with fiery glow it gives promise of fair return. But lo! no sooner is one luminary of the father-land taken away, than another springs up—another George: and reanimated by the omen of its King, the land regains its smile."

The Alcaic stanza was also selected by Dr. Randolph, President of Corpus, for his exercise. He celebrates the conquest of Canada, and names the St. Lawrence. He addresses himself thus to the young King: He shows himself a careful student of Horace and a master of Latin.

Pacatus orbis consiliis tuis
Irrupta gaudet fœdera jungere,
Gentesque Te, Rex, bellicosæ
Compositis venerantur armis.
Dediscit artes perfida Gallia;
Mansuescit Indus, scalpraque projicit,
Laurentiique immite flumen
Volvit aquas taciturniores.
Mercator audax æquora transvolat,
Plenoque cornu copia cernitur,
Frandemque propulsat sceleusque
Rex animo et patriâ Britannus.

"The whole earth, restored to peace by thy counsels, rejoices in forming inviolable leagues; and warlike nations, unitedly laying aside their arms, venerate thee, O King! Treacherous Gaul unlearns her wiles: the Indian ceases to be savage, and throws away his dread knife: St. Lawrence's ruthless stream rolls down his waves less ravingly. The daring trader traverses the ocean, and Plenty with full horn is to be seen. Trickery and guilt are utterly repelled by a King in soul, as by birth, a Briton."

We have, of course, in the closing expression, an allusion to the young King's first speech from the throne, in which, it is said, he inserted with his own hand a paragraph stating that "he gloried in the name of Briton," thus differencing himself from his immediate predecessors, who were German-born. The text of the paragraph referred to is as follows: "Born and educated in this country, I glory in the name of Briton; and the peculiar happiness of my life will ever consist in promoting the welfare of a people whose loyalty and warm affection to me I consider as the greatest and most permanent security of my throne; and I doubt not but their steadiness in those principles will equal the firmness of my invariable resolution to adhere to and strengthen this excellent constitution in church and state, and to maintain the toleration inviolable."

In some vigorous heroic verse, by a fellow of Magdalen, John Hall, "S. T. B.," or Bachelor of Theology, we have an express reference to Wolfe, the plains of Abraham, and the conquest of Canada. The lines included in our extract are an indignant address to France:

En! Tibi in Hesperiis quo cedunt, Gallia, terris
Insidiæ, turpesque doli, cædesque nefandæ!
Divisi impatiens regni, tu cuncta volebas
Imperio premere et dominari sola per orbem.

At sæva instantem non arma avertere cladem,
Non rupes poterant, cum in prælia duceret ultor
Wolfius accensas metuendo Marte catervas!
Ergo expugnatas arces, eversaque castra,
Nequicquam mœres, fractis ingloria telis.
Ergo iterum vastata diu tua rura, Colone,
Pace colas, nec te cultro jam terreat Indus
Crudelis, Gallusque Indo crudelior hostes.
Felix rura colus: hæc Georgius otia fecit.

"Behold, O Gaul! to what end thy plots and base wiles and nefarious blood-thirstiness have come, in the lands of the West. Refusing to endure a divided rule, thou didst aim, by military power, to subdue all things, and to lord it throughout the earth alone! But ruthless armaments availed not, nor rocky fastnesses, to avert from thee quick destruction, when Wolfe, the avenger, brought into the field his cohorts, fired by dread-inspiring Mars. Here is the reason why thou, shorn of glory, thy weapons shattered, bewailest in vain stormed citadels, demolished fortresses! Here is the reason why thou, O colonist, now again tillest in peace thy fields devastated so long: and neither the inhuman Indian affrighteth thee with his knife, nor thy Gallic foe, than Indian more inhuman. All blest, till thou thy fields. For thee, this repose a George hath secured."

The production of John Smith Bugden, gentleman commoner of Trinity ("Coll. SS. Trin. Sup. Ord. Com."), is likewise in heroic metre. He moulds into shapely classic forms the names of Acadia, Louisbourg, Quebec, Ontario and the Mississippi. He represents the French King, Louis XV, on hearing of the decease of George II, as bidding his nobles not to imagine that that event would unfavorably affect the fortunes of England. The reference to our own Lake Ontario is especially interesting. He thus speaks to them:

—— Suetas torpere in prœlia vires
Creditis Angligenûm, minuive ingentia cœpta?
En superest sceptri, superest virtutis avitæ,
Georgius, auspiciis æque felicibus, hæres.
Ille animis veteres odiisque sequacibus iras
Implebit, belloque secundo quicquid agendum
Restiterit, paribus cumulabit protinus armis.
Fœdera nunc violasse pudet, nunc pœnitet ultrò
Acadiæ fines tetigisse, incertaque rura!
Occiduo tulerit quantos ex axe, videtis,
Longævi dudum Regis fortuna, triumphos.

Ipsa jacet Lodoica solo convulsa, minæque
Murorum ingentes, disjectaque mœnia fumant.
Umbriferis frustra se muniit ardua saxis,
Vallosque implicuit vallis (victoria tanto
Hostibus empta licet Ductore) arx fida Quebeci.
Jamque novæ gentes et centum uberrima regna,
Se Britonum titulis ultro regalibus addunt.
Ex quo præruptis scopulis plaga pinea vastum
Obsidet Osvegum, sonituque per arva marino
Lata fremit, lacuumque Ontaria maxima sævit;
Ad cultas procul usque oras, Missippia præceps
In mare quà refluum sublimi volvitur ore;
Prœlia magnanimi novus ille Georgius ultor
Instaurabit avi, propriumque tuebitur Indum
Victor, et Hesperio latè dominabitur orbi.

"Think ye a torpor is coming over the practised power of the English race for war, or that the vastness of their designs is lessening? Lo! there survives a George, heir under equally happy auspices to his grandsire's sceptre, to his grandsire's valour. He will maintain the full measure of the ancient quarrels with supplies of energy and persistent hate; and whatever for a successful war remains to be done, he will forthwith, with armaments like the former, fully accomplish. It shames me now that I broke the treaty; it repenteth me now that I wantonly meddled with the boundaries of Acadia, and the tracts left undefined! Ye see what triumphs the fortune of the long-lived King hath lately wrested from the western world! Louisbourg is razed to the ground; its vast threatening walls, its shattered fortifications, smoke! In vain did the trusty fortress of Quebec, raised aloft on shadowy rocks, strengthen and environ itself with stockade upon stockade—paid for by the foe though that success was, by the life of a commander so great! And now new tribes, and a hundred fertile domains, voluntarily swell the honours appertaining to the King of the British people. From the point where, on precipitous rocks, a region of pines surrounds the lonely Oswego, and with a sound like that of the sea, heard over a wide space, Ontario, greatest of lakes, roars and rages, even unto the cultured banks afar, where the swift Mississippi, with front upreared, plunges into the tidal sea,—he, this new George, this new avenger, will begin afresh his grandsire's wars, will guard an Indus of his own, and will lord it far and wide within the Hesperian hemisphere."

"Angligenûm," in the second line, is, of course, a contraction for "Angligenorum," from Angligeni, a mediæval word for "men English-

born." Another term of the same era, for "Englishmen," is "Angligenenses," a word familiar by reason of the well known monkish distich,

> Chronica si pen-es, cum pugnant Oxonienses,
> Post paucos menses, volat ira per Angligenenses,

a couplet quoted not long since in the British House of Commons, in relation to the agitations occasioned throughout the empire by Oxford controversies. It referred originally to faction fights between Northern men and Southern men, between Welshmen and Saxons, which filled the streets and neighbouring fields with tumult and bloodshed. The treaty of which Louis is made to regret the violation, in line 8, is that of Utrecht. By the 12th article of the treaty of Utrecht, "all Nova Scotia, or Acadia, with its ancient limits, and with all its dependencies," was ceded to the Crown of Great Britain. The French authorities afterwards contended that Nova Scotia comprehended only the Peninsula, and did not extend beyond the Isthmus: whereas the charter of James I. to Sir William Alexander, and Sir William's own map, as old as the charter, demonstrated that the ancient limits of the country so named included a vast tract of land, besides the peninsula, reaching along the coast till it joined New England; and extending up the country till it was bounded by the south side of the St. Lawrence. By the 15th article of the treaty of Utrecht, "the subjects of France, inhabitants of Canada and elsewhere, were not to disturb or molest, in any manner whatsoever, the Five Nation Indians, which, the article says, are subject to Great Britain, nor its other American allies." Notwithstanding, a writer in the *Gentleman's Magazine*, for December, 1759, sets forth, "while the French usurpations went on so insolently in Nova Scotia, the plan was carrying on with equal perfidy on the banks of the Ohio; a country, the inhabitants of which, says that writer, had been in alliance with the English above a hundred years ago, to which also we had a claim, as being a conquest of the Five Nations, and from which, therefore, the French were excluded by the 15th article of the treaty of Utrecht." We observe from line 20 that Lake Ontario had by some means acquired a reputation for tempestuousness. In the thirteenth of the Duddon Sonnets, Wordsworth also, at a later period, sang of

> "—— the gusts that lash
> The matted forests of Ontario's shore,
> By wasteful steel unsmitten."

The adroit Latinist has, in line 22, made "Mississippi" manageable, manipulating it into "Missippia." By "Indus," in line 25, the

St. Lawrence is, as we suppose again, intended. It is possible, however, that here, and in the other places as well, where the word occurs in these extracts, "Indus" may be "the Indian," meaning the Indian races.

Our next excerpt is from the exercise of Thomas Baker, "Portionista," as he is styled, of Merton. "Portionista," pensioner, or exhibitioner, has been strangely vernacularized at Merton into "postmaster." The metre is epic or heroic. We again have allusions to the conquests of Cape Breton and Canada; and the St. Lawrence is named. The battle of Minden is celebrated; and the capture of Goree. He compares the successes of George II. over France on the continent of Europe to those of Edward III. He thus speaks:

Vidimus Edvardi veteres revirescere laurus;
Vidimus Angliacæ metuentes signa catervæ
Gallorum trepidare acies Germania priscæ
Conscia virtutis, Britonum mirata triumphos,
Nuper Mindeniæ obstupnit miracula pugnæ.
Addam urbes Lybiæ domitas, captæque Bretonæ
Duplex obsidium; dicam superaddita nostris,
Sub duce pro patriâ egregie moriente, triumphis
Arva, ubi Laurentî in latum se porrigit æquor.

"We have seen renewed the ancient laurels of an Edward. We have seen the Gallic armies tremble through fear of the standards of an English cohort. Germany, mindful of valour evinced of old, full of wonder already at triumphs won by Britons, lately stood amazed at prodigies achieved in the fight at Minden. I will add the reduction of African towns; the twofold blockade in the capture of Cape Breton: I will name the accession to our conquests, under the Chief who for his country so nobly fell, of the fields where the vast surface of the St. Lawrence spreads itself abroad."

This association of Minden with "the fields where the St. Lawrence spreads itself" will remind the reader of a passage in Langhorne's "Country Justice," the last line of which has become a stock quotation. (He is speaking of a poor vagrant culprit, the child of a soldier's widow):

Cold on Canadian hills, on Minden's plain,
Perhaps that parent mourn'd her soldier slain;
Bent o'er her babe, her eyes dissolved in dew,
The big drops mingled with the milk he drew,
Gave the sad presage of his future years,
The child of misery, baptized in tears.

In the lines selected from the hexameters of Henry Jerome de Sales, gentleman commoner of Queen's, we have Niagara named, the St. Lawrence and the Ohio. He utters a lament on the death of the King:

Occidit heu patriæ columen! Te, maxime Princeps,
Plebs, proceresque dolent, quin rusticus ipse per arva
Auspiciis secura tuis et nescia belli,
Sinceros fundens luctus lacrymasque, dolorem
Exprimit, et raptos Britonum deplorat honores.
Heu citò vanescit vitæ decus! heu citò rerum
Transit honos! frustrà mandata Britannica classes
Vidimus invictas subjectum ferre per æquor;
Ingentes animos frustrà miratus arenas
Horribiles inter Mauros, desertaque tesqua
Gallorum invalidas contundere viderat iras.
Heu frustrà sævi positâ feritate tyranni
Extremi ad fines orientis, et arva beata
Auratis in quæ Ganges devolvitur undis,
Ignotas Britonum nomen coluere per oras.
Consiliis frustrà prudentibus usus, et altâ
Omnipotentis ope, victricia fulmina latè
Sparsisti: frustrà partos sine cæde triumphos
Viderat horrisonis torrens Niagara fluentis,
Nequicquam insidias Indorum vidit inanes
Debellata Ohio, atque, æterni causa doloris,
Subjectas tibi volvebat Laurentius undas.

"Alas! the country's stay hath fallen! Thee, great Prince, commons and nobles lament: nay, in the fields, rendered through thy providence secure and undevastated by war, the very boor expresses his grief by unfeigned lamentations and tears, and bemoans the snatching away of the pride of the British people. Alas! how swiftly vanisheth life's grace! how swiftly passeth away the glory of earthly possessions! In vain have we beheld invincible fleets bearing the behests of Britain across the subject main: in vain the Moor, amazed, amidst his horrid sands and desert wilds, beheld mighty spirits quelling the strong rage of the Gauls. Alas! throughout regions unexplored, to the bounds of the far East and the happy fields towards which Ganges rolls, with waters that bring down gold, in vain have barbarian chiefs, laying aside their ferocity, reverenced the British name! In vain, leaning on wise counsels and the help of the Most High, hast thou dealt thy victorious bolts far and wide! In vain, with dread-sounding billows, did the down-rushing Niagara behold bloodless victories won. To no purpose

did vanquished Ohio behold the ambuscades of savages made of none effect; and, source of woe unending! St. Lawrence pour down his tide, subject unto Thee!"

It will be observed that the penultimate syllable of Niagara has, in the above Latin lines, the quantity which it possessed when the name first fell on the ear of Europeans. The line in Goldsmith's *Traveller* will be remembered:

> Have we not seen, at Pleasure's lordly call,
> The smiling, long-frequented village fall?
> Beheld the duteous son, the sire decayed,
> The modest matron, and the blushing maid,
> Forc'd from their homes, a melancholy train,
> To traverse climes beyond the western main,
> Where wild Oswego spreads her swamps around,
> And Niagara stuns with thund'ring sound?

Like other native names, Niagara has been subjected to a process of abbreviation and shaping. It properly begins with a nasal *On*. The following forms of the word are to be read in early books on Canada: Iagera, Iagare, Jagera, Jagare, Jagera, Niagaro, Niagra, Niagro, Oakinagaro, Ochiagara, Ochjagara, Octjagara, Ohniagero, Oneageragh, Oneagoragh, Oneigra, Oneygra, Ongayerae, Oniagara, Oniagorah, Oniagra, Oniagro, Onjagara, Onjagera, Onjagora, Onjagore, Onjagoro, Onjagra, Onnyagaro, Onyagara, Onyagare, Onyagaro, Onyagoro, Onyagars, Onyagra, Onyagro, Onyegra, Yagero, Yangree. In the Jesuit *Relation* for 1641, we have Onguiaahra.

Our English system of accentuation misleads us in respect to the quantity of syllables in native words. The aborigines lay an almost equal stress on every syllable: thus it happens that, although their language, when reduced to writing, seems to consist of words of an unconscionable length, it sounds, when spoken, monosyllabic. Ohio, too, it may be observed, has here its middle syllable short. We find it short in other early productions. Like the shortening of the penult of Niagara, the lengthening of that of Ohio is an English modernism. Ohio occurs in the old books as Oio and Oyo.

For the sake of a clever transfer into Latin of the idea of our national flag, we made an extract from P. Methuen's production. Otherwise, in the lines presented there is nothing especially interesting. Indus therein seems to indicate the river; although again Indian or Hindoo may be intended. The writer was a gentleman commoner of Corpus Christi College. He is speaking of the late royal death:

Ah! quoties memori revocantes pectore, Regem
Sublatum quærent Britones, luctuque recenti
Tam cari capitis quoties jactura recurret,
Dum redit in mentem veri pia cura Parentis,
Sancti juris amor, mitissima gratia sceptri,
Et blandi mores, atque artes mille benigni
Imperii?—At non sola dedit pax aurea laudem;
Nec minus emicuit memorabile nomen in armis,
Per mare, per terras, quacunque sub auspice tanto
Anglia victrices turmas metuenda per orbem
Miserit, extremasque Indi tremefecerit oras,
Sanguineumve Crucis signum (dirum hostibus omen!)
Dant ventis agitare per æquora lata carinæ.

"Ah! recalling him, how oft, with faithful hearts, will Britons sigh for the King of whom they have been bereft: how oft with fresh grief will the loss of so dear a one come back, whilst to their minds recur his true paternal solicitude, his love of the sacred right; the gentle graciousness of his sway, his condescending manner, his countless modes of exercising a benignant rule! Yet not alone did golden peace win him renown: not less did his name shine forth conspicuous for deeds of arms, by sea and land; wherever, under guardianship so august, England, feared throughout the world, hath sent forth her victorious bands, and made tremble the remote shores of the Indus; wherever her ships unfold to the winds on the broad sea, the blood-red cross, to foemen, presage of woe!"

A fellow-commoner of Trinity, John Cussans, contributed some Alcaics; and therein he imagines the shade of George II. in Hades meeting the shades of his son Frederick and of his own Queen Caroline. The substance of their talk, which is about affairs in the upper regions, is briefly given. Whilst they converse, the ghost of Wolfe joins them for a moment. It will be remembered that George III. was not the son, but the grandson of George II.:

Prolis frequentes ut juvat invicem
Audire plausus! Ut, patriæ memor,
Uterque victrices Britannûm
Assiduâ bibit aure laudes!
Nec longum; et altis gressibus Wolfius,
Visâ coronâ, se socium inserit;
Belli tumultus usitatos
Victor adhuc meditatur Heros:
Fractoque postquam milite Galliam
Suetis fugatam cedere finibus

Exaudit, inceptisque culmen
Appositum subito triumphis,
Lætus citato se rapit impetu,
Nec plura quærit: tum sua, conscià
Virtute nixus, gesta crebrò
Dinumerat, patriasque laurus.

"How it delighteth them mutually to hear the frequent commendations of their descendant! Still mindful of fatherland, how each of them drinks in with eager ear the praises of the victorious British race! Nor is the interval long before, observing the concourse, Wolfe, with solemn stride, joins them: the victor-hero even yet thinks over the turmoils of war to which he was used; and when he hears that Gaul, its military power broken, hath been made to flee from its wonted limits and to succumb; and that to the triumph begun by himself a crown was swiftly put, he, filled with joy, hurries away, and asks no more. Then, sure of his own conscious merit, he rapidly reckons up his own exploits and his country's glories."

It will not be altogether out of place to mention here that Cruden dedicated the first edition of his well-known *Concordance* to the Queen Caroline, of George II., and to give a specimen of the style he employs addressing her on the occasion:

"The beauty of your person," he says, "and the fine accomplishments of your mind, were so celebrated in your father's court, that there was no prince in the Empire, who had room for such an alliance, that was not ambitious of gaining a princess of such noble virtues into his family, either as a daughter or as a consort. And though the heir to all the dominions of the house of Austria was desirous of your alliance, yet you generously declined the prospect of a crown that was inconsistent with the enjoyment of your religion."

The talent and skill of several members of the magnificent college of Christ Church, graduate and undergraduate, noble, gentle and simple, were put in requisition. For one, we have Viscount Beauchamp, eldest son of the Earl of Hertford, expressing himself in dignified heroics. (His full name and style stand as a signature at the end of his composition in this wise: "Franciscus Seymour Conway, Vice-Comes de Beauchamp, Honoratissimi Comitis de Hertford, Fil. natu maximus, ex Ædc Christi.") The piece is addressed *Ad Regem*, in the usual strain. We quote the passage which contains the word *America:*

Aspice jam quantis se attollat gloria rebus
Angligenûm! spoliis illic, frænoque potita
Supposito victrix dominatur in æquore classis;

Hic nova captivis fluitant insignia muris
Americæ; validas sensit Germania vires,
Sensit et extremus septem per flumina Ganges, &c. &c.

"Lo! by what exploits the glory of the English race mounts high! Yonder, possessing itself of spoils and of the power of control, their victorious fleet dominates the subject ocean: here, from the captured fortresses of America their ensign floats, a novelty. Germany hath felt their prowess: remote Ganges along its sevenfold tide hath felt it."

Charles Agar, B.A., student of Christ Church, likewise addresses the King. He introduces the St. Lawrence by name:

Jam Britonum genus omne simul Regemque Patremque
Te solum vocat, afflictis succurrere rebus
Qui poteris, regnoque graves impendere curas.
Seu spectas vestris Libyæ quà terra subacta
Imperiis effundit opes, et lætiùs effert
Libertas se pulchra, jugo vinclisque soluta
Jam primùm: seu quà sævo Germania fervet
Milite, tot cædes nondum miserata suorum,
Irarum impatiens: seu quà Laurentius amnis
Litora jam tandem pacatis alluit undis.
Hæc tibi sint curæ, Tuque hæc servare memento.

"Thee solely, the whole British race salutes at once King and Father, as being able to give aid to their troubled affairs, and to bestow earnest care on the Empire. Whether thy glance is directed to where Libya, subjected to thy sway, pours forth her wealth, where fair Freedom bears herself all the more joyously for now being for the first time from yoke and fetter released; or to where Germany, with her fierce soldiery, rages, unable to restrain her wrath, unpitying yet the multiplied deaths of her own sons; or to where the Laurentian stream laves its shores at length at peace. Let these possessions be thy care: these possessions be thou mindful to guard."

Another member of Christ Church, Robert Bernard, a fellow-commoner, vents his patriotic enthusiasm in senarian iambics. We give the sentence in which he finely personifies the St. Lawrence, as poets are wont to do with noble streams. He applies to the Canadian stream the title of "Father," which it is awkward to attach in English to our river. We can say with propriety Father Thames, Father Rhine, Father Tiber; but from the associations connected with the proper name "St. Lawrence," we feel that it is impossible poetically to prefix "Father" to it, when designating our river. He alludes to pageants

exhibited in the streets during the rejoicings for successes in the East and West. The Latin signature at the end informs us that Mr. Bernard was the eldest son of a baronet. It thus runs: "Robertus Bernard, Bar. Fil. Nat. Max., ex Ædo Christi, sup. ord. com." He apostrophises Britain:

O prole gestiens virûm, Britannia,
Cui cæruleæ per impotentia freta
Dedere fasces imperi Nereides,
Quali tuorum læta plausu compita,
Cum rapta Georgio viderent auspice
Tropœa victis hostibus deducier!
Hic aurifer reconditos Ganges sinus
Tibi reclusit; hic pater Laurentius
Ibat minori vortice; hic portus tuos
Alacris subacto pinus intrat Hespero, &c. &c.

"O Britain! rejoicing in a progeny of true men, to whom over all the raging seas the green Nereids have given the fasces of empire, with what cheering from thy sons were thy streets made joyous, when, under the auspices of thy George, they beheld the trophies won from the vanquished foe borne along! Here for thee the gold-bearing Ganges disclosed its sinuous windings long concealed: here St. Lawrence (pater Laurentius) flowed, its whirling tide abashed: here, the Western world subdued, thy swift barks are seen entering its ports, now thine own."

John Wodehouse, also the eldest son of a baronet, and a fellow-commoner of Christ Church, adopts the metre chosen by Mr. Bernard. He cleverly imagines a veteran narrating, over his cups, to his great grandson, exploits destined to be performed during the reign of the new King. He expressly names America, and refers to its vast lakes:

Festis diebus lætus inter pocula
Miles, revinctus laureâ canum caput
Hoc Rege gesta, vel triumphos nobiles
Jactabit olim: et, Georgii senis memor,
Qui militaret ipse patria procul,
Quæ dux et ipse gloriosa fecerint:
Americæ sinus, et immanes lacus,
Comata sylvis montium cacumina,
Gravesque lapsus fluminum, urbium situs,
Et barbarorum corpora, et vultus truces,
Et sæva dicat arma, et usus horridos:
Dum mira pronepos stupebit audiens,
Et vera forsan credet esse fabulas.

"Joyful amid his cups on festive days, his gray head crowned with laurels, the soldier will boast hereafter of his exploits under this King, and noble triumphs won; and, remembering the former George, who himself also waged wars far from fatherland, will tell of glorious deeds done by himself and his chief; will tell of the gulfs and huge lakes of America, of mountain summits clothed with forests, of sternly-rushing rivers, of finely seated cities, of the forms and murderous looks of savages, of their dire implements of war, their horrific customs: whilst his great-grandson, listening to these marvels, will stand amazed, and, it may be, deem fabulous that which is true."

We have in the *Gentleman's Magazine* for March 1759, a glimpse, somewhat too realistic, of a group, of whom it is to be hoped some survived to fulfil the poet's prediction:

"On Tuesday, the 13th instant,' we are told, "about eighty Highlanders, wounded at the battle of Ticonderago, in America, set out from Portsmouth in waggons, in order to be sent, some to hospitals for cure, others to Chelsea Hospital, and the rest to return to their own country. Some of them, it is added, were so lacerated by the slugs and broken nails which the enemy fired, that they were deemed incurable."

The Regius Professor of Medicine, Dr. John Kelly, also a member of Christ Church, gives proof that the cares of his profession had not caused him to forget how to construct hexameters. We extract the passage where he names America. He is eulogising the late King:

—— Virtutis præcepta secutus
Impiger ille aderat quâ divæ causa vocabat
Libertatis; eam firmâ defendere dextrâ
Unica erat cura: Americæ quin barbara Pubes
Jura Britannorum sævis agnovit in oris,
Duraque consuerant mitescere corda, Georgî
Præsidio —— &c.

"Obeying the dictates of valour, wherever the cause of god-like Liberty summoned, he was instantly present: her to defend with strong right hand was his one care. Moreover, under the guardianship of our George, the barbarian youth of America, in all their savage coasts, became acquainted with the laws of Britons, and their stern hearts grew familiar with gentleness."

Here is a brief extract from the production of another Christ Church man, John Crewe, senior, a fellow-commoner. He names Canada:

En! nomen Britonum quaquà patet Orbis, ab Ortu
Solis ad Occasum, veneratur deccior Indus

Qui Gangen potat, Canadæve in montibus errans
Incultus, certo sibi victum quæritat arcu.

"Lo! wherever the wide world spreads, from rise to set of sun, the swart Indian reveres the British name: the Indian who quaffs the Ganges, and he who, wandering rude on Canadian hills, is ever on the search, with unerring bow, for food."

Once more: a member of Christ Church, a fellow-commoner, bearing a name of archaic tone, Chaloner Arcedeckne, appears as an encomiast of the late King, whose shade he addresses. While recounting the perils from climate experienced in the war on this continent, he names the St. Lawrence, thus:

—— Tu, crescentem, Rex magne, Britannis
Latiùs extendens per inhospita litora famam,
Tentabas nova bella; licet de montibus altis
Concretas nive devolvat Laurentius undas,
Pennatusque gerat miles furtiva sub aspris
Bella latens dumis, et sylvâ tectus opacâ.

"Thou, great King, while extending for the British people, wider than ever, over inhospitable regions, their growing fame, didst engage in novel warrings, despite the St. Lawrence rolling down from vast heights his glacial masses, and the feather-cinctured brave, waging a stealthy warfare, lurking in rough thickets, protected by dense forests."

My last extract in Latin will be from some choriambic stanzas, after the mannner of Horace in the ode *Scriberis Vario*, and elsewhere. The author is no less a personage than the Duke of Beaufort of the day. He was of Oriel. The signature runs thus: "Illustrissimus Princeps Henricus, dux de Beaufort, è coll. Oriel." We again have Canada expressly mentioned. Under the name of Agrippa, the right-hand man of Augustus, the elder Pitt is personified. The young King is adroitly converted into Octavius; and George II. is then, with some appropriateness, spoken of as the deified Julius. The whole composition shows great tact and skill. The poem is addressed to the new King. We select the passage where Canada is met with, in very classic company:

Nec te pœniteat quòd mediis novus
Rerum undis subeas: Ea lateri assidet
Agrippa eloquiis et consiliis potens,
Octavi Juvenis, Tuo!
Sævi illo moderante impavidâ manu
Belli frœna, niger solibus Africus,

Semotæ et Canadæ barbarus incola,
Duris pellibus horridus,
Senserunt Britonûm quid potuit manus,
Fortunâ comite et Consilio duce:
Dum portu latuit Gallia conscio,
Ventis surda vocantibus
Orbem jam dubiis undique prœliis
Vexatum, ad Superos sidere Julio
Evecto, ecce tuis, maxime Principum,
Pacandum auspiciis vides!

"Grieve not that thou, a novice, art plunging into the very midst of the waves of public affairs. Lo! at thy side, O young Octavius, sits an Agrippa, powerful in speech and counsel. While he with fearless hand hath been guiding the reins of ruthless war, the African, sunburnt to blackness, and the savage denizens of far Canada, shaggily covered with undressed skins, have felt what a band of Britons, attended by good fortune and guided by prudence, could do. Whilst deaf to the winds inviting her forth, Gaul hath within her secret haven hidden herself, lo! thou, O greatest of princes, now that the star of Julius has risen to the skies, beholdest the whole globe, long harassed on every side by dubious strifes, destined under thy auspices to be reduced to peace."

In November 20–22, 1759. Admiral Sir Edward Hawke, at the head of thirty-three ships of the line and frigates, partly destroyed and partly drove back into the river Villaine, the Brest fleet:

"In attacking a flying enemy," Sir Edward, in his despatch, says, "it was impossible, in the space of a short winter's day, that all our ships should be able to get into action, or all those of the enemy brought to it. The commanders and companies of such as did come up with the rear of the French, behaved with the greatest intrepidity, and gave the strongest proof of a true British spirit. In the same manner, I am satisfied, would those have acquitted themselves, whose bad-going ships, or the distance they were at in the morning, prevented from getting up. When I consider the season of the year, the hard gales on the day of action, a flying enemy, the shortness of the day, and the coast we were on, I can boldly affirm, that all that could possibly be done, has been done. Had we had but two hours more daylight, the whole had been totally destroyed, or taken, for we were almost up with their van when night overtook us."

From one of the exercises in Greek verse, I made a brief excerpt, because it exhibited the name of Canada, which, as we have seen before, falls very readily into the ranks, in the nomenclature of the Greek language. J. Wills, scholar of Wadham, laments the death of the King in a strain quite Theocritean, thus:

Οἱ παρὰ τὸν Γάγγην ἱερὸν μελανώχροες Ἰνδοὶ
Θαυμάζοντο γέροντ' ἐρικυδέα πάντα δάμοντα.
Καὶ ΚΑΝΑΔΗ Γάλλους ἔκθαμβος ὁρᾶτο φύγοντας,
Χεῖρας ὀρεξομένη τε καὶ ὅρκια πιστὰ τάμουσα.
Αὐτὸς δ', αἶ, νῦν ὤλετ', ἀδεύκεϊ ὤλετ' ὀλέθρῳ
Φίλτατος, αἶ, Βασιλεύς, μέγ' ἀπώλετο χάρμα Βρετάννων.

"The swart Hindoos, on the banks of the sacred Ganges, wondered at the illustrious old man who conquered all things; and Canada, amazed, beheld the Gauls routed, stretching forth her hands and entering into firm treaties. But He, alas! now hath perished, hath perished by a woeful stroke. The King best beloved, alas! the chief joy of the British race, hath perished!"

"The chief joy of the British race hath perished!" Curiously enough, Thackeray, in his "Four Georges," avers that the death of George II. was the beginning of an era of misfortune to England. "It was lucky," he says, "for us that our first Georges were not more high-minded men; especially fortunate that they loved Hanover so much as to leave England to have her own way. Our chief troubles began when we got a King who gloried in the name of Briton, and, being born in the country, proposed to rule it."

Here is a specimen of the scenes going on among "the swart Hindoos," along the Coromandel coast, in 1759. We quote from a report on the French side. On the 29th of April, Count Dache is off the town of Gondelour, in command of the French fleet, when a signal is given of the approach of an English squadron of nine ships. The narrative then proceeds: M. Dache immediately drew up in line of battle. At two in the afternoon the engagement began, and continued till night with great vivacity on both sides. The English retired to Madras, to repair the damage they had received. On June 1st, the English fleet, after being repaired at Madras, was again seen approaching. Count Dache immediately got under sail; but the English, rather than venture a second engagement, again retired to the coast of Madras. On the 26th of July, the English fleet again appeared; and on August 3rd, at one in the afternoon, an engagement began, "which continued with the utmost fury for above two hours." The English squadron suffered greatly in the action; and Count Dache, the account says, would have had the whole advantage, had it not been for the accident that happened on board his ship and the *Comte de Provence*, by the combustibles or fire-arrows which the English, contrary to all the rules

and customs of war, threw on board. The *Comte de Provence* was the first that suffered: all her sails and mizenmast took fire, and the flames spread to the quarter-deck, so that the whole ship would have been consumed, had not the captain of the *Duc de Bourgogne* shot in between the *Comte de Provence and the English* vessel, which continued firing broadsides, after expending all her combustibles. It was with the utmost difficulty the captain of the *Comte de Provence* extinguished the fire on board his ship. The same thing happened to the *Zodiaque*, with this difference, that the fire having gained the powder-room, she was on the point of blowing up, but was saved by the diligence of the officers. The French fleet retired, and anchored before Pondicherry on the following day. We were not again attacked. The number of French killed was 251; of wounded, 602.

From a set of heroics contributed to the Oxford volume by the Regius Professor of Greek himself, in the grand old tongue of which he was the official guardian in the university, I made no extract, as no use was made therein of the local names with which I was immediately concerned. I noted, however, that the professor did not accentuate his Greek; and that he bore a name which some years back was imagined to have a sound somewhat unclassical, even in English; but which, by association, now possesses a fine ring. The signature attached to the exercise alluded to was "S. Dickens," with the Academic suffixes of "S.T.P., ex Ædе Christi, Ling. Græcæ Professor Regius."

Among the poetical offerings at the tomb of the deceased King, and before the throne of his youthful successor, there were several in English also, duly preserved and splendidly printed in the volume which has been engaging our attention. A few specimens of these are now given, containing either the name of Canada or allusions to localities with which Canadians are familiar.

The first will be from a set of very good Spenserian stanzas, by "the Right Honorable the Earl of Donegal, M.A., of Trinity College." The Genius of the Western World is represented as appearing to Columbus during his first adventurous voyage. Among other coming events, she reveals to him the conquest by the second George of the *region which she represents*, his sudden decease, and the fact that a young King would succeed him, and carry on triumphantly the work begun. She broaches by anticipation the Monro doctrine, but in the interest of Great Britain. She exhibits no prescience of the diminution which the Empire was destined speedily to suffer. The Genius speaks:

"Lo! then whate'er old bards, in mystic lore,
Of regions blest, Hesperian coasts, have told,
In me shall be revealed. From shore to shore,
From Pole to Pole, one Empire I behold!
From Albion's cliffs a mighty King shall send
Secure dominion: mid the brave career,
Howe'er to death his honour'd eld descend
A youthful prince shall seize his massy spear,
Shall rise his grandsire's conquering race to run,
To rule, to bless the realms the hoary Warrior won."

W. H. Reynell, scholar of New College, contributed a copy of verses in the style and form of "Gray's Elegy." He poetically styles Canada, or New France, "Laurentia." In "royal towers," there is probably an especial allusion to Montreal and Louisbourg; also, it may be, to Quebec, and to the important forts, which had been captured from the French, of Beausćjour, Niagara, Frontenac, Ticonderoga, Crown Point and Isle Royal. After alluding to the military intervention of Great Britain on the continent of Europe, he proceeds:

"Nor yet for you, Germania, favour'd land,
Alone her heroes fight, her blessings fall;
Another clime demands her fostering hand,
Glory commands: who hears not glory's call?

Happy Laurentia, to thy farthest shore,
Lavish of life, a chosen band she led;
And to those royal towers her standard bore,
Whence fell Oppression, Gallic tyrant, fled."

In Wright's *Caricature History of the Georges*, a portion of a satirical picture, of the year 1754, is given, in which the British lion is represented as plucking feathers from the tail of a Gallic cock; the feathers under the lion's paw being severally inscribed with the names of the French forts in North America, "Beau Séjour," "Fort St. John," "Crown Point," "Ohio," "Quebec," &c.

S. Bradbury, commoner of Wadham, adopted, in his exercise, the ordinary English epic measure. He expressly employs the epithet "Canadian." All *the successes of the British arms during the late* reign are attributed to the King himself. Thus he speaks:

"Witness, thou sun, whose vivid beams are shed
On every clime, how wide his conquests spread,
Or on the Atlantic, or Pacific main,
Or Libya, or the bleak Canadian plain."

Henry Theodore Broadhead, gentleman commoner of Trinity College, wrote in blank verse. He employs the epithet "Canadian." With him "Laurentia" denotes the river St. Lawrence. Ontario and Erie figure in his composition. He anticipates the re-establishment of peace, and the gratitude of the world to George III. He even conceives the existence, at a future day, of an "Oxford" on "the Atlantic shores," nay, a "fane to science sacred" on "Ontario's meads," "where nature revels most;" a devoted University, where, "a thousand ages hence," professors, graduates and undergraduates would be, like himself and his compeers in their day, chanting the glories of one "born of Brunswick's line." We shall observe, however, that Mr. Broadhead had not as yet been put in possession of accurate information as to the fauna and flora of the surroundings of his expected seat of learning. He sings of "Canadian bards" reclining beneath "the plantane or the citron grove," and of the "hunter youth" of the land feasting on "the boar"—the boar, it is presumed, taken in the chase.

"——— What realms remote
Shall bless his potent influence, when the fiend,
Insatiate War, with carnage gorged, shall drop
The blunted spear, reluctant, at his word
And gracious call! The tawny tribes that watch
The lion's footsteps, in the sultry sands
Of Afric printed; the furr'd swains that pine
Near Hudson's frozen straits, in games uncouth,
Around their midnight fires, shall meet to praise
His name rever'd, who joins to distant Thames
Laurentia's thundering waves. In numbers wild,
Wild above rule or art, Canadian bards,
Beneath the plantane stretch'd or citron grove,
Shall carol George's acts: the hunter youth
Shall listening stop in full career, and leave
The boar untasted. The true hero scorns
The warrior's meaner fame, exults to spread
Concord and harmony, and social life
Guard and refine. The time may come when Peace,
Diffusing wide her blessings, on thy banks,
Romantic Erie, or Ontario's meads,
Where Nature revels most, may build a fane
To science sacred; *snatch the murderous knife*
From the grim savage, tame his stubborn heart
With arts and manners mild, and gently bind
In true Religion's golden band, the States
Of lawless, hapless wanderers. There may rise

Another Oxford, on the Atlantic shores
Still fond, a thousand ages hence, to chaunt
Some future hero born of Brunswick's line."

The establishment of universities on this northern continent early entered into the schemes of philanthropists. Harvard University was founded in 1636, and Yale in 1700. Bishop Berkeley's name is associated with a chivalrous effort of the kind in the reign of George II. But his institution was to be set up in Bermuda, or "the Summer *Islands," for the benefit of "the youth of our English plantations."* Swift, in a letter to Lord Carteret, Lord Lieutenant of Ireland, in 1724, introduces Berkeley and his scheme in the following humorous style: "He (Berkeley) is an absolute philosopher with regard to money, titles and power, and for three years past hath been struck with a notion of founding a university at Bermuda, by a charter from the Crown. * * He shewed me a little tract, which he designs to publish, and there your Excellency will see his whole scheme for a life academic-philosophic of a college founded for Indian scholars and missionaries, where he most exorbitantly proposeth a whole hundred a-year for himself, forty pounds for a fellow, and ten for a student. His heart will break if his deanery be not taken from him, and left at your Excellency's disposal. * * Therefore do I humbly entreat your Excellency," Swift continues, "either to use such persuasions as will keep one of the first men for learning and virtue quiet at home, or assist him by your credit to compass his romantic design, which, however, is very noble and generous, and directly proper for a great person of your excellent education to encourage." Berkeley's famous lines, written in prospect of the speedy establishment of his college, partake of the exalted ideas indulged in by the Oxford versifier:

"There shall be sung another golden age,
The rise of empire and of arts,
The good and great inspiring epic rage,
The wisest heads and noblest hearts.
Not such as Europe breeds in her decay;
Such as she bred when fresh and young,
When heavenly flame did animate her clay,
By future poets shall be sung."

The establishment of a university formed, it will be remembered, a part of Governor Simcoe's scheme for the organization of his new province of Upper Canada. To account for the epithet "romantic," applied to Lake Erie, we must have recourse to the early French

writers on America. La Houtan, in his *Memoires de l'Amérique Septentrionale*, unaccountably says of that sheet of water: "C'est assurément le plus beau qui soit sur la terre." (ii. 20.) Charlevoix, as he journeys along its northern coast, writes more calmly; but even he employs such language as the following: "In every place where I landed, I was enchanted with the beauty and the variety of the landscape, bounded by the finest forest in the world." (ii. 2.) It is interesting to know that it was Charlevoix's account of this region that induced the distinguished pioneer of Canadian civilization, Col. Talbot, to form his settlement there. See "Life of Colonel Talbot," by Mr. Ermatinger, of St. Thomas, page 13; also Mrs. Jameson's "Winter Studies and Summer Rambles," ii. 11.

We come next to an extract, in vigorous blank verse, like the last, from a piece contributed by "Thomas Leigh, M.A., Magd. Coll." He makes Britannia herself bemoan the sudden death of the King. She says:

> "——— What now avails
> That in the embattled field upon my spear
> Perch'd Victory, whilst o'er the subject main
> My conquering fleets have spread their canvas wings
> From Ganges to the river on whose banks
> The scalping Indian, nursed in Murder's arms,
> Quaff'd the ensanguined stream, which erst (ere Wolfe's
> And Amherst's heaven-assisted swords forbade)
> With British blood flowed purple to the vast
> Laurentine Gulf."

The Amherst here coupled with Wolfe is Major-General Jeffrey Amherst, to whom Montreal was surrendered, September 8th, 1760. He was afterwards Lord Amherst. We have in the December number of the *London Magazine*, 1760, a "Martial Song" on the Taking of Montreal, with music: the whole "presented to His Royal Highness the Prince of Wales." Amherst is its hero. In a list of new publications, given in the March number of the same volume of the *London Magazine*, an ode, entitled "Canadia," is mentioned; price 1s.; published by Dodsley: also "Quebeck," a Poetical Essay; price 1s. 6d.

In the blank verse of J. Fortescue, B.D., Fellow of Exeter College, we have some very strong expressions of regard for the late King. Posterity, it was predicted, would kiss the greensward once trod by him, at Kensington. The metaphor of the setting and rising sun is once more employed. Pitt is adroitly introduced; Canada is named, and

its conquest by Britain is patriotically declared to be a rescue from "Gallic slavery." Our extract thus proceeds:

"No more thy walks, O Kensington, shall see
A presence more august; nor shall thy plants
Which grew beneath his fostering hand, perceive
A kindlier influence. 'Here he stood'—
'Here walk'd'—shall late posterity remark,
And reverentially kiss the sacred ground,—
'Planning with thee, O Pitt, successful schemes,
Determining the fate of kingdoms; while
Thy realms, O Canada, that too long groan'd
The Gallic slavery beneath, restored
To smiling freedom, own his gentle sway.
Him as another sun the western world
Revered declining, anxious for his fate,
Till Thou, another orb, as heavenly bright,
With every art and early virtue graced,
The loss repairing, lead th' auspicious Hours.'"

Canada again is expressly named in the poem of "the Right Hon. the Earl of Abingdon, of Magdalen College." He adopts the Pindaric style, and arranges his matter in a series of strophes and antistrophes. In a stanza relating to the triumphs of the reign of George II. in different quarters of the globe, he excitedly exclaims:

"Hark! hark! the feather-cinctured Muse that roves
O'er Canada's high-trophied shore,
Calls to the sable nymph that dwells
Amid the thunder-echoing cells
Where Senegal's rough waters roar,—
Calls to the Muse sublime that swells
Her voice in Asia's spicy groves,
And oft her glowing bosom laves
In the rich Ganges' sparkling waves,
To chaunt the triumphs that have crown'd
The second George's arms;
To chaunt the blessings they have found
In British virtue, thro' the world renown'd,
And British freedom's unresisted charms."

That the same ideas should occur to our versifiers was, under the circumstances, inevitable. We have several times already heard what "Thomas Foley, Gentleman Commoner of Magdalen," says in his address to the shade of the departed King. The author was probably youthful. The excerpt is given for the sake of the name of Canada occurring therein:

"George, thy giant race is run,
Unclouded sets the British sun;
Glory marks the parting rays,
The vast Atlantic spreads its blaze
From vanquish'd Canada to India's main:
Mighty Lord, on mortal sight
Beams no more thy glorious light;
No more shall empire's sacred toils,
Asian triumphs, naval spoils,
America's extended reign,
No more shall win thee from the realms of day;
Unfettered springs the soul, and spurns the abode of clay."

As a curiosity, the opening of Shute Barrington's expression of Academic sorrow was selected. Canadians, proud as they are of their *British descent*, are nevertheless apt to forget the eponymous hero of their race. They may refresh their memories by a perusal of Shute Barrington's address to the "Genius of Britain." He thus begins:

"Genius of Britain! who with ancient Brute,
Didst visit first this goodly soil, here fix
Thy glad abode, with more than Argus' watch
To guard its welfare: say, for well thou know'st,
When in thy people's sorrow hast thou felt
Thy deepest wound? When mourn'd thy heaviest loss?"

It was not, he proceeds to explain, when Edward the Third, ever victorious over France, expired; nor when Elizabeth died; nor when William the Third departed this life; but when the late illustrious George deceased. As to Brute, the chronicles affirm that he was great-grandson of Æneas; and that in the year of the world 2855, he came to England from Troy, accompanied by certain Grecian philosophers; that they settled first at Greeklade (Cricklade), in Wiltshire, and thence removed to a place called Ryd-ychen, a name, "denotans," says Antony à Wood, in his Historia et Antiquitates Universitatis Oxoniensis, p. 10, "vadum-boûm, id est, Oxonium, apud Britannos." At Totness, in Devonshire, I was shown, not long since, the "Britstone," which still marks the spot where Brute is said to have landed in Britain. The tide-water of the beautiful river Dart must have pushed farther inland in 2855 than it does at present. The tradition indicates that here, at a very primitive period, traders from the *Mediterranean exchanged* commodities with the inhabitants of the Forest of Dartmoor and the surrounding region. The whole signature of the writer of the verses of

which a specimen has just been given, is as follows: "The Hon. Shute Barrington, M.A., Brother to the Lord Viscount Barrington, one of His Majesty's Chaplains in Ordinary, and Fellow of Merton College." He was afterwards a famous prince-bishop of Durham, and an early friend and patron of the late Bishop Phillpotts of Exeter.

Sir Gerard Napier, Bart., of Trinity College, furnishes some blank verse. Our extract was made for the sake of the adulatory reference to Pitt, who is represented as having begun to form, while yet a student at Oxford, plans "fatal to Gallia's visionary hopes." The elder Pitt had been a member of Trinity College, in that university. He himself, while there, had perpetrated Latin verse on the occasion of a royal death—that of George I. "Allen" is a river in Dorsetshire, which falls into the Stour near Blandford. We gather from Sir Gerard's words that certain members of the University had been honored with a request to write on the twofold occasion which Oxford in its loyalty desired to commemorate. He exhibits an affectionate appreciation of Oxford as a place of beauty, and as congenial to the pursuits of science. He thus speaks:

"This humble strain, near Allen's silver tide,
That winds with vocal lapse its easy way
To Blandford's vale, from Rhedycina's view
Estrang'd, yet mixing with the letter'd tribe,
Mean suitor, I indite, nor of her call
Unmindful, nor of that well-favour'd spot,
Where late I traced the scientific page;
Whose spacious walks and winding alleys green,
With blended foliage sweetly interchang'd,
Prompted to woo the solitary muse,
And calm with noontide breeze intemperate heat.
Blest haunt! where once, in speculative search,
Industrious Pitt indulg'd the lonely step,
And formed, deep-musing, the commercial plan,
Fatal to Gallia's visionary hopes:
Who now his counsel sage with patriot zeal
Dispenses, and unrivalled still attracts
His Sovereign's favour, and his country's love."

The popularity of Pitt, at the time of the composition of these verses, was immense. It was the intention of the Corporation of London, that the bridge over the Thames, afterwards known as Black Friars, should bear the name of Pitt. The following is a translation of the inscription engraved on the plate deposited in the foundation-

stone of this bridge, on the 31st of October, 1760: "That there might remain to posterity a monument of this City's affection to the Man who, by the strength of his genius, the steadiness of his mind, and a certain kind of happy contagion of his probity and spirit (under the Divine favour and fortunate auspices of George II.), recovered, augmented and secured the British Empire in Asia, Africa and America, and restored the ancient reputation and influence of this country amongst the nations of Europe, the citizens of London have unanimously voted this bridge to be inscribed with the name of WILLIAM PITT."

In a contemporary account of a royal visit to the city, in the year of the coronation, we have the following description of the reception given to Pitt by the crowd in the streets: "What was most remarkable," the writer says (An. Reg. 1761, Chron. 237), "were the prodigious acclamations and tokens of affection shown by the populace to Mr. Pitt, who came in his chariot, accompanied by Earl Temple. At every stop, the mob clung about every part of the vehicle, hung upon the wheels, hugged his footmen, and even kissed his horses. There was a universal huzza; and the gentlemen at the windows and in the balconies waved their hats, and the ladies their handkerchiefs. The same, I am informed, was done all the way he passed along."

From the contribution of R. Heber, M.A., of Brase-nose College, father of the well-known Bishop of Calcutta, and of the famous *helluo librorum*, Richard Heber, two lines were selected, on account of the familiar sound of one of them—

"The brightest jewel in the British crown."

With us, I believe, this phrase is chiefly held to describe a colony of Great Britain, and Canada *par excellence;* but in the text where it is found, its application is to something quite different. It there appears as an apposition to an honorable prerogative enjoyed by the Sovereigns of England:

"To reign in freeborn hearts is true renown,
The brightest jewel in the British crown."

One more brief extract and we have done. There is again no reference by name to Canada or this continent therein, but it helps to illustrate the general contents of the volume which has been engaging our attention; and is a specimen of a kind of production insipid enough, as it seems to us, but which was once in high repute not only in the

University of Oxford, but throughout England. The exercise of "the Right Hon. Lord Charles Grenville Montagu, second son of his Grace the Duke of Manchester, of Christ Church" (so runs the signature at its close), is a Pastoral, after the manner of one of the eclogues of Virgil. There is in the composition a curious mixture of the ancient and partially modern; of the classic and the English of the time of Chaucer.

Two shepherds discourse: one of them dismally laments the recent death of him that was, as he speaks, "hight of shepherds all, the King." This old shepherd King is styled Tityrus. The successor to the pastoral monarch is then alluded to. One Damœtas, Colin, the speaker, says, has pointed him out to him—a youth, as he describes him,

> "——— of peerless praise
> And modest mein, that over generous mind betrays."

Damœtas himself, the shepherd observes, is one "deeply skilled in wise foresight, and much of all admired for learned fame." The lines to which I confine myself are ddress of Damœtas to Colin, on showing him the King:

> "Colin, quoth he, thilk lovely Lad goes yon,
> Master is now of all this forest wide,
> (Si' that great Tityrus his life hath done)
> And well shall keep: ne hence with sturdy stride
> Shall derring wolf our nightly folds annoy,
> Ne subtle fox, what time the lambs for dam 'gin cry."

Possibly this piece, with its antique, homely English, may have been relished as much as any in the volume by the young King, who in after years was popularly known as "Farmer George." "Thilk lovely lad goes yon" recalls the copper-plate frontispiece of the *London Magazine* for the year 1760, which represents the following scene, as explained to the reader in the periodical itself: "Britannia mourning over an urn, on which is the profile of his late Majesty. Justice and Religion are consoling her, by showing the person of our present most gracious Sovereign, accompanied by Liberty and Concord: PROVIDENCE is placing the British diadem on his head; Mercury, the god of Commerce, with the Cornucopia at his feet, denoting the present flourishing state of our Trade. The obelisk in the back-ground may serve to commemorate the death of his late Majesty." All these symbolical objects are depicted with great spirit and grace: the young King is represented as a smiling stripling.

George III. does not appear to have possessed the poetic sense very strongly. He expressed his regret that Milton had not written *Paradise Lost* in prose. In the spirit of complaisance, a "gentleman of Oxford" accordingly provided a version of the work in the form suggested by the royal taste. Occasionally a volume is to be met with in the old booksellers' stalls, bearing the following title, "Milton's Paradise Lost, State of Innocence and Fall of Man; rendered into Prose; with historical, philosophical and explanatory Notes, from the French of Raymond de St. Maur, by a Gentleman of Oxford." This is the work. It is in octavo shape, and was printed at Aberdeen, in 1770.

A poem on the death of George II., by R. Warton, the Professor of Poetry, and the respectable author of the History of English Poetry, is preserved in the "Elegant Extracts." From its contents, it appears to have been one of a number of contributions from Oxford. I am not sure that it was not the opening piece in the Bodleian folio. Warton indulges in the customary adulation of Pitt, and prays him to accept the volume as an appropriate offering from Oxford. "Lo! this her genuine love!" he says; and, writing from Trinity College, of which Society he was a fellow, he intimates that the gift will probably be all the more agreeable, as that was *his* college also—the college likewise, he takes occasion to say, where the great Lord Somers, the famous Chancellor and statesman of King William's day, had studied; and where Harrington wrote his *Oceana*, a work, like the New Atlantis of Plato and the Utopia of More, descriptive of a transcendental human community. Thus he concludes, expressing the opinion that now, by the aid of Pitt, and under the auspices of the new King, the speculations of Harrington, on the subject of a perfect Commonwealth, are realized:

> "Lo! this her genuine love!—Nor thou refuse
> This humble present of no partial muse,
> From that calm bower which nurs'd thy youth
> In the pure precepts of Athenian truth:
> Where first the form of British Liberty
> Beam'd in full radiance on thy musing eye;
> That form, whose mien sublime, with equal awe,
> In the same shade unblemish'd Somers saw:
> Where once (for well she lov'd the friendly grove
> Where every classic Grace had learn'd to rove)
> Her whispers wak'd sage Harrington to feign
> The blessings of her visionary reign;

That reign which now, no more an empty theme,
Adorns Philosophy's ideal dream,
But crowns at last, beneath a George's smile,
In full reality this favour'd Isle."

Here my notes from the Bodleian folio end. We can gather from what has been presented, that which we gather also from the contemporary literature of the day, of every description, that in 1759, '60, '61–'64, Canada was occupying a very large space in the public mind of England. The public imagination pictured to itself, after its own fashion, a conquest of immense importance to the empire, and of immense extent; failing to master, nevertheless, after all, as events have proved, and still continue to prove, the true character and actual magnitude of the prize which had been won. Should England at a future time be stirred to put forth her strength for the retention, by force of arms, of this great region, it will be the tradition of the exultation of her people over the acquisition in 1759 that will move her to do so, more than the desire to hold possession of a domain unproductive of national advantage to herself directly—entailing, on the contrary, on herself several embarrassments. Let the national pride be touched by a reawakening of the memories of the close of the second George's reign, and the decision of England would be promptly expressed in the memorable language of good William the Fourth, when the Maine boundary question was in agitation,—"Canada must neither be lost nor given away!"

We may be sure that Cambridge was not behind Oxford in its formal expressions of academic grief and joy on the demise of the crown in 1760. Cambridge was always held to be, in an especial degree, Hanoverian and Whiggish. Sir William Browne's famous epigram will be remembered, on the Donation of Books by George I. to Cambridge, at the moment when, as it happened, a regiment of cavalry was being despatched to Oxford, in 1751:

"The King to Oxford sent a troop of horse,
For Tories own no argument but force;
With equal care to Cambridge books he sent,
For Whigs allow no force but argument."

This, it will be remembered, was in reply to Dr. Trapp's witticism on the same occasion, in the Oxford interest, which ran very irritatingly as follows:

The King observing with judicious eyes,
The state of both his Universities,

To one he sent a regiment; for why?
That learned body wanted loyalty.
To th' other he sent books, as well discerning
How much that loyal body wanted learning."

At the time of my last visit to the Public Library at Cambridge, my attention had not been turned to the point dwelt on in this paper. During the few hours that I was enabled to spend in that vast labyrinth of books, unsurpassed by the Bodleian itself in its air of venerableness and in the richness of its treasures, I was engaged in obtaining momentary glimpses of a *Cicero de Officiis*, printed by Faust in 1466; a manuscript of the Bible, in English, of the year 1430; the Catholicon, printed in 1460, by Guttenberg; a copy of Coverdale's Bible, and a multitude of Caxtons. Otherwise, a volume of contemporary academic exercises of the date of 1760, fellow to that accidentally stumbled on at Oxford, might readily have been found. The shapes, style and flavour of the pieces would, without doubt, have resembled those of the samples that have been supplied to the reader with sufficient abundance from the "Pietas Oxoniensis." I find evidence of the existence of the Cambridge volume, in an epigram to be read among those in the "Elegant Extracts." For the sake of a piquant antithesis, an epigrammatist will, as all the world knows, say almost anything. The assertion of this writer, therefore, that the Cambridge productions on this occasion were inferior to the Oxford ones, both being bad, has not much weight. It is entitled "The Friendly Contest," and reads thus:

"While Cam and Isis their sad tribute bring
Of rival grief, to weep their pious King,
The bards of Isis half had been forgot,
Had not the sons of Cam in pity wrote;
From their learned brothers they took off the curse,
And proved their verse not bad by writing worse."

It is certain that Cambridge erected a magnificent statue of George the Second, of life size, in marble. It stands to this day on a pedestal in the Senate-house, on the left side as the visitor passes up to the Chancellor's chair. The sculptor's name was Wilton. I have spoken of this statue before, on more than one public occasion. It represents the King, according to the taste of the age, in the dress or undress of a Roman imperator. He leans on a truncated column, round which obliquely passes a series of medals commemorative of military successes; and he encircles with his right arm a globe duly marked with meridian

lines, and showing the Western hemisphere, across a goodly portion of which is engraven, in characters of a considerable size, the word CANADA. From the moment, long ago, when I made the discovery of this inscription, while in jest brushing off, "*à la* Niebuhr," from the orb round which the arm of the King was thrown, some of the accumulated dust of years, this statue—which to persons in general is not especially attractive—became, to me, an object of peculiar interest; as, I think, it will also prove to any other Anglo-Canadian, who, when passing through Cambridge, may, for the sake of seeing his country's name in a situation so unique, step into the Senate-house and examine the statue which it contains of George II.

The Latin and Greek pieces, from which we have been giving extracts, have rendered the idea of Canada in classic guise, and in the midst of classic surroundings, familiar to us. It happened that, like Stadacona, Hochelaga, Cacona, Kamouraska, Muskoka, and other now familiar names, Canada, in the lips of the first immigrants, underwent little or no change—none in the termination. In passing into Latin, it consequently required no manipulation to make it conform to the laws of that tongue. It became at once a feminine proper name of legitimate form, and admitted of "declension," like any other name of a country ending in *a*.

In French, strangely, Canada is a masculine noun. We shall remember that it used to be "Bas Canada," "Haut Canada." Had the word assumed, by some chance, a form resembling "Acadie," then it would have been feminine in French, on the analogy of the numerous feminine names of regions with that termination. And then in Latin (as in English), it would have been Canadia, as from Acadie has come the beautiful word Acadia; and from Algérie, Algeria. (We have seen that there was a poem published in 1760, entitled "Canadia.") But entering the French language unchanged from the aboriginal tongue, it remains masculine. We may suppose "le pays" to be understood before it; and that the full expression really is "the Canada country," as we say, "the Lake Superior country," "the Hudson's Bay country." The French poetic imagination must have suffered a certain degree of violence, when, as was recently the case, the "two Canadas" were impersonated on the seal of the United Province by two tall, comely females. By a rule of French grammar, to this day "Quebec" and "Ontario" are both of them of the male

sex. On a medal of Louis XIV. and elsewhere, the city of Quebec is "Kebeca.")

The most recent reappearance of "Canada" as a Latin word, is on the massive and beautiful medal by Wyon, struck to perpetuate the memory of the confederation of the British North American Provinces. CANADA INSTAURATA is thereon to be read—CANADA RE-FOUNDED, CANADA RESTORED to more than its pristine significance, to more than its original comprehensiveness. The Dominion of Canada, according to the intention of the statesmen of the mother country, is to extend from the Atlantic to the Pacific. The name had never before such a wide application as this. "New France," the old synonym for Canada, was understood by French statesmen of the reigns of Louis XIV. and Louis XV., to cover a very large area. But the geographers of those days had not yet the data for mapping out the continent with any minuteness much to the west and north of the head waters of the St. Lawrence. New France was accordingly, in their conceptions, bounded in those directions probably by the limits of the basin of that river. The name "Canada" has thus been destined to a wider and wider significance, in successive years. As a territorial appellation, it was at the outset, as we all know, a mistake on the part of the first voyagers up the St. Lawrence. The natives, coming out to the ships from different points along the river, would point to their wigwams on the shore, articulating the word "Kanata." The new comers, under the influence of the old-world notion that every region must of necessity have a distinct appellation, imagined that they heard in the frequently repeated vocable, the name of the country into the heart of which they were penetrating. It was a mistake; for we do not find that the aborigines, either here or any where else, were in the habit of forming local generalizations. They designated particular spots from some striking physical feature, or from some occurrence happening there. For areas they had, in their primitive condition, no name, in the *European sense*. *Among the* French, nevertheless, Canada became, in the manner just described, established as a regular territorial designation. The name attached itself also to the great river which had been their highway into the interior of the country. The Gulf had been named after St. Lawrence by Jacques Cartier, because he entered it on St. Lawrence's day; but the river itself was known by the supposed designation of a portion of the country through which it flowed. In the rude map accompanying my copy of the *Periegesis* of Dionysius, and

illustrating the additions of his continuator, the St. Lawrence is marked "Flumen Canada;" and in the Greek text we have, as we have heard, the stream of the "fair-flowing Canada" spoken of. In Hubert Jaillot's old map of America, of the date 1692, examined by me in 1867, in the Library at Lambeth, the St. Lawrence is called "Riviere du Canada." In this map the sea along the whole coast of the present United States is also styled "Mer du Canada."

Some of the old geographers undertook to teach that the country derived its name from the river, and so probably misled some of the writers in the Bodleian folio. Thus Gordon, in his "Geography Anatomized," a work of repute, in its 6th edition, in 1711, in a section entitled "Terra Canadensis," says the land is so called from the "River Canada," which divides it into two parts. The north part, he says, is called "Terra Canadensis Propria," and contains *Nova Britannia* and *Nova Francia* The southern part contains Nova Scotia, New England, New York, New Jersey, Pennsylvania, Maryland, Virginia, Carolina. "Terra Canadensis Propria," Gordon continues, being the northmost of all the rest, is esteemed none of the best; but being so slenderly known as yet, he candidly says, we pass on to *Nova Britannia* and the rest. And again: Morden, author of a quarto Geography bearing the date of 1680, at page 366, teaches to the same effect. "Canada," he writes, "so called from the river Canada, which hath its fountains in the undiscovered parts of this tract; sometimes enlarging itself into greater lakes, and presently contracting into a narrow channel, with many great windings and falls, having embosomed almost all the rest of the rivers. After a known eastern course of near fifteen hundred miles, it empties itself into the great bay of St. Lawrence, over against the Isle of Assumption [Anticosti), being at the mouth 30 leagues in breadth, and 150 fathoms deep. On the north side whereof, the French (following the track of Cabot) made a further discovery of these said northern parts, by the name of *Nova Francia.*"

It is true that many countries and regions on this continent were named from rivers by the European immigrants, as Ohio, Arkansas, Delaware, Iowa, Tennesee; but not Canada. Morden's expression, when he speaks of the river Canada "enlarging itself into greater lakes," reminds one of Wordsworth's allusion to the St. Lawrence in the Excursion, where he speaks of

> "——— that Northern stream,
> That spreads into successive seas."

In respect to the prosodiacal quantity of the penultimate syllable of "Canada," we may notice that the pseudo-Dionysius quoted above makes it long, contrary to modern usage. He says, as we shall remember

γαίην καλέουσι Κανάδην.

In the exercises of the Oxford versifiers, on the contrary, the quantity of that syllable is held to be short. In this connection it may be remarked that in the *Perigesis* continued, and also in the pieces contained in the Bodleian folio, the first three syllables of "America" form always a dactyl, in accordance with the popular pronunciation of the word. Nevertheless, by the old prosodiacal rule, "Derivativa eandem ferè cum primitivis quantitatem sortiuntur," the *i* is by nature long, as always in the Teutonic syllable *ric* or *reic*. *America* is from *Americus*, the latinization of the first name of Amerigo Vespucci. And Americus was a softened form of Albericus, as the name appears in my own copy of Peter Martyr *De Rebus Oceanicis et Novo Orbe-Coloniæ* 1574, where the editor Gervinus Calenius says the "Divine Favour," "terras novas majoribus incognitas, regibus catholicis, ductu atque auspiciis cum aliorum, tum imprimis Christophori Coloni sive Columbi, et Alberici Vespucii, patefecit."

One more observation relating to Canada in Latin guise must be subjoined. On the Confederation medal, bearing on its reverse the inscription *Canada Instaurata*, the Queen's head is seen veiled and crowned. Posterity will understand the artist's symbolism, and with more tenderness than some contemporaries manifested, will recall the touching devotedness of Victoria to the memory of the husband of her youth. The artist, in designing this interesting and grand head of the Queen, had doubtless in mind one of the medals of Livia, the Empress of Augustus, long "the mirror of Roman mothers," as the Historian of the Romans under the Empire speaks (v. 165). There are three rather well-known medals of this Empress existing. On one of them she is represented simply as Empress, with the common legend *Salus Augusta*. On the second she is supposed to personify *Justitia*, Justice. On the third she is represented as Pietas. On this last the head is encircled with a tiara, and is veiled. This was struck by Drusus, her grandson, during his second consulship, as inscribed on the medal itself (DRVSVS. CÆSAR. TI. AVGVSTI. F. TR. POT. ITER.), and represents Livia as the faithful widow of Augustus. It is curious to find in Tacitus (An. iii. 34) the record of an express quotation by

Drusus at this particular period, of the example of Livia as formerly a devoted wife. "Quoties," he says, in a speech deprecating the threatened prohibition of public officers taking their wives with them into the provinces, "quoties divum Augustum in Occidentem atque Orientem meavisse, comite Livia?"

The legend, "Juventus et Patrius Vigor," to be read on the Confederation medal, is from the magnificent ode of Horace, usually entitled the "Praises of Drusus"—the praises of the uncle, namely, of the Drusus who struck the medal in honor of Livia. The Drusi were a family in which bravery seemed to be hereditary. This is the burden of the ode. It was—the poet reminds the Roman people—one of this family that helped, as consul, to overthrow Hasdrubal at the Metaurus, B. C. 207, the event that brought about the final retirement of Hannibal from Italy.

Whoever it was that selected the legend for the medal, he has adroitly given a hint therein of the modern policy of Great Britain in relation to the colonies as they become populous and strong. They may be timidly anxious still to keep under her wing; but when fullfledged, they must be taught to undertake for themselves. *Juventus et patrius vigor*, as the words stand in "The Praises of Drusus," are the qualities or instincts moving a now mature young eagle, at the very instant of his quitting the nest, to provide bravely for himself, however unwonted before was such an occupation. The young soldier, Drusus, step-son of Augustus, has no sooner quitted the home where he had been reared and trained, than, by a splendid victory, won amidst the defiles and fastnesses of the Tyrolean Alps, he lays the whole empire under an enduring obligation. He is consequently compared by the poet to the only just fledged but spirited young eaglet—

> "Whom native vigor and the rush
> Of youth have spurr'd to quit the nest,
> And skies of blue in springtide's flush,
> Entice aloft to breast
> The gales he fear'd before his lordly plumes were drest,—
> Now swooping, eager for his prey,
> Spreads havoc through the flutter'd fold,—
> Straight, fired by love of food and fray,
> In grapple fierce and bold
> The struggling dragons rends even in their rocky hold."

The application is obvious. This famous fourth ode of the fourth book of the Odes was previously associated with Canadian history.

The inscription on the seal of the former Province of Lower Canada was from it—

"Ab ipso
Ducit opes animumque ferro."

A part of it also is the Alcaic stanza familiar to recipients of prizes at Upper Canada College, from the time of its foundation:

"Doc'rina sed vim promovet insitam,
Rectique cultus pectora roboranti,
Utcunque defecere mores
Dedecorant bene nata culpæ."

The inscription on the seal of the Province of Upper Canada was also from Horace:

"Imperî
Porrecta Majestas * * *
Custode rerum Cæsare."

But this was from the fourteenth ode of the fourth book. Formerly Virgil was held to be a source of mystic oracular responses; but with colonial ministers Horace has evidently been the favorite for such purposes. One of them (Lord Lytton) has even given the world a translation of the odes and epodes of Horace.

The seal of the province of Quebec before the division of the country into Upper and Lower Canada may be seen figured on the title page of "The Laws of Lower Canada," printed at Quebec, by J. Neilson, in 1793. Its motto, "*Externæ gaudent agnoscere metæ*," which is to be found neither in Virgil nor Horace, seems to indicate the supposed pleasure with which the new monarch was welcomed after the conquest. A king, crowned and robed, stands before a map unrolled, and points with his sceptre towards the St. Lawrence. The legend round the outer edge of the seal is "*Sigillum Provinciæ Nostræ Quebecensis in America.*"

## ON THE CAUSE OF GLACIER MOTION.

BY JOSEPH L. THOMPSON.

The cause of glacial action, or, as it is more briefly termed, the "glacial theory," has been a favorite subject of discussion among geologists, from Dr. Buckland downwards. The effects of glacial action, though apparent enough in many imperishable markings and striæ in the rocks and mountain-sides in various countries in both the

old and new world, have now been satisfactorily explained. That the scratches and groovings referred to have been, and, indeed, only could have been caused by the action of rocks and stones imbedded in ice and forced over the surface of the earth, seems to have been admitted by all; but, how such immense masses of ice, extending over superficies of many square miles, should have been so impelled, has, I believe, hitherto been considered a mystery; at least, so far as I know, no cause adequate for such tremendous results has been suggested.

It may be considered presumptuous in one unknown to science, to venture to offer a solution of a mystery that has, till now, eluded the attempts of the scientific word; but I believe it to be better to try and do good, even with the certainty of failing, than to sit down in apathy without making the attempt.

It is a well known fact that all glaciers have an onward or progressive motion. The immense heaps of rocks, stones, mud, &c. (moraines), which mark the limits of glaciers, prove this beyond a doubt; as do also the differences between the summer and winter limits of the same glaciers. This motion is invariably in a direction from its source in the mountain to its extremity in the valley (for it is necessary to the formation of a river of ice that it should be confined at each side, as its lateral expansion would deprive it of its distinctive character: a valley, therefore, is an indispensable condition of a glacier), irrespective altogether of the inclination of the bottom of the valley; thus disproving the gravitation theory of Prof. Forbes, of Edinburgh, which for some time obtained favor among geologists, though, in my opinion, the theory of Prof. Agassiz, of Switzerland, was, albeit short of the truth, nevertheless, a much nearer approach to it. He imagined that the glacier being full of chinks, owing to its being composed of snow and ice, and on its being exposed to the action of the rays of the sun portions of the ice were melted, the water flowed into these chinks; and thus, by the alternate thawing and freezing of the water so lodged, the movement of the whole mass was effected. Surely never was the solution of a great scientific difficulty so nearly attained: another step, and it had been solved. It seems to me that the great defect in the learned Professor's reasoning lies in this, that the progressive motion is ascribed to the alternate thawing and freezing of the *water* in the cavities in the glacier, and the consequent contraction and dilatation of the *water*, and, by that much only, of the volume of the glacier! Now, if this were true, absolutely, it would apply with equal force to the glacier throughout its

entire course; whereas, as all glaciers originate above the line of perpetual snow, it is obvious that however well this theory may apply to as much of it as the rays of the sun might affect so as to melt it, it is absolutely certain that it could not apply to that portion where the ice does *not* melt. Another reason must therefore be sought for, that will apply to the glacier as a whole. I venture, then, with all deference, to submit the following as one that, whether it solve all the difficulties of this difficult question or not, is, I think, worth a moment's consideration. *The alternate thawing and freezing*, that is, the expansion and contraction *of the glacier, of the enormous mass of ice itself, constitutes the motive power of this extraordinary phenomena.* The melting and congealing of the water in the chinks are opposing, not assisting, forces; because, although water in the act of freezing does expand, this takes place generally and in the greatest degree at night; therefore the contraction of the bulk of the water is not coincident with, but in opposition to the expansion of the volume of the glacier by the action of the sun, which takes place during the day; and the act of contracting, consequent on the diminished temperature, and therefore increased density, or, which is the same thing, diminished bulk, takes place at night, the very time that, according to Agassiz's theory, the greatest dilatation of the mass ought to take place. These are antagonistic forces, whose effects must be neutralized. These, added to the stupendous *vis inertiæ* of the glacier itself, show the amazing power of the apparently simple action of difference of temperature upon inert matter. The resultant is easily predicated. The mass, being once set in motion, moves in accordance with a known universal law of nature, *i. e.*, that expansive forces move in the direction of the least resistance, that is, downwards towards the lower and wider extremity of the valley. It may be, and generally is, assisted by the formation of the sides and bed of the valley and laws of gravitation; though were these aids absent, it would still advance in that direction, because, being frozen and solid at the upper extremity, it could not move towards that. It is therefore shut up to go the other way, that is, in the line of the least resistance.

This seems to me to be the *rationale* of the onward motion of modern glaciers; and I see nothing in it which will bar its application to a system or series of glaciers, however extensive, however great, the operation of the laws which regulate the movements of matter being absolute and invariable.

Lindsay, February 17, 1870.

# THE LAW OF COPYRIGHT.

## PIKE vs. NICHOLAS.

In an article in the last number of the *Canadian Journal*, entitled "Race Head-forms and their Expression by Measurements," reference was made to a suit prosecuted in the English Court of Chancery, before the Vice-Chancellor, Sir W. M. James, in which Mr. Luke Owen Pike, a graduate of Oxford, and member of Lincoln's Inn, author of "The English and their Origin, a Prologue to Authentic English History," charged Dr. Thomas Nicholas, a professor in Carmarthen College, with plagiarism, literary piracy, and appropriation of the contents of that work, in the production of his "Pedigree of the English People." The suit is one of great interest to literary men, as it raised questions involving the practical interpretation of the law of copyright, and the whole bearings of their vested rights in their own brain-work. There is something curious in the very prosecution of a suit for the restitution of a man's rights in reference to his own published thoughts and inductions, which is calculated to arrest attention as a characteristic phase in the highly artificial development of modern civilization. In this respect the student of science stands at a peculiar disadvantage. The novelist or other caterer for popular tastes receives in general so abundant a pecuniary reward as to furnish no inadequate compensation, were his literary claims in any danger of invasion. But the laborious researches of the student of science rarely produce any more practical return for the cost of publication, than the reputation thereby acquired. It is not, therefore, to be wondered at if authors of scientific treatises should be found prone to evince even undue sensitiveness in reference to the misappropriation of the fruits of their literary toil.

It chanced that the readers of this journal had a special interest in some of the questions raised in the suit of *Pike* v. *Nicholas*; for while plaintiff and defendant figured in the reports of the trial as contending for originality of views, or priority of publication, in reference to sundry results of ethnical study and research, we had no difficulty in showing that many of those had been published by us years before, in the pages of this journal, as well as in original works. The occasion was a legitimate one for reclaiming our own; for more than one contributor to this journal has had repeated reason to complain of such ignoring of his

published views, and misappropriation of his labours Soon after its publication, however, we received a letter from the defendant, Professor Nicholas, protesting against the article in question, in which, as he says, "with no purpose to injure, I am quite sure, but doubtless out of zeal for justice and literary honor, you do me and a book which I recently published ('The Pedigree of the English People'), a great injustice. That book and its author, I am happy to tell you, have been fully vindicated before the High Court of Appeal in Chancery." Dr. Nicholas further adds: "From what quarter you got the *ex parte* statement of facts on which you rely, I do not know; but it was clearly a quarter wholly unworthy of reliance. You have, however, based your remarks upon the facts given you, and taken Vice-Chancellor James's judgment as just and final; whereas, as now proved, it was neither the one nor the other. That judgment was at once declared, by all men acquainted with the two books, and capable of understanding the question, as absurdly unfair; and while you were making use of it in Canada to bring down upon the temporary victim a greater weight of odium, I was engaged here in vindicating, before the Lord Chancellor and Lord Justice Giffard, my own rights as an author, and collaterally your right to priority in the very matters in which you claim priority in your article of November last. As you will see from the pamphlet I send by this post,* the Vice-Chancellor's judgment has been dismissed without hesitation, and the merits of my book, as an honest and independent production, properly vindicated. If you glance at the pamphlet, although the discussion is necessarily condensed and incomplete, I think that you will see that the decree did me a gratuitous injury; and I trust that you will also see, on consideration, that the *Canadian Journal*, which has assisted in augmenting that injury, will only act fairly by making fully known to its readers the other side of the question."

The *Canadian Journal* cannot be justly accused of going beyond its legitimate province, in giving publicity to a judgment of the English Vice-Chancellor on an important question of literary copyright, in which its own contributors had special claims and rights involved; nor can we, with propriety, be charged as having "taken the Vice-Chancellor's judgment as just and final." Its finality was a question

* An Examination of Vice-Chancellor James's Judgment," with an account of its dismissal by the Court of Appeal in Chancery, in the case of the book entitled "The Pedegree of the English People," by Thomas Nicholas, M.A., Ph. D., F. G. S

wholly beyond our cognizance. As to its justice, our notice of the evidence was chiefly directed to show that much of the asserted claims to originality on which it was based, did ourselves injustice, and could not be sustained. That the decision of Vice-Chancellor James was appealed against, and has since been reversed, may indeed be reason for further review of the subject, in the light of new facts that have transpired, but at the date of publication of the article referred to, his judgment was the latest fact in the case; and, had we then known of the contemplated appeal: Mr. Luke Owen Pike, and not Dr. Nicholas, would have had most reason for objecting to a review which set forth reasons for denying the right either of plaintiff or defendant to claim originality in certain lines of research and induction, as set forth in the evidence, or to priority in publication of the results.

In reality, it appears to us that Mr. Pike's great error was his choice of the tribunal to which he appealed, the final award of which is now so triumphantly produced by his rival. His book bears abundant evidence that pecuniary results were not those he had chiefly in view though doubtless they would have been no unwelcome accompanimen, of successful authorship. The sweeping judgment of the Vice-Chancellor, even had it remained unchallenged, would have carried no such weight among those whose opinion we believe Mr. Pike chiefly values, as the verdict of competent scientific and literary critics. True, the immediate award of the press is subject to many chances of error, and to still more indirect influences than any court of law; and its judgment in not a few cases depends on the little coterie, or literary clique, which controls the magisterial We of critical journalism. But a work possessed of any substantial merit outlives the first uncertain veerings of the critical weather-cock, and is sure to receive its true meed in the end. In the case of any book that has a recognised scientific or literary authority a dozen years after its publication, what do all the reviews that heralded its original appearance amount to? They may, indeed, have affected its immediate sale, and so, when unfavourable, have diminished the author's chances of profit; but the final estimation of the book at its true worth is independent of such bias of prejudiced judgment.

But Dr. Nicholas further asserts that the sources from whence our information was derived, whatever they were, were "wholly unworthy of reliance." These sources are no mystery. They were the *Times*, of

April 29th, May 3rd, 25th, &c., and the *Anthropological Review*, of July, 1869. To all appearance, the one confirmed the other; and it will scarcely be assumed by impartial readers that we were producing a report "wholly unworthy of reliance," when sustained by an agreement between journals so dissimilar in sympathies and aims. But if we had had any doubts before as to the employment of reasonable diligence in informing ourselves on the subject in question, they would be removed by the pamphlet of Dr. Nicholas; for we are there warned that "the statements in the London morning papers, in reference to this case, are by no means to be relied upon;" and no more reliable sources of information are named by him. His position in this respect was indeed surpassingly grievous. Even his own counsel failed him, if they did not positively play into the hands of his opponents; for, as he says, "My counsel, to my utter astonishment, withheld all the evidence as to *common sources* which I had prepared; believing, as it seems, that the case was safe enough without it; and made silly admissions and gratuitous statements, as if on purpose to strengthen the other side." Dr. Nicholas accordingly took up his own case in the Court of Appeal; and, in spite of the proverbial fate of the client who trusts to such counsel, he is able to report: "Though no lawyer, I pleaded my own cause on appeal, and had no difficulty in overthrowing the adverse decision."

But all this belongs to a subsequent date. When we wrote, the "admissions and gratuitous statements" of Dr. Nicholas's own counsel (on his classical acquirements, for example,) were the sole record we could appeal to; and could scarcely be suspected, by us at least, of being set forth "on purpose to strengthen the other side." The author's own pamphlet was not yet written; only the ordinary and usually reliable channels of news were accessible to us; and if neither the daily press, nor literary or scientific periodicals, were to be trusted in this peculiar case, our final resort could only be to the judgment of the Vice-Chancellor.

As, however, the *Anthropological Review* is the organ of a Society, of which the plaintiff in the original suit is a vice-president, Dr. Nicholas may have some ground for his belief that its report is biased, at any rate in the selection of some of those unfortunate admissions and gratuitous statements, which naturally carried all the more weight till they were met by counter evidence in the subsequent appeal, owing to their actually forming part of the defendant's own case, as set forth

for him by his representatives in court. It will be seen, for example, from a remark in Lord Chancellor Hatherley's judgment, that he suffered under unjust imputations as to deficient scholarship; in part, at least, owing to the line of defence adopted by his own counsel; in part also, probably, from erroneous inferences, based on the comparison instituted between the rival publications in the absence of all rebutting evidence. But on this point we have even now no adequate means of judging, and can only make the satisfactory atonement for all injustices resulting from the first trial and adverse judgment, by producing the later awards of the Lord Chancellor and Lord Justice Giffard, setting aside the Vice-Chancellor's decree.

So far as could be ascertained from the reports of the first trial to which we had access—and apparently no better were available,—it appeared that sundry witnesses, of literary and scientific repute, were summoned by the plaintiff to testify their belief that certain opinions as to the physical characteristics of the British population, Saxon and Celtic, were new, set forth for the first time in Mr. Luke Owen Pike's work, and arrived at by its author as the fruits of original and long-continued research. Without either calling in question the industry and research claimed for him, or doubting that his book was the honest result of much labour, we asserted very distinctly that the opinions claimed for him by his witnesses as having been set forth for the first time in his work, were neither original nor new; but that, on the contrary, most of them had been published years before in this journal, or in other works there named. We, not unnaturally, assumed that the question of originality was submitted to the court as between plaintiff and defendant. But in this it seems we were mistaken; though no indication of the plea of mere common sources as borrowers appears to have been introduced in the original defence.

So far as Dr. Nicholas is concerned, it now seems he is perfectly contented to admit all that we then asserted, and indeed claims to have produced nearly the same in evidence before the Lord Chancellor, while still unaware of our assertion of our own literary rights. He has accordingly included among other documents forwarded to us the following "verbatim extracts from the short-hand writer's report," along with copious extracts from the final judgment of the Higher Court, with a request for their publication in the *Canadian Journal*. In compliance with his appeal, we print them here, in full:

("PIKE'S CLAIM TO ORIGINALITY IN THEORY ON LONG HEADS OF ENGLISH.")

*Nicholas's Pleadings, Dec. 4, '69, pp. 32, Physic. Charact.*

"Now, my Lords, it is a fact that, forgetting the contents of his book, the plaintiff (Luke O. Pike) has boldly laid claim to originality in this very matter. It is a fact that his friend Blake has sworn positively that the plaintiff advanced this theory, and *that it was a novel theory.* It is a probable fact that the Vice-Chancellor believed all this. I will give the proof.

"On page 20 of the plaintiff's evidence (short-hand writer's) we have these questions and answers:—'*Q.* You applied that conclusion (that the early British were long-headed) to your argument as regards the origin of the early British?' *A.* In regard to the origin of the early English.—*Q.* So far as that went, is that, to your knowledge and belief, an original view? *A.* Yes.—*Q.* Have you, in the course of your reading, ever found that argument applied to that particular subject? *A.* No, I cannot say that I have.'

"This distinct claim to originality was supported as follows by Mr. Blake: On page 26 of his evidence, in answer to a question by the Vice-Chancellor, he says, 'Mr. Pike's argument is, that the Celtic race had long skulls; that the Teutons had round heads and short skulls; that the modern Britons have long skulls, and therefore the modern English or modern Britons are descendants of the ancient Britons. *Q.* That is an ovel view, you say? *A.* That was novel.—*Q.* That was novel at the time Mr. Pike wrote his book? *A.* That was a novel view.' And he finishes up on this question by saying, on the next page (27): 'All French writers on the subject asserted that the Celts had short skulls.'

"Now, it is not my function to say here that this evidence is contrary to the truth. This evidence greatly influenced the mind of the Vice-Chancellor. I had not the opportunity given me of showing its inaccuracy by reference to books published prior to the plaintiff's book, and which I had brought into Court. I am anxious now to refer to one or two of these, that your Lordships may judge of the truth or untruth of these depositions.

"As long ago as 1863, Dr. Daniel Wilson's great work, *The Prehistoric Annals of Scotland,* made its appearance in a second edition; and in that work, known to all students of British Anthropology, vol. 1, p. 278, occur these words, in reference to the *modern English head-form:* 'The insular Anglo-Saxon race, in the Anglican and Saxon districts, deviates from its continental congeners, as I conceive, mainly by reason of a large intermixture of Celtic blood, traceable to the inevitable intermarriage of invading colonists, chiefly male, with the British women. But if the Celtic head be naturally a short one [a notion he is combating], the tendency of such admixture of races should have been to shorten the hybrid Anglo-Saxon skull, whereas it is essentially longer than the continental Germanic type.'

"This was published three years before the plaintiff's book. But I wish to rely rather on another publication, and for the reason that it can be proved to be in the plaintiff's possession at the time he wrote his MS in 1865.

"The same learned writer, Dr. D. Wilson, whose views in the work already referred to had excited so much attention, published an elaborate article on the

'Physical Characteristics of the Ancient and Modern Celt,' in the *Canadian Journal*, of November, 1864, in which he at greater length developed the theory now in question. That journal is in the library of the Anthropological Society, of which the plaintiff is, and was then, a member.

"But this is not all. He might be a member of the Society, and yet not peruse this book in its library. But that article was reprinted in the *Anthropological Review*, of London, in February, 1865, just one month before the plaintiff forwarded his MS., and that the plaintiff *saw and perused* the article in question, is proved thus: Each member of the Society, by right of membership, received the *Review*, as intimated at p. lxix. of the Society's Journal, of the same year. 'The *Anthropological Review* has been punctually supplied to each Fellow quarterly.'

"But it is clearly proved, and set beyond all question, that the plaintiff had *read* this article, by the plaintiff *himself*, although at the same time he, curiously enough, disowns any obligation to it! In a note on page 170 of his volume, he says. 'Since this portion of the Essay was written, there has appeared in the *Anthropological Review*, vol. iii. p. 52–84, an excellent paper by Prof. Wilson, of Toronto, on the Physical Characteristics of the Ancient and Modern Celt. He too has derived much of his information from the hatters. It fully *confirms* all that has been above stated.' The employment of hatters may strike one as rather an original idea; but it is a curious and suggestive coincidence that the *Canadian Journal* (November, 1864), containing Professor Wilson's elaborate measurements, furnished by hatters, British and American, had reached London before the date of plaintiff's first correspondence with London hatters, Lincoln & Bennett, &c., (December 5th and 10th, 1864.)

"This article of Prof. Wilson's, then, being thus known to plaintiff when he wrote this Essay, let me show your Lordships whether it contained the theory on the English long head-form which the plaintiff claims as his own sole invention. On page 61, *Anthropological Review*, vol. iii., 1865, Prof. Wilson writes thus: 'On this subject Dr. Anders Retzius remarks: 'During an excursion in Great Britain, in 1865, I was able to satisfy myself anew that the dolichocephalic form is predominant in England proper, in Wales, in Scotland, and in Ireland. Most of the dolichocephalæ of these countries have the hair black, and are very similar to Celts.' The Anglo-Saxon cannot be affirmed to be a pure race. Apart from later Danish, Norse and Norman intermixture, it differs mainly, as I conceive, from its Germanic congeners, by reason of a large admixture of Celtic blood, traceable primarily to the intermarriage of English and Saxon colonists with the British women. Such a process of amalgamation is the inevitable result of a colonisation chiefly male, even where the difference is so extreme as between the white and the red or black races of the New World. But the Anglo-Saxon intruder and the native were on a par physically and intellectually; and while the former was pre-eminent in all warlike attributes, the latter excelled in the refinements of a civilization borrowed both from the pagan Roman and the Christian missionary. There was nothing, therefore, to prevent a speedy and complete amalgamation. But if this was an admixture of a dolichocephalic with

a brachycephalic race, the result should be a hybrid skull of intermediate form; whereas the modern Anglo-Saxon head is essentially longer than the continental Germanic type.'

(After reference to the first edition of Dr. Wilson's Prehistoric Annals, 1851,)—

"I leave it to your Lordships now to judge of the *originality* of the plaintiff's theory in *this* branch of it, viz., the origin of the modern English long-head, and of his idea of employing 'hatters,' as well as of the nature of the depositions made by him and his friends, C. Blake and Dr. Beddoe."

So far, therefore, it does not appear that there is anything to retract in reference to what was the essential point of the article in question, in its bearing on the authorship of opinions in dispute. Neither can we be expected to retract, or apologise for, the publication of Vice-Chancellor James's judgment on this important question of literary copyright, although, at a date subsequent to our publication, the highest court of appeal reversed his decision. How far that reversal absolutely oversets the previous judgment, the reader can determine for himself. But Dr. Nicholas tells us in his pamphlet that "fully a third of the Vice-Chancellor's judgment consists of a careful statement of the plaintiff's case, in the supposed words of the plaintiff himself. There is no corresponding adequate representation of the argument on my side. This at once indicates the leanings of the judge." The leanings of his own counsel were, it would seem, in the same direction; that of the London morning papers, and of scientific and literary journals, much on a par; so that any chance of our catching an impartial glimpse of the case would seem to have been hopeless enough.

But objectionable assertions and admissions, referred to in the daily press, reported at some length in the *Anthropological Review*, and left uncontroverted, it would appear, in the Vice-Chancellor's court, came under review before the Lord Chancellor, and are dealt with, in part at least, in his final judgment. We accordingly comply with Dr. Nicholas's appeal for justice, so far as this journal is concerned, by printing the following abstracts of the judgments pronounced by the Lord Chancellor and Lord Justice Giffard. Both these extracts, and those previously produced from Dr. Nicholas's own pleadings, are given *verbatim*, as furnished by him, and include all that he has seen fit to forward to us. As has been already observed, he undertook his own case in the Court of Appeal, having met, as he believed, with scant justice at the hands of his counsel in the former trial; and to this the Lord Chancellor makes complimentary allusion in the opening sentence:

## THE LORD CHANCELLOR'S JUDGMENT.

PIKE *v.* NICHOLAS.—Dec. 1869.

*(Verbatim Extracts.)*

"In many cases we have to regret the absence of counsel, but in the present case we certainly have no occasion to express any regret in that respect. This is peculiarly a case requiring such minute investigation and comparison as would render it difficult for counsel to find time to enter upon.

"In no respect will it be found that we shall lay down general principles in any way contrary to those which are laid down by the learned Vice-Chancellor. If we have the misfortune to differ from him, it is entirely in the application of these principles to the particular works before us. It is confessedly one of the most difficult problems brought forward for the court to solve with reference to cases of piracy, when there is a common subject with which parties start, when there are common authors which are open to both of them, and when portions of the one work which are said to resemble portions of the other work may be deduced from those common authors to which each is at liberty to resort.

"I shall first advert to the circumstances under which these works were composed, and then to the *common sources* to which it is open to either party to apply himself. I think that the Vice-Chancellor has not given sufficient weight to either of those two circumstances.

"First, there was a common origin of subject, which it is very important should be borne in mind throughout in the consideration of this case. The subject was originated in the minds of both these gentlemen by the prize which was offered for the best essay on the origin of the English Nation, &c. Therefore I find in the outset (as is to be expected) the writers of both these treatises taking exactly the same view in this respect, viz, that the ancient Britons largely preponderate as an element of the English nation. That being so, each of them would naturally begin to look about for the authors bearing on this question. . . . There are a variety of authors on the subject, especially Dr. Prichard, to whom, in the first instance, both of them would have recourse. . . . the existing evidence of language, physical characteristics, customs and habits of life, &c. . . . Therefore, before approaching the question, whether or not one author has taken from the other, it must be borne in mind that a great deal of similarity will naturally be expected to be found in the works of authors writing on such subjects as these.

"Then, as to common sources. When once it is established that there are common sources, it will naturally be expected that there will be great similarity in the statement of the facts which are narrated in those common sources. Accordingly there may be traced throughout the work of the defendant a great similarity to the outline and plan of that of the plaintiff. With regard to that part of the case, I think the Vice-Chancellor has laid a great deal too much stress upon the fact of the division of the subject in the defendant's work being similar to the division of the subject in the plaintiff's work. I am allowing at present that the defendant's evidence—I mean what he has stated on his oath,—is not to enter into the matter at all, but that we must look only to those documents

(defendant's MSS. of the work) which are admitted on the part of the plaintiff to be genuine. The documents marked A and B must be admitted on the part of the plaintiff to be genuine, because the Vice-Chancellor has taken them as admitted. . . . Looking to these documents, marked A and B, which are the MSS. of the original treatise. . . . I find in B those very elements drawn out, and I think very naturally drawn out, which we find in the plaintiff's work. . . . But I think we must take the defendant, in his first treatise, . . . before he could possibly have seen the plaintiff's treatise, to have originated a division which was proper and peculiar to a subject of this character. I find in MS. B, physical, mental and moral characteristics referred to. . . .

"Then, starting with this as regards the plan of the work (and this is the part of the case on which the Vice-Chancellor seems in some degree to have relied), we find in the undisputed document A, the same division. . . . We find also a reference to Prichard's work, one of the common sources. It is carried on in B. . . . There is certainly enough in B to satisfy me that, without seeing the plaintiff's book [then not published], the author . . . had arrived at and mapped out a principle, . . . including, under the head of 'Physical Characteristics,' the question of colour, in which is comprehended the skin and hair, and craniology, or form of skull.

"Now, as regards common sources, I apprehend that when once it is established that there are common sources, . . . it amounts to nothing at all for the plaintiff to say, 'the defendant has cited author after author who have been cited by me;' because, when the common sources are referred to, it will be found that they both got them from the same common sources. . . . Therefore, to find Lecebonius, Tacitus, Cæsar and so on, cited, . . . really comes to nothing, when it is found they are both citing the identical passages which are for the most part to be found in Dr. Prichard's book, to which both have recourse.

"Here I was very anxious to learn whether either the plaintiff or the defendant had cited any author in addition to these referred to in this particular portion of the plaintiff's work, which is supposed to be invaded on the part of the defendant. The defendant has quoted an author from Prichard (Calp. Flaccus) who is not quoted by the plaintiff. The defendant has added to his quotations a passage from Tertullian. . . . These circumstances show clearly that the defendant went to the original source. . . . .

"This really does remove a vast portion of the subject, which seems to have impressed the Vice-Chancellor very forcibly. . . . If you refer to the common sources, then you reduce in a very material degree any legal consequences that can result from the circumstance of the books having similarity in treating of these particular heads. . . . I think the defendant has satisfactorily explained all the passages contained in the common sources, except the second passage from Retzius. . . I had another doubt as to the words *rutilatae comae*. . . Prichard makes a mistake. All through he calls this 'red hair,' instead of calling it 'reddened hair.' The plaintiff says, 'I did not fall into that error. From my classical education: I see the force of the word *rutilatae*, and I translate that "reddened hair."'

"Then, can it be said that the defendant has done exactly the same thing? Of course I cannot assume that the defendant does not know Latin. . . . He has read to us several passages in Latin, sensibly and intelligibly, and in a manner which appeared to me to show that he understood what he was reading. I am bound, therefore, to say that he is acquainted with Latin; and if acquainted with Latin, I cannot say that he could not translate the word *rutilatae* 'reddened,' just as the plaintiff had. Besides that, he evidently seems to be well acquainted with German, and he says he has looked at the German translation of Livy, and he finds exactly the same translation of the word *rutilatae* as the plaintiff's, viz., 'reddened;' showing, therefore, that from his own resources he might very well have been led to that.

"Therefore, I think the Vice-Chancellor has laid a great deal too much stress on these similarities, which are numerous, but which are well and properly accounted for.

"I come next to the part of the case which relates to the two passages of the defendant's book which have been enjoined by the Vice-Chancellor. The first passage is that with reference to Gildas, and with regard to Gildas the case is reasonably clear to my mind. . . . It must be taken as admitted ground, that on the one hand the defendant used the plaintiff's book in writing his observations on Gildas; and on the other, knowing that the subject is treated of in the *Monumenta Historica Britannica*, he went to that work, which he says they went to in common. . . .

"Then, however, says the plaintiff, 'My observations on the character of Gildas, and his prejudiced and exaggerated views, are wholly taken by you.' Upon this part of the case, again, I confess I am wholly with the defendant. I think the defendant has taken a wholly different view from that of the plaintiff. . . . He writes a line of argument which cannot fairly be designated the same as that of the plaintiff, but must be taken to be a line of argument of his own. . . .

"Where it seems to me, I confess, the Vice-Chancellor has failed to do justice to the defendant, is in this respect: he lays great weight on the common division of the subject, which I have already gone into. . . . He lays great stress on this and that author being cited. . . . 'I cite Tacitus; so do you. I cite Licebonius; so do you,' &c. And then the Vice-Chancellor winds up by asking, 'If you did not get them from the plaintiff, where did you get them from?' I think the answer to that question is, if there be a common source, that he got them from that common source.

"But I think the Vice-Chancellor had great reason to entertain a very strong feeling of distrust. There is the *Answer*, which undoubtedly states the case in a manner which, if not intended to mislead, was calculated in the highest degree to do so. . . . I think the passage in the answer [improperly drawn by counsel, and against his instructions, stating that the MSS. produced were in an unaltered state, although it was also expressly allowed that the subsection on Gildas had been written into the text, from being in the form of a note, since the plaintiff's book had been published;] I have referred to does justify us in saying that we ought not to give the defendant his costs, because it seems to me that that passage has occasioned a great deal of the litigation, and that if the whole matter

had been stated in the answer in a straightforward manner, and clearly and at once, as it has been subsequently stated [and had from the first been stated, as far as the defendant was concerned], the plaintiff might possibly have stopped the suit altogether. . . . I am of opinion the bill should have been dismissed, but, under the circumstances I have referred to, dismissed without costs."

LORD JUSTICE GIFFARD

"I have only a few general observations to add to the judgment the Lord Chancellor has just delivered. Beyond all doubt, in this case the plaintiff undertook a more formidable task than was ever undertaken before in any copyright case. . . . The task undertaken by the plaintiff was impossible, unless he could show that there were passages either actually copied, or copied with mere colorable alteration. It will not do to show merely one or two passages, but some material part of the book. . . . Then, upon referring to MSS. A, B, C and D, it is beyond all doubt that great labour and a large amount of time must have been employed, if the mere labour of writing those MSS *and nothing* else is considered. *But I am* satisfied that the defendant bestowed a great deal of labour and time on these MSS. . . . I am also satisfied of this—which, when you are dealing with a question of copyright with reference to books such as this, is of great importance,—that the book of the defendant is his own composition; that, wherever he got the materials from, they were worked up by him into his own language. . . . Then that brings me to the conclusion that there has been really no such use made by the defendant of the plaintiff's book, as entitles the plaintiff to an injunction. . . . As I said before, when we have a book which is really the composition of the defendant, written in his own language, and bearing in mind the circumstances attending the writing of these two books, it will be seen that the plaintiff undertook a task which was morally impossible."

The explanatory comments of Dr. Nicholas, inserted within brackets in the preceding extracts, we have allowed to stand, as furnished by himself, so as to do him all justice in setting forth his own case. But as he has characterised our previous notice as founded on an "*ex parte* statement of facts," it could not surprise us if Mr. Pike should retort by calling this "an *ex parte* abstract of judgments;" for we find, on referring to the *Times* of November 25th, that the Lord Chancellor is reported as stating, after disposing of much which had impressed the Vice-Chancellor, on the ground of common authorities: "In three cases, however, he was of opinion that the defendant was indebted directly to the plaintiff;" and Lord Justice Giffard closes his judgment in these words: "Considering that the defendant had certainly spent labour on the MS., and had pursued a certain amount of research, the amount borrowed was not sufficient ground for an injunction. *On* the other hand, there were assertions in the defendant's answer which were not ingenuous, and which were even in some respects wholly

untrue. His Lordship was rejoiced that the court was able to mark its reprobation of such conduct by not giving the defendant, though successful, his costs. He trusted this would be a lesson to the defendant to act in future more frankly."

It is with reluctance that we supplement the previous abstract with those passages, from what we must assume to be an impartial report; but since we are appealed to, we are bound, if possible, not to wrong the plaintiff in seeking to accord justice to his rival. Not unnaturally, the decision of the Vice-Chancellor fluttered authors considerably, as it seemed to establish a proprietory right by mere priority of compilation, giving to the first miner in the quarry of published investigation and research a right little short of that of the original author. It was not, therefore, without reason that the *Athenæum*, in reporting that "the Vice-Chancellor's judgment was dismissed," added, "Some authors will breathe more freely after this."

Various letters addressed to ourselves expressed the unusual interest which the trial has excited among literary men. One distinguished British anthropologist thus comments on it: "I see in your paper on Race Head-forms, you take up Mr. Pike and the strange trial to which his publication and that of Dr. Nicholas have given rise. I was not surprised to see the decision reversed in this famous case. Had it remained unquestioned, there would not have been any safety. Nevertheless, I cannot help thinking that Dr. Nicholas got a great deal from Mr. Pike's work."

While thus quoting the reports and opinions of impartial on-lookers, it is only fair to draw attention to an important element in the question, which is calculated to modify such a verdict. It is not a simple case of the publication of Mr. Pike's "English and their Origin," in 1866, and then of a work by Dr. Nicholas, in 1868, under the analogous title of "The Pedigree of the English People," with as great a correspondence in plan and arguments as in title. Were this the whole case, the undoubted priority of publication on Mr. Pike's part would give him a strong claim to the preoccupation of the literary field, apart from any question as to absolute originality in views or research. But when it is seen that both publications originated in a competition at the Welsh Eisteddfod, and are in reality only expansions of rival prize essays, written at the same time, on the same subject, and to a great extent based on the same authorities, it ceases to surprise us that much should be found common to both, which nevertheless is asserted to have been

written by the one without any reference to the other's work. Dr Nicholas thus states the case: "Some months before the appearance of my book, another, and smaller work, by Mr. L. O. Pike, had been published on a like theme. It is admitted on both sides that the subjects had been suggested to us by an announcement made by a public society. Both works were written simultaneously, but mine was the last published." So far, Dr. Nicholas states what undoubtedly constitutes an important element in the dispute. The question, however, on which the plaintiff's plea rests, as between him and the defendant—apart from any claims advanced by others to priority of publication,—is this: Did Dr. Nicholas avail himself to any extent of Mr. Pike's essay in the final preparation of his own for issue in the form in which it appears, as published under the title of "The Pedigree of the English People?" To this question the Vice-Chancellor directed his special attention in the original judgment; and the reader possesses, in the extracts now furnished from the final award of Lord Hatherley and Lord Justice Giffard, some means of determining how far they designed entirely to set aside the previous verdict.

In an appeal to the literary tribunal of the press, after an impartial recognition of all that requires to be allowed in reference to accessible sources of fact and opinion, undoubtedly turned to account by both writers, the rule must still be held good which gives to priority of publication, even in the work of compilation, certain rights of authorship which cannot be contravened. Some, at least, of the claims of Mr. Pike to originality, and his charges of plagiarism in specific passages, have not been sustained; but this fact still remains indisputable, as between plaintiff and defendant, that his "English and their Origin" was published in 1866, whereas his rival's "Pedigree of the English People" did not issue from the press till 1868.

As, however, we have quoted the comments of one distinguished British anthropologist, we shall add the more matured judgment of another, regarded as one of the most learned, as he has been one of the most laborious, amongst living British ethnologists. In thus completing our review of the questions in dispute, with every desire for an impartial award, we produce the following opinion of Dr. R. G. Latham, alike with a view to its bearings on Dr. Nicholas's claims of independent authorship, and in its more comprehensive relations to the law of copyright, in which every author has a personal interest:

"I inspected," says Dr. Latham, "at the request of Dr Nicholas, his work entitled 'The Pedigree of the English People,' before its publication, and as it was passing through the press. I have studied it with interest since. I have especially compared it with Mr Pike's work on the same subject ['The English and their Origin'], and that with a view of comparing the two with the decision of the Court of Chancery in favour of the author of the work first published. My personal acquaintance with Dr. Nicholas, which is but slight, has had but little to do with the investigation, which was undertaken mainly on grounds affecting literature in general It touches every writer to know, as accurately as possible, how far a later work upon the same subject as an earlier one, from the same source, and from the same point of view, can be published without risk; in other words, how far, under a certain combination of circumstances, by no means uncommon, two works upon the same subject are possible. The matter has pressed itself upon the attention of literary men often enough before now, the domain of biography supplying the chief instances: for here, when we get two lives of the same person, from the same point of view, &c., a considerable amount of coincidence is compatible with absolute independence in the way of investigation.

"A question like the one discussed by the Messrs Pike and Nicholas is much in the same predicament as a biography. The facts upon which an opinion can be founded are limited in number, have long been known, are in a very accessible form, and have been the object of much comment. Two writers, who make it their business to exhaust the matter thus at hand, *must* have much in common with one another. But it will be a great detriment to literature if the mere accident of priority of publication is to exclude the production of the work which possibly may merely differ from its predecessor by having been longer in the hands of either the author or the printer.

"There are not wanting instances where, when two works are published on the same or similar subjects, the writer of the later one has taken pains to tell the reader that he has abstained from the perusal of the earlier one, with the express view of avoiding the charge of imitation or borrowing. As far as I can judge, it is the general opinion that, except with works of imagination, such disclaimers are condemned rather than approved; it being the duty of the writer to put his book in the best form he can, by reading everything on the subject to which he has access.

"A single fact, statement, argument, or piece of evidence, common to Dr. Nicholas and Mr. Pike, which might not have occurred to the former writer if the latter had never existed, I, after a careful examination, have failed to find. Such is the fact. It might have been otherwise. There might have been in Mr. Pike's work data which nothing but exclusive knowledge, extraordinary scholarship in the Welsh language, access to unpublished documents, new methods of criticism, &c., could give; and for such he might reasonably claim protection. But I unhesitatingly state that there is nothing of the kind. The facts and arguments of Mr. Pike's work are the facts and arguments of a current, common literature, and not the peculiar property of any individual." D. W.

# TORONTO OF OLD:

## A SERIES OF COLLECTIONS AND RECOLLECTIONS

*(Continued from page 354.)*

BY THE REV. DR. SCADDING.

### XXII.—THE VALLEY OF THE DON.—FROM THE BRIDGE ON THE KINGSTON ROAD TO TYLER'S

Retracing our steps; placing ourselves again on the bridge, and, turning northwards, we see on the right, near by, a field or rough space, which has undergone excavation, looking as though the brick-maker or potter had been at work on it: and we may observe that a large quantity of the displaced material has been spread out over a portion of the marshy tract enclosed here by a bend of the river westward. What we see is a relic of an effort made long ago, by Mr. Washburn, a barrister of York, to whom reference has been made before, to bring this piece of land into cultivation. In its natural state the property was all but useless, from the steepness of the hill side on the one hand, and from the ever wet condition of the central portion of the flat below on the other. By grading down the hill and filling in the marsh, and establishing a gentle slope from the margin of the stream to the level of the top of the bank on the right, it was easy to see that a large piece of solid land in an eligible position might be secured. The undertaking, however, was abandoned before the work was finished, the expense probably being found heavy, and the prospect of a return for the outlay remote. At a later period Mr. O'Neill, with greater success and completeness, cut down the steep ridges of the bank at Don Mount, a short distance up, and filled in the marsh below. These experiments show how the valley of the Don, along the eastern outskirts of the town, will ultimately be turned to account, when the necessities of the population demand the outlay. At present such improvements are discouraged by the length of time required to cover large surfaces of new clay with vegetable mould. But in future years it will be for mills and factories, and not for suburban and villa purposes, that the parts referred to will be held valuable.

These marshes along the sides of the Don, from the point where its current ceases to be perceptible, appear to be remains of the river as it was at an epoch long ago. The rim or levee that now, on the right and left, confines and defines the meandrings of the stream in the midst of the marshes, has been formed by the alluvial matter deposited in the annual overflowings. The bed of the stream has probably in the same manner been by degrees slightly raised. The solid tow-path, as it were, thus created on each side of the river-channel, affords at present a great convenience to the angler and fowler. It forms, moreover, as shown by the experiments above alluded to, a capital breastwork, towards which the engineer may advance, when cutting down the adjoining hills, and disposing of their material on the drowned land below.

Once more imagining ourselves on the bridge, and looking obliquely to the north-west, we may still discern close by some remains of the short, shallow, winding ravine, by which in winter the sleighs used to ascend from the level of the river, and regain, through a grove of *pines and hemlocks*, the high road into the town. As soon as the steady cold set in, every year, the long reaches and grand sweeps of the river Don became peculiarly interesting. Firmly frozen over everywhere, and coated with a good depth of snow, bordered on each side by a high shrubbery of wild willow, alder, wych-hazel, dog-wood, tree-cranberry and other specimens of the lesser brushwood of the forest, plentifully overspread and interwoven in numerous places with the vine of the wild grape, the whole had the appearance of a fine, clear, level English coach-road or highway, bounded throughout its winding course by a luxuriant hedge, such as

such English roads and their surroundings were wont to be, all snow-clad, at Christmas tide, from the top of the fast mail to Exeter, for example, in the old coaching days.

Down the river, thus conveniently paved over every day came a cavalcade of strong sleighs, heavily laden, some with cordwood, some with sawn lumber, some with hay, a whole stack of *which at once, sometimes, would seem to be on the move*

After a light fall of snow in the night, the surface of the frozen stream would be marked all over with foot-prints innumerable of animals, small and great, that had been early out a-foraging: tracks of field-mice, minks and martens, of land-rats, water-rats and muskrats, of the wild cat sometimes, and of the fox; and sometimes of the wolf Up this valley we have heard at night the howling of the wolf, and in the snow of the meadows that skirt the stream, we have seen the blood-stained spots where sheep had been worried and killed by that ravenous animal —In one or two places where the bends of the river touched the inner high bank, and where diggings had abortively been made with a view to the erection of a factory of some kind, beautiful frozen gushes of water from springs in the hill-side were every winter to be seen, looking, at a distance, like small motionless Niagaras At one sheltered spot, we remember, where a tannery was begun but never finished, solid ice was sometimes to be found far on in the summer.

In the spring and summer, a pull up the Don, while yet its banks were in their primæval state was something to be enjoyed After passing certain potasheries and distilleries that at an early period were erected a short distance northward of the bridge, the meadow land at the base of the hills began to widen out, and numerous elm trees, very lofty, with gracefully-drooping branches, made their appearance, with other very handsome trees, as the lime or basswood, and the sycamore or button wood —At a very early period, we have been assured that brigades of North-west Company boats, *en route* to Lake Huron, used to make their way up the Don as far as the "Forks," by one of which they then passed westward towards the track now known as Yonge street they there were taken ashore, and carried on trucks to the waters of the Holland river The help gained by utilizing this piece of water-way must have been slight, when the difficulties to be overcome high up the stream are taken into account. We have conversed with an early inhabitant who, at a more recent period, had seen the North-west Company's boats drawn on trucks by oxen up the line of modern Yonge-street, but, in his day, starting, mounted in this manner, from the edge of the bay. In both cases they were shifted across from the Lake into the harbour at the "Carrying-place"—the narrow neck of isthmus a little to the west of the mouth of the Don proper, where the lake has now made a passage.

We add one more of the spectacles which, in the olden time, gave animation to the scene before us Along the winding stream, where in winter the sleighs were to be seen coming down, every summer at night would be observed a succession of moving lights, each repeated in the dark water below. These were the iron cressets, filled with unctuous pine knots all ablaze, suspended from short poles at the bows of the fishermen's skiffs, out in quest of salmon and such other large fish as might be deemed worth a thrust of the long-handled, sharply barbed trident used in such operations Before the establishment of mills and factories, many hundreds of salmon were annually taken in the Don, as in all the other streams emptying into Lake Ontario. We have ourselves been out on a night-fishing excursion on the Don, when in the course of an hour some twenty heavy salmon were speared; and we have a distinct recollection of the conspicuous appearance of the great fish, as seen by the aid of the blazing "jack" at the bow, nozzling about at the bottom of the stream.

## XXIII.—FROM TYLER'S TO THE BIG BEND.

Not far from the spot where, at present, the Don-street bridge crosses the river, on the west side and to the north, lived for a long time a hermit-squatter, named Joseph Tyler, an old New Jersey man, of picturesque aspect. With his rather fine, sharp, shrewd features, set off by an abundance of white hair and beard, he was the counterpart of an Italian artist's stock-model. The mystery attendant on his choice of a life of complete solitude, his careful reserve, his perfect self-resource in regard to domestic matters, and, at the same time, the evident wisdom of his contrivances and ways, and the propriety and sagacity of his few words, all helped to render him a good specimen in actual life of a secular anchorite. He had been in fact a soldier

in the United States army, in the war of Independence, and was in the receipt of a pension from the other side of the lakes. He was familiar, he alleged, with the personal appearance of Washington. His abode on the Don was an excavation in the side of the steep hill, a little way above the level of the river-bank. The flue of his winter fire place was a tubular channel, bored up through the clay of the hill-side. His sleeping-place or berth was exactly like one of the receptacles for human remains in the Roman catacombs, an oblong recess, likewise carved in the dry material of the hill. To the south of his cave he cultivated a large garden, and raised, among other things, the white sweet edible Indian corn, a novelty here at the time, and very excellent tobacco. He moreover manufactured pitch and tar, in a little kiln or pit dug for the purpose close by his house. He built for himself a magnificent canoe, locally famous. It consisted of two large pine logs, each about forty feet long, well shaped and deftly hollowed out, fastened together by cross dovetail pieces let in, at regular distances, along the interior of its bottom. While in process of construction in the pine woods through which the "Mill road" passed, on the high bank eastward of the river, it was a wonderment to all the inquisitive youth of the surrounding neighbourhood, and was accordingly often visited and inspected by them. In this craft he used to pole himself down the windings of the stream, all the way round into the bay, and on to the landing-place at the foot of Caroline-street, bringing with him the produce of his garden, and neat stacks of pine knots, ready split for the fishermen's lightjacks. He would also on occasion execute the function of a ferryman. On being hailed for the purpose, he would put across the river persons anxious to make a short cut into the town from the eastward. Just opposite his den there was for a time a rude causeway over the marsh. At the season of the year when the roads through the woods were impracticable, Tyler's famous canoe was employed by the Messrs. Hellwell for conveying into town, from a point high up on the stream, the beer manufactured at their Breweries on the Don. We are informed by Mr. William Hellwell, of the Highland Creek, that twenty-two barrels at a time could be placed in it, in two rows of eleven each, laid lengthwise side by side, still leaving room for Tyler and an assistant to navigate the boat.

The large piece of meadow land on the east side of the river, above Tyler's abode, enclosed by a curve which the stream makes towards the west, has a certain interest attached to it from the fact that therein was reproduced, for the first time in these parts, that peculiarly pleasant English scene, a hop-garden. Under the care of Mr. James Case, familiar with the hop in Sussex, this graceful and useful plant was here for several seasons to be seen passing through the successive stages of its scientific cultivation, in early spring sprouting from the surface of the rich black vegetable mould; then trained gradually over, and at length clothing richly the poles or groups of poles set at regular distances throughout the enclosure; overtopping these supports; by and by loading them heavily with a plentiful crop of swaying clusters; and then finally, when in a sufficiently mature state, prostrated, props and all, upon the ground, and stripped of their fragrant burden, the real object of all the pains taken. From this field many valuable pockets of hops were gathered; and the quality of the plant was pronounced to be good. Mr Case afterwards engaged extensively in the same occupation in the neighbourhood of Newmarket.

About the dry, sandy table-land that overlooked the river on each side in this neighbourhood, the burrows of the fox, often with little families within, were plentifully to be met with. The marmot too, popularly known as the woodchuck, was to be seen on sunny days sitting up upon its haunches at holes in the hill-side. We could at this moment point out the ancient home of a particular animal of this species, whose ways we used to note with some curiosity. Here were to be found racoons also; but these, like the numerous squirrels, black, red, flying and striped, were visible only in the height of summer, when the maize and the nuts began to ripen. At that period also, bears, he-bears and she-bears, accompanied by their cubs, were not unfamiliar objects, wherever the blackberry and raspberry grew. In the forest, moreover, hereabout, a rustle in the underbrush, and something white seen dancing up and down in the distance like the plume of a mounted knight,, might at any moment indicate that a group of deer had caught sight of one of the dreaded human race, and, with tails uplifted, had bounded incontinently away.

Pines of a great height and thickness crowded the tops of these hills. The paths of hurricanes could be traced over extensive tracts by the fallen trunks of trees of this species, their huge

bulks lying one over the other in a titanic confusion worthy of a sketch by Doré in illustration of Dante; their heads all in one direction. Their upturned roots, vast mats of woody ramifications and earth, presented sometimes a perpendicular wall of a great height. Occasionally one of these upright masses, originating in the habit of the pine to send out a wide-spread but shallow rootage, would unexpectedly fall back into its original place, when, in the clearing of the land, the bole of the tree to which it appertained came to be gashed through. In this case it would sometimes happen that a considerable portion of the trunk would appear again in a perpendicular position. As its top would of course show that human hands had been at work there, the question would be propounded to the new comer as to how the axe could have reached to such a height. The suppositions usually encouraged in him were, either that the snow must have been wonderfully deep when that particular tree was felled, or else that some one of the very early settlers must have been a man of exceptional stature.—Among the lofty pines, here and there, one more exposed than the rest would be seen, with a piece of the thickness of a strong fence rail stripped out of its side, from its extreme apex to its very root, spirally, like the groove of a rifle-bore. It in this manner showed that at some moment it had been the swift conductor down into the earth of the contents of a passing electric cloud. One tree of the pine species we remember, that had been severed in the midst by lightning, so suddenly, that the upper half had descended with perfect perpendicularity, and such force, that it planted itself upright in the earth by the side of the trunk from which it had been smitten. Nor may we omit from our remembered phenomena of the pine forests hereabout, the bee-trees. Now and then a huge pine would fall, or be intentionally cut down, which would exhibit in cavernous recesses at a great distance from what had been its root end, the accumulated combs of, it might be, a half-century, those of them that were of recent construction, filled with honey.—A solitary survivor of the forest of towering pines that, at the period to which we are adverting, covered the hills on both sides of the Don is still to be seen towards the northern limit of the Moss Park property. This particular tree has been gracefully commemorated in the columns of a local paper:

O! tell to me, thou old pine tree,
O! tell to me thy tale,
For long has thou the thunder braved,
And long withstood the gale;
The last of all thy hardy race,
Thy tale now tell to me,
For sure I am, it must be strange,
Thou lonely forest tree.

Yes, strange it is, this bending trunk,
So withered now and grey,
Stood once amid the forest trees
Which long have passed away:
They fell in strength and beauty,
Nor have they left a trace,
Save my old trunk and withered limbs
To show their former place.

Countless and lofty once we stood;
Beneath our ample shade
His forest home of boughs and bark
The hardy red man made.
Child of the forest, here he roamed,
Nor spoke nor thought of fear,
As he trapped the beaver in his dam,
And chased the bounding deer.

No gallant ship with spreading sail
Then ploughed those waters blue,
Nor craft had old Ontario then,
But the Indians' birch canoe;
No path was through the forest,
Save that the red man trod;
Here, by your home, was his dwelling place,
And the temple of his God.

Now where the busy city stands,
Hard by that graceful spire,
The proud Ojibeway smoked his pipe
Beside his camping fire.
And there, where those marts of commerce are
Extending east and west,
Amid the rushes in the marsh,
The wild fowl had its nest.

But the pale face came, our ranks were thinn'd,
And the loftiest were brought low,
And the forest faded far and wide,
Beneath his sturdy blow;
And the steamer on the quiet lake,
Then ploughed its way of foam,
And the red man fled from the scene of strife
To find a wilder home.

And many who in childhood's days
Around my trunk have played,
Are resting like the Indian now
Beneath the cedar's shade;
And I, like one bereft of friends,
With winter whitened o'er,
But wait the hour that I must fall,
As others fell before.

And still what changes wait thee,
When at no distant day,
The ships of far off nations,
Shall anchor in your bay;
When one vast chain of railroad,
Stretching from shore to shore,
Shall bear the wealth of India,
And land it at your door.

A short distance above the hop ground of which we have spoken, the Don passed immediately underneath a high sandy bluff. Where, after a long reach in its downward course, it first im-

pinged against the steep cliff, it was very deep. Here was the only point in its route, so far as we recall, where the epithet was applicable which Milton gives to its English namesake, when he speaks of—

"Utmost Tweed, or Ouse, or *gulphy* Don."

This very noticeable portion of the river was known as the "Big Bend." (We may observe here that in retaining its English name, the Don has lost the appellation assigned to it by the French and the aborigines. The Grand River, on the contrary, has retained its French name, notwithstanding its English official designation, which was the Ouse. The Rouge, too, has kept its French name. It was the Nen; and the Indians, it is said, styled it The River of Easy Entrance (Katabokokonk). The Thames, however, has wholly dropped its French title, LaTranche. We may subjoin that the Humber was anciently called by some, St. John's River, from a trader named St. John; and by some, Toronto River.)—Towards the summit of the high bluff just mentioned, the holes made by the sand-martins were numerous. Hereabout we have met with the snapping turtle. This creature has not the power of withdrawing itself wholly within a shell. A part of its protection consists in the loud threatening snap of its strong horny jaws, armed in front with a beak-like hook bent downwards. What the creature lays hold of, it will not let go. Let it grasp the end of a stout stick, and the sportsman may sling it over his shoulder, and so carry it home with him. When allowed to reach its natural term of life, it probably attains a very great age. We remember a specimen captured near the spot at which we are pausing, which, from its vast size, and the rough, lichen-covered condition of its shell, must have been extremely old. We also once found near here a numerous deposit of this animal's eggs; all white and spherical, of the diameter of about an inch, and covered with a tough, parchment-like skin. The ordinary lesser tortoises of the marsh were of course plentiful along the Don: their young, frequently to be met with creeping about, were curious and ever-interesting little objects. Snakes too there were about here, of several kinds: one, often very large and dangerous-looking, the copper-head, of a greenish brown colour, and covered with oblong and rather loose scales. The striped garter-snake, of all sizes, was very common. Though reported to be harmless, it always indulged, when interfered with, in the menacing action and savage attempts to strike, of the most venomous of its genus. Then there was the beautiful grass-green snake; and in large numbers, the black water-snake. In the rank herbage along the river's edge, the terrified piping of a pursued frog was often heard. It recurs to us, as we write, that once, on the banks of the Humber, we saw a bird actually in the grasp of a large garter-snake—just held by the foot. As the little creature fluttered violently in the air, the head of the reptile was swayed rapidly to and fro. All the small birds in the vicinity had gathered together in a state of noisy excitement; and many spirited dashes were made by several of them at the common foe. No great injury having been as yet inflicted, we were enabled to effect a happy rescue.

From the high sandy cliff, to which our attention has been drawn, it was possible to look down into the waters of the river; and on a sunny day, it afforded no small amusement to watch the habits, not only of the creatures just named, but of the fish also, visible below in the stream; the simple sunfish, for example, swimming about in shoals (or *schools*, as the term used to be); and the pike, crafty as a fox, lurking in solitude, ready to dart on his unwary prey with the swiftness and precision of an arrow shot from the bow.

## XXIV.—FROM THE BIG BEND TO CASTLE FRANK BROOK.

Above the "Big Bend," on the west side, was "Rock Point." At the water's edge hereabout was a slight outcrop of shaly rock, where crayfish were numerous, and black bass. The adjoining marshy land was covered with a dense thicket, in which wild gooseberry bushes and wild black-currant bushes were noticeable. The flats along here were a favorite haunt of woodcock at the proper season of the year: the peculiar set of little twitters uttered by them when descending from their flight, and the very different, deep-toned note, the signal of their having alighted, were both very familiar sounds in the dusk of the evening.—A little further on was "the Island." The channel between it and the "mainland" on the north side, was completely choked up with logs and large branches, brought down by the freshets. It was itself surrounded by a high fringe or hedge of the usual brush that lined the river-side all along, matted together and clambered over, almost everywhere, by the wild grape-vine. In the waters at its northern end, wild rice grew plentifully, and the beautiful sweet-scented white water-lily or lotus.

This minute bit of insulated land possessed, to the boyish fancy, great capabilities Within its convenient circuit, what phantasies and dreams might not be realized? A Juan Fernandez, a Barataria, a New Atlantis.—At the present moment we find that what was once our charmed isle has now become *terra firma*, wholly amalgamated with the mainland Silt has hidden from view the tangled lodgments of the floods. A carpet of pleasant herbage has overspread the silt. The border-strip of shrubbery and grape-vine, which so delightfully walled it round, has been improved, root and branch, out of being

Near the Island, on the left side, a rivulet, of which more immediately, pouring down through a deep, narrow ravine, entered the Don On the right, just at this point, the objectionable marshes began to disappear, and the whole bottom of the vale was early converted into handsome meadows. Scattered about were grand elms and butter-nut trees, fine bass-wood and button-wood trees, with small groves of the Canadian willow, which pleasantly resembles, in habit, the olive tree of the south of Europe. Along the flats, remains of Indian implements were often met with; tusks of bears and other animals; with fragments of coarse pottery, streaked or furrowed rudely over, for ornament. And all along the valley, calcareous masses, richly impregnated with iron, were found, detached, from time to time, as was supposed, from certain places in the hill-sides —At the long-ago epoch when the land went up, the waters came down with a concentrated rush from several directions into the valley just here, from some accidental cause, carving out in their course, in the enormous deposit of the drift, a number of deep and rapidly descending channels, converging all upon this point —The drainage of a large extent of acreage to the eastward, also at that period, found here for a time its way into the Don, as may be seen by a neighbouring gorge, and the deep and wide, but now dry water-course leading to it, known, where the "Mill road" crosses it, as the "Big Hollow" Bare and desolate, at that remote era, must have been the appearance of these earth-banks and ridges and flats, as also those in the vicinity of all our rivers. for many a long year they must have resembled the surroundings of some great tidal river, to which the sea, after ebbing, had failed to return.

One result of the ancient down-rush of waters, just about here, was that on both sides of the river there were to be observed several striking specimens of that long, thin, narrow kind of hill which is popularly known as a "hog's back" One on the east side afforded, along its ridge, a convenient ascent from the meadows to the table-land above, where fine views up and down the vale were obtainable, somewhat Swiss in character, including in the distance the lake, to the south. Overhanging the pathway, about half-way up a group of white-birch trees is remembered by the token that, on their stems, a number of young men and maidens of the neighbourhood had, in sentimental mood, after the manner of the Corydons and Amaryllises of classic times, incised their names.

The west side of the river, as well as the east, of which we have been more especially speaking, presented here also a collection of convergent "hogsbacks" and deeply channelled water-courses. One of the latter still conducted down a living stream to the Don This was the rivulet already noticed as entering just above the Island. It bore the graceful name of "Castle Frank Brook."

## XXV.—CASTLE FRANK.

Castle Frank was a rustic chateau or summer-house, built by Governor Simcoe in the midst of the woods, on the brow of a steep and lofty bank, which overlooks the vale of the Don, a short distance to the north of where we have been lingering The construction of this edifice was a mere *divertissement* while engaged in the grand work of planting in a field literally and entirely new, the institutions of civilization All the way from the site of the town of York to the front of this building, a narrow carriage-road and convenient bridle-path had been cut out by the soldiers, and carefully graded. Remains of this ancient engineering achievement are still to be traced along the base of the hill below the Necropolis and elsewhere. The brook—Castle Frank Brook—a little way from where it enters the Don, was spanned by a wooden bridge. Advantage being taken of a narrow ridge, that opportunely had its commencing point close by on the north side, the roadway here began the ascent of the adjoining height It then ran slantingly up the hill-side, along a cutting that is still to be seen. The table-land at the summit was finally gained by utilizing another narrow ridge. It then proceeded along the level at the top for some distance through a forest of lofty pines, until the chateau itself was reached.

The cleared space where the building stood was not many yards across On each side of it, the ground precipitously descended, on the one hand to the Don, on the other to the bottom of the ravine where flowed the brook. Notwithstanding the elevation of the position, the view was circumscribed, hill-side and table-land being alike covered with trees of the finest growth.

Castle Frank itself was an edifice of considerable dimensions, of an oblong shape; its walls were composed of a number of rather small, carefully hewn logs, of short lengths The whole wore the hue that unpainted timber, exposed to the weather, speedily assumes. At the gable end, in the direction of the roadway from the nascent capital, was the principal entrance, over which a rather imposing portico was formed by the projection of the whole roof, supported by four upright columns, reaching the whole height of the building, and consisting of the stems of four good-sized, well-matched pines, with their deeply-chapped, corrugated bark unremoved. The doors and shutters to the windows were all of double thickness, made of stout plank, running up and down on one side, and crosswise on the other, and thickly studded over with the heads of stout nails. From the middle of the building rose a solitary, massive chimney-stack.

We can picture to ourselves the cavalcade that was wont, from time to time, to be seen in the summers and autumns of 1794-'5-'6, wending its way leisurely to the romantically situated chateau of Castle Frank, along the reaches and windings, the descents and ascents of the forest road, expressly cut out through the primitive woods as a means of access to it.

First, mounted on willing and well-favored horse, as we will suppose, there would be General Simcoe himself—a soldierly personage, in the full vigour of life, advanced but little beyond his fortieth year, of thoughtful and stern, yet benevolent aspect—as shown by the medallion in marble on his monument in the cathedral at Exeter—revolving ever in his mind schemes for the development and defence of the new Society which he was engaged in founding; a man "just, active, enlightened, brave, frank," as the French Duke de Liancourt described him in 1795; "possessing the confidence of the country, of the troops, and of all those who were joined with him in the administration of public affairs" "No hillock catches his eye," the same observant writer remarks, "without exciting in his mind the idea of a fort which might be constructed on the spot, associating with the construction of this fort the plan of operations for a campaign; especially of that which should lead him to Philadelphia," *i. e.*, to recover, by force of arms, to the allegiance of England, the Colonies recently revolted.

By the side of the soldier and statesman Governor, also on horseback, would be his gifted consort, small in person, "handsome and amiable," as the French Duke again speaks; "fulfilling," as he continues to say, "all the duties of the mother and wife with the most scrupulous exactness; carrying the latter so far," DeLiancourt observes, "as to be of great assistance to her husband by her talent for drawing, the practice of which, in relation to maps and plans, enabled her to be extremely useful to the Governor," while her skill and facility and taste in a wider application of that talent were attested, the French traveller might have added, by numerous sketch-books and portfolios of views of Canadian scenery in its primitive condition, taken by her hand, to be treasured up carefully and reverently by her immediate descendants, but unfortunately not accessible generally to Canadian students. This memorable lady—memorable for her eminent Christian goodness, as well as for her artistic skill and taste, and superior intellectual endowments—survived to the late period of 1850 Her maiden name is preserved among us by the designation borne by two of our townships, East and West "Gwillim"-bury. Her father, at the time one of the aides-de-camp to General Wolfe, was killed at the taking of Quebec.

Conspicuous in the group would likewise be a young daughter and son, the latter about five years of age and bearing the name of Francis The chateau of which we have just given an account was theoretically the private property of this child, and took its name from him, although the appellation, by accident as we suppose, is identical, in sound at all events, with that of a certain "Castel-franc" near Rochelle, which figures in the history of the Huguenots.

The Iroquois at Niagara had given the Governor a title, which in their language signified, "One whose door is always open." They had, moreover, in Council declared his son a chief, and had named him "Toga;" and to humour them in return, as Liancourt informs us. the child was occasionally attired in Indian costume. For most men it is well that the future is veiled from them It happened eventually that a warrior's fate befell the young chieftain Toga. The little spirited lad who had been seen at one time moving about before the assembled

Iroquois at Niagara, under a certaint restrain probably, from the unwonted garb of embroidered deerskin, in which on such occasions, he would be arrayed; and at another time clambering up and down the steep hill sides at Castle Frank with the restless energy of a free English boy, was at last after the lapse some seventeen years, seen a mangled corse, one in that ghastly pile of "English dead," which in 1812, closed up the breach at Badajoz

Riding with the Governor, out to his rustic lodge, would be seen also his attached secretary, Major Littlehales, and one or other of his faithful aides-de-camp, Lieutenant Talbot or Lieutenant Givins, with men in attendance in the dark green undress of the famous Queen's Rangers, with a sumpter pony or two, bearing packages and baskets filled with a day's provender for the whole party. A few dogs also, a black Newfoundland, a pointer, a setter, white and tan, hieing buoyantly about on the right and left, would give animation to the cavalcade as it passed sedately on its way—

"Through the green-glooming twilight of the grove."

It will be of interest to add here, the inscription on General Simcoe's monument in Exeter Cathedral —"Sacred to the memory of John Graves Simcoe, Lieutenant-General in the Army, and Colonel of the 22nd Regiment of Foot, who died on the 25th day of October, 1806, aged 54. In whose life and character the virtues of the hero, the patriot and the Christian were so eminently conspicuous, that it may justly be said, he served his king and his country with a zeal exceeded only by his piety towards God." Above this inscription is a medallion portrait. On the right and left are figures of an Indian and a soldier of the Queen's Rangers The remains of the General are not deposited in Exeter Cathedral, but under a mortuary chapel on the estate of his family elsewhere.

Our cavalcade to Castle Frank, as sketched above, has been challenged on the supposed ground that in 1794 there were no horses in Western Canada Horses were no doubt at that date scarce in the region named; but some were procurable for the use of the Governor and his suite. In a "Journal to Detroit from Niagara, in 1793, by Major Littlehales," printed for the first time in the *Canadian Literary Magazine*, for May, 1833, we have it mentioned that, on the return of an exploring party, they were met at the end of the plains, near the Salt Lake Creek, by Indians, "bringing horses for the Governor and his suite" The French *habitans* about Sandwich and Detroit were in possession of horses in 1793, as well as their fellow-countrymen in Lower Canada.

After the departure of General Simcoe from Canada, Castle Frank was occasionally made the scene of an excursion or pic-nic by President Russell and his family; and a ball was now and then given there, for which the appliances as well as the guests were conveyed in boats up the Don At one time it was temporarily occupied by Captain John Denison, of whom hereafter. About the year 1829, the building, shut up and tenantless at the time, was destroyed by fire, the mischievous handiwork of persons engaged in salmon-fishing in the Don. A depression in the dry sand just beyond the fence that bounds the Cemetery of St James, northward, shews to this day the exact site of Castle Frank The quantity of iron that was gathered out from this depression after this fire, was, as we remember, something extraordinary, all the window-shutters and doors, having been, as we have said, made of double planks, fastened together with an immense number of stout nails, whose heads thickly studded the surface of each in regular order.

The immediate surroundings of the spot where Castle Frank stood, fortunately continue almost in their original natural state. Although the site of the building itself is outside the bounds of the Cemetery of St. James, a large portion of the lot which at first formed the domain of the chateau, now forms a part of that spacious and picturesque enclosure. The deep glen on the west, immediately below where the house was built, and through which (and by the listener may be pleasantly *heard* to flow) the brook that bears its name, is to this day a scene of rare sylvan beauty. The pedestrian from the town, by a half-hour's easy walk, can here place himself in the midst of a forest solitude; and from what he sees he can form an idea of the whole surrounding region, as it was when York was first laid out. Here he can find in abundance, to this day, specimens, gigantic and minute, of the vegetation of the ancient woods. Here at the proper seasons he can still hear the blue-jay; the flute notes of the solitary wood-thrush, and at night, specially when the moon is shining bright, the wimp poor-will, hurriedly and in a high key, syllabling forth its own name.

## XXVI.—ON TO THE FORD AND THE MILLS.

We now resume our ramble up the valley of the Don. Northward of the gorge, where Castle Frank Brook entered, and where so many other deep-cut ravines converge upon the present channel of the stream, the scenery becomes really good. We pass along through natural meadows, bordered on both sides by fine hills, which recede by a succession of slight plateaus, the uppermost of them clothed with lofty pines and oaks, on the slope nearest to "the flats" on the east, grew, along with the choke-cherry and may-flower, numbers of the wild apple or crab, beautiful objects when in full bloom. Hereabout also was to be found the prickly ash, a rather uncommon and graceful shrub. Immediately beyond the Castle Frank woods, where now is the property known as Drumsnab, came the estate of Capt. John Playter, the elder; and directly across on the opposite side of the river, that of his son Capt. John Playter, the younger, both immigants from Pennsylvania. When the town of York was in the occupancy of the Americans, in 1812, many of the archives of the young province of Upper Canada were conveyed for safe keeping to the houses of these gentlemen. But boats, with men and officers from the invading force, found their way up the windings of the river Don; and such papers and documents as could be found were carried away.

Just below Drumsnab, on the west side of the stream, and set down, as it were, in the midst of the valley, was, and is, a singular isolated mound of the shape of a glass shade over a French clock, know in the neighborhood as the "Sugar loaf." It was completely clothed over with moderate sized trees. When the whole valley of the Don was filled with a brimming river reaching to the summit of its now secondary banks, the top of the "Sugar loaf," which is nearly on a level with the summit of the adjacent hills, must have appeared above the face of the water as an island speck.

This picturesque and curious mound is noticed by Sir James Alexander, in the account which he gives of the neighbourhood of Toronto in his "L'Acadie, or Seven Years' Explorations in British America":—"The most picturesque spot near Toronto," says Sir James, "and within four miles of it, is Drumsnab, the residence of Mr Cayley. The mansion is roomy and of one storey, with a broad verandah. It is seated among fields and woods, on the edge of a slope; at the bottom winds a river; opposite is a most singular conical hill, like an immense Indian tumulus for the dead, in the distance, through a vista cut judiciously through the forest, are seen the dark blue waters of Lake Ontario. The walls of the principal room are covered with scenes from Faust, drawn in fresco, with a bold and masterly hand, by the proprietor."—(Vol. i. p. 230.)

In the shadow thrown eastward by the "Sugar-loaf," there was a "Ford" in the Don, a favourite bathing-place for boys, with a clean gravelly bottom, and a current somewhat swift. That Ford was just in the line of an allowance for a concession road; which from the precipitous character of the hills on both sides, has been of late years closed by Act of Parliament, on the ground of its supposed impracticability for ever—a proceeding to be regretted; as the highway that would traverse the Don valley at the Ford would be a continuation of Bloor street in a right line; and would form a convenient means of communication between Chester and Yorkville. In the meadow on the left, just above the Ford, a little meandering brook, abounding in trout, entered the Don. Hereabouts also was, for a long while, a rustic bridge over the main river, formed by trees felled across the stream. Proceeding on our way we now in a short time approached the great colony of the Helliwells, which has already been described. The mills and manufactories inaugurated here by that enterprising family constituted quite a conspicuous village.—A visit to this cluster of buildings, in 1827, is described by Mr W. L. Mackenzie, in his "Sketches of Canada," published in London, by Effingham Wilson, in 1833. At page 270 of that work, the writer says: "About three miles out of town, in the bottom of a deep ravine, watered by the river Don, and bounded also by beautiful and verdant flats, are situated the York Paper Mills, distillery and grist-mill of Messrs Eastwood & Co.; also Mr. Shepard's axe-grinding machinery; and Messrs Helliwell's large and extensive Brewery. I went out to view these improvements a few days ago, and returned much gratified with witnessing the paper-manufacture in active operation—as also the bold and pleasant scenery on the banks of the Don. The river might be made navigable with small expense up to the brewery; and if the surrounding lands were laid out in five-acre lots all the way to town, they would sell to great advantage."

# CANADIAN INSTITUTE.

## ANNUAL REPORT OF THE COUNCIL FOR THE YEAR 1868-69.

The Council of the Canadian Institute have the honour to present the following Report of the proceedings of the Society for the past year, from the 1st December, 1868, to 30th November, 1869.

### MEMBERSHIP.

The present state of membership is as follows:—

| | | |
|---|---|---|
| Members at commencement of Session, 1st December, 1868 | | 354 |
| " Elected during Session 1868-'69 | | 12 |
| " " provisionally by Council | | 7 |
| Total | | 373 |
| *Deduct* | | |
| Deaths | 9 | |
| Withdrawn | 9 | |
| Left the Province | 1 | |
| | | 19 |
| Total, 30th November, 1869 | | 354 |
| *Composed of* | | |
| Honorary members | 4 | |
| Life members | 28 | |
| Corresponding members | 5 | |
| Ordinary members | 317 | |
| Total | | 354 |

## COMMUNICATIONS.

The following list of papers, read at the ordinary meetings held during the Session, will be found to contain many valuable communications:—

5*th December*, 1868.—Professor D. Wilson, LL.D., "On the Petrarchan Stanza, in relation to successive eras of English Literature."

12*th December*, 1868.—Dr. Agnew, "Roundabout Paper."

19*th December*, 1868.—The Annual Report was read and adopted.

8*th January*, 1869.—Dr. E. M. Hodder, "On some Sphygmographic Tracings, and their relations to diseases of Heart and Large Vessels."

16*th January*, 1869.—Rev. Prof. W. Hincks, F.L.S., President, read his Inaugural Address.

22*nd January*, 1869.—Dr. J. Bovell, "Illustrative of the Growth of Tissue."

30*th January*, 1869.—Dr. C. B. Hall (for Dr. Scadding), "Collections and Recollections in regard to York, Upper Canada."

5*th February*, 1869.—The Medical Section adjourned in consequence of the Death of Dr. M. O'Dea.

12*th February*, 1869.—Dr. Scadding continued his "Collections and Recollections in regard to York, Upper Canada."

*12th February*, 1869.—
J. C. Hamilton read "Some interesting remarks on the early modes of Criminal Procedure and Punishment in the Home District of Upper Canada."

*19th February*, 1869.—Dr. Cumming, "On English Views of Vaccination."

*5th March*, 1869.—Dr. Oldright, "On Auscultation as applied to Obstetrical Practice."

*19th March*, 1869.—"The Meeting was resolved into a Public Meeting."

*2nd April*, 1869.—Dr. Temple, "On Carbolic Acid."

*9th April*, 1869.—Dr. Hall, in continuation, Dr. Scadding's "Collections and Recollections in regard to York, U. C."

## TREASURER AND AUDITORS' REPORT.

*Statement of the General Account of the Canadian Institute for the Year 1868-69, from 1st December, 1868, to 30th November, 1869.*

DEBTOR.

| | | | |
|---|---|---|---|
| Cash Balance last year | | | $352 13 |
| " Received from Members | | | 355 00 |
| " for Rent | | | 68 40 |
| " Parliamentary Grant, year 1869 | | | 750 00 |
| " for Interest on Loan of $3,100, to 30th Nov., 1868 | | $186 00 | |
| " for Interest on Loan of $3,100, from 30th November, 1868, to 7th January, 1869 | | 19 36 | |
| | | | 205 36 |
| " for sale of Journals | Old Series | 1 00 | |
| | New " | 14 00 | |
| | | | 15 00 |
| Due by Members | | | 1715 75 |
| " Journals | Old Series | 114 25 | |
| | New " | 43 25 | |
| | | | 157 50 |
| | | | $3,619 14 |

CREDITOR.

| | | | |
|---|---|---|---|
| Cash paid for Journal, Vol. XII., Nos. 1, 2 | | | $465 11 |
| " for Library and Museum | | | 67 39 |
| " Account of Institute: | | | |
| Salary | | $336 00 | |
| Insurance | | 102 25 | |
| Wood | | 60 75 | |
| Printing | | 25 25 | |
| Drains | | 76 25 | |
| Postage, $2.77; oil, $2.05; brooms, 55c.; chimney sweeping, 60c.; candles, 90c.; filing, 25c.; lime, 10c.; lock, 30c.; nails, 10c.; snow shovel, 30c.; stationery, $4.02; window brush, 75c.; board for fence, 80c.; advertising, $1.67; glazing, 45c | | 15 11 | |
| | | | 615 61 |
| Estimated Balance | | | 2471 03 |
| | | | $3,619 14 |

*The* TREASURER *in Account with the* CANADIAN INSTITUTE, *for the Year* 1868-69, *from the* 1st *December*, 1868, *to* 30*th November*, 1869.

DEBTOR.

| | | | |
|---|---|---|---|
| Cash Balance last year | | | $352 13 |
| " Received from Members | | | 355 00 |
| " for Rent | | | 68 40 |
| " Parliamentary Grant, year 1869 | | | 750 00 |
| " for Interest on Loan of $3,100, to 30th Nov., 1868 | $186 00 | | |
| " for Interest on Loan of $3,100, from 1st December, 1868, to 7th January, 1869 | 19 36 | | |
| | | | 205 36 |
| " for sale of Journals { Old Series | 1 00 | | |
| " for sale of Journals { New " | 14 00 | | |
| | | | 15 00 |
| Securities | | | 3100 00 |
| | | | $4,845 89 |

CREDITOR.

| | | | |
|---|---|---|---|
| Cash paid for Journal, Vol. XII, Nos. 1 and 2 | | | $465 11 |
| " for Library and Museum | | | 67 39 |
| " on Account of Institute: | | | |
| Salary | $396 00 | | |
| Insurance | 102 25 | | |
| Wood | 60 75 | | |
| Printing | 25 25 | | |
| Drains | 76 25 | | |
| Postage, $2.77; oil, $2.05; brooms, 55c.; chimney sweeping, 60c.; candles, 90c.; filing, 25c.; lime, 10c.; lock, 30c.; nails, 10c.; snow shovel, 30c.; stationery, $4.02; window brush, 75c.; board for fence, 30c.; advertising, $1.07; glazing, 45c. | 15 11 | | |
| | | | 615 61 |
| Securities | | | 3100 00 |
| Cash in Hand | | | 597 78 |
| | | | $4,845 89 |

SAMUEL SPREULL, *Treasurer.*

The undersigned, Auditors, have compared the Vouchers for the above items with the Cash Book, and find them to agree. The Balance in hands of Treasurer at date above given is five hundred and ninety-seven dollars and seventy-eight cents.

TORONTO, December 1st, 1869.

W. J. MACDONELL, } *Auditors.*
GEORGE MURRAY, }

## LIBRARIAN'S REPORT.

The Librarian reports as follows:—

The increase in the Library of the Institute by donations during the current year has been one hundred and ninety-three volumes, besides pamphlets to the number of three hundred and eleven. A detailed list of titles and donors, made by the assistant Secretary, is now laid on the table.

It will be seen that the Institute is indebted to Mr. Lawrence Heyden, its late Recording Secretary, for a large proportion of the volumes and pamphlets presented, one hundred and eighty-six of the former, and two hundred and sixty-three of the latter being gifts of his.

Among Mr. Heyden's collection will be found several publications, of especial value, as relating to the early history of Canada and other portions of this Continent. Also a fine old copy of Lysons' Environs of London, in five volumes quarto, date 1796, bound in calf; and an interesting Lavater, in three volumes octavo, London, 1797.

From the Hon. Mr. Broadhead, at Washington, was received a royal octavo volume of 899 pages, on "The Geology of New Jersey," with an Atlas of eight large plates: also the Report of J. Ross Browne, on the "Mineral Resources of the States and Territories west of the Rocky Mountains." This is a royal octavo volume of 674 pages. Its date is 1868.

The Boston Natural History Society has sent a copy of Harris's "Entomological Correspondence," a royal octavo volume of 375 pages, with fine coloured plates.

Dr. Paine's work entitled "Institutes of Medicine," New York, 1870, royal octavo, bound, has been forwarded to us by the author.

The usual number of valuable periodicals put forth by the Scientific Societies of Great Britain, the Continent of Europe, and the United States, and sent in exchange for the *Canadian Journal*, have been duly received throughout the year.

December 16th, 1869.

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## NOTE RELATIVE TO METEOROLOGICAL REPORTS FOR JAN. 1869.

In consequence of the progressive change in the distribution of temperature through the year, it was found necessary to compute a new table of normal temperatures as standards of reference. The normals, as derived from the ten years 1859-1868, have been employed from January 1869 inclusive. In the reports for January and February 1869, in the *Canadian Journal*, a breach of continuity occurs in the differences of the daily means from their normal standards, which was occasioned by using the old instead of the New Table for January.

The differences should be as follows:

| *Differences of the actual Mean Daily Temperatures from the Normal Daily Means for January 1869.* | Date | Differences fr. Normal. |
|---|---|---|
| | 1 | − 9·88 |
| | 2 | − 8·37 |
| | 3 | − 17·13 Sunday. |
| | 4 | + 11·55 |
| | 5 | + 11·27 |
| | 6 | + 18·05 |
| | 7 | + 13·53 |
| | 8 | + 17·62 |
| | 9 | + 7·03 Sunday. |
| | 10 | + 2·88 |
| | 11 | + 7·70 |
| | 12 | + 11·50 |
| | 13 | + 9·23 |
| | 14 | + 2·53 |
| | 15 | − 1·75 Sunday. |
| | 16 | − 6·58 |
| | 17 | − 3·05 |
| | 18 | + 3·58 |
| | 19 | + 9·58 |
| | 20 | + 10·88 |
| | 21 | − 15·48 Sunday. |
| | 22 | − 5·55 |
| | 23 | − 3·93 |
| | 24 | + 10·95 |
| | 25 | + 12·38 |
| | 26 | + 9·05 Sunday. |
| | 27 | |
| | 28 | |
| | 29 | |
| | 30 | |
| | 31 | |
| | Month | + 6·03 |

# MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETICAL OBSERVATORY, TORONTO, ONTARIO,—JULY, 1869.

*Latitude*—43° 39′4 *North. Longitude*—5*h.* 17*m.* 33*s. West. Elevation above Lake Ontario*, 108 *feet.*

| Day. | Barom. at temp. of 32° | | | | Temp. of the Air. | | | | Excess of Mean above Normal. | Tension of Vapour. | | | | Humidity of Air. | | | | Direction of Wind. | | | Resultant. | Velocity of Wind. | | | | | Rain in Inches | Snow in Inches |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 6 A.M. | 2 P.M. | 10 P.M. | Mean. | 6 A.M | 2 P.M. | 10 PM | ME'N | | 6 A.M. | 2 P.M. | 10 P.M | M'N | 6 A.M. | 2 P.M | 10 P.M. | M'N | 6 A.M. | 2 P.M. | 10 P.M. | | 6 A.M. | 2 P.M. | 10 P.M | Result'. | M'N | | |
| | | | | | ° | ° | ° | ° | | | | | | | | | | | | | | | | | | | | |
| 1 | 29.725 | 29.686 | 29.624 | 29.6740 | 54.7 | 64.1 | 56.9 | 58.27 | — 8.05 | .304 | .406 | .431 | .382 | 71 | 67 | 93 | 79 | N | S S W | S W | S 27 W | 1.2 | 3.6 | 1.4 | 2.22 | 2.48 | ... | ... |
| 2 | .592 | .500 | .395 | .4798 | 55.5 | 71.5 | 67.4 | 65.58 | — 0.92 | .381 | .591 | .575 | .513 | 86 | 77 | 86 | 81 | Calm. | S b W | S b W | S 20 W | 0.4 | 7.2 | 5.0 | 3.46 | 3.50 | 0.140 | ... |
| 3 | .281 | .277 | .287 | .2829 | 63.7 | 80.7 | 76.4 | 73.78 | + 7.08 | .570 | .702 | 679 | .656 | 96 | 66 | 75 | 79 | S | W | N W b W | S 84 W | 1.0 | 8.4 | 9.0 | 3.70 | 5.30 | .020 | ... |
| 4 | .437 | .543 | — | — | 64.5 | 74.9 | — | — | — | .507 | .448 | — | — | 83 | 51 | — | — | W | W b N | N W b W | N 49 W | 9.0 | 13.6 | 7.7 | 8.75 | 9.97 | ... | ... |
| 5 | .852 | .864 | .862 | .8607 | 55.8 | 65.2 | 54.7 | 59.48 | — 7.58 | .333 | .361 | .389 | .339 | 74 | 58 | 89 | 68 | N | S S W | Calm. | S 27 W | 8.8 | 9.2 | 0.0 | 1.67 | 3.56 | ... | ... |
| 6 | .905 | .870 | .828 | .8650 | 54.0 | 68.8 | 60.5 | 61.33 | — 5 92 | .346 | .372 | .3 5 | .362 | 82 | 53 | 62 | 67 | N E b N | S b W | E b N | S 46 E | 0.6 | 4.6 | 2.5 | 1.30 | 2.38 | ... | ... |
| 7 | .766 | .659 | .597 | .6590 | 56.5 | 66.3 | 63.7 | 62.97 | — 4.40 | .378 | .455 | .491 | .459 | 83 | 70 | 83 | 80 | N E b E | E b S | Calm | S 35 E | 4.6 | 8.6 | 0.0 | 2.65 | 3.56 | 0.400 | ... |
| 8 | .592 | .516 | .419 | .5117 | 64.3 | 72.0 | 64.8 | 67.13 | — 0.40 | .575 | .613 | .569 | .589 | 95 | 78 | 92 | 89 | S W b W | S W b W | S E b S | S 39 W | 1.4 | 10.0 | 4.0 | 2.87 | 3.94 | 0.140 | ... |
| 9 | .433 | .450 | .488 | .4543 | 64.1 | 73.8 | 62.7 | 67.42 | — 0.25 | .538 | .590 | .504 | .536 | 90 | 70 | 88 | 80 | N W | S S W | Calm. | S 74 W | 7.2 | 7.5 | 0.0 | 1.46 | 3.47 | ... | ... |
| 10 | .500 | .388 | .195 | .3452 | 62.3 | 74.2 | 69.5 | 69.63 | + 1.85 | .497 | .570 | .561 | .552 | 88 | 67 | 77 | 76 | Calm. | S b W | S W b S | S 28 W | 0.0 | 13.5 | 11.8 | 9.12 | 9.97 | 0.240 | ... |
| 11 | .276 | .504 | — | — | 72.4 | 69.2 | — | — | — | .579 | .457 | — | — | 73 | 64 | — | 69 | S W b W | W N W | N b W | N 73 W | 6.0 | 20.0 | 4.1 | 9.97 | 10.97 | ... | ... |
| 12 | .689 | .695 | .710 | .6938 | 56.2 | 68.8 | 62.3 | 62.92 | — 5.08 | .360 | .423 | .336 | .370 | 80 | 60 | 60 | 65 | W | S S W | N b E | N 51 W | 3.8 | 6.0 | 7.2 | 1.03 | 5 83 | ... | ... |
| 13 | .687 | .678 | .656 | .6728 | 60.2 | 65 5 | 59.8 | 62.42 | — 5.67 | .429 | .417 | .392 | .412 | 80 | 66 | 76 | 73 | N E b N | E | N E b E | N 76 E | 3.8 | 15.4 | 6.5 | 7.22 | 7.50 | ... | ... |
| 14 | .645 | .586 | .501 | .5685 | 61.9 | 65.) | 64.1 | 64.16 | — 4.03 | .4 1 | .540 | .565 | .503 | 73 | 85 | 94 | 84 | N E b E | E b N | N b E | N 78 E | 5.2 | 8.0 | 1.5 | 4.85 | 4.96 | 0.055 | ... |
| 15 | .484 | .485 | .438 | .4698 | 64.1 | 80.7 | 71.0 | 72.77 | + 4.52 | .565 | .716 | .598 | .636 | 94 | 68 | 79 | 80 | S E | S S W | W S W | S 2 E | 0.2 | 4.6 | 1.4 | 1.82 | 2.67 | 1.600 | ... |
| 16 | .403 | .442 | .508 | .4558 | 69.1 | 80.7 | 70.6 | 74.20 | + 5.92 | .637 | .591 | .561 | .604 | 90 | 57 | 75 | 73 | S W | W N W | N W | S 77 W | 2.2 | 15.0 | 5.0 | 7.68 | 8.07 | ... | ... |
| 17 | .574 | .599 | .560 | .5790 | 61.6 | 72.4 | 68.1 | 68.45 | — 0.10 | .428 | .538 | .446 | .480 | 78 | 67 | 65 | 69 | N W b W | S S W | N | S 83 W | 1.4 | 8.6 | 6.4 | 1.20 | 4.48 | ... | ... |
| 18 | .568 | .532 | — | — | 64.5 | 74.2 | — | — | — | .467 | .485 | — | — | 76 | 57 | — | — | N N W | S S W | N N W | N 35 W | 2.5 | 5.8 | 7.0 | 1.56 | 5.07 | ... | ... |
| 19 | .567 | .592 | .560 | .5758 | 61.6 | 69.2 | 60.5 | 64.18 | — 4.23 | .393 | .417 | .395 | .401 | 71 | 58 | 75 | 67 | N | S E b S | Calm | S 82 E | 1.0 | 5.8 | 0.0 | 1.98 | 2.42 | ... | ... |
| 20 | .470 | .352 | .285 | .3550 | 58.0 | 67.4 | 63.0 | 63.52 | — 4.93 | .394 | .547 | .526 | .510 | 82 | 81 | 91 | 86 | N E | E b S | S W b S | S 59 E | 2.5 | 9.4 | 2.5 | 5.05 | 4.65 | 0.420 | ... |
| 21 | .300 | .416 | .568 | .4390 | 61.6 | 62.3 | 55.8 | 59.67 | — 8.80 | .441 | .383 | .344 | .383 | 81 | 68 | 77 | 75 | S W b W | W | W | S 83 W | 3.2 | 16.0 | 8.5 | 9.21 | 9.65 | 0.040 | ... |
| 22 | .633 | .651 | .674 | .6563 | 56.5 | 68.8 | 57.6 | 61.63 | — 6.83 | .356 | .462 | .331 | .384 | 78 | 65 | 69 | 69 | W N W | S W b S | Calm | S 61 W | 9.0 | 6.0 | 0.0 | 1.93 | 2.72 | ... | ... |
| 23 | .662 | .648 | .630 | .6382 | 56.5 | 67.4 | 59.4 | 61.10 | — 7.35 | .413 | .480 | .473 | .453 | 90 | 71 | 93 | 84 | Calm | S W b S | Calm. | S 31 W | 0.0 | 4.8 | 0.0 | 4.12 | 4.15 | 0.060 | ... |
| 24 | .539 | .551 | .548 | .5480 | 63.4 | 85.6 | 62.7 | 64.13 | — 4.32 | .521 | .531 | .530 | .531 | 89 | 84 | 93 | 89 | S W b W | S W | Calm. | S 44 W | 3.5 | 3.5 | 0.0 | 2.61 | 2.63 | ... | ... |
| 25 | .553 | .528 | — | — | 63.4 | 77.5 | — | — | — | .593 | .710 | — | — | 67 | 75 | — | — | Calm | S W b W | S S W | S 27 W | 0.0 | 10.2 | 0.5 | 4.39 | 4.88 | ... | ... |
| 26 | .439 | .369 | .431 | .4165 | 64.1 | 72.4 | 62.7 | 67.17 | — 1.20 | .538 | .594 | .492 | .554 | 90 | 75 | 86 | 83 | S | S W | S W | S 34 W | 4.0 | 5.0 | 3.6 | 3.69 | 3.90 | 0.005 | ... |
| 27 | .457 | .467 | .501 | .4703 | 61.2 | 74.6 | 61.2 | 66.38 | — 1.98 | .512 | .550 | .434 | .512 | 95 | 63 | 80 | 79 | W b S | S b W | Calm | S 42 W | 1.6 | 7.0 | 0.0 | 3.98 | 4.47 | 0.210 | ... |
| 28 | .453 | .491 | .413 | .4480 | 61.6 | 61.6 | 61.6 | 62.20 | — 6.10 | .468 | .493 | .513 | .502 | 85 | 90 | 85 | 88 | S W b W | S S W | N N W | S 80 W | 2.8 | 7.2 | 8.2 | 3.52 | 6.50 | 1.280 | ... |
| 29 | .448 | .530 | .631 | .5427 | 56.9 | 63.4 | 52.9 | 58.52 | — 9.72 | .431 | .382 | .338 | .384 | 94 | 65 | 84 | 79 | N W b W | W b N | W N W | N 73 W | 4.0 | 15.8 | 2.6 | 8.18 | 8.26 | ... | ... |
| 30 | .677 | .715 | .799 | .7382 | 53.6 | 71.3 | 60.9 | 62.37 | — 5.83 | .319 | .351 | .355 | .344 | 78 | 46 | 67 | 63 | W N W | N W | N W | N 62 W | 7.0 | 5.0 | 2.4 | 3.93 | 4.15 | ... | ... |
| 31 | .911 | .914 | .950 | .9250 | 52.9 | 64.1 | 58.3 | 59.47 | — 8.66 | .296 | .313 | .355 | .333 | 74 | 53 | 72 | 66 | Calm. | S S E | Calm. | S 23 E | 0.0 | 2.6 | 0.0 | 0.92 | 1.22 | ... | ... |
| | 29.5805 | 29.5700 | 29.5577 | 29.5676 | 59.73 | 69.58 | 62.56 | 64.48 | — 3.43 | .438 | .496 | .463 | .470 | 84 | 68 | 80 | 77 | ..... | ..... | ..... | ..... | 3.16 | 8.64 | 3.51 | ... | 5.07 | 4.610 | ... |

## REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR JULY, 1860.

NOTE.—The monthly means do not include Sunday observations. The daily means, excepting those that relate to the wind, are derived from six observations daily, namely at 6 A M., 8 A M., 2 P M., 4 P.M., 10 P.M., and midnight. The means and resultants for the wind are from hourly observations.

Highest Barometer .....29.950 at 10 p m. on 31st } Monthly range=
Lowest Barometer ..... .....29.193 at mid. on 10th } 0.757 inches.

Self-register-ing Ther.
- Maximum Temperature .....84°9 on 15th } Monthly range=
- Minimum Temperature..... .....49°8 on 6th } 35°.1
- Mean Maximum Temperature .....73°07 } Mean daily range=
- Mean Minimum Temperature .....57°61 } 16°.46
- Greatest daily range.....24°1 from a.m. to p.m. of 14th.
- Least daily range ..... .... 5°0 from a m. to p m. of 21st.

Warmest Day.....10th...Mean Temperature.....74°20 } Difference=16°.93
Coldest Day..... 1st...Mean Temperature..... .....55°27 }

Maximum Radiation. { Solar .....98°5 on 10th } Monthly range= 58°.3
{ Terrestrial..... .....40°2 on 6th }

Aurora observed on 1st night, viz.:—3rd.

Possible to see Aurora on 14 nights; impossible on 17 nights.

Raining on 13 days; depth 4.610 inches; duration of fall 30.1 hours.

Mean of Cloudiness=0.67.

Resultant Direction S. 67° W.; Resultant Velocity 2.01.

Mean Velocity 5.07 miles per hour.

Maximum Velocity 27.8 miles, from 9 to 10 a.m. of 11th.

Most Windy day 11th; Mean Velocity 10.97 miles per hour.
Least Windy day 31st; Mean Velocity 1.22 miles per hour.

Most Windy hour 1 p m; Mean Velocity 8.72 miles per hour.
Least Windy hour 6 a m.; Mean Velocity 2.67 miles per hour.

8th, Heavy Thunder Storm; 14th, Thunder Storm; 15th, Heavy Thunder Storm, 1.600 inches of rain fell in about 2 hours.
20th, Thunder Storm. Heavy rain. Rainbow during evening.
23rd, Thunder Storm. 26th, Thunder Storm 27th, Thunder Storm.
28th, Heavy Thunder Storm. 1.280 inches of rain fell.

It will be observed from the Comparative Table that this has been the coldest July, except 1843 and 1860.

## COMPARATIVE TABLE FOR JULY

| YEAR. | TEMPERATURE. Mean. | Excess above aver'ge | Maximum. | Minimum. | Range. | RAIN. No. of days. | Inches. | SNOW. No. of days. | Inches. | WIND. Resultant. Direction. | Velo'y | Mean Velocity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ° | ° | ° | ° | ° | | | | | ° | | |
| 1841 | 65.0 | — 2.4 | 89.0 | 38.9 | 49.1 | 10 | 8.150 | ... | ... | ... | ... | 0.27 lbs |
| 1842 | 64.7 | — 2·7 | 91.0 | 42.5 | 48.5 | 4 | 3.051 | ... | ... | ... | ... | 0.33 |
| 1843 | 64.5 | — 2.9 | 86.8 | 38.7 | 48.1 | 8 | 4.605 | ... | ... | ... | ... | 0.44 |
| 1844 | 66.0 | — 1.4 | 86.6 | 40.1 | 46.5 | 12 | 2.815 | ... | ... | ... | ... | 0.19 |
| 1845 | 66.2 | — 1.2 | 95.0 | 45.7 | 49.3 | 7 | 2.195 | ... | ... | ... | ... | 0.30 |
| 1846 | 68.0 | + 0.6 | 94.6 | 44.5 | 50.1 | 9 | 2.895 | ... | ... | ... | ... | 0.29 |
| 1847 | 68.0 | + 0.6 | 87.0 | 43.2 | 43.8 | 8 | 3.355 | ... | ... | ... | ... | 0.19 |
| 1848 | 65.6 | — 1.8 | 82.2 | 44.1 | 38.1 | 10 | 1.890 | ... | ... | N 14 W | 0.18 | 4.94mls |
| 1849 | 68.4 | + 1.0 | 88.6 | 45.2 | 43.4 | 4 | 3.415 | ... | ... | S 5 W | 0.75 | 3.52 |
| 1850 | 68.0 | + 1.6 | 86.2 | 51.6 | 34.6 | 12 | 5.270 | ... | ... | N 81 E | 0.59 | 4.56 |
| 1851 | 65.0 | — 2.4 | 82.7 | 46.5 | 36.2 | 12 | 3.625 | ... | ... | N 60 W | 0.88 | 4.13 |
| 1852 | 66.8 | + 0.6 | 90.1 | 48.5 | 41.6 | 8 | 4.025 | ... | ... | N 43 W | 0.93 | 3.33 |
| 1853 | 65.6 | — 1.8 | 91.3 | 41.6 | 49.7 | 10 | 0.915 | ... | ... | S 58 E | 0.24 | 3.89 |
| 1854 | 72.5 | + 5.1 | 98.0 | 42.5 | 55.5 | 9 | 4.805 | .. | ... | S 49 W | 0.37 | 4.03 |
| 1855 | 67.9 | + 0.5 | 92.8 | 49.2 | 43.6 | 13 | 3.245 | ... | ... | S 19 W | 0.73 | 6.47 |
| 1856 | 69.9 | + 2.5 | 96.6 | 49.5 | 47.1 | 8 | 1.120 | ... | ... | N 70 W | 1.57 | 5.84 |
| 1857 | 67.8 | + 0.4 | 86.6 | 47.0 | 39.6 | 15 | 3.475 | .. | ... | S 68 E | 0.81 | 4.74 |
| 1858 | 67.9 | + 0.5 | 85.0 | 52.0 | 33.0 | 13 | 3.072 | ... | ... | N 15 E | 1.13 | 5.76 |
| 1859 | 66.9 | — 0.5 | 88.0 | 44.7 | 43.3 | 12 | 2.611 | ... | ... | N 56 W | 1.48 | 5.81 |
| 1860 | 63.9 | — 3.5 | 88.0 | 43.8 | 44.2 | 13 | 4.330 | .. | ... | N 60 W | 2.15 | 7.29 |
| 1861 | 65.4 | — 2.0 | 84.5 | 47.0 | 37.5 | 16 | 2.935 | ... | ... | N 74 W | 1.43 | 4.66 |
| 1862 | 66.7 | — 0.7 | 95.5 | 48.2 | 47.3 | 15 | 5.344 | ... | ... | S 80 W | 1.42 | 5.80 |
| 1863 | 67.6 | + 0.2 | 83.5 | 48.0 | 35.5 | 15 | 3.408 | ... | ... | N 18 W | 0.40 | 3.89 |
| 1864 | 69.7 | + 2.3 | 90.2 | 49.0 | 41.2 | 8 | 1.332 | ... | ... | N 81 W | 2.23 | 6.00 |
| 1865 | 65.0 | — 2.4 | 85.0 | 45.8 | 37.2 | 11 | 2.470 | ... | ... | N 86 W | 2.28 | 5.34 |
| 1866 | 70.4 | + 3.0 | 94.0 | 47.8 | 46.2 | 16 | 5.390 | ... | ... | S 79 W | 0.94 | 4.17 |
| 1867 | 68.2 | + 0.8 | 94.0 | 48.2 | 45.8 | 12 | 1.965 | ... | ... | N 48 W | 1.40 | 5.45 |
| 1868 | 75.8 | + 8.4 | 93.4 | 59.0 | 34.4 | 5 | 0.510 | ... | ... | S 87 E | 0.72 | 4.66 |
| 1869 | 64.5 | — 2.9 | 84.9 | 49.8 | 35.1 | 13 | 4.610 | ... | ... | S 67 W | 2. | 5.07 |
| Results to 1868. | 67.4 | ... | 89.44 | 46.21 | 43 23 | 10.38 | 3.351 | ... | ... | N 68 W | 0.68 | 4.96 |
| Excess for '69 | — 2.92 | ... | — 4.54 | + 3.59 | + 8.13 | + 2.62 | + 1.259 | ... | ... | ... | ... | + 0.11 |

## MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETIC OBSERVATORY, TORONTO, ONTARIO,—AUGUST, 1869.

*Latitude*—43° 39′4 *North. Longitude*—5h. 17m. 33s. *West. Elevation above Lake Ontario*, 108 *feet.*

| Day. | Barom. at temp. of 32°. | | | | Temp. of the Air. | | | | Excess of Mean above Normal | Tension of Vapour | | | | Humidity of Air. | | | | Direction of Wind | | | Result't. | Velocity of Wind. | | | | Rain in Inches. | Snow in Inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0. A.M. | 2 P.M. | 10 P.M. | Mean. | 6 A.M. | 2 P.M. | 10 P.M. | M'N | | 6 A.M. | 2 P.M. | 10 P.M | M'N | 6 A.M. | 2 P.M. | 10 P.M. | M'N | 6 A.M. | 2 P.M. | 10 P.M. | | 6 A.M. | 2 P.M | 10 P.M. | Result't. | M'N. | | |
| | | | | | ° | ° | ° | | ° | | | | | | | | | | | | | | | | | | |
| 1 | 29.960 | 29.909 | — | — | 60.9 | 72.4 | — | — | — | .431 | .549 | — | — | 93 | 69 | — | — | N b E | S S E | Calm. | S 48 E | 0.4 | 0.5 | 0.0 | 1.27 | 1.35 | ... | ... |
| 2 | .727 | .538 | 20.459 | 29.5620 | 60.1 | 69.9 | 64.8 | 65.65 | — 2.37 | .476 | .555 | .582 | .550 | 92 | 76 | 95 | 87 | Calm. | S W b S | S W b W | S 51 W | 0.0 | 14.8 | 1.5 | 6.69 | 8.28 | .610 | ... |
| 3 | .546 | .521 | .531 | .5307 | 58.0 | 76.0 | 65.2 | 66.93 | — 0.98 | .416 | .406 | .484 | .432 | 86 | 45 | 78 | 67 | W N W | N W b W | W b N | N 65 W | 9.5 | 14.6 | 6.8 | 6.57 | 6.70 | .025 | ... |
| 4 | .500 | .436 | .470 | .4650 | 56.2 | 65.1 | 55.5 | 55.65 | —12.29 | .371 | .398 | .426 | .402 | 82 | 91 | 97 | 90 | W N W | S E | N E | N 5 E | 1.2 | 2.6 | 1.6 | 1.76 | 2.22 | .155 | ... |
| 5 | .528 | .632 | .757 | .6523 | 54.7 | 63.4 | 54.0 | 57.83 | — 9.92 | .348 | .299 | .303 | .313 | 81 | 51 | 72 | 68 | N | N b W | N | N 6 W | 12.0 | 12.6 | 10.0 | 8.29 | 8.42 | ... | ... |
| 6 | .833 | .825 | .873 | .8540 | 49.0 | 64.1 | 54.7 | 56.05 | —10.74 | .256 | .278 | .283 | .283 | 74 | 46 | 66 | 62 | N N W | N N W | N b E | N 18 W | 2.8 | 9.4 | 7.0 | 7.70 | 7.80 | ... | ... |
| 7 | .921 | .907 | .870 | .8932 | 50.0 | 63.0 | 51.8 | 56.46 | —11.10 | .253 | .337 | .321 | .311 | 69 | 59 | 83 | 68 | N | S b W | N N W | N 40 W | 7.0 | 11.2 | 0.4 | 2.55 | 5.16 | ... | ... |
| 8 | .903 | .818 | — | — | 51.1 | 67.7 | — | — | — | .289 | .374 | — | — | 76 | 55 | — | — | Calm. | S | S W b W | S 26 W | 0.0 | 7.0 | 1.7 | 3.04 | 3.37 | ... | ... |
| 9 | .767 | .737 | .672 | .7190 | 53.0 | 72.4 | 59.0 | 63.18 | — 4.13 | .351 | .508 | .380 | .428 | 85 | 63 | 76 | 74 | Calm. | S S W | Calm. | S 33 W | 0.0 | 7.8 | 0.0 | 3.50 | 3.55 | ... | ... |
| 10 | .656 | .602 | .605 | .6142 | 58.7 | 74.2 | 66.3 | 66.63 | — 0.63 | .442 | .554 | .548 | .504 | 90 | 65 | 85 | 78 | W S W | S S W | Calm. | S 35 W | 2.4 | 9.0 | 0.0 | 2.91 | 3.10 | .155 | ... |
| 11 | .609 | .657 | .727 | .6718 | 64.8 | 77.1 | 65.9 | 69.33 | + 2.28 | .595 | .517 | .560 | .536 | 97 | 55 | 78 | 76 | Calm. | N E b N | N b W | N 11 W | 0.0 | 8.5 | 7.6 | 5.58 | 6.02 | ... | ... |
| 12 | .771 | .736 | .646 | .7162 | 59.4 | 70.0 | 61.2 | 64.67 | — 2.23 | .375 | .540 | .410 | .462 | 74 | 74 | 76 | 75 | N N E | E b S | Calm. | N 77 E | 5.0 | 7.0 | 0.0 | 2.84 | 3.92 | .471 | ... |
| 13 | .621 | .663 | .753 | .6306 | 63.7 | 74.9 | 69.0 | 69.27 | — 0.48 | .570 | .652 | .323 | .519 | 90 | 76 | 65 | 79 | N W b W | S S W | N b W | N 28 W | 3.3 | 6.0 | 6.5 | 3.84 | 6.13 | ... | ... |
| 14 | .817 | .735 | .630 | .6630 | 60.5 | 63.7 | 59.4 | 61.38 | — 5.20 | .335 | .376 | .410 | .396 | 73 | 63 | 81 | 73 | N E | E b N | E N E | S 88 E | 2.8 | 8.6 | 8.6 | 6.84 | 7.66 | .700 | ... |
| 15 | .338 | .391 | — | — | 63.4 | 68.8 | — | — | — | .548 | .424 | — | — | 94 | 60 | — | — | Calm. | W | W b N | N 83 W | 0.0 | 21.5 | 2.5 | 9.11 | 10.29 | ... | ... |
| 16 | .558 | .607 | .590 | .5823 | 58.0 | 65.9 | 60.9 | 61.62 | — 4.72 | .416 | .474 | .491 | .460 | 86 | 74 | 92 | 82 | N W b N | S S E | Calm. | S 40 E | 1.8 | 2.6 | 0.0 | 0.71 | 1.52 | ... | ... |
| 17 | .661 | .703 | .719 | .6932 | 60.1 | 67.7 | 63.0 | 64.03 | — 2.03 | .476 | .464 | .475 | .471 | 92 | 68 | 82 | 79 | N W | S b W | N | N 82 W | 1.0 | 7.5 | 7.0 | 1.13 | 2.80 | ... | ... |
| 18 | .718 | .666 | .645 | .6747 | 57.2 | 72.0 | 67.4 | 65.15 | + 0.23 | .404 | .613 | .494 | .504 | 86 | 78 | 75 | 78 | Calm. | S S E | S W | S 14 W | 0.0 | 7.0 | 1.0 | 2.00 | 2.37 | ... | ... |
| 19 | .645 | .563 | .417 | .5298 | 62.3 | 75.3 | 69.5 | 69.70 | + 4.02 | .649 | .709 | .617 | .635 | 98 | 81 | 86 | 88 | W b S | S E | S S W | S 26 W | 0.6 | 6.5 | 5.0 | 4.34 | 5.27 | ... | ... |
| 20 | .416 | .438 | .551 | .4768 | 76.7 | 86.8 | 68.1 | 75.18 | + 9.68 | .703 | .822 | .566 | .672 | 79 | 64 | 82 | 76 | S W b W | W b N | N b E | N 29 W | 2.8 | 9.0 | 11.0 | 4.09 | 7.28 | insp. | ... |
| 21 | .578 | .613 | .676 | .6228 | 64.1 | 66.0 | 63.4 | 64.52 | — 0.77 | .524 | .465 | .508 | .493 | 87 | 71 | 86 | 81 | N E b N | E b N | Calm. | N 60 E | 3.4 | 8.6 | 0.0 | 3.76 | 4.35 | 1.150 | ... |
| 22 | .717 | .772 | — | — | 63.0 | 69.2 | — | — | — | .487 | .405 | — | — | 84 | 56 | — | — | Calm. | S S E | N N E | S 81 E | 0.0 | 5.4 | 3.4 | 0.97 | 2.35 | ... | ... |
| 23 | .870 | .860 | .854 | .8593 | 59.1 | 71.3 | 61.2 | 64.77 | — 0.08 | .390 | .442 | .434 | .435 | 78 | 57 | 80 | 72 | Calm. | E b S | N N E | N 68 E | 0.0 | 5.2 | 2.5 | 2.30 | 2.97 | ... | ... |
| 24 | .852 | .778 | .670 | .7627 | 60.6 | 71.0 | 65.2 | 66.70 | + 2.10 | .419 | .611 | .604 | .553 | 80 | 80 | 97 | 84 | N b E | E S E | Calm. | S 72 E | 1.2 | 1.5 | 0.0 | 1.32 | 1.71 | ... | ... |
| 25 | .594 | .545 | .643 | .5943 | 67.0 | 77.8 | 66.9 | 68.85 | + 4.50 | .594 | .669 | .389 | .540 | 90 | 69 | 73 | 75 | Calm. | N W | Calm | N 46 W | 0.0 | 19.8 | 0.0 | 7.13 | 8 50 | .030 | ... |
| 26 | .763 | .800 | .774 | .7800 | 60.5 | 67.7 | 59.5 | 61.63 | — 2.47 | .382 | .412 | .378 | .367 | 73 | 60 | 83 | 71 | N E b N | S b W | N W b N | N 56 W | 2.8 | 4.6 | 0.8 | 0.21 | 2.50 | ... | ... |
| 27 | .774 | .691 | .670 | .6768 | 52.6 | 65.2 | 63.7 | 62.10 | — 1.83 | .342 | .421 | .491 | .432 | 86 | 67 | 83 | 77 | N b E | E | E N E | N 80 E | 3.5 | 6.2 | 2.0 | 2.98 | 3.22 | .517 | ... |
| 28 | .507 | .394 | .488 | .4676 | 64.1 | 76.3 | 64.8 | 68.55 | + 4.98 | .591 | .723 | .555 | .613 | 99 | 82 | 90 | 87 | Calm. | Calm. | Calm. | N 68 W | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | ... | ... |
| 29 | .562 | .591 | — | — | 57.6 | 71.7 | — | — | — | .376 | .411 | — | — | 79 | 53 | — | — | N W b W | W b N | W | N 66 W | 12.8 | 12.8 | 2.4 | 10.36 | 10.52 | ... | ... |
| 30 | .697 | .699 | .742 | .7152 | 54.7 | 64.6 | 55.8 | 58.76 | — 4.32 | .349 | .354 | .333 | .337 | 81 | 57 | 74 | 68 | N W b N | N W b N | N W | N 33 W | 8.0 | 18.0 | 3.0 | 9.53 | 9.69 | ... | ... |
| 31 | .835 | .826 | .865 | .8447 | 46.4 | 57.2 | 48.2 | 51.22 | —11.56 | .249 | .228 | .255 | .239 | 79 | 48 | 75 | 65 | N N W | N N W | N W b N | N 23 W | 1.6 | 10.0 | 0.5 | 6.77 | 6.87 | ... | ... |
| | 29.6832 | 29.6603 | 29.6579 | 29.6654 | 58 73 | 69.54 | 60.98 | 63.64 | — 2.32 | .430 | .493 | .445 | .456 | 84 | 66 | 81 | 76 | ..... | ..... | ..... | ..... | 2.77 | 8.54 | 2.99 | ..... | 5.13 | 4.273 | ... |

## REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR AUGUST, 1869

NOTE.—The monthly means do not include Sunday observations. The daily means, excepting those that relate to the wind, are derived from six observations daily, namely at 6 A.M., 8 A.M., 2 P.M., 4 P.M., 10 P.M., and midnight. The means and resultants for the wind are from hourly observations.

Highest Barometer.....29.960 at 6 a.m. on 1st. } Monthly range=
Lowest Barometer.....29.338 at 6 a.m. on 15th. } 0.622.

Self-registering Ther.
- Maximum Temperature .....89°0 on 20th. } Monthly range=
- Minimum Temperature .....43°5 on 6th. } 45·5.
- Mean Maximum Temperature .....72°14. } Mean daily range=
- Mean Minimum Temperature .....55°62. } 16° 2.
- Greatest daily range.....24°0 from a.m. to p.m. of 8th.
- Least daily range.....0°2 from a.m. to p.m. of 4th.

Warmest day.....20th...Mean Temperature.....75°18. } Difference=23°96.
Coldest day .....31st ...Mean Temperature.....61°22. }

Maximum { Solar .....106°5 on 20th. } Monthly range=
Radiation. { Terrestrial ... ..... ..... 34°0 on 6th & 31st } 72°5.

Aurora observed on 4 nights, viz.: 5th, 6th, 10th, and 24th.

Possible to see Aurora on 24 nights; impossible on 7 nights.

Raining on 11 days; depth 4.273 inches; duration of fall 23.0 hours.

Mean of Cloudiness=0.53.

Resultant Direction N. 42° W.; Resultant Velocity 1.98.

Mean Velocity 5.13 miles per hour.

Maximum Velocity 26.0 miles, from 11 a.m. to noon of 15th.

Most Windy day 20th; Mean Velocity 10.52 miles per hour.

Least Windy day 1st; Mean Velocity 1.35 miles per hour.

Most Windy hour 2 p.m; Mean Velocity 8.75 miles per hour.

Least Windy hour 4 a.m.; Mean Velocity 2.84 miles per hour.

4th. Thunder storm during morning. 11th. Solar halo.
12th. Thunder storm during night. 14th. Solar halo.
14th. Sheet lightning at midnight. 17th. Lunar halo.
19th. Distant thunder. 20th. Distant thunder; solar halo and *parhelia distinct*.
27th. Violent thunder storm during night and at 6.30 a.m. of 28th.
Hoar frost night of 31st.

## COMPARATIVE TABLE FOR AUGUST

| YEAR. | TEMPERATURE. Mean. | Excess above average | Maximum. | Minimum. | Range. | RAIN. No of days. | Inches | SNOW. No. of days. | Inches. | WIND. Resultant. Direction | Vel'y | Mean Velocity. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ° | ° | ° | ° | ° | | | | | ° | | |
| 1841 | 64.4 | — 1.7 | 84.8 | 45.7 | 39. | 9 | 9.617 | ... | ... | ... | ... | 0.19 lbs |
| 1842 | 65.7 | — 0.4 | 81.8 | 43.9 | 37.9 | 6 | 2.500 | .. | .. | ... | ... | 0.30 |
| 1843 | 66.4 | + 0.3 | 83.1 | 44.0 | 39.1 | 4 | 4.850 | ... | ... | ... | . | 0.12 |
| 1844 | 64.3 | — 1.8 | 86.8 | 45.5 | 43.3 | 17 | imper | ... | ... | ... | ... | 0.16 |
| 1845 | 67.9 | + 1.8 | 84.8 | 41.5 | 43.3 | 9 | 1.725 | ... | ... | ... | ... | 0.19 |
| 1846 | 68.4 | + 2.3 | 86.4 | 49.5 | 36.9 | 9 | 1.770 | .. | .. | ... | ... | 0.17 |
| 1847 | 65.1 | — 1.0 | 82.6 | 44.6 | 38.0 | 10 | 2.140 | ... | ... | ... | .. | 0.19 |
| 1848 | 69.2 | + 3.1 | 87.0 | 48.7 | 38.3 | 8 | 0·855 | ... | ... | S 21 E | 0.98 | 4.55mls |
| 1849 | 66.3 | + 0.2 | 79.0 | 49.0 | 30.0 | 10 | 4.970 | ... | ... | N 71 W | 0.60 | 3.76 |
| 1850 | 66.8 | + 0.7 | 85.0 | 41.0 | 44.0 | 13 | 4.355 | ... | ... | N 15 E | 0.35 | 4.46 |
| 1851 | 63.6 | — 2.5 | 79.8 | 42.0 | 37.8 | 10 | 1.360 | ... | ... | N 63 W | 0.40 | 4.63 |
| 1852 | 65.9 | — 0.2 | 81.2 | 45.8 | 35.4 | 9 | 2.695 | ... | ... | N 70 E | 0.56 | 3.30 |
| 1853 | 68.6 | + 2.5 | 94.9 | 42.5 | 52.4 | 11 | 2·575 | ... | ... | S 36 E | 0.30 | 4.26 |
| 1854 | 68.0 | + 1.9 | 99.2 | 45.6 | 53.6 | 5 | 0.455 | ... | ... | N 64 W | 1.76 | 4.60 |
| 1855 | 64.1 | — 2.0 | 83.5 | 40.0 | 43.5 | 7 | 1.455 | ... | ... | N 63 W | 1.04 | 6.97 |
| 1856 | 63.6 | — 2.5 | 82.7 | 41.5 | 41.2 | 12 | 1.680 | ... | ... | N 50 W | 2.88 | 7.03 |
| 1857 | 65.3 | — 0.8 | 88.2 | 46.0 | 42.2 | 13 | 5.265 | ... | ... | N 77 W | 1.51 | 6.36 |
| 1858 | 67.6 | + 1.5 | 84.0 | 44.0 | 40.0 | 11 | 3.890 | ... | ... | N 69 W | 1.57 | 6.50 |
| 1859 | 66.6 | + 0.5 | 82.2 | 45.8 | 36.4 | 11 | 3.990 | ... | ... | N 36 W | 1.62 | 5.96 |
| 1860 | 64.5 | — 1.6 | 87.0 | 46.8 | 40.2 | 14 | 3.405 | ... | ... | N 70 W | 1.83 | 5.80 |
| 1861 | 65.5 | — 0.6 | 85.2 | 47.0 | 38.2 | 15 | 2.955 | .. | ... | N 8 E | 0.46 | 4.21 |
| 1862 | 67.6 | + 1.5 | 89.5 | 42.8 | 46.7 | 15 | 3.483 | ... | ... | N 78 W | 1.67 | 5.96 |
| 1863 | 66.6 | + 0.5 | 88.0 | 42.4 | 45.6 | 12 | 2.208 | .. | ... | S 61 W | 1.80 | 4.89 |
| 1864 | 68.6 | + 2.5 | 94.0 | 47.0 | 47.0 | 16 | 5.060 | ... | ... | N 70 W | 1.38 | 4.75 |
| 1865 | 65.2 | — 0.9 | 87.8 | 44.4 | 43.4 | 8 | 1.990 | ... | ... | N 60 W | 1.55 | 5.07 |
| 1866 | 60.8 | — 5.3 | 77.0 | 42.4 | 34.6 | 14 | 4.457 | ... | ... | N 59 W | 2.58 | 5.16 |
| 1867 | 68.1 | + 2.0 | 95.2 | 42.2 | 53.0 | 10 | 2.440 | ... | ... | N 76 W | 1.25 | 4.52 |
| 1868 | 67.2 | + 1.1 | 84.4 | 46.8 | 37.6 | 13 | 1.562 | ... | ... | S 58 W | 1.01 | 6.15 |
| 1869 | 63.6 | — 2.5 | 89.0 | 43.5 | 45.5 | 11 | 4.273 | ... | ... | N 42 W | 1.98 | 5.13 |
| Results to 1868. | 66.09 | ... | 85.90 | 44.51 | 41.39 | 10.79 | 2.970 | ... | ... | N 68 W | 1.04 | 5.19 |
| Excess for '69 | — 2.45 | ... | + 3.10 | — 1.01 | + 4.11 | + 0.21 | + 1.303 | ... | ... | ... | ... | — 0.06 |

## MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETICAL OBSERVATORY, TORONTO, ONTARIO,—SEPTEMBER, 1869.

*Latitude*—43° 39′4 *North.* *Longitude*—5*h.* 17*m.* 31*s. West.* *Elevation above Lake Ontario, 108 feet.*

| Day. | Barom. at temp. of 32°. | | | | Temp. of the Air. | | | | Excess of Mean above Normal. | Tension of Vapour. | | | | Humidity of Air. | | | | Direction of Wind. | | | Resultant. | Velocity of Wind | | | | | Rain in Inches. | Snow in Inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 6 A.M. | 2 P M. | 10 P.M. | Mean. | 6 A M | 2 P M. | 10 PM | ME'N | | 6 A. M | 2 P. M. | 10 P. M. | M'N | 6 A. M | 2 P. M. | 10 P. M | M'N. | 6 A M. | 2 P M. | 10 P M | | 6 A.M. | 2 P M. | 10 P M. | Res'l-tant. | MEAN | | |
| 1 | 29.928 | 29.907 | 29.943 | 29.926 | 46.1 | 61.9 | 52.2 | 54.30 | — 8.25 | .225 | .238 | .275 | .250 | 72 | 43 | 70 | 62 | N N W | N N W | N | N 9 W | 4.8 | 5.0 | 6.6 | 6.81 | 6.09 | ... | ... |
| 2 | 30.025 | 29.920 | .947 | .9967 | 50.0 | 63.0 | 49.7 | 55.38 | — 6 87 | .304 | .362 | .278 | .312 | 84 | 63 | 77 | 71 | N b E | s b E | Calm. | S 40 E | 5.8 | 5.5 | 0.0 | 1.42 | 2.29 | ... | ... |
| 3 | 29.903 | 29.841 | .789 | .8376 | 47.5 | 61.0 | 60.5 | 58.95 | — 3.03 | .283 | .422 | .456 | .391 | 86 | 63 | 86 | 78 | Calm. | s s E | w b s | S 5 W | 0.0 | 4.4 | 1.2 | 2.38 | 2.55 | ... | ... |
| 4 | .776 | .666 | .654 | .6653 | 53.3 | 72.0 | 64.1 | 63.13 | + 2.05 | .366 | .556 | .499 | .485 | 90 | 70 | 83 | 82 | Calm. | s b W | s W | S 14 W | 0.0 | 9 2 | 1.0 | 3.62 | 3.72 | ... | ... |
| 5 | .600 | .596 | — | — | 56.2 | 74.6 | — | — | — | .360 | .567 | — | — | 86 | 59 | — | — | E | s b W | s s W | S 18 W | 1.2 | 12.8 | 1.8 | 5.20 | 5.33 | ... | ... |
| 6 | .596 | .591 | .614 | .6057 | 62.3 | 75.5 | 64.6 | 67.93 | + 6.88 | .522 | .567 | .546 | .540 | 93 | 64 | 90 | 80 | Calm. | s s W | s s W | S 9 W | 0.0 | 9.2 | 0.5 | 4.41 | 4.70 | ... | ... |
| 7 | .555 | .437 | .416 | .4643 | 65.6 | 65.6 | 60.0 | 63.15 | + 2.43 | .585 | .585 | .439 | .535 | 92 | 92 | 88 | 91 | E b s | N b W | N N W | N 14 W | 2.8 | 6.6 | 12.5 | 7.18 | 9.48 | 2.350 | ... |
| 8 | .384 | .381 | .112 | .3950 | 58.0 | 58.7 | 55.1 | 56.83 | — 3.52 | .452 | .419 | .398 | .417 | 94 | 85 | 91 | 90 | N N W | N b W | N W | N 22 W | 9.2 | 12.2 | 13.0 | 11.45 | 12.27 | .470 | ... |
| 9 | .525 | .619 | .683 | .6172 | 53.3 | 56.5 | 53.6 | 54.83 | — 5.15 | .344 | .322 | .329 | .328 | 84 | 71 | 80 | 76 | N W b W | N W b W | N b W | N 32 W | 7.0 | 3.0 | 3.8 | 7.02 | 7.38 | ... | ... |
| 10 | .745 | .728 | .734 | .7348 | 51.8 | 68.7 | 55.5 | 58.08 | — 1.52 | .332 | .428 | .381 | .383 | 86 | 72 | 86 | 79 | N | s s W | Calm. | N 7 W | 5.0 | 5.8 | 0.0 | 0.55 | 2.09 | ... | ... |
| 11 | .765 | .718 | .741 | .7 93 | 49.7 | 71.7 | 63.0 | 62.48 | + 3.28 | .278 | .476 | .462 | .421 | 77 | 61 | 80 | 73 | Calm. | s W b s | W s W | S 32 W | 0.0 | 8.0 | 0.5 | 2.65 | 2.71 | trap | ... |
| 12 | .775 | .822 | — | — | 58.0 | 73.5 | — | — | — | .452 | .578 | — | — | 94 | 70 | — | — | Calm. | S | E b s | S 34 E | 0.0 | 7.2 | 1.3 | 1.40 | 2.43 | ... | ... |
| 13 | .859 | .879 | .857 | .8807 | 58.0 | 70.6 | 65.9 | 65.12 | + 6.70 | .452 | .491 | .527 | .492 | 94 | 66 | 83 | 80 | N E b E | E b S | S E | S 79 E | 1.6 | 4.2 | 1.0 | 2.87 | 3.21 | ... | ... |
| 14 | .938 | .889 | .849 | .8882 | 59.0 | 68.8 | 64.8 | 65.05 | + 7.02 | .439 | .462 | .489 | .463 | 88 | 65 | 80 | 75 | E S E | E b S | S E | S 83 E | 2.2 | 8.8 | 1.0 | 4.11 | 4.32 | ... | ... |
| 15 | .813 | .697 | .637 | .7032 | 60.9 | 70.6 | 64.8 | 65.67 | + 8.05 | .491 | .491 | .555 | .511 | 92 | 66 | 90 | 81 | E | E | Calm. | S 79 E | 2.2 | 5.4 | 0.0 | 2.74 | 2.85 | trap. | ... |
| 16 | .635 | .619 | .600 | .6200 | 64.1 | 71.7 | 64.5 | 66.98 | + 9.77 | .565 | .574 | .560 | .566 | 94 | 74 | 92 | 86 | Calm | S E | Calm | S 38 E | 0.0 | 7.0 | 0.0 | 2.04 | 3.08 | .410 | ... |
| 17 | .701 | .787 | .823 | .7785 | 61.9 | 70.6 | 58.1 | 63.02 | + 6.23 | .528 | .491 | .353 | .446 | 95 | 66 | 82 | 78 | Calm. | s s W | Calm. | S 68 W | 0.0 | 6.2 | 0.0 | 0.67 | 2.28 | ... | ... |
| 18 | .877 | .867 | .866 | .8692 | 54.4 | 69.2 | 62.7 | 62.34 | + 5.95 | .352 | .551 | .530 | .482 | 82 | 77 | 93 | 85 | N b E | E S E | N E b S | S 83 E | 2.4 | 4.0 | 0.6 | 1.60 | 1.88 | ... | ... |
| 19 | .907 | .855 | — | — | 57.6 | 77.8 | — | — | — | .458 | .690 | — | — | 96 | 72 | — | — | Calm | s b W | W s W | S 40 W | 0.0 | 7.0 | 1.6 | 2.11 | 2.33 | ... | ... |
| 20 | .826 | .746 | .723 | .7650 | 62.3 | 79.6 | 67.7 | 68.73 | +13.18 | .497 | .699 | .685 | .569 | 88 | 68 | 87 | 81 | Calm. | E S E | W N W | N 82 E | 0.0 | 6.2 | 1.0 | 0.44 | 2.44 | .195 | ... |
| 21 | .764 | .807 | .823 | .7980 | 66.3 | 69.3 | 59.8 | 64.62 | + 9.50 | .535 | .365 | .369 | .404 | 83 | 51 | 72 | 67 | N W b N | N W b N | N b W | N 23 W | 5.6 | 9.8 | 8.6 | 6.85 | 7.30 | ... | ... |
| 22 | .831 | .841 | .877 | .8537 | 68.0 | 69.2 | 58.3 | 62.05 | + 7.40 | .405 | .497 | .448 | .454 | 84 | 70 | 92 | 82 | N N E | S S E | Calm. | S 86 E | 3.0 | 6.2 | 0.0 | 1.15 | 2.16 | ... | ... |
| 23 | .947 | .920 | .884 | .9103 | 58.3 | 68.1 | 60.5 | 62.80 | + 8.53 | .448 | .511 | .434 | .477 | 92 | 75 | 82 | 83 | Calm. | E | N N E | N 61 E | 0.0 | 6.8 | 4.0 | 3.47 | 3.95 | ... | ... |
| 24 | .867 | .807 | .767 | .8097 | 60.1 | 73.5 | 65.2 | 66.63 | +12.80 | .501 | .651 | .590 | .580 | 96 | 79 | 95 | 90 | N E b N | S E | E N E | S 51 E | 2.2 | 3.8 | 2.6 | 2.19 | 3.15 | ... | ... |
| 25 | .741 | .618 | .569 | .6320 | 66.3 | 68.1 | 58.3 | 64.63 | +11.12 | .618 | .594 | .436 | .548 | 95 | 87 | 90 | 89 | s b W | N W b N | N N W | N 53 W | 2.2 | 9.8 | 10.8 | 4.51 | 7.57 | .640 | ... |
| 26 | .519 | .554 | — | — | 54.7 | 54.4 | — | — | — | .380 | .277 | — | — | 89 | 65 | — | — | N W b W | N W b N | N W b N | N 30 W | 12.2 | 21.6 | 7.3 | 12.02 | 12.03 | .062 | ... |
| 27 | .726 | .734 | .817 | .7646 | 35.6 | 48.6 | 39.2 | 41.98 | +10.62 | .186 | .211 | .190 | .193 | 89 | 61 | 79 | 73 | N N W | N W | W b N | N 46 W | 16.3 | 13.5 | 5.2 | 8.12 | 8.51 | ... | ... |
| 28 | .890 | .844 | .816 | .8517 | 36.0 | 55.8 | 52.7 | 49.47 | + 2.72 | .189 | .228 | .288 | .245 | 89 | 50 | 72 | 70 | W N W | W s W | S W b W | S 65 W | 4.8 | 8.0 | 6.5 | 6.31 | 6.49 | ... | ... |
| 29 | .879 | .874 | .885 | .8647 | 49.0 | 65.5 | 49.3 | 54.90 | + 3.15 | .297 | .367 | .343 | .314 | 85 | 68 | 86 | 73 | W S W | S W b S | Calm. | S 43 W | 2.8 | 13.5 | 0.0 | 5.34 | 5.65 | ... | ... |
| 30 | .898 | .847 | .838 | .8592 | 48.2 | 67.0 | 55.1 | 57.73 | + 6.35 | .317 | .396 | .364 | .364 | 94 | 59 | 84 | 77 | Calm | S W b S | W S W | S 40 W | 0.0 | 12.0 | 2.4 | 4.65 | 4.96 | ... | ... |
| M | 29.7659 | 29.7671 | 29.7624 | 29.7630 | 55.23 | 66.99 | 58.50 | 60.67 | + 3.42 | .404 | .460 | .426 | .430 | 88 | 68 | 84 | 70 | ..... | ..... | ..... | ..... | 2.91 | 8.06 | 3.14 | ..... | 4.89 | 1.027 | ... |

NOTE.—The monthly means *do not* include Sunday observations. The daily means, excepting those that relate to the wind, are derived from six observations daily, namely, at 6 A.M., 8 A.M., 2 P.M., 4 P.M., 10 P.M., and midnight. The means and resultants for the wind are from hourly observations.

Highest Barometer.....30.045 at 8 a.m. on 2nd. } Monthly range=
Lowest Barometer.....29.369 at 4 p.m. on 8th. } 0.676 inches.

Self-registering Ther.
- Maximum temperature .....81°0 on 20th. } Monthly range=
- Minimum temperature .....34°4 on 28th. } 46°6
- Mean maximum temperature .....69°35 } Mean daily range=
- Mean minimum temperature .....53°85 } 15°50
- Greatest daily range .....24°2 from a.m. to p.m. of 11th.
- Least daily range .....4°0 from a.m. to p.m. of 8th.

Warmest day.....20th; mean temperature.....68°73 } Difference=26°75.
Coldest day.....27th; mean temperature.....41°98 }

Maximum Solar.....94°0 *on 20th.* } Monthly range=
Radiation Terrestrial.....23°2 on 28th. } 70°8.

Aurora observed on 9 nights, viz.:—2nd, 3rd, 6th, 9th, 13th, 14th, 27*th*, 29*th*, and 30th.

Possible to see Aurora on 21 nights; impossible on 9 nights.

Raining on 8 days; depth, 4.927 inches; duration of fall, 47.9 hours.

Mean of cloudiness=0.47.

Resultant direction, N. 53° W.; resultant velocity, 1.16.

Mean velocity, 4.89 miles per hour.

Maximum velocity, 26.0 miles, from 1 to 2 p.m of 26th.

Most windy day, 8th; mean velocity, 12.27 miles per hour.

Least windy day, 18th; mean velocity, 1.88 miles per hour.

Most windy hour, 1 p.m.; mean velocity, 8.35 miles per hour.

Least windy hour, 5 a.m.; mean velocity, 2.54 miles per hour.

1st. Hoar frost.

7th Heavy rain storm.

16th. Thunder storm. 20th. Heavy thunder storm. 20th. Rainbow.

25th. Thunder storm. 28th. Hoar frost.

30th. Solar halo.

Dew recorded on 20 occasions, some of which were very heavy.

Fog recorded on 6 occasions during month.

## COMPARATIVE TABLE FOR SEPTEMBER.

| YEAR | TEMPERATURE. Mean. | Excess above Average | Maximum | Minimum | Range. | RAIN. No of days. | Inches. | SNOW. No. of days. | Inches. | WIND. Resultant. Direction. | Velocity. | Mean Velocity. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ° | ° | ° | ° | ° | | | | | ° | | |
| 1841 | 61.3 | + 3.4 | 80.2 | 34.2 | 46.0 | 9 | 3.340 | ... | ... | ... | ... | 0.26 lbs. |
| 1842 | 55.7 | — 2.2 | 83.8 | 27.9 | 55.9 | 12 | 6.160 | ... | ... | ... | ... | 0.45 |
| 1843 | 59.1 | + 1.2 | 89.0 | 32.2 | 56.8 | 10 | 9.760 | ... | ... | ... | ... | 0.57 |
| 1844 | 58.6 | + 0.7 | 81.3 | 28.2 | 53.6 | 4 | Impr | ... | .. | ... | ... | 0.26 |
| 1845 | 56.0 | — 1.9 | 79.6 | 34.0 | 45.6 | 10 | 6.245 | ... | ... | ... | ... | 0.34 |
| 1846 | 63.6 | + 5.7 | 84.3 | 37.3 | 47.0 | 11 | 4.595 | ... | ... | ... | ... | 0.33 |
| 1847 | 55.6 | — 2.3 | 74.5 | 35.0 | 39.5 | 15 | 6.665 | ... | ... | ... | ... | 0.33 |
| 1848 | 54.2 | — 3.7 | 80.4 | 28.1 | 52.3 | 11 | 3.115 | ... | ... | N 71 W | 2.35 | 5.81 miles. |
| 1849 | 58.2 | + 0.3 | 80.1 | 32.7 | 47.4 | 9 | 1.480 | ... | ... | N 75 W | 0.69 | 4.23 |
| 1850 | 56.6 | — 1.4 | 76.0 | 29.5 | 46.5 | 11 | 1.735 | ... | ... | S 65 W | 1.02 | 4.78 |
| 1851 | 60.0 | + 2.1 | 86.3 | 32.0 | 54.3 | 9 | 2.665 | ... | ... | N 14 E | 1.03 | 5.45 |
| 1852 | 57.5 | — 0.4 | 81.8 | 35.8 | 46.0 | 10 | 3.630 | ... | ... | N 77 W | 0.53 | 4.60 |
| 1853 | 58.8 | + 0.9 | 85.5 | 33.9 | 51.6 | 12 | 5.140 | ... | ... | N | 1.01 | 4.33 |
| 1854 | 61.0 | + 3.1 | 93.6 | 35.8 | 57.8 | 14 | 5.375 | ... | ... | N 22 W | 1.33 | 4.04 |
| 1855 | 59.5 | + 1.6 | 82.6 | 33.0 | 49.6 | 12 | 5.585 | ... | ... | N 20 E | 1.20 | 7.61 |
| 1856 | 57.1 | — 0.8 | 78.4 | 35.0 | 43.4 | 13 | 4.105 | ... | ... | S 70 W | 1.98 | 6.53 |
| 1857 | 58.6 | + 0.7 | 82.0 | 34.1 | 47.9 | 11 | 2.040 | ... | ... | N 68 W | 1.61 | 5.55 |
| 1858 | 59.1 | + 1.2 | 81.4 | 35.6 | 45.8 | 8 | 0.735 | ... | ... | S 74 W | 1.53 | 5.69 |
| 1859 | 55.2 | — 2.7 | 75.4 | 35.7 | 39.7 | 15 | 3.525 | ... | ... | N 44 W | 1.60 | 6.36 |
| 1860 | 55.3 | — 2.6 | 75.8 | 28.7 | 47.1 | 14 | 1.359 | ... | ... | N 71 W | 2.63 | 5.79 |
| 1861 | 59.1 | + 1.2 | 78.8 | 37.1 | 41.7 | 17 | 3.607 | ... | ... | N 71 W | 1.39 | 4.81 |
| 1862 | 59.6 | + 1.7 | 79.4 | 39.0 | 40.4 | 9 | 2.344 | ... | ... | N 59 W | 1.07 | 5.11 |
| 1863 | 55.9 | — 2.0 | 80.0 | 31.4 | 48.6 | 8 | 1.236 | ... | ... | N 16 W | 0.92 | 6.46 |
| 1864 | 56.4 | — 1.5 | 73.0 | 37.8 | 35.2 | 11 | 2.508 | ... | ... | N 38 W | 1.80 | 7.06 |
| 1865 | 64.5 | + 6.6 | 90.5 | 42.0 | 48.5 | 12 | 2.450 | ... | ... | S 56 E | 0.47 | 4.12 |
| 1866 | 55.2 | — 2.7 | 80.0 | 34.4 | 45.6 | 15 | 5.657 | ... | ... | N 33 W | 1.45 | 4.63 |
| 1867 | 57.9 | 0.0 | 87.0 | 31.8 | 55.2 | 9 | 1.225 | ... | ... | N 37 W | 1.45 | 5.43 |
| 1868 | 56.6 | — 1.3 | 75.5 | 36.0 | 39.5 | 16 | 4.239 | ... | ... | N 74 W | 0.85 | 6.68 |
| 1869 | 60.7 | + 2.8 | 81.0 | 34.4 | 46.6 | 8 | 4 027 | ... | ... | N 53 W | 1.16 | 4.89 |
| Results to 1868. | 57.93 | ... | ... 81.31 | 33.86 | 47.45 | 11.28 | 3.682 | ... | ... | N 55 W | 1.08 | 5.48 |
| Exc for 1869. | +2.74 | ..... | —0.31 | +0.54 | —0.85 | — 3.28 | + 0.345 | ... | ... | ... | ... | — 0.59 |

## MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETICAL OBSERVATORY, TORONTO, ONTARIO—OCTOBER, 1869

*Latitude*—43° 39′4 *North.* *Longitude*—5*h.* 17*m* 33*s. West* *Elevation above Lake Ontario, 108 feet.*

| Day. | Barom at temp. of 32°. | | | | Temp. of the Air. | | | | Excess of Mean above Normal | Tension of Vapour | | | | Humidity of Air. | | | | Direction of Wind. | | | Resultant. | Velocity of Wind. | | | | | Rain in Inches. | Snow in Inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A.M. | 2 P.M | 10 P.M. | Mean. | 6 A.M | 2 P.M | 10 P.M | M'N. | ° | 6 A.M | 2 P.M | 10 P.M. | M'N. | 6 A.M | 2 P.M. | 10 P.M. | M'N | 6 A.M. | 2 P.M. | 10 P.M | ° | 6 A.M. | 2 P.M. | 10 P.M. | Res'l-tant | M. AM | | |
| 1 | 29.844 | 29.758 | 29.664 | 29.7486 | 47.5 | 68.4 | 55.8 | 57.4 | + 6.43 | .306 | .441 | .365 | .372 | 93 | 64 | 82 | 79 | N N W | s b w | E N E | S 68 E | 1.5 | 2.2 | 2.2 | 1.20 | 2.27 | ... | ... |
| 2 | .682 | .638 | .589 | .5682 | 54.0 | 66.3 | 56.2 | 59.62 | + 9.03 | .367 | .456 | .94 | .419 | 88 | 70 | 87 | 82 | Calm. | s w b s | N | S 79 W | 0.0 | 12.2 | 9.0 | 2.92 | 6.06 | 0.150 | ... |
| 3 | .645 | .586 | — | — | 43.5 | 56.9 | — | — | — | .278 | .287 | — | — | 98 | 61 | — | — | Calm. | S S E | N E b I | N 82 E | 0.0 | 6.8 | 3.0 | 1.60 | 3.48 | ... | ... |
| 4 | .382 | .246 | .357 | .3308 | 45.4 | 59.0 | 53.3 | 52.73 | + 2.99 | .253 | .250 | .230 | .253 | 83 | 51 | 56 | 64 | N | N N W | N W | N 27 W | 7.0 | 15.0 | 16.0 | 12.75 | 13.34 | ... | ... |
| 5 | .540 | .610 | .698 | .6216 | 47.2 | 54.7 | 39.9 | 47.1 | — 2.37 | .290 | .304 | .198 | .264 | 89 | 71 | 80 | 80 | N W b N | N W | N W b W | N 41 W | 13.2 | 18.0 | 9.5 | 11.06 | 11.22 | ... | ... |
| 6 | .750 | .728 | .701 | .7196 | 34.5 | 54.0 | 42.8 | 44.63 | — 4.46 | .173 | .241 | .258 | .224 | 86 | 57 | 94 | 78 | N W b W | S b E | Calm. | S 17 W | 6.2 | 8.0 | 0.0 | 1.75 | 4.17 | ... | ... |
| 7 | .796 | .750 | .768 | .7713 | 41.9 | 60.9 | 47.6 | 50.80 | + 2.01 | .244 | .355 | .306 | .311 | 91 | 67 | 93 | 84 | N b E | S S E | S E b E | S 71 E | 5.0 | 7.8 | 1.0 | 1.60 | 3.68 | ... | ... |
| 8 | .812 | .801 | .778 | .7987 | 45.0 | 65.2 | 55.4 | 56.08 | + 7.00 | .258 | .432 | .371 | .354 | 86 | 70 | 85 | 79 | N N E | S E b E | N E b E | N 79 E | 5.2 | 4.2 | 4.5 | 2.68 | 3.72 | ... | ... |
| 9 | .710 | .637 | .495 | .613 | 49.3 | 64.1 | 60.1 | 58.5 | +10.38 | .323 | .408 | .376 | .381 | 91 | 67 | 72 | 77 | N E b E | E b S | S S W | S 37 E | 6.6 | 6.2 | 9.6 | 3.29 | 6.86 | ... | ... |
| 10 | .567 | .554 | — | — | 50.8 | 53.3 | — | — | — | .324 | .250 | — | — | 87 | 61 | — | — | S W b S | S S W | Calm | S 51 W | 8.8 | 9.0 | 0.0 | 3.85 | 4.08 | ... | ... |
| 11 | .365 | .300 | .435 | .3668 | 41.7 | 62.9 | 38.5 | 44.03 | — 2.09 | .218 | .223 | .205 | .215 | 82 | 55 | 88 | 72 | N b W | W b N | Calm. | W | 2.6 | 18.5 | 0.0 | 3.80 | 4.59 | .085 | ... |
| 12 | .361 | .209 | .413 | .3683 | 39.6 | 62.7 | 38.1 | 43.46 | — 3.78 | .210 | .168 | .195 | .185 | 87 | 41 | 85 | 70 | W b S | W b S | N W | N 79 W | 0.8 | 12.4 | 7.2 | 5.91 | 6.99 | ... | ... |
| 13 | .421 | .411 | .466 | .4316 | 31.6 | 49.1 | 32.4 | 38.70 | — 8.20 | .163 | .176 | .153 | .177 | 91 | 50 | 83 | 75 | N W b N | W b N | Calm. | N 57 W | 4.2 | 12.2 | 0.0 | 5.81 | 6.88 | ... | ... |
| 14 | .322 | .144 | .291 | .2538 | 46.1 | 47.1 | 40.3 | 44.43 | — 2.17 | .263 | .280 | .201 | .247 | 84 | 87 | 80 | 83 | S E | S b E | S W | S 9 W | 10.0 | 6.4 | 4.4 | 5.69 | 7.42 | .096 | ... |
| 15 | .340 | .444 | .606 | .4772 | 41.0 | 47.5 | 44.3 | 42.29 | — 4.07 | .227 | .216 | .209 | .217 | 88 | 65 | 84 | 79 | S W | N W b W | W b N | N 69 W | 5 0 | 15.2 | 3.6 | 6.54 | 7.31 | ... | ... |
| 16 | .639 | .569 | .487 | .5365 | 39.6 | 49.3 | 37.4 | 39.93 | — 6.13 | .152 | .203 | .170 | .182 | 89 | 57 | 76 | 74 | N W b W | S W | W S W | S 32 W | 4.5 | 8.0 | 1.6 | 2.80 | 3.16 | ... | ... |
| 17 | .393 | .437 | — | — | 42.8 | 51.8 | — | — | — | .250 | .188 | — | — | 90 | 49 | — | — | S W b W | N W b W | W N W | N 67 W | 1.4 | 19.4 | 9.3 | 10.03 | 10.31 | ... | ... |
| 18 | .594 | .632 | .698 | .6536 | 31.6 | 42.8 | 32.7 | 36.66 | — 8.93 | .156 | .168 | .142 | .155 | 87 | 61 | 76 | 74 | W b N | N W b W | W b N | N 71 W | 3.0 | 12.4 | 3.2 | 6.02 | 6.77 | ... | Inapp. |
| 19 | .668 | .584 | .634 | .6308 | 32.0 | 42.8 | 30.6 | 34.73 | —10.51 | .158 | .143 | .144 | .150 | 87 | 51 | 85 | 78 | W b S | W N W | W | N 83 W | 2.0 | 16.8 | 2.2 | 7.75 | 7.99 | Inap | Inapp. |
| 20 | .624 | .556 | .602 | .5872 | 34.5 | 43.9 | 37.5 | 39.03 | — 6.04 | .181 | .146 | .165 | .164 | 90 | 56 | 72 | 71 | W S W | W S W | S W b W | S 54 W | 5.0 | 12.2 | 9.0 | 7.71 | 7.80 | ... | ... |
| 21 | .464 | .476 | .561 | .4667 | 32.4 | 43.2 | 38.3 | 37.43 | — 7.33 | .161 | .209 | .171 | .177 | 87 | 74 | 74 | 79 | S W | S S W | W | S 32 W | 2.0 | 12.0 | 1.0 | 6.07 | 6.27 | ... | ... |
| 22 | .687 | .618 | .585 | .5874 | 37.4 | 44.3 | 41.7 | 41.55 | — 3.04 | .196 | .194 | .246 | .212 | 87 | 67 | 93 | 83 | Calm. | E b S | N E | N 65 E | 0.0 | 4.5 | 3.0 | 3.16 | 4.08 | .114 | ... |
| 23 | .374 | .164 | .381 | .3602 | 42.8 | 49.7 | 37.0 | 40.16 | — 4.13 | .258 | .231 | .176 | .221 | 94 | 91 | 79 | 87 | E N E | N W b N | N W b W | N 46 W | 2.6 | 14.8 | 18.0 | 9.46 | 10.63 | .465 | ... |
| 24 | .656 | .644 | — | — | 29.8 | 36.7 | — | — | — | .147 | .155 | — | — | 86 | 71 | — | — | W | W | S W | S 85 W | 0.5 | 11.6 | 10.1 | 8.72 | 9.00 | ... | Inapp. |
| 25 | .910 | .977 | .956 | .9528 | 28.4 | 38.1 | 30.9 | 32.38 | —11.45 | .142 | .160 | .122 | .128 | 90 | 44 | 64 | 66 | W | W b S | S W b W | S 80 W | 13.2 | 10.8 | 1.6 | 7.73 | 7.95 | ... | ... |
| 26 | .845 | .746 | .826 | .8005 | 31.3 | 32.7 | 26.1 | 29.65 | —13.93 | .136 | .128 | .110 | .125 | 77 | 68 | 86 | 78 | S W b W | W | N W b W | N 63 W | 3.6 | 12.0 | 8.5 | 7.10 | 8.20 | .. | 2.0 |
| 27 | .580 | .796 | .662 | .7297 | 21.5 | 33.8 | 30.6 | 28.87 | —14.48 | .102 | .158 | .152 | .134 | 88 | 81 | 89 | 83 | N W | S | W S W | N 87 W | 6.0 | 3.0 | 3.2 | 1.99 | 2.88 | ... | 0.2 |
| 28 | .208 | .205 | .216 | .2408 | 31.3 | 34.9 | 35.3 | 34.27 | — 8.82 | .160 | .178 | .198 | .181 | 90 | 87 | 96 | 91 | Calm. | W b S | S W b W | S 66 W | 0.0 | 1.6 | 3.5 | 3.06 | 3.12 | .052 | 0.1 |
| 29 | .254 | .442 | .640 | .4640 | 36.3 | 34.5 | 31.3 | 33.94 | — 8.93 | .193 | .128 | .152 | .158 | 90 | 64 | 86 | 81 | W b N | N W b N | N b W | N 26 W | 12.0 | 20.0 | 10.4 | 13.82 | 13.98 | Inap | ... |
| 30 | .708 | .838 | .912 | .8288 | 29.1 | 32.1 | 30.2 | 30.38 | —12.28 | .141 | .143 | .149 | .128 | 87 | 76 | 89 | 75 | N N W | N b W | N N W | N 16 W | 9.0 | 11.6 | 6.4 | 8.16 | 8.40 | ... | Inapp. |
| 31 | .926 | .896 | — | — | 28.4 | 36.7 | — | — | — | .134 | .135 | — | — | 86 | 62 | — | — | Calm. | S W | S W | S 54 W | 0.0 | 6.0 | 7.1 | 5.85 | 6.08 | ... | ... |
| | 29.5792 | 29.5468 | 29.6827 | 29.5708 | 37.85 | 48.29 | 39.98 | 42.29 | — 4.04 | .209 | .234 | .214 | .221 | 88 | 65 | 82 | 78 | ..... | ..... | ... | ... | 4.55 | 10.88 | 5.42 | ... | 6.73 | 0.962 | 2.3 |

## REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR OCTOBER, 1869.

NOTE.—The monthly means do not include Sunday observations. The daily means, excepting those that relate to the wind, are derived from six observations daily, namely at 6 A.M., 8 A.M., 2 P.M., 4 P.M., 10 P.M., and midnight. The means and resultants for the wind are from hourly observations.

Highest Barometer .....29.988 at 4 p. m. on 25th. } Monthly range=
Lowest Barometer.....29.144 at 2 p. m. on 14th. } 0.844

Self-registering Ther.
- Maximum temperature .....69°8 on 1st. } Monthly range=
- Minimum temperature .....18°7 on 27th. } 51°1
- Mean maximum temperature .....50°08 } Mean daily range=
- Mean minimum temperature .....35°75 } 14°33
- Greatest daily range.....23°0 from a.m. to p.m. of 7th.
- Least daily range..... 4°0 from a m. to p.m. of 29th.

Warmest day ..... 2nd; mean temperature 59°62 } Difference=30°75
Coldest day .....27th; mean temperature 28°87 }

Maximum { Solar.....89°8 on 1st. } Monthly range=
Radiation { Terrestrial.....8°0 on 27th. } 81°8

Aurora observed on 3 nights, viz : 6th, 25th, and 31st.

Possible to see aurora on 19 nights; impossible on 21 nights.

Snowing on 7 days; depth, 2.3 inches; duration of fall, 16.4 hours.

Raining on 8 days; depth, 0.962 inches; duration of fall, 33.3 hours.

Mean of cloudiness=0.60.

Resultant direction, N. 73° W.; Resultant velocity, 3 72.

Mean velocity, 6.73 miles per hour.

Maximum velocity, 21.3 miles, from 2 to 3 p.m. of 29th.

Most windy day, 29th; mean velocity, 13.98 miles per hour.

Least windy day, 1st; mean velocity, 2.27 miles per hour.

Most windy hour, 1 p.m.; mean velocity, 11.17 miles per hour.

Least windy hour, 1 a.m.; mean velocity, 4.20 miles per hour.

12th. Thin ice. 13th. Lunar corona. 14th. Thunder storm.
18th. First snow of season. 25th. Ice half an inch thick.
27th. Very large flocks of robins.

Fog recorded on four occasions during month.
Dew recorded on four occasions during month.

It will be seen from the comparative table, that October, 1869, is the coldest October except 1841 and 1843, differing, however, only slightly from 1868

## COMPARATIVE TABLE FOR OCTOBER.

| YEAR. | TEMPERATURE. Mean. | Excess above Average | Maximum. | Minimum | Range. | RAIN. No. of days. | Inches. | SNOW. No. of days. | Inches. | WIND. Resultant. Direction. | Velocity. | Mean Velocity. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ° | ° | ° | ° | ° | | | | | ° | | |
| 1841 | 41.6 | — 4.2 | 59.7 | 26.6 | 39.1 | 6 | 1.360 | 2 | ... | ... | ... | 0.41 lbs |
| 1842 | 45.1 | — 0.7 | 68.6 | 27.5 | 41.1 | 8 | 5.175 | 0 | ... | ... | .. | 0.35 |
| 1843 | 41.8 | — 4.0 | 68.0 | 24.2 | 43.8 | 12 | 3.790 | 4 | 2.5 | ... | ... | 0.54 |
| 1844 | 43.3 | — 2.5 | 71.6 | 15.9 | 55.7 | 7 | Imp | 4 | 12.0 | ... | ... | 0.43 |
| 1845 | 46.4 | + 0.6 | 64.0 | 19.7 | 44.3 | 11 | 1.760 | 1 | Inap | ... | ... | 0.26 |
| 1846 | 44.6 | — 1.2 | 70.1 | 20.7 | 49.4 | 14 | 4.180 | 2 | Inap | ... | ... | 0.44 |
| 1847 | 44.0 | — 1.8 | 64.6 | 20.4 | 44.2 | 13 | 4.390 | 2 | Inap | ... | ... | 0.19 |
| 1848 | 46.3 | + 0.5 | 61.8 | 24.5 | 37.3 | 11 | 1.550 | 0 | .. | N 54 W | 1.24 | 4.60 m. |
| 1849 | 45.3 | — 0.5 | 58.9 | 24.2 | 34.7 | 13 | 5.965 | 1 | Inap | N 12 W | 1.23 | 7.76 |
| 1850 | 45.4 | — 0.4 | 66.7 | 22.4 | 44.3 | 10 | 2.085 | 0 | ... | N 66 W | 1.10 | 5.60 |
| 1851 | 47.4 | — 1.6 | 66.2 | 25.2 | 41.0 | 10 | 1.686 | 2 | 0.3 | S 72 W | 1.05 | 4.19 |
| 1852 | 48.0 | + 2.2 | 70.7 | 23.8 | 46.9 | 12 | 5.280 | 0 | ... | N 5 E | 1.19 | 4.47 |
| 1853 | 44.4 | — 1.4 | 64.7 | 23.4 | 41.3 | 10 | 0.875 | 2 | Inap. | S 88 W | 1.74 | 4.77 |
| 1854 | 49.5 | + 3.7 | 75.4 | 26.4 | 49.0 | 15 | 1.405 | 3 | Inap | N 45 W | 1.55 | 4.57 |
| 1855 | 45.4 | — 0.4 | 68.0 | 22.6 | 45.4 | 14 | 2.485 | 5 | 0.8 | N 82 W | 4.91 | 9.88 |
| 1856 | 45.3 | — 0.5 | 71.4 | 23.0 | 48.4 | 10 | 0.875 | 2 | 0.1 | N 76 W | 2.15 | 6.07 |
| 1857 | 45.4 | — 0.4 | 64.0 | 26.5 | 37.5 | 10 | 1.040 | 2 | 0.2 | N 19 W | 2.93 | 6.24 |
| 1858 | 48.8 | + 3.0 | 76.3 | 31.5 | 44.8 | 17 | 1.795 | 1 | Inap | N 34 W | 0.30 | 5.96 |
| 1859 | 43.0 | — 2.8 | 69.8 | 22.3 | 47.5 | 11 | 0.940 | 4 | Inap | N 68 W | 6.04 | 8.12 |
| 1860 | 47.3 | + 1.5 | 68.0 | 28.4 | 39.6 | 15 | 1.618 | 1 | Inap | N 9 W | 2.00 | 6.93 |
| 1861 | 48.7 | + 1.9 | 71.0 | 29.0 | 42.0 | 15 | 1.993 | 1 | Inap | N 61 W | 1.06 | 5.96 |
| 1862 | 48.7 | + 2.9 | 76.6 | 26.2 | 50.4 | 19 | 2.484 | 2 | 0.5 | N 78 W | 2.89 | 6.53 |
| 1863 | 45.9 | + 0.1 | 66.4 | 30.5 | 35.9 | 16 | 2.522 | 0 | ... | S 71 W | 0.48 | 6.16 |
| 1864 | 45.2 | — 0.6 | 67.0 | 28.0 | 39.0 | 22 | 3.321 | 1 | Inap | N 60 W | 3.17 | 6.66 |
| 1865 | 44.5 | — 1.3 | 71.4 | 21.6 | 49.8 | 17 | 2.705 | 3 | 4.5 | N 36 W | 3.55 | 7.26 |
| 1866 | 49.1 | + 3.3 | 71.0 | 31.8 | 39.2 | 11 | 2.470 | 1 | Inap | N 30 W | 0.84 | 5.53 |
| 1867 | 49.9 | + 4.1 | 75.4 | 31.0 | 44.4 | 11 | 1.970 | 0 | ... | N 45 W | 1.51 | 5.73 |
| 1868 | 42.4 | — 3.4 | 67.6 | 24.0 | 43.6 | 10 | 1.365 | 2 | 2.0 | N 89 W | 1.27 | 7.10 |
| 1869 | 42.3 | — 3.5 | 69.8 | 18.7 | 51.1 | 8 | 0.962 | 7 | 2.3 | N 73 W | 3.72 | 6.73 |
| Results to 1868 | 45.76 | ..... | 68.39 | 24.83 | 43.56 | 12.62 | 2.472 | 1.76 | 0.88 | N 57 W | 1.72 | 6.05 |
| Excess for 1869. | — 3.47 | ..... | + 1.41 | — 6.13 | + 7.54 | — 4.52 | 1.511 | + 5.24 | + 1.42 | ... | ... | + 0.68 |

## MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETICAL OBSERVATORY, TORONTO, ONTARIO,—NOVEMBER, 1869.

*Latitude*—43° 39′4 *North.* *Longitude*—5h. 17m 33s. *West.* *Elevation above Lake Ontario*, 108 *feet.*

| Day. | Barom. at temp. of 32°. | | | | Temp. of the Air. | | | | Excess of Mean above Normal | Tension of Vapour | | | | Humidity of Air. | | | | Direction of Wind | | | Resultant. | Velocity of Wind. | | | | | Rain in Inches | Snow in Inches. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 6 A.M. | 2 P.M. | 10 P.M. | Mean. | 6 A.M. | 2 P.M. | 10 PM | ME'N. | | 6 A.M | 2 P.M. | 10 P.M. | M'N. | 6 A.M | 2 P.M | 10 P.M. | M'N. | 6 A.M. | 2 P.M. | 10 P.M | | 6 A.M. | 2 P.M. | 10 P.M | Res'l-tant. | MEAN | | |
| | | | | | ° | ° | ° | ° | | | | | | | | | | | | | | | | | | | | |
| 1 | 29.684 | 29.626 | 29.851 | 29.6953 | 34.5 | 47.9 | 37.0 | 39.62 | — 2.65 | .181 | .183 | .183 | .188 | 90 | 54 | 84 | 78 | w s w | w b N | N W | N 61° W | 2.0 | 12.0 | 3.2 | 4.77 | 5.20 | ... | ... |
| 2 | .575 | .573 | .528 | .5753 | 30.9 | 42.8 | 39.9 | 37.93 | — 3.98 | .157 | .232 | .233 | .207 | 90 | 84 | 95 | 89 | Calm | s E b E | Calm. | S 21 E | 0.0 | 1.0 | 0.0 | 1.13 | 1.39 | ... | ... |
| 3 | .792 | .708 | .677 | .7242 | 36.3 | 53.3 | 39.6 | 42.83 | + 1.15 | .193 | .279 | .219 | .224 | 90 | 69 | 90 | 82 | s s w | s w b s | Calm. | S 37 W | 1.0 | 9.8 | 0.0 | 2.84 | 2.85 | ... | ... |
| 4 | .660 | .604 | .265 | .4650 | 35.6 | 52.6 | 50.4 | 46.50 | + 5.08 | .167 | .269 | .351 | .262 | 80 | 67 | 96 | 81 | Calm. | E b S | S b W | S 13 W | 0.0 | 4.0 | 4.2 | 4.51 | 5.71 | .140 | ... |
| 5 | .166 | .166 | .274 | .2057 | 43.5 | 42.8 | 36.3 | 40.22 | — 0.93 | .223 | .213 | .169 | .197 | 78 | 77 | 78 | 79 | S W | S W b W | W b S | S 66 W | 13.0 | 14.5 | 12.0 | 13.95 | 14.53 | .045 | Inap. |
| 6 | .339 | .435 | .473 | .4235 | 33.4 | 32.0 | 28.4 | 31.15 | — 9.75 | .163 | .158 | .142 | .153 | 85 | 87 | 90 | 87 | W b N | N N W | N W b N | N 39 W | 10.6 | 6.4 | 8.2 | 7.68 | 8.16 | ... | 0.2 |
| 7 | .462 | .359 | — | — | 22.3 | 29.1 | — | — | .114 | .088 | — | — | 96 | 50 | — | — | N W | N W | W N W | N 57 W | 16.0 | 25.0 | 19.5 | 18.64 | 19.00 | ... | 0.1 |
| 8 | .328 | .350 | .461 | .3862 | 26.6 | 32.2 | 31.3 | 30.03 | —10.28 | .135 | .141 | .155 | .141 | 93 | 77 | 88 | 84 | W N W | W N W | N W b W | N 71 W | 16.5 | 23.5 | 9.4 | 13.44 | 13.58 | ... | 0.4 |
| 9 | .470 | .431 | .448 | .453 | 30.9 | 34.2 | 29.8 | 31.65 | — 8.42 | .149 | .163 | .147 | .148 | 86 | 77 | 88 | 83 | W | W b S | W S W | S 84 W | 7.6 | 7.2 | 8.6 | 8.38 | 8.42 | ... | Inap. |
| 10 | .481 | .518 | .579 | .5273 | 25.5 | 33.4 | 28.8 | 29.30 | —10.37 | .118 | .112 | .129 | .123 | 86 | 58 | 81 | 76 | W | N W | W S W | N 64 W | 2.8 | 12.6 | 2.0 | 6.98 | 7.29 | ... | 0.1 |
| 11 | .551 | .579 | .627 | .5930 | 25.9 | 34.2 | 30.2 | 30.13 | — 9.17 | .128 | .138 | .120 | .129 | 91 | 71 | 71 | 77 | W b N | N W | W b W | N 76 W | 5.0 | 16.2 | 10.5 | 9.90 | 10.48 | ... | ... |
| 12 | .642 | .630 | .683 | .6572 | 29.1 | 36.0 | 32.4 | 32.43 | — 6.53 | .136 | .129 | .153 | .138 | 80 | 61 | 84 | 76 | W b S | W | W | N 75 W | 9.0 | 11.0 | 6.2 | 7.34 | 7.59 | ... | Inap. |
| 13 | .687 | .651 | .694 | .6775 | 27.3 | 29.1 | 27.0 | 28.22 | —10.38 | .139 | .141 | .129 | .134 | 94 | 87 | 88 | 87 | W b E | N E b E | N E b N | N 37 E | 1.7 | 8.4 | 9.8 | 7.54 | 7.95 | ... | 0.5 |
| 14 | .710 | .694 | — | — | 25.9 | 29.8 | — | — | .129 | .134 | — | — | 91 | 80 | — | — | N | N b E | N W b W | N 9 W | 7.2 | 5.0 | 2.4 | 4.82 | 5.06 | ... | ... |
| 15 | .719 | .712 | .788 | .7438 | 22.6 | 30.2 | 28.4 | 27.22 | —10.69 | .111 | .128 | .142 | .130 | 92 | 76 | 90 | 87 | N b W | N N E | N W b W | N 22 W | 4.6 | 1.0 | 2.8 | 1.17 | 1.35 | ... | Inap. |
| 16 | .807 | .737 | .366 | .6053 | 31.3 | 35.2 | 32.7 | 32.90 | — 4.55 | .160 | .155 | .172 | .160 | 90 | 75 | 92 | 85 | Calm. | E b S | E b S | S 86 E | 0.0 | 15.2 | 26.0 | 13.82 | 14.20 | 1.400 | 3.0 |
| 17 | 28.876 | 28.793 | 28.920 | 28.8672 | 36.3 | 38.7 | 30.9 | 34.73 | — 2.25 | .202 | .162 | .120 | .163 | 94 | 68 | 69 | 79 | E b S | S W b S | W b S | S 52 W | 15.2 | 30.6 | 6.2 | 16.82 | 20.25 | .045 | Inap. |
| 18 | 29.197 | 29.377 | 29.504 | 29.3790 | 29.1 | 34.0 | 28.8 | 30.62 | — 5.98 | .141 | .117 | .137 | .125 | 87 | 57 | 86 | 75 | W b S | W b S | W S W | S 79 W | 12.6 | 15.4 | 5.6 | 7.89 | 9.05 | ... | 0.1 |
| 19 | .478 | .337 | .344 | .3725 | 32.7 | 34.5 | 35.3 | 34.83 | — 1.33 | .166 | .163 | .198 | .183 | 88 | 82 | 96 | 90 | E S E | E | S S E | S 70 E | 8.8 | 7.6 | 7.6 | 6.28 | 8.21 | .350 | 0.2 |
| 20 | .097 | .065 | .402 | .2063 | 33.1 | 38.5 | 29.8 | 33.62 | — 2.20 | .184 | .182 | .133 | .166 | 98 | 78 | 80 | 86 | N b E | W | W b N | N 69 W | 3.8 | 15.0 | 11.0 | 11.42 | 11.88 | Inap. | 0.1 |
| 21 | .596 | .678 | — | — | 26.6 | 30.6 | — | — | .126 | .116 | — | — | 87 | 67 | — | — | W N W | W b N | W N W | N 63 W | 21.0 | 7.8 | 2.4 | 6.19 | 6.45 | ... | Inap. |
| 22 | .847 | .708 | .520 | .6847 | 20.8 | 30.2 | 26.2 | 25.45 | — 9.37 | .102 | .149 | .131 | .125 | 92 | 89 | 92 | 90 | W N W | S E b S | E S E | N 85 E | 2.6 | 12.6 | 16.0 | 7.19 | 11.17 | ... | 5.5 |
| 23 | .527 | .657 | .790 | .6782 | 23.7 | 27.0 | 21.8 | 24.78 | — 9.65 | .113 | .121 | .120 | .114 | 87 | 82 | 90 | 85 | N | N b E | N | N 4 W | 11.0 | 6.0 | 3.4 | 5.37 | 5.55 | ... | ... |
| 24 | .991 | 30.065 | 30.104 | 30.0577 | 16.1 | 29.1 | 19.7 | 20.57 | —13.33 | .081 | .096 | .083 | .083 | 90 | 59 | 78 | 76 | N N W | Calm. | Calm. | N 3 W | 1.0 | 0.0 | 0.0 | 0.74 | 0.76 | ... | ... |
| 25 | 30.098 | 29.792 | 29.915 | 29.9877 | 16.8 | 31.3 | 30.9 | 27.18 | — 6.22 | .084 | .152 | .167 | .134 | 91 | 86 | 90 | 89 | N b E | S E | E S E | S 67 E | 1.0 | 3.3 | 8.2 | 3.31 | 3.59 | ... | ... |
| 26 | 29.857 | .773 | .698 | .7736 | 28.4 | 32.0 | 30.6 | 30.27 | — 2.67 | .147 | .151 | .152 | .151 | 95 | 84 | 89 | 90 | N E b E | b N | Calm. | N 43 E | 1.0 | 2.8 | 0.0 | 0.88 | 2.23 | Inap. | ... |
| 27 | .636 | .538 | .680 | .6220 | 33.1 | 34.2 | 33.1 | 33.32 | + 0.87 | .174 | .152 | .160 | .157 | 92 | 77 | 84 | 83 | s w b w | W b S | W N W | S 89 W | 2.6 | 10.2 | 14.6 | 9.56 | 10.06 | ... | Inap. |
| 28 | .734 | .672 | — | — | 29.5 | 32.7 | — | — | .150 | .165 | — | — | 92 | 88 | — | — | W S W | S W | W S W | S 72 W | 12.5 | 10.7 | 3.7 | 5.35 | 5.67 | ... | ... |
| 29 | .626 | .489 | .341 | .4760 | 30.9 | 36.3 | 37.4 | 35.00 | + 3.50 | .167 | .176 | .204 | .180 | 90 | 82 | 91 | 88 | Calm. | E b S | S E b E | S 62 E | 0.0 | 8.0 | 2.8 | 4.22 | 4.83 | .180 | Inap. |
| 30 | .139 | .213 | .195 | .1972 | 41.4 | 44.6 | 38.5 | 40.80 | + 9.77 | .259 | .245 | .216 | .234 | 99 | 83 | 93 | 91 | s w b w | W | N W | N 85 W | 2.5 | 6.5 | 14.6 | 9.58 | 10.98 | .350 | ... |
| M | 29.5562 | 29.5349 | 29.5549 | 29.5503 | 29.34 | 36.43 | 32.24 | 32.74 | — 4.60 | .152 | .165 | .164 | .160 | 90 | 75 | 87 | 84 | ..... | ..... | ..... | ..... | 6.39 | 10.31 | 7.35 | ..... | 8.12 | 2.540 | 10.2 |

## REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR NOVEMBER, 1869.

NOTE.—The monthly means do not include Sunday observations. The daily means, excepting those that relate to the wind, are derived from six observations daily, namely, at 6 A.M., 8 A.M., 2 P.M., 4 P.M., 10 P.M., and midnight. The means and resultants for the wind are from hourly observation.

Highest Barometer.....30.104 at 10 p.m. on 24th. } Monthly range=
Lowest Barometer.....28.793 at 2 p.m. on 17th } 1.311 inches.

Self-registering Ther.

Maximum temperature.....58°0 on 3rd } Monthly range=
Minimum temperature.....13°0 on 24th, 25th. } 45°0
Mean maximum temperature.....38°26 } Mean daily range=
Mean minimum temperature.....26°89 } 11°37
Greatest daily range.....24°6 from a.m. to p.m. of 3rd.
Least daily range.....2°4 from a.m. to p.m. of 6th.

Warmest day.....4th; mean temperature.....46°50 } Difference=25°93.
Coldest day.....24th; mean temperature.....20°67 }

Maximum Radiation { Solar.....52°0 on 1st. } Monthly range= 78°6.
Terrestrial.....3°4 on 24th. }

Aurora observed on 1 night, viz.:—11th.

Possible to see Aurora on 7 nights; impossible on 23 nights.

Snowing on 18 days; depth 10.2 inches; duration of fall, 83.5 hours.

Raining on 9 days; depth, 2.510 inches; duration of fall, 46.0 hours.

Mean of cloudiness=0.62.

### WIND.

Resultant direction, N. 78° W.; resultant velocity, 3.69.

Mean velocity, 8.12 miles per hour.

Maximum velocity, 31.2 miles, from 1 to 2 p.m. of 17th.

Most windy day, 17th; mean velocity, 20.29 miles per hour.

Least windy day, 24th; mean velocity, 0.76 miles per hour.

Most windy hour, 10 p.m.; mean velocity, 10.34 miles per hour

Least windy hour, 6 a.m.; mean velocity, 6.21 miles per hour.

Fog recorded on 2nd, 3rd, 24th, 29th, and 30th.

Hail fell with the rain on the 5th.

Solar haloes on 7th and 26th. Lunar halo on 18th.

Very brilliant meteor 7 p.m. of 3rd.

Violent storm of wind with heavy rain and snow on 16th and 17th.

## COMPARATIVE TABLE FOR NOVEMBER.

| YEAR | TEMPERATURE. Mean. | Excess above Average. | Maximum. | Minimum. | Range. | RAIN. No of days. | Inches. | SNOW. No. of days. | Inches. | WIND. Resultant. Direction. | Velocity. | Mean Velocity. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ° | ° | ° | ° | ° | | | | | ° | | |
| 1841 | 35.0 | — 1.9 | 63.8 | 8.5 | 55.3 | 8 | 2.450 | b | ... | ... | ... | 0.91 lbs. |
| 1842 | 33.3 | — 3.6 | 56.8 | 8.1 | 48.7 | 9 | 5.310 | 10 | ... | ... | ... | 1.22 |
| 1843 | 33.5 | — 3.4 | 52.6 | 14.1 | 38.5 | 10 | 4.765 | 7 | 1.2 | ... | ... | 0.59 |
| 1844 | 34.9 | — 2.0 | 56.0 | 12.1 | 43.9 | 8 | impr. | 4 | 3.0 | ... | ... | 0.48 |
| 1845 | 36.8 | — 0.1 | 59.5 | 8.1 | 51.4 | 7 | 1.105 | 4 | 5.0 | ... | ... | 0.53 |
| 1846 | 41.3 | + 4.4 | 55.6 | 18.0 | 37.6 | 12 | 5.805 | 2 | 0.4 | ... | ... | 0.64 |
| 1847 | 38.6 | + 1.7 | 57.9 | 8.7 | 49.2 | 14 | 3.165 | 3 | insp | ... | ... | 0.36 |
| 1848 | 34.5 | — 2.4 | 49.0 | 15.9 | 33.1 | 9 | 2.020 | 3 | 1.4 | N 81 W | 1.81 | 4.81 ms. |
| 1849 | 42.6 | + 5.7 | 56.4 | 26.5 | 29.9 | 10 | 2.815 | 2 | 1.0 | N 33 W | 1.55 | 4.78 |
| 1850 | 38.8 | — 1.9 | 62.8 | 11.0 | 51.8 | 7 | 2.955 | 1 | insp | N 42 W | 1.45 | 5.27 |
| 1851 | 32.9 | — 4.0 | 50.2 | 13.8 | 36.4 | 5 | 3.885 | 6 | 6.7 | N 50 W | 1.25 | 4.70 |
| 1852 | 36.0 | — 0.9 | 50.4 | 18.2 | 32.2 | 7 | 1.775 | 3 | 2.0 | N 59 W | 1.53 | 6.50 |
| 1853 | 38.7 | + 1.8 | 55.6 | 12.8 | 42.8 | 15 | 2.425 | 6 | 2.7 | N 9 W | 0.65 | 5.52 |
| 1854 | 36.8 | — 0.1 | 55.4 | 13.8 | 41.6 | 13 | 1.115 | 4 | 1.3 | W | 3.44 | 7.54 |
| 1855 | 38.6 | + 1.7 | 59.2 | 15.5 | 43.7 | 8 | 4.690 | 6 | 3.0 | N 66 W | 3.18 | 10.81 |
| 1856 | 37.4 | + 0.5 | 56.4 | 18.8 | 37.6 | 10 | 1.375 | 9 | 9.5 | S 85 W | 2.95 | 8.75 |
| 1857 | 33.5 | — 3.4 | 68.2 | -3.5 | 61.7 | 14 | 3.235 | 9 | 6.9 | S 81 W | 5.45 | 9.25 |
| 1858 | 34.2 | — 2.7 | 53.0 | 15.3 | 37.7 | 12 | 3.870 | 13 | 4.0 | N 25 W | 3.14 | 8.87 |
| 1859 | 38.9 | + 2.0 | 62.6 | 21.8 | 40.8 | 12 | 5.193 | 9 | 0.6 | N 81 W | 3.39 | 9.65 |
| 1860 | 37.9 | + 1.0 | 64.6 | 13.2 | 51.3 | 12 | 2.569 | 8 | 1.9 | S 89 W | 4.95 | 11.02 |
| 1861 | 37.1 | + 0.2 | 52.4 | 23.0 | 29.4 | 14 | 4.294 | 8 | 3.2 | N 46 W | 1.94 | 7.44 |
| 1862 | 35.6 | — 1.3 | 58.0 | 16.2 | 41.8 | 11 | 2.205 | 11 | 5.3 | N 46 W | 3.00 | 6.60 |
| 1863 | 39.1 | + 2.2 | 67.0 | 17.8 | 49.2 | 13 | 3.656 | 6 | 0.1 | N 88 W | 3.59 | 7.86 |
| 1864 | 36.9 | 0.0 | 60.2 | 21.0 | 39.2 | 11 | 3.765 | 8 | 4.5 | S 72 W | 3.82 | 7.64 |
| 1865 | 38.6 | + 1.7 | 63.2 | 23.6 | 39.6 | 5 | 0.975 | 7 | 1.1 | N 79 W | 2.98 | 7.90 |
| 1866 | 38.4 | + 1.5 | 54.2 | 21.8 | 32.4 | 13 | 2.963 | 4 | 2.2 | N 88 W | 3.06 | 6.96 |
| 1867 | 36.9 | 0.0 | 60.4 | 9.6 | 50.8 | 8 | 1.375 | 9 | 0.9 | N 87 W | 4.02 | 7.76 |
| 1868 | 36.2 | — 0.7 | 50.5 | 20.1 | 30.4 | 14 | 5.150 | 10 | 4.3 | N 35 W | 2.10 | 8.16 |
| 1869 | 32.7 | — 4.2 | 58.0 | 13.0 | 45.0 | 9 | 2.540 | 18 | 10.2 | N 78 W | 3.69 | 8.12 |
| Results to 1868. | 36.86 | ..... | 57.21 | 15.14 | 42.07 | 10.21 | 3.089 | 6.38 | 2.97 | N 78 W | 2.52 | 7.51 |
| | | | | | | — | — | + | + | | | + |
| Exc. for 1869. | —4.12 | ..... | +0.79 | —2.14 | +2.93 | 1.21 | 0.549 | 11.62 | 7.23 | ... | ... | 0.61 |

# MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETICAL OBSERVATORY, TORONTO, ONTARIO,—DECEMBER, 1865

*Latitude*—43° 39′4 *North*  *Longitude*—5h. 17 m. 33s. *West*.  *Elevation above Lake Ontario*, 108 *feet*

| Day. | Barom. at temp of 32° | | | | Temp. of the Air. | | | | Excess of Mean above Normal | Tension of Vapour | | | | Humidity of Air. | | | | Direction of Wind. | | | Resultant. | Velocity of Wind. | | | | | Rain in Inches | Snow in Inches |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 6 A.M. | 2 P.M. | 10 P.M | Mean | 6 A.M | 2 P.M. | 10 P.M | M'N | | 6 A.M | 2 P.M. | 10 P.M | M'N | 6 A.M. | 2 P.M. | 10 P.M | M'N | 6 A.M | 2 P.M. | 10 P.M | | 6 A.M | 2 P.M. | 10 P.M. | Re-sult' | M'N. | | |
| | | | | | ° | ° | ° | ° | ° | | | | | | | | | | | | | | | | | | |
| 1 | 29.621 | 29.774 | 29.832 | 29.7758 | 26.1 | 24.4 | 21.6 | 23.98 | — 6.55 | .141 | .140 | .104 | .114 | 87 | 84 | 90 | 87 | W | N W | N N W | N 47 W | 22.2 | 20.0 | 6.5 | 9.81 | 11.68 | ... | 0.1 |
| 2 | .762 | .629 | .692 | .6563 | 19.0 | 24.1 | 21.2 | 21.00 | — 9.03 | .085 | .114 | .095 | .099 | 93 | 86 | 93 | 87 | N E b N | W b S | W b S | N 19 W | 6.6 | 2.8 | 4.4 | 3.56 | 8.16 | ... | 2.0 |
| 3 | .819 | .935 | .867 | .8753 | 8.5 | 16.5 | 14.7 | 14.57 | —15.18 | .054 | .064 | .072 | .063 | 84 | 68 | 85 | 79 | N | Calm. | N E | S 27 W | 9.5 | 0.0 | 3.6 | 1.81 | 7.03 | ... | 0.3 |
| 4 | .577 | .353 | .493 | .4676 | 29.1 | 34.5 | 34.9 | 32.72 | + 3.62 | .141 | .183 | .176 | .166 | 87 | 90 | 86 | 88 | S b W | S W | N W | S 63 W | 15.6 | 38.5 | 7.2 | 8.34 | 11.87 | 0.040 | |
| 5 | .015 | .750 | — | — | 28.7 | 24.1 | — | — | — | .145 | .177 | — | — | 92 | 82 | — | — | N b W | S b E | S E | N 15 E | 5.4 | 9.0 | 9.6 | 9.17 | 9.42 | ... | ... |
| 6 | .901 | .919 | .943 | .9198 | 6.7 | 13.2 | 8.0 | 9.47 | —18.70 | .047 | .060 | .048 | .051 | 78 | 75 | 77 | 76 | N | N b W | N N W | N S W | 11.2 | 7.6 | 5.8 | 5.10 | 5.34 | ... | ... |
| 7 | .928 | .887 | .894 | .9057 | 11.1 | 24.1 | 24.4 | 20.17 | — 7.55 | .065 | .114 | .117 | .099 | 92 | 87 | 89 | 89 | N b W | S S W | Calm | N | 3.0 | 0.0 | 0.0 | 0.28 | 1.65 | ... | 0.2 |
| 8 | 30.004 | 30.080 | 30.131 | 30.0830 | 23.7 | 31.3 | 31.3 | 27.92 | + 0.63 | .118 | .115 | .129 | .116 | 93 | 65 | 73 | 76 | N b W | N b W | W b N | N 48 W | 3.5 | 1.6 | 5.6 | 1.58 | 3.01 | ... | ... |
| 9 | 30.126 | 30.031 | 29.986 | 30.0462 | 28.4 | 35.3 | 32.7 | 32.07 | + 5.20 | .131 | .127 | .143 | .135 | 86 | 61 | 76 | 75 | S W | S W b S | S W b S | S 30 W | 8.5 | 15.2 | 4.8 | 9.47 | 9.51 | ... | ... |
| 10 | 29.934 | 29.862 | .892 | 29.0003 | 37.4 | 38.1 | 36.0 | 37.12 | +10.67 | .196 | .204 | .196 | .196 | 87 | 88 | 93 | 89 | S b W | S W b S | Calm | S 37 W | 8.2 | 7.0 | 0.0 | 5.19 | 5.26 | fnap. | ... |
| 11 | .838 | .722 | .574 | .6977 | 35.2 | 37.4 | 38.2 | 37.05 | +11.00 | .200 | .213 | .224 | .212 | 97 | 95 | 96 | 96 | Calm | E b S | E | N 85 E | 1.0 | 7.6 | 8.0 | 6.37 | 6.55 | .260 | ... |
| 12 | .512 | .530 | — | — | 38.8 | 41.4 | — | — | — | .220 | .232 | — | — | 94 | 89 | — | — | E b N | W S W | N b W | N 21 W | 4.5 | 6.6 | 11.0 | 6.36 | 7.56 | fnap | ... |
| 13 | 30.090 | 30.155 | 30.223 | 30.1678 | 24.4 | 22.3 | 21.5 | 22.45 | — 2.62 | .117 | .100 | .095 | .103 | 89 | 83 | 82 | 85 | N | N N W | N N E | N 12 E | 9.9 | 9.4 | 3.8 | 6.92 | 7.07 | ... | ... |
| 14 | 30.146 | 30.066 | 29.926 | 30.0310 | 21.9 | 26.6 | 29.5 | 26.12 | + 1.23 | .105 | .126 | .150 | .127 | 89 | 87 | 92 | 89 | N b E | N E b E | E S E | N 77 E | 0.2 | 10.0 | 9.8 | 7.06 | 7.93 | ... | ... |
| 15 | 29.744 | 29.598 | .476 | 29.5866 | 30.2 | 34.5 | 36.0 | 33.56 | + 9.38 | .149 | .192 | .196 | .180 | 89 | 96 | 93 | 92 | E S E | E b S | E | S 86 E | 4.0 | 10.5 | 15.8 | 11.98 | 12.04 | 1.405 | ... |
| 16 | .338 | .403 | .582 | .4513 | 37.0 | 39.2 | 34.5 | 36.12 | +11.88 | .219 | .199 | .173 | .197 | 99 | 79 | 86 | 88 | E | S W | S W | S 37 W | 14.7 | 11.0 | 12.6 | 7.88 | 11.12 | .050 | ... |
| 17 | .095 | .710 | .662 | .6883 | 32.4 | 34.6 | 31.3 | 32.37 | + 8.47 | .169 | .137 | .141 | .147 | 91 | 68 | 81 | 79 | S W b S | S W b | W b S | ..... | 6.8 | 5.6 | 0.8 | .. | 4.27 | ... | ... |
| 18 | .503 | .344 | .336 | .3827 | 29.8 | 32.4 | 30.2 | 30.80 | + 7.03 | .147 | .146 | .138 | .140 | 88 | 79 | 80 | 81 | N b E | N | N W b N | S 37 W | 7.2 | 12.2 | 13.2 | 9.80 | 12.31 | ... | fnap. |
| 19 | .360 | .402 | — | — | 25.5 | 26.2 | — | — | — | .125 | .124 | — | — | 91 | 87 | — | — | W | W N W | W b S | S 79 W | 11.2 | 16.0 | 12.9 | 12.14 | 12.23 | ... | ... |
| 20 | .652 | .766 | .960 | .8120 | 23.3 | 24.8 | 24.8 | 24.30 | + 1.23 | .111 | .112 | .098 | .104 | 87 | 84 | 72 | 79 | W S W | W | W S W | S 74 W | 6.2 | 16.0 | 12.2 | 9.99 | 10.15 | ... | fnap. |
| 21 | 30.112 | 30.050 | 29.748 | .9188 | 22.6 | 27.0 | 26.9 | 25.82 | + 2.97 | .104 | .086 | .137 | .113 | 86 | 58 | 94 | 80 | W S W | S E | E S E | S 67 E | 6.0 | 6.5 | 10.0 | 8.51 | 10.30 | .360 | 3.5 |
| 22 | 29.313 | 28.932 | .398 | .2455 | 34.9 | 39.9 | 39.1 | 34.33 | +11.72 | .195 | .198 | .126 | .167 | 96 | 89 | 78 | 83 | E S E | S W b S | W S W | S 58 W | 12.0 | 11.6 | 20.0 | 12.05 | 15.99 | .070 | ... |
| 23 | .575 | 29.695 | .874 | .7418 | 36.6 | 25.5 | 21.2 | 24.02 | + 1.60 | .107 | .083 | .085 | .086 | 73 | 60 | 75 | 66 | S W b W | W S W | W S W | S 64 W | 16.2 | 16.0 | 14.6 | 15.08 | 15.11 | ... | fnap |
| 24 | 30.001 | .885 | .948 | .9473 | 17.9 | 32.7 | 32.0 | 27.95 | + 5.74 | .079 | .120 | .135 | .112 | 80 | 64 | 74 | 72 | W S W | S W | S W b W | S 53 W | 6.6 | 19.2 | 9.8 | 9.20 | 9.39 | ... | ... |
| 25 | 29.996 | .944 | — | — | 27.3 | 35.2 | — | — | — | .133 | .164 | — | — | 89 | 80 | — | — | W S W | S W | Calm. | S 32 W | 3.0 | 1.0 | 0.0 | 0.38 | 2.07 | ... | ... |
| 26 | .898 | .813 | — | — | 28.3 | 39.0 | — | — | — | .121 | .150 | — | — | 90 | 62 | — | — | N E b N | E b N | E N E | N 51 E | 4.8 | 4.0 | 2.8 | 4.09 | 4.28 | .005 | ... |
| 27 | .697 | .478 | .352 | .5072 | 36.0 | 35.6 | 37.8 | 36.25 | +14.52 | .201 | .207 | .226 | .209 | 95 | 99 | 99 | 97 | E b N | E | Calm | N 85 E | 8.8 | 12.2 | 0.0 | 4.54 | 7.87 | .400 | ... |
| 28 | .463 | .476 | .524 | .4917 | 36.0 | 36.0 | 34.5 | 35.38 | +13.77 | .196 | .189 | .181 | .187 | 97 | 89 | 90 | 90 | W b S | S W b W | W | S 67 W | 4.0 | 8.0 | 6.8 | 5.63 | 5.84 | ... | ... |
| 29 | .622 | .534 | .426 | .4883 | 33.8 | 35.2 | 32.4 | 33.62 | +12.10 | .173 | .164 | .153 | .164 | 89 | 90 | 83 | 85 | W S W | W b S | S W b W | S 55 W | 5.0 | 10.0 | 11.4 | 8.99 | 9.26 | ... | 1.0 |
| 30 | .239 | .338 | .441 | .3580 | 33.8 | 36.0 | 33.8 | 34.47 | +13.92 | .173 | .147 | .158 | .159 | 89 | 69 | 81 | 79 | W S W | W | W b S | S 77 W | 11.9 | 16.0 | 6.6 | 9.63 | 9.13 | ... | ... |
| 31 | .617 | .653 | .696 | .6396 | 34.5 | 35.6 | 30.9 | 33.62 | +12.22 | .174 | .135 | .149 | .153 | 87 | 65 | 86 | 80 | W b S | S W | E b N | S 36 E | 3.8 | 3.7 | 3.4 | 1.11 | 4.44 | ... | ... |
| | 29.7395 | 29.7051 | 29.7224 | 29.7238 | 27.05 | 30.04 | 28.82 | 28.74 | + 3.88 | .138 | .140 | .141 | .138 | 88 | 78 | 85 | 83 | ..... | ..... | ..... | ..... | 8.01 | 9.77 | 7.83 | .. | 8.44 | 2.550 | 7.1 |

## REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR DECEMBER, 1869.

NOTE—The monthly means do not include Sunday observations. The daily means, excepting those that relate to the wind, are derived from six observations daily, namely at 6 A.M., 8 A.M., 2 P.M., 4 P.M., 10 P.M., and midnight. The means and resultants for the wind are from hourly observations.

Highest Barometer .....30.223 at 10 p.m. on 13th } Monthly range=
Lowest Barometer .....28.992 at 2 p.m. on 22d } 1.231 inches.

Self-Registering Thar.
- Maximum Temperature .....45°0 on 12th } Monthly range=
- Minimum Temperature..... 6°0 on 6th } 39°0
- Mean Maximum Temperature .....34°09 } Mean daily range=
- Mean Minimum Temperature .....24°27 } 9°82
- Greatest daily range.....23°5 from a.m. to p.m. of 4th.
- Least daily range ..... 2°5 from a.m. to p.m. of 24th.

Warmest Day.....10th...Mean Temperature.....37°12 } Difference=27°65
Coldest Day..... 6th...Mean Temperature..... 9°47 }

Maximum Radiation. {Solar .....54°5 on 19th } Monthly range=
{Terrestrial.....—4°8 on 7th } 59°3

No Aurora observed.

Possible to see Aurora on 9 nights; impossible on 22 nights.

Snowing on 9 days; depth 7.1 inches; duration of fall 43.2 hours.

Raining on 10 days; depth 2.590 inches; duration of fall 53.9 hours.

Mean of Cloudiness=0.83.

### WIND.

Resultant Direction S. 80° W.; Resultant Velocity 2.31.

Mean Velocity 8.44 miles per hour.

Maximum Velocity 27.2 miles, from 5 to 6 p.m. of 22d.

Most Windy day 22d; Mean Velocity 16.99 miles per hour.

Least Windy day 7th; Mean Velocity 1.53 miles per hour.

Most Windy hour 2 p.m.; Mean Velocity 9.95 miles per hour.

Least Windy hour 5 a.m.; Mean Velocity 7.59 miles per hour.

Fog recorded on 11th, 12th, 22d and 27th; that on 22d was very dense.

Solar halo and parhelia on 6th.

Lunar halo on 9th. Lunar coronas 20th and 24th.

8th. Bay frozen over and crossed by skaters; broken up in the storm of following day.

## COMPARATIVE TABLE FOR DECEMBER.

| YEAR. | TEMPERATURE. Mean. | Excess above average | Maximum. | Minimum. | Range. | RAIN. No. of days. | Inches. | SNOW. No. of days. | Inches. | WIND. Resultant. Direction. | Velo'y | Mean Velocity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ° | ° | ° | ° | ° | | | | | | | |
| 1841 | 28.7 | + 2.8 | 48.1 | 3.1 | 43.0 | 7 | 6.600 | 5 | ... | ... | ... | 1.33 lbs |
| 1842 | 24.7 | — 1.2 | 40.5 | 3.2 | 37.3 | 3 | 0.880 | 17 | ... | ... | ... | 0.61 |
| 1843 | 30.0 | + 4.1 | 48.5 | 3.1 | 45.4 | 6 | 1.040 | 8 | 8.1 | ... | ... | 0.53 |
| 1844 | 28.2 | + 2.3 | 48 5 | 1.6 | 46.9 | 6 | Imp. | 6 | 4.2 | ... | ... | 0.40 |
| 1845 | 21.1 | — 4.8 | 39.7 | — 2.4 | 42.1 | 2 | Inap. | 12 | 4.7 | ... | ... | 0.70 |
| 1846 | 27.5 | + 1.6 | 49.2 | 3.9 | 45.3 | 5 | 1.215 | 9 | 6.0 | ... | ... | 0.57 |
| 1847 | 30.1 | + 4.2 | 49.6 | 0.3 | 49.3 | 7 | 1.185 | 8 | 6.8 | ... | ... | 0.35 |
| 1848 | 29.1 | + 3.2 | 48.8 | 1.1 | 47.7 | 7 | 2.750 | 7 | 10.5 | S 83 W | 1.12 | 5.44mls |
| 1849 | 26.5 | + 0.6 | 40.8 | — 6.5 | 47.3 | 5 | 0.840 | 12 | 9.6 | N 82 W | 2.56 | 6.23 |
| 1850 | 21.7 | — 4.2 | 48.8 | — 9.0 | 57.8 | 2 | 0.190 | 18 | 29.5 | N 44 W | 2.93 | 7.40 |
| 1851 | 21.5 | — 4.4 | 44.0 | —14.8 | 58.8 | 6 | 1.075 | 15 | 10.7 | N 82 W | 4.00 | 7.37 |
| 1852 | 31.9 | + 6.0 | 51.0 | 13.2 | 37.8 | 7 | 3.995 | 10 | 20.1 | S 69 W | 1.03 | 6.54 |
| 1853 | 25.3 | — 0.6 | 46.4 | — 8.4 | 54.8 | 4 | 0.625 | 13 | 22.3 | N 35 W | 2.39 | 4.98 |
| 1854 | 21.0 | — 4.0 | 44.8 | — 7.0 | 51.8 | 5 | 0.590 | 12 | 17.2 | N 44 W | 4.30 | 8.56 |
| 1855 | 26.8 | + 0.9 | 47.0 | — 5.2 | 52.2 | 6 | 1.845 | 10 | 29.5 | S 88 W | 5.29 | 11.38 |
| 1856 | 22.9 | — 3.0 | 42.2 | — 9.1 | 51.3 | 6 | 1.790 | 20 | 16.3 | S 87 W | 4.62 | 11.56 |
| 1857 | 31.9 | + 6.0 | 46.0 | 4.7 | 41.3 | 7 | 3.205 | 14 | 9.0 | N 89 W | 2.50 | 6.34 |
| 1858 | 27.4 | + 1.5 | 45.4 | 4.2 | 41.2 | 11 | 1.657 | 18 | 10.4 | N 78 W | 1.66 | 9.36 |
| 1859 | 17.9 | — 8.0 | 54.8 | — 6.0 | 60.8 | 3 | 1.035 | 23 | 37.4 | N 53 W | 4.29 | 10.77 |
| 1860 | 24.0 | — 1.9 | 39.0 | — 7.0 | 46.0 | 3 | 1.362 | 21 | 13.5 | N 62 W | 4.66 | 10.14 |
| 1861 | 31.1 | + 5.2 | 55.2 | 5.5 | 49.7 | 6 | 0.660 | 8 | 6.8 | N 72 W | 3.50 | 7.96 |
| 1862 | 28.5 | + 2.9 | 50.1 | — 3.4 | 53.5 | 5 | 1.945 | 8 | 10.4 | N 73 W | 3.17 | 7.58 |
| 1863 | 27.0 | + 1.1 | 53.4 | — 1.5 | 54.9 | 10 | 2.960 | 17 | 7.1 | N 41 W | 1.61 | 9.40 |
| 1864 | 24.7 | — 1.2 | 50.4 | —10.4 | 60.8 | 9 | 2.045 | 18 | 27.1 | S 82 W | 4.94 | 9.98 |
| 1865 | 27.7 | + 1.8 | 54.2 | 5.7 | 48.5 | 7 | 1.727 | 11 | 5.2 | S 81 W | 3.07 | 7.33 |
| 1866 | 25.1 | — 0.8 | 51.0 | — 5.0 | 56.0 | 7 | 2.790 | 13 | 15.5 | S 88 W | 4.98 | 9.91 |
| 1867 | 21.0 | — 4.3 | 49.5 | —12.8 | 62.3 | 7 | 1.045 | 21 | 13.6 | S 81 W | 4.82 | 10.32 |
| 1868 | 22.5 | — 3.4 | 44.2 | — 5.2 | 47.4 | 1 | 0.005 | 18 | 15.6 | N 71 W | 4.05 | 9.80 |
| 1869 | 28.7 | + 2.8 | 45.0 | 6.0 | 39.0 | 10 | 2.590 | 9 | 7.1 | S 80 W | 2.31 | 8.44 |
| Results to 1868 | 25.93 | ... | 47.47 | —2.22 | 49.69 | 5.62 | 1.619 | 13.45 | 14.35 | N 75 W | 3.14 | 8.52 |
| Excess for '69 | + 2.81 | ... | — 2.47 | + 8.22 | — 10.69 | + 3.38 | — 0.971 | — 4.45 | — 7.25 | ... | ... | — 0.08 |

# GENERAL METEOROLOGICAL REGISTER

FOR THE YEAR 1869.

# GENERAL METEOROLOGICAL

*MAGNETICAL OBSERVATORY,*

Latitude 43° 39′ 24″ North. Longitude 5h. 57m. 33s. West. Elevation above

| | JAN. | FEB. | MAR | APR. | MAY | JUNE. | JULY. |
|---|---|---|---|---|---|---|---|
| Mean Temperature..... | 27°·71 | 24°·96 | 23°·06 | 40°·05 | 50°·77 | 55°·42 | 64°·48 |
| Difference from average (29 years)... | + 4.77 | + 2·01 | — 6·79 | — 0·94 | — 0·64 | — 3·11 | — 2·90 |
| Thermic anomaly (lat. 43° 40′)..... | — 5·09 | — 9·74 | —17·04 | —10·15 | — 7·33 | — 6·18 | — 4·22 |
| Highest temperature ..... | 45·0 | 46·0 | 46·8 | 72·2 | 74·2 | 81·4 | 84·9 |
| Lowest temperature ..... | — 1·0 | — 1·0 | — 5·4 | 16.6 | 31·4 | 36·4 | 49·8 |
| Monthly and Annual Ranges ..... | 46·0 | 47·0 | 52·2 | 55·6 | 42·8 | 45·0 | 35·1 |
| Mean maximum temperature ..... | 34·59 | 35·32 | 31·21 | 48·03 | 58·83 | 67·37 | 73·07 |
| Mean minimum temperature ..... | 21·95 | 20·31 | 15.73 | 32·28 | 42·75 | 50·04 | 57 61 |
| Mean daily range..... | 12·64 | 15·01 | 15·48 | 15·75 | 16·08 | 17·33 | 15·46 |
| Greatest daily range ..... | 33·6 | 23·0 | 27·6 | 32·4 | 30·4 | 28·6 | 24·1 |
| Mean height of the Barometer..... | 29·5682 | 29·5162 | 29·6496 | 29·5216 | 29·4820 | 29·5808 | 29·5676 |
| Difference from average (28 years) ... | —·0784 | —·1159 | +·0507 | —·0751 | —·0897 | +·0121 | —·0314 |
| Highest barometer ..... | 29·877 | 30·088 | 30·104 | 29·912 | 29·803 | 29·982 | 29·950 |
| Lowest barometer ..... | 29·074 | 28·845 | 29·178 | 28·896 | 29·054 | 29·074 | 29·193 |
| Monthly and Annual Ranges ..... | 0·803 | 1·243 | 0·926 | 1·016 | 0·749 | 0·908 | 0·757 |
| Mean humidity of the air ..... | 80 | 80 | 78 | 68 | 67 | 74 | 77 |
| Mean elasticity of aqueous vapour..... | 0·127 | 0·114 | 0·105 | 0·173 | 0·258 | 0·367 | 0·470 |
| Mean of cloudiness ..... | 0·68 | 0·75 | 0·60 | 0·61 | 0·67 | 0·67 | 0·67 |
| Difference from average (16 years).. | — ·04 | + ·03 | — ·02 | + ·01 | + ·12 | + ·15 | — ·18 |
| Resultant direction of the wind ..... | N 72 W | N 34 W | N 52 W | N 59 W | N 20 W | N S0 W | S 67 W |
| " velocity of the wind..... | 3·40 | 4·18 | 2·86 | 4·03 | 2·38 | 1·77 | 2·01 |
| Mean velocity (miles per hour) ..... | 9·21 | 10.04 | 8·02 | 8·91 | 6·55 | 5·23 | 5·67 |
| Difference from average (21 years) ... | + 1·07 | + 1·51 | — 0·78 | + 0·79 | — 0·22 | + 0·08 | + 0·11 |
| Total amount of rain .... | 0·887 | 0·165 | 0·985 | 2·965 | 2·805 | 4·373 | 4·610 |
| Difference from average (28-29 years) | —0·288 | —0·800 | —0 644 | +0·565 | —0·570 | + 1·632 | +1·259 |
| Number of days of rain ..... | 4 | 2 | 3 | 9 | 16 | 22 | 13 |
| Total amount of snow..... | 9·8 | 39·7 | 15·0 | 0·5 | Inapp | ... | .. |
| Difference from average (25 years) ... | — 6·16 | +20·35 | + 4·85 | — 2·09 | — 0·08 | ... | .. |
| Number of days of snow ..... | 12 | 19 | 9 | 6 | 1 | ... | .. |
| Number of fair days ..... | 14 | 9 | 19 | 15 | 15 | 8 | 18 |
| Number of Auroras observed ..... | 2 | 3 | 5 | 12 | 4 | 3 | 1 |
| Possible to see Aurora (No. of nights)... | 14 | 11 | 15 | 22 | 15 | 11 | 14 |
| Number of Thunderstorms ..... | 0 | 0 | 0 | 3 | 5 | 4 | 11 |

# REGISTER FOR THE YEAR 1869

*TORONTO, ONTARIO*

Lake Ontario, 108 feet. Approximate elevation above the Sea, 342 feet.

| Aug. | Sept. | Oct. | Nov. | Dec. | 1869. | 1868. | 1867. | 1866. | 1865. | 1864. | 1863. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 63°·64 | 60°·67 | 42°·29 | 32°·74 | 28°·74 | 43°·13 | 43°·35 | 43°·84 | 43°·51 | 44°·92 | 41°·70 | 44°·57 |
| — 2·45 | + 2·74 | — 3·47 | — 4·12 | + 2·81 | — 1·01 | — ·81 | — 0·30 | — 0·63 | + 0·78 | + 0·56 | + 0·43 |
| — 4·86 | — 0·83 | —11·51 | —10·46 | — 7·26 | — 7·87 | — 7·65 | — 7·16 | — 7·49 | — 6·08 | — 6·30 | — 6.43 |
| 89·0 | 81·0 | 69·8 | 58·0 | 45·0 | 89·0 | 93·4 | 95·2 | 94·0 | 90·5 | 94·0 | 88·0 |
| 43·5 | 34·4 | 18·7 | 13·0 | 6·0 | — 5·4 | — 15·6 | — 12·8 | — 14·0 | — 10·0 | — 15·0 | — 19·8 |
| 45·5 | 46·6 | 51·1 | 45·0 | 39·0 | 94·4 | 109·0 | 108·0 | 108·0 | 100·5 | 109·0 | 107·8 |
| 72·14 | 69·35 | 50·08 | 38·26 | 34·09 | ... | ... | ... | ... | ... | ... | .. |
| 55·62 | 53·85 | 35·75 | 26·89 | 24·27 | ... | ... | ... | ... | ... | ... | .. |
| 16·52 | 15·50 | 14·33 | 11·37 | 9·81 | 14·61 | 16·26 | 15·47 | 14·99 | 15·43 | 14·57 | 14·73 |
| 24·0 | 24·2 | 23·0 | 24·6 | 23·5 | 33·6 | 38·7 | 31·6 | 40·8 | 36·9 | 37·4 | 39·6 |
| 29·6654 | 29.7639 | 29·5708 | 29·5503 | 29·7238 | 29·5970 | 29·6421 | 29 6140 | 29·6216 | 29·6330 | 29·5596 | 29·6536 |
| +·0424 | +·1016 | —·0779 | —·0625 | +·0704 | —·0212 | +·0239 | —·0042 | +·0034 | +·0148 | —·0586 | +·0354 |
| 29·960 | 30·045 | 29·988 | 30·104 | 30·223 | 30·223 | 30·445 | 30·332 | 30·940 | 30·354 | 30·327 | 30·502 |
| 29·338 | 29·369 | 29·144 | 28·793 | 28·992 | 28·793 | 28·824 | 28·768 | 28·807 | 28·707 | 28·671 | 28·704 |
| 0·622 | 0·676 | 0·844 | 1·311 | 1·231 | 1·430 | 1·621 | 1·564 | 2·133 | 1·647 | 1·656 | 1·798 |
| 76 | 79 | 78 | 84 | 83 | 77 | 76 | 74 | 75 | 75 | 76 | 77 |
| 0·458 | 0·430 | 0·221 | 0·160 | 0·139 | 0·232 | 0·264 | 0·252 | 0·248 | 0·259 | 0·263 | 0·266 |
| 0·53 | 0·47 | 0·60 | 0·82 | 0·83 | 0·66 | 0·64 | 0·61 | 0·61 | 0·61 | 0·65 | 0·61 |
| + ·05 | — ·02 | — ·01 | + ·07 | + ·09 | + ·05 | + ·03 | ·00 | ·00 | ·00 | + ·04 | ·00 |
| N 42 W | N 53 W | N 73 W | N 78 W | S 30 W | N 64 W | N 57 W | N 69 W | N 73 W | N 66 W | N 76 W | N 41 W |
| 1·98 | 1·16 | 3·72 | 3.69 | 2·31 | 2·55 | 1·47 | 2·05 | 2·83 | 1·98 | 2·49 | 1·34 |
| 5·13 | 4·89 | 6·73 | 8·12 | 8·44 | 7.20 | 7·09 | 7·00 | 7·41 | 6·78 | 7·46 | 7·16 |
| — 0·06 | — 0·59 | + 0·68 | + 0·61 | — 0·08 | + 0·26 | + 0·75 | + 0·06 | + 0·47 | — 0·16 | + 0·46 | + 0·19 |
| 4·273 | 4·027 | 0·962 | 2·540 | 2·590 | 31·182 | 29·408 | 19·041 | 34·209 | 26·599 | 29·486 | 26·483 |
| +1·303 | +0·345 | —1·511 | —0·549 | +0·971 | +1·713 | —0·061 | —10·428 | +4·740 | —2·870 | +0·017 | —2·986 |
| 11 | 8 | 8 | 9 | 10 | 115 | 103 | 100 | 126 | 111 | 132 | 130 |
| ... | ... | 2·3 | 10·2 | 7·1 | 84·6 | 76·7 | 110·5 | 52·1 | 63·3 | 74·6 | 62·9 |
| .. | ... | + 1·42 | + 7·23 | — 7·25 | +18·27 | +13·37 | +45·17 | —13·23 | — 2·03 | + 9·27 | — 2·43 |
| ... | ... | 7 | 18 | 9 | 81 | 82 | 84 | 69 | 68 | 70 | 74 |
| 20 | 22 | 18 | 9 | 13 | 180 | 190 | 181 | 180 | 201 | 180 | 181 |
| 4 | 9 | 3 | 1 | 0 | 47 | 50 | 43 | 44 | 55 | 34 | 44 |
| 24 | 21 | 19 | 7 | 9 | 182 | 193 | 202 | 200 | 201 | 158 | 182 |
| 5 | 3 | 1 | 0 | 0 | 32 | 25 | 23 | 24 | 17 | 21 | 24 |

## TEMPERATURE.

| | 1869. | Average of 29 years. | Extremes. | |
|---|---|---|---|---|
| | ° | ° | ° | ° |
| Mean temperature of the year | 43·13 | 44·14 | 46·36 in '46 | 42·16 in '56 |
| Warmest month | July. | July. | July, 1868 | Aug. 1860. |
| Mean temperature of the warmest month | 64.48 | 67·38 | 75·80 | 64·46 |
| Coldest month | March | January | Jan. 1857. | Feb. 1848. |
| Mean temperature of the coldest month | 23 06 | 22·94 | 12.75 | 26·60 |
| Difference between the temperatures of the warmest and coldest months | 41·42 | 44·44 | ... | ... |
| Mean of deviations of monthly means from their respective averages of 29 years, signs of deviation being disregarded | 3·06 | 2·41 | 3·67 in 1843 | 1·33 in 1853, 1864 |
| Months of greatest deviation without regard to sign | March | January | Jan. 1857. | ... |
| Corresponding magnitude of deviation | 6·8 | 3·8 | 10·2 | ... |
| Warmest day | Aug. 20 | ... | July 14, '68 | July 31, '44 |
| Mean temperature of the warmest day | 75·18 | 78·23 | 84·50 | 72·75 |
| Coldest day | March 4 | ... | Feb. 6, '55. Jan. 22, '57. | Dec. 22, '42. |
| Mean temperature of the coldest day | —5·12 | —1·32 | —14·38 | 9·57 |
| Date of the highest temperature | Aug. 20 | ... | Aug. 24, '54. | Aug. 19, '40. |
| Highest temperature | 89.0 | 91·0 | 99·2 | 82·4 |
| Date of the lowest temperature | March 5 | ... | Jan. 26, '59. | Jan. 2, '42. |
| Lowest temperature | —5·4 | —12·5 | —26·5 | 1·9 |
| Range of the year | 94·4 | 103·5 | 118·2 | 87.0 |

## BAROMETER.

| | 1869. | Average of 28 years. | Extremes. | |
|---|---|---|---|---|
| Mean pressure of the year | 29·5970 | 29·6182 | 29·6670 in 1849. | 29·5602 in 1864. |
| Month of highest mean pressure | Sept. | Sept. | Jan. 1849. | June 1864. |
| Highest mean monthly pressure | 29·7639 | 29·6623 | 29·8046 | 29 6525 |
| Month of lowest mean pressure | May. | May. | Mar. 1859. | Nov. 1849 |
| Lowest mean monthly pressure | 29·4820 | 29·5717 | 29·4143 | 29·5586 |
| Date of highest pressure in the year | Dec. 13, 10 p.m. | ... | Jan. 8, '66. | Dec. 13, '69. |
| Highest pressure | 30·223 | 30·336 | 30.940 | 30.223 |
| Date of lowest pressure in the year | Nov. 17, 2 p.m. | ... | Mar. 19, '59. | Mar. 17, '45. |
| Lowest pressure | 28·793 | 28·694 | 28·286 | 28·939 |
| Range of the year | 1·430 | 1·692 | 2·133 in 1866. | 1·303 in 1845. |

RELATIVE HUMIDITY.

| | 1869. | Average of 27 years. | Extremes. | |
|---|---|---|---|---|
| Mean humidity of the year | 77 | 77 | 82 in 1851 | 73 in 1858 |
| Month of greatest humidity | November | January | Jan. 1·57. | Dec. 1858. |
| Greatest mean monthly humidity | 84 | 83 | 89 | 81 |
| Month of least humidity | May. | May. | Feb. 1843. | Apr. 1849. |
| Least mean monthly humidity | 67 | 71 | 58 | 76 |

EXTENT OF SKY CLOUDED.

| | 1869. | Average of 16 years. | Extremes. | |
|---|---|---|---|---|
| Mean cloudiness of the year | 0·66 | 0·61 | 0·66 in 1869 | 0·57 in 1856 |
| Most cloudy month | Decem. | Novem. | ... | ... |
| Greatest monthly mean of cloudiness | 0·83 | 0·75 | 0·83 | 0·73 |
| Least cloudy month | Septem. | August. | ... | ... |
| Lowest monthly mean of cloudiness | 0·47 | 0·48 | 0·29 | 0·50 |

WIND.

| | 1869. | Average of 21 years. | Extremes. | |
|---|---|---|---|---|
| Resultant direction | N. 64° W. | N. 61° W. | ... | ... |
| Resultant velocity in miles | 2·55 | 1·90 | ... | ... |
| Mean velocity, without regard to direction | 7·20 | 6·94 | 8·55 in 1860 | 5·10 in 1853 |
| Month of greatest mean velocity | February | March. | Mar. 1860. | Jan. 1848. |
| Greatest monthly mean velocity | 10.04 | 8.80 | 12·41 | 5·82 |
| Month of least mean velocity | Septem. | July. | Aug. 1852. | Sept. 1860. |
| Least monthly mean velocity | 4·89 | 4·96 | 3·30 | 5·79 |
| Day of greatest mean velocity | Feby. 4 | ... | Mar. 19. '59. | Dec. 2, '48. |
| Greatest daily mean velocity | 23 39 | 23·22 | 31·16 | 15·30 |
| Day of least mean velocity | June 2 | ... | ... | ... |
| Least daily mean velocity | 0·47 | ... | ... | ... |
| Hour of greatest absolute velocity | March 14, n. to 1 p.m | ... | Dec 27, '61, 9-10 a.m. | Mar. 14,' 53. 11 to noon. |
| Greatest velocity | 35.4 | 39·7 | 46·0 | 25·6 |

## RAIN.

| | 1869. | Average of 29 years | Extremes | |
|---|---|---|---|---|
| Total depth of rain in inches | 31·182 | 29·469 | 43·555 in '43 | 19.041 in 67 |
| Number of days in which rain fell | 115 | 109 | 130 in 1861 | 80 in 1841 |
| Month in which the greatest depth of rain fell | July. | Sept. | Sept. 1843. | Sept. 1848 |
| Greatest depth of rain in one month | 4·610 | 3 682 | 9 760 | 3·115 |
| Months in which the days of rain were most frequent | June. | October. | Oct. '64. June '69. | May, 1841. |
| Greatest number of rainy days in one month | 22 | 13 | 22 | 11 |
| Day in which the greatest amount of rain fell | Sept. 7. | ... | Sept 14, '43 | Sept. 14 '48 |
| Greatest amount of rain in one day | 2 350 | 2 044 | 3·455 | 1 000 |
| Hour of heaviest rain | J'ly 15, 8 to 9 a.m. | ... | ... | ... |
| Greatest amount of rain in one hour | 0 710 | ... | ... | ... |

## SNOW.

| | 1869. | Average of 26 years. | Extremes. | |
|---|---|---|---|---|
| Total depth in the year in inches | 84·6 | 65·3 | 110·5 in '67 | 38 4 in '51 |
| Number of days in which snow fell | 81 | 61 | 87 in 1859 | 33 in 1848 |
| Month in which the greatest depth of snow fell | February | February | Feb 1846. | Dec. 1851 |
| Greatest depth of snow in one month | 39 7 | 18·35 | 46·1 | 10·7 |
| Month in which the days of snow were most frequent | February | January | Jan. 1861. | Feb. 1848 |
| Greatest number of days of snow in one month | 19 | 14 | 23 | 8 |
| Days in which the greatest amount of snow fell | Feb. 23. | ... | Feb. 5, '63. | Jan. 10, '57 |
| Greatest fall of snow in one day | 9.0 | 8 9 | 16·0 | 5·5 |

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