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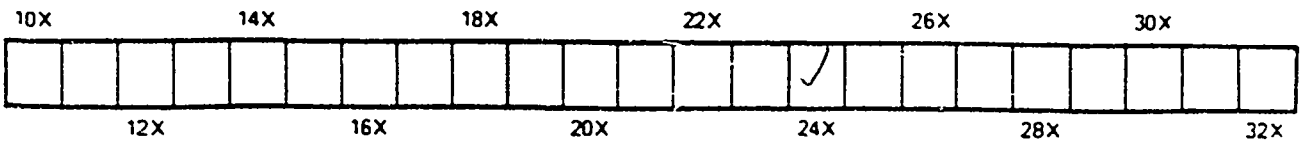

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THE MOHAWK LANGUAGE.

BY ORONHYATEKHA,
OF THE MOHAWK NATION.

When I was requested to prepare a paper concerning the language of my people, to be read before your learned body, I readily assented, not because I was not fully sensible of the difficulty of the task, or that I was not painfully aware of my own inability to do a subject of so much importance anything like full justice, but in the hope that I may be able to contribute something which may prove of some assistance to those who may hereafter institute inquiries in the same direction.

It will not be expected, in a short paper like this, that more can be done than merely give a brief introduction to the subject in hand, trusting that future opportunities may be afforded to further prosecute our work. While it is the design to direct your attention mainly to the language, it may not be amiss to give, at the outset, a general outline of the history of the Mohawks.

They are the head tribe of the *Confederacy of the Six Nations*, and, like the other Indian tribes of this continent, their origin is involved in mystery.

The only source which has not been exhausted, from which we can derive any information, at present within our reach, is the Indian traditions. They are, however, so mythical in their character, as touching the origin of the Indian, that but little, if any, reliance can be placed in them. I may say, however, that they all teach that the

red man was created upon this continent; and, were I to weigh the evidence given by these traditions, and that derived from the various theories of scientific writers upon the subject, I should be inclined, after making all allowances for the legendary character of Indian history, to decide in favour of the evidence of tradition, for I am disposed to attach but little weight to theories formed upon supposed similarity in manners and customs, or accidental resemblance, in words, of the language. I do think, however, that there is every reason to hope that we shall find, if not a solution of our difficulty, at least great assistance, from the Science of Language.

I know that the traditions of the Mohawks assume a rational and reliable character, with the formation of the Confederacy of the Five Nations by the Mohawk Chief De-ka-na-wi-dah, yet the Tuscaroras are completely lost sight of in all the earlier traditions of the Five Nations, and are represented to have first met the Mohawks when they joined the Confederacy at a comparatively recent date. An examination, however, of the two languages, leaves no room to doubt that at some remote period these two nations were one.

Here, therefore, we have a case where we are enabled by a knowledge of, and an examination into, the languages, to pronounce judgment with absolute certainty upon a point which goes farther back than tradition. I should be placing a low estimate to say that the Confederacy is 500 years old. Philology, therefore, immediately solves a question for us which is from 600 to 1,000 years old. Leaving, however, the question of our origin for discussion till we are in a position to bring the Science of Language to bear upon it, we will proceed to give a hasty view of the Confederacy of which we have already made mention.

I have said that it was first conceived by De-ka-na-wi-dah, at a time when the nations which subsequently formed the League were living in separate and independent communities, continually engaged in hostilities with each other. The Chief, no sooner thoroughly satisfied that a Confederation of the neighbouring tribes would result in mutual benefit and prosperity, made proposals to the Oneida for an alliance, to which the latter fortunately acceded without hesitation.

They next proceeded to the Onondaga, who at that time was the most powerful of the neighbouring Chiefs. Having received the proposition of the Mohawk and Oneida to form an alliance in which

all would be equal, he rejected them, as he was then more powerful and had more influence than they, and by entering the alliance he would be brought down to an equality with them. Determined, however, to carry out the Confederation scheme, the Mohawk and Oneida tendered the Onondaga the office of "Fire-keeper" in the new Council they would form. This, giving him the sole authority of opening or closing the Councils of the Five Nations, and a *veto* power upon all transactions of the Confederate Chiefs, induced the Onondaga to yield. The Cayugas and Senacas were subsequently added, and thus completed the scheme of Confederation of the Five Nations—a lasting evidence of their wisdom, and that they were entitled to the name of statesmen much more than many "pale-faces" of the present day. From the consummation of this scheme, the "new nationality" steadily though slowly increased in prosperity and power till about the time of the settlement of the English at Jamestown, when they had reached the zenith of their power and glory. Their hunting grounds extended from the great lakes upon the north to the Cumberland River and Cherokee country upon the south and east of the Mississippi.

They subdued nation after nation, till their name was known and their arms dreaded by nearly all Indian tribes east of the Rocky Mountains.

With what has occurred to us since we came in contact with the pale-faces, most of you are familiar, and I need say but a few words. At the time that New Amsterdam changed masters, was formed that alliance with the English which has been kept inviolate by the Mohawks unto this day. The Indians were engaged in all the wars that took place upon this continent for the possession of Canada, between the English and French, and to them England, most undoubtedly, owes her possessions in America. Their fidelity and the strength of their friendship will better appear when it is taken into consideration that they had not only no personal interest to serve, but also tempting offers were frequently made to them by the foes of England, to remain at least neutral. But their invariable reply was, "When my brother is glad we rejoice, when he weeps, we also weep."

At the close of the revolutionary war, the Mohawks, having throughout fought for their brother the King, though the American Government generously offered them the undisturbed possession of

their territory, left their "hunting grounds and the graves of their forefathers," and sought a new home in the wilds of Canada in order to preserve their alliance with their Great Brother the King.

A portion settled upon the shores of the Bay of Quinté, where there are now about 700, while the remainder passed up to their present reservation at the Grand River, numbering at the present day about 2,500. So, again, in the war of 1812, these people gave good evidence at "Beaver Dam," "Lundy's Lane," and "Queenston Heights," that the spirit of their forefathers had not yet entirely died out. As illustrating the "ruling passion," strong even in the din and smoke of battle, the father of the writer, who took a leading part in all the engagements on the Niagara frontier, being present at the burning and sacking of Buffalo, selected from a rich, varied, and costly assortment, as his share of the plunder, *a key of rum!*

With this bare outline we shall now proceed with our subject proper.

Although all the traditions represent the Six Nations as originally separate and distinct tribes, there can be no doubt of their common origin when we come to examine the dialects.

The migration of a family away from the rest, and living in isolation, would, in time, give us the dialectic differences now existing among the languages spoken by the Six Nations. If this be true, we would naturally suppose that the greatest similarity would be found to exist between the languages spoken by tribes located contiguous to each other; and, on the contrary, the greatest dissimilarity between the languages of tribes that are most remote from each other. On reference to the geographical position of the tribes, we find that, according to this, the Mohawk and Oneida ought to be most alike. An examination will prove this fact, while the Tuscarora differs more from the Mohawk than any of the others; for the Chiefs of the Mohawks, Oneidas, Onondagas, Cayugas, and Senacas, speak each in his own language in the Council House, and is readily understood by all; but the speech of a Tuscarora Chief usually has to be interpreted into one or other of the five dialects before it can be understood by the Council.

Our first inquiries must be directed, as a matter of course, to the alphabet of the leading language, viz., the Mohawk, and our attention will at once be arrested by a curious peculiarity in the entire absence of the labials which in English are so prominent.

I ought, perhaps, here to explain that the name Mohawk was given to us by foreigners, and that the signification or derivation is entirely unknown to us. Some writers, I believe, have conjectured it to mean *man eaters*, but if it is implied by this that the Mohawks were cannibals, I have no hesitation in pronouncing it to be a libel.

The name by which we are known among Indians is, perhaps, not quite so euphonious, but much more complimentary. It is *Ka-nyen-ke-ha-ka*, which means "flint-people," or "people derived from the flint," given no doubt by those who had experienced something of the flinty character and the scalping propensities of the Mohawk when upon the war-path.

The following comprises all the letters of the alphabet, viz. :—

VOWELS.

A as' *a* in far.
E " *a* " fate.
I " *e* " meet.
O " *o* " old.
U " *u* " tune.

Vowels followed by h have a short, quick, explosive sound, *e.g.* Eh as *e* in met.
Ih " *i* " pin.
E followed by n has the sound of *a* in under.

CONSONANTS.

d h j k n q r s t w x z.

It will thus be seen that b c f g l m p v z are wanting, leaving seventeen letters in the alphabet.

Writers who have gone before me have, as a general thing, retained c and g, but I conceive uselessly, as I think where former writers would employ these letters. j and k could be used quite as correctly.

It will be my object not so much to exhibit the language in some particular form, or according to certain preconceived grammatical notions, as to examine and analyze the language, and afterwards deduce rules founded upon such analysis. With most of the works upon the subject that I have been able to examine, I have found this difficulty, that instead of truly exhibiting the language as it exists, it has been distorted and made to assume new forms to suit the purposes of the author.

In order to indicate the connection between the language of the Mohawks with the other dialects of the Six Nations, I have prepared a comparative table of the numerals, and of a few common words, from which it will be seen that the Mohawk and Oneida are the most alike, while the Tuscarora is most unlike the rest.

	MOHAWK.	ONEIDA.	ONONDAGA.	CAYUGA.	TUSCARORA.
1	En-ska	En-ska	Ska-dah	Skat	En-jih
2	De-ke-nih	De-ke-nih	De ke-nih	Dek-nih	Ne-ktuh
3	Ah-senh	Ah-senh	Ah-senh	Ah-seuh	Ah-senh
4	Ka-ye-rih	Ka-ye-lih	Ka-ye-th	Ke-th	En-dah
5	Wisk	Wisk	Wiks	Wi-sh	Whisk
6	Ya-yak	Ya-yak	Ah-yak	Nye-th	O-yak
7	Ja-dah	Ja-dah	Ja-dah	Ja-dak	Ga-nah
8	Sa-de-konh	De-ke-ronh	De-kenh	De-krunh	Na-krunh
9	Tyo-donh	Wa-deh	Wa-donh	Dyo-ton	Ni-reh
10	O-ye-rih	O-ye-lih	Wa-senh	Wa-seuh	Wa-senh
11	En-ska-ya-wen-reh		Ska-dah-ka-he	Skat-ska-reh	En-jih-ska-reh
12	De-ke-nih-ya-wen-reh		De-ke nih-he	Dek-nih-ska-reh	Ne-ktuh-ska-reh
20	De-wa-senh		D owa-senh	De-wa-seuh	Ne-wa-seuh
21	De-wa-senh-en-ska-ya-wen-reh		De-wa-senh-ska-dah-ka-he	De-wa-senh-skat-ska-reh	Ne-wa-seuh-en-jih-ska-reh
22	De-wa-senh-de-ke-nih-ya-wen-reh		Ah senh-ni-wa-senh	Ah-senh-ni-wa-senh	Ah-senh de-wa-senh
30	Ah-senh-ni-wa-senh		Ka-ye-ih-ni-wa-senh, &c.	ke-th, &c. &c.	En-dah-de-wa-senh, &c.
40	Ka-ye-rih-ni-wa-senh				
50	Wisk-ni-wa-senh				
60	Ya-yak-ni-wa-senh				
70	Ja-dah-ni-wa-senh				
80	Sa-de-konh-ni-wa senh				
90	Tyo-don h-ni-wa-senh				
100	En-ska-de-wen-nya-weh		Ska-dah-de-wen-nya-eh-weh	Skat-de-wen-nya-woh	Ka-ya-swih
150	En-ska-de-wen-nya-weh-nok-wisk-ni-wa-senh		Similar to Mohawk		
	One hundred and fifty.				
200	De ke-nih-de-wen-nya-weh		De-ke-nih-de-wen-nya-eh-weh		
Man	Ron-kwe	Lon-kwe	Ha-ji-nah	Ha-ji-nah	Ra-ni-ha
Woman	Yon-kwe	Yon-kwe	E-henh	Kont-swi-sah	Ka-nen-wenh
Boy	Rax-ha	Lax-ha	Hak-sa-ah	Hak-sa-ah	Rs-ka-senh
Girl	Kax ha	Ex-ha	Ek sa-ah	Ex-ha-ah	Ya-ken-wa-stoc
Husband (my)	De-ya-ke-ni de-ronh	De-ya-ke-ni-de-lonh	De-ya-ke-ni-ke-onh	Ho-oh (husband)	Ro-ho
Wife (my)	De-ya-ke-ni-de-ronh	De-ya-ke-ni-de-lonh	De-ya-ke-ni-de onh	De-ya-ke-ni-ya-seh (wife)	Ke-ho
Father (my)	Ra-ke-ni-ha	La-ke-nih	Kh-ni-ha	Ha-nih (father)	Ri-enh
Mother (my)	Is-ten-ah	Ah ke nol-ha	Ah-ke-no-ha	Kno-ha (mother)	Kwi-renh

Combined same as in Mohawk, only using l wherever r occurs in the Mohawk.

DELAWARE.*

1	En-kwi-ta
2	Ni-sha
3	Nghah
4	Ni-wah
5	Nau-lon
6	En-kwi-tash
7	Ni-shash
8	Nghash
9	Nole
10	Wi-mbut
11	En-kwi-ta-nih
12	Ni-sha-nih
13	Nghah-nih
14	Ni-wa-nih
15	Nau-lon-na-nich
16	En-kwi-tash-ta-nich
17	Ni-shash-ta-nich
18	Nghash-ta-nich
19	Nole-ta-nich
20	Ta-kwi-na cheh
21	Ta-kwi na-cheh-wak-en-kwi-ta, &c.
30	Ngheh-nach-kenh
40	Ni-wah-nach-kenh
50	Nau-lon-nach-kenh
60	En-kwi-tash-ta-nach-kenh
100	En-kwi-ta-poh-kenh
175	En-kwi-ta-poh-kenh-wak-ni-shash-ta-nach-kenh-wak-nau-lon

One hundred and seventy and five.

Man	Lin-non	Father	Noch
Woman	Oh-kwi	Mother	En-gik
Boy	Ska-hen-tson	Son	We-quo-shein
Girl	Oh-kwi-*sis* (little woman)	Daughter	En-da-nish
Husband	Ni-tah-wun-musk	Day	Ki-ish-koh
Wife	Ni tah-wun-musk	Night	Pi-skak

The writer is indebted for the *Delaware* to an educated young Indian of that tribe (Mr. Albert Anthony). Every possible care was taken to guard against errors, and it is believed that the examples given are as nearly correct as possible.

From the above table we can readily see that the numerals are combined according to the decimal system of notation, and that in the language of the Six Nations they counted as far as ten, and then began to combine, as *ten and one, ten and two,* &c., while in the Delaware language, they counted only as far as five. For, the form *Enquitash* = 6 is evidently allied to *Enquita* = 1, and so of *Neeshash* = 7, and *Neesha* = 2, &c.

Although there does not appear to be much connection between the Mohawk *O-ye-rih* = 10, and *De-wah-senh* = 20, yet when we come to look at the forms for *ten* in the other languages with which it is allied, we readily recognize in *De-wah-senh* the words *De-ke-nih* + *Wasenh*—two-tens.

The addition of the ending *Ya-wen-reh* to *one, two,* &c., to express *eleven, twelve,* &c., is peculiar to the Mohawk and Oneida. The form for the other languages, as in Cayuga,—*Wa-senh-skat-ska-reh,* simply means *ten* and *one piled on* in the sense of added. I am at a loss to trace the Mohawk and Oneida form *Ya wen-reh.* It may be derived from *O-ye-rih* = 10, but more likely from *De-ya-wen-renh* = *over,* in the sense of overflowing—more than enough. You will have noticed the peculiarity in the Oneida in the substitution of *l* where *r* is used in the remaining dialects. In fact, this seems to be its principal difference from the Mohawk. The initial *R* and *Yor K* seem to have some connection with the gender, as, for instance, *On-kwe* for mankind, in contradistinction from *Kar-yoh* = beast, is changed into man by simply prefixing R, and into woman by simply prefixing Y. So we have *Ex-ha* = child, *Rax-ha* = a boy, and *Kax-ha* = a girl.

Before subjecting a verb through it various forms, it may help us to understand some of the changes which it undergoes, by first looking at the pronouns and nouns :—

		MOHAWK.		(Plural.)	
I	I-ih.	We (two)	Un-ke-non-ha.	We	Un-kynha.
My	Ah-kwa-wenh.	Ours	Un-kya-wenh.	Ours	Un-kwa-wenh.
Me	I-ih.	Us	———	Us	———
Thou	I-sch.	You (two)	Se-non-ha.	You	Jon-ha.
Thy	Sa-wenh.	Yours	Ja-wenh.	Yours	Se-wa-wenh.
He	Ra-on-ha.	They (two)	Ro-non-ha.	They	Ro-non-ha.
His	Ra-o-wenh.	Theirs	Ra-o-na-wenh.	Theirs	Ra-o-na-wenh.

Dual and Plural.

She or it	A-on-ha.	They	O-non-ha.
Hers or its	A-o-wenh.	Their s	A-o-na-wenh.

There is another form for *she* and *hers* applied to those for whom we entertain love, respect, or esteem, viz., she = Ah-ka-on-ha; hers = Ah-ko-wenh, in which we have introduced the *k* we have already mentioned as having some connection with the feminine gender. There is but one form for the nominative and accusative cases. But the chief peculiarity is the existence of a dual element: as, however, we shall see this more clearly when we come to consider the verbs, it may, perhaps, be better to proceed to an examination of the verb before we say anything of this peculiarity of the language.

We shall find great difficulty in our process of analyzing and tracing the words, from the great tendency to agglutination which

exists in all of the dialects of the Six Nations. We shall frequently meet with compound words in which the characters of the original elements are so entirely changed, or so little left of them, that it will require the utmost caution to keep clear of error. It may be better, when such cases occur, not to attempt an analysis, rather than incur the risk of misleading in the matter.

As an example of this tendency to run words together, as well as showing how the possessive of nouns is formed, we have :—

My apple = *Ah-kwa-hih*, which is evidently a compound of the pronoun My = *Ah-kwa-wenh* and Apple = *Ka-hih*, but instead of using the full form *Ah-kwa-wenh* + *Ka-hih*, we have the last syllable of the pronoun and the first of the noun elided, and we get *Ah-kwa-hih*.

So in the second and third persons we have Thy apple = *Sa-hih*, from *Sa-wenh* + *Ka-hih*.

Thy apple	= *Sa-hih*	from	*Sa-wenh* + *Ka-hih*.
His apple	= *Ra-o-hih*	"	*Ra-o-wenh* + *Ka-hih*.
Her apple	= *Ah-ko-hih*	"	*Ah-ko-wenh* + *Ka-hih*.
Her or its apple	= *A-o-hih*	"	*A-o-wenh* + *Ka-hih*.

Dual.		Plural.
Our apple	Un-kya-hih.	Unkwa-hih.
Your apple	Ja-hih.	Se-wa-hih.
Male—Their apple	Ra-o-na-hih.	Male—Ra-o-na-hih.
Neuter or female—Their apple	A-o-na-hih.	Female or N.—A-o-na-hih.

The rule which may be deduced from the above, with reference to the formation of the possessive case of nouns, I think will be found general. In many cases, however, we shall find that the final syllable of the pronominal part of a compound word, or rather of the possessive, is modified, doubtless for the sake of euphony, and according to certain general rules.

Take any number of words, as Bow = *Ah-en-nah*, Arrow = *Ka-yen-kwi-reh*, Tommahawk = *Ah-do-kenh*, Knife = *Ah-sa-reh*, Shoes = *Ah-dah*, and form their possessive cases, and we shall, I think, find that the same general rule applies to all, *e.g.* :—

My bow	Ah-kwa-en-nah.
Thy bow	Sa-en-nah.
His bow	Ra-o-en-nah.
Her bow	Ah-ko-en-nah.
Her or its bow	A-o-en-nah.

In this example we find that precisely the same rule applies as in the first instance given, and we need go no further than the singular,

as the formation of the dual and plural is quite regular. Take the next word, Arrow :—

My arrow	Ah-kyen-kwi-reh.
Thy arrow	Sa-yen-kwi-reh.
His arrow	Ra-o-yen-kwi-reh.
Her arrow	Ah-ko-yen-kwi-reh.
Her or its arrow	A-o-yen-kwi-reh.

Dual.

Our arrow	Un-ke-ni-yen-kwi-reh.
Your arrow	Se-ni-yen-kwi-reh.
Male—Their arrow	Ra-o-di-yen-kwi-reh.
Neuter or female—Their arrow	A-o-di-yen-kwi-reh.

Plural.

Our arrow	Un-kwa-yen-kwi-reh.
Your arrow	Se-wa-yen-kwi-reh.
Male—Their arrow	Ra-o-di-yen-kwi-reh.
Female or neuter—Their arrow	A-o-di-yen-kwi-reh.

Here we have a slight change in the first person singular by the coalescing of the last syllable of the pronominal with the first of the substantive element, and instead of having Ah-*kwa-yen*-kwi-reh, as we should, we get *Ah-kyen-kwi-reh*. We also have a change in the dual, and in all probability this form of the dual is the primary, as far as the two given are concerned, and the more correct form. I think we shall find hereafter, in various forms of the verb, that the *ni* in the first and second persons, and *di* in the third person, is the proper dual element, which we may hereafter be able to trace to *De-ke-nih*, two.

The following are the possessive forms for the remaining three words :—

	Tommahawk.	Knife.	Shoe.
My	Ah-kwa-do-kenh	Ah-kwa-sa-reh	Ah-kwah-dah
Thy	Sa-do-kenh	Sa-sa-reh	Sah-dah
His	Ra-o-do-kenh	Ra-o-sa-reh	Ra-oh-dah
Her	Ah-ko-do-kenh	Ah-ko-sa-reh	Ah-koh-dah
Her or its	A-o-do-kenh	A-o-sa-reh	A-oh-dah

The formation of the dual and plural follow throughout the same rules as the first example given.

It will be seen that in the third person plural there is a variation from the English, in there being a distinction made in Mohawk with regard to the gender of the possessor when such possessor is of the human species.

That arises from there being two forms—a masculine and feminine, for the pronoun *their*. Were we speaking of both genders, as a boy or girl, in the expression "their book," we would use the masculine form.

There is no distinction between the nominative and accusative forms.

Reference has already been made to a masculine, feminine, and neuter gender.

We shall find that the masculine and feminine are confined entirely to mankind, and that the initial R seems to be in some way connected, as already mentioned, with the masculine, while with the feminine, K and Y are used, *e.g.* :—

Ron-kwe	Man.	*Yon*-kwe	Woman.
Rih-yen-ah	My son.	*Khe*-yen-ah	My daughter.
Rax-ah	Boy.	*Kax*-ha	Girl.

We have already pointed out the existence of two forms of the feminine, confined, I believe, to the singular. There is one form applied to those whom we esteem, as to a mother, and there is a general form, which, perhaps, may be more properly regarded as a *common gender*, and it is the form used when speaking of the beasts of the field, and applied without distinction of gender. This form is used when speaking in general terms of the female sex.

The common gender is confined entirely to the brute creation. Where no masculine or feminine exists, as I stated in the formation of the possessive case, whenever we are speaking of both sexes, as man or woman, we use the masculine, dual, or plural form, as the case may be.

There are in nouns, contrary to what we should expect from what we have seen of the pronouns, only two numbers, the singular and the plural, there being no dual.

The formation of the plural is quite simple and uniform, being effected in two ways, according as the word represents an animate or inanimate being. For the former we add to the singular the termination *o-konh*, *e.g.* :—

Ya-ko-sa-tens = Horse	Ya-ko-sa-tens-*o-konh* = Horses.
On-kweh = Mankind	On-kweh-*o-konh*.

For the inanimates we add *o-kon-ah*, *e.g.* :—

Ah-sa-reh = Knife	Ah-sa-reh-*o-kon-ah* = Knives.
Ah-dah = Shoe	Ah-dah-*o-kon-ah* = Shoes.

There are a few exceptions where the animate form is applied to inanimates, and we may be able, after a more extended observation, to point out the rules that govern these exceptions.

With this brief introduction we leave our subject for some future occasion, and shall close by translating one or two words whose signification may interest you.

The name *Oh-nya-ka-ra*, "on or at the neck," is applied to the whole stream of water between Lakes Erie and Ontario, and is derived from *O-nya-ra*, "neck," or *contraction* between head and trunk.

The Mohawks applied this name to the *neck-like* contraction between the two lakes, and hence we have *Niagara*.

In one of the excursions of the Mohawks, they are reported to have found themselves in the Bay of Toronto. Casting their eyes round, they saw as it were, in every direction, trees standing in the water, hence they called the place *Ka-ron-to*, "trees standing in water," from which, doubtless, you get your *Toronto**; while Ontario is supposed to be from *Ken-ta-ri-yoh*, "placid sheet of water."

* For a reconciliation of the two meanings commonly assigned to "Toronto," viz., "Place of Concourse," i. e. populous region, and "Trees standing out of the water," see pp. 74, 75 of "Toronto of Old." "Toronto" as a local name was first applied to the populous region round the lake now known as Lake Simcoe. At p. 76 of the work just named will be found the interpretation of "Sen-aga" and "Mo aga," according to Pownall, Governor of Massachusetts in 1763, an intelligent investigator in such matters.—[Ed. *Canadian Journal.*]

ON THE LEADING GEOLOGICAL AREAS OF CANADA.

BY E. J. CHAPMAN, Ph. D,
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In a recent number of the *Canadian Journal*, an outline was given of a proposed subdivision of the Province of Ontario into certain natural areas. In the present essay, an attempt is made to extend a subdivision of this kind to the entire Dominion, but in the form of an index only, defining the general position of each area, and summarizing in a few words its distinctive characters, without entering, at present, into physical and geological details. That a generalization of this sort, now first attempted, must present many imperfections, can well be understood; but, as the only condensed view, hitherto published, of the leading geological features of the entire country, it may not be altogether unacceptable.*

The Dominion of Canada includes, at present, three western and four eastern Provinces. The western Provinces comprise: Ontario, Manitoba, with the North-West Territory at present attached, and British Columbia. The eastern Provinces include: Quebec, New Brunswick, Nova Scotia, and Prince Edward Island. In the following geological summary, these Provinces will be taken in the above order.

PROVINCE OF ONTARIO.

This Province admits of a subdivision into six natural areas, comprising: (1) The Lower Ottawa District; (2) The Gananoque and Back Townships District; (3) The Lake Ontario District; (4) The Erie and Huron District; (5) The Manitoulin District; and (6), The District of the Upper Lakes.

(1.) *The Lower Ottawa District.*—Comprises a comparatively level area, bounded on the north by the Ottawa River; east by the

* It is proposed to issue this Index, when completed, in a separate form, with the addition of two or three pages of introduction, a list of the works consulted in its compilation, and outline maps of the various Provinces, showing the subdivisions adopted in the text.

Province boundary line between the Ottawa and the St. Lawrence; south by the latter river; and west by a line extending roughly from Brockville to the vicinity of Perth, and from the latter point to the mouth of the Madawaska. Essentially an agricultural region, occupied by Lower Silurian formations (ranging from the Potsdam to the Hudson River series), with overlying Glacial, Post-Glacial, and Recent deposits: the latter represented principally by extensive beds of peat. The average elevation of the district above the sea is from 200 to 300 feet.

(2.) *The Gananoque and Back Townships District.*—Extends along the St. Lawrence, between Brockville and Kingston, and from these points north-westerly to the north shore of Georgian Bay, thus including the back portions of Frontenac, Addington, Hastings, Peterborough, Victoria, and Simcoe. Essentially a mineral region, occupied by Laurentian strata, composed of gneissoid and micaceous rocks, with beds of crystalline limestone, &c. These, as a rule, are much tilted and broken up, producing a rugged and hilly country, with numerous exposures of bare rock. The district contains important deposits of magnetic and specular iron ore, auriferous mispickel, galena, fluor-apatite, marble, &c. Average elevation above the sea, about 800 feet; but many parts of its area exceed 1,000 feet in altitude.

(3.) *The Lake Ontario District.*—Ranges along the entire north and west shores of Lake Ontario, and extends northwards to the crystalline gneissoid area of the Gananoque and Back Townships District—a chain of small lakes marking more or less continuously the junction of the two areas. In the west, it is bounded by the great Niagara escarpment, which extends from the Niagara River to Georgian Bay. It is essentially an agricultural region, occupied by Lower Silurian strata—represented chiefly by the limestones of the Trenton, the bituminous shales of the Utica, and the shaly sandstones of the Hudson River formations—except in its more western limits where the red marls and sandstones of the Medina formation (of the Middle Silurian series) appear. These formations follow each other in ascending order from east to west, but their strata, apart from the slight dip necessary to effect this, are practically undisturbed. The whole district is more or less overlaid, however, by Glacial boulders, clays, and gravels; Post-Glacial sands, and other deposits holding shells of existing fresh-water mollusca; and Recent deposits of shell-

marl, &c. The Drift or Glacial gravels form a series of roughly parallel terraces or ridges, running from the Niagara escarpment, or its vicinity, in a general west and east direction. The highest ridge is in places from 700 to 750 feet above Lake Ontario. The latter is 232 feet above the sea.

(4.) *The Erie and Huron District.*—Forms a comparatively elevated table-land, extending from the summit of the Niagara escarpment southwards to the Niagara River and Lake Erie, and westward to Lake Huron. In its central and north-eastern portions it presents an average elevation of from 1,000 to 1,200 feet (higher in places), but slopes gradually to Lake Erie, 565 feet, and to Lake Huron, 578 feet above the sea. Constitutes a very fertile agricultural region, underlaid by Middle and Upper Silurian, and succeeding Devonian formations: the more important comprising the Clifton, Niagara, Guelph, Onondaga, Corniferous, and Hamilton subdivisions. The district is apparently traversed by some flat anticlinals running in a general west and east, or north-east, direction, but its strata are otherwise practically undisturbed. Gypsum deposits occur largely in the Onondaga strata; and brine and petroleum are obtained, by boring, from the Devonian formations. Glacial, Post-Glacial, and Recent accumulations, overlie the district generally.

(5.) *The Manitoulin District.*—Comprises the Great Manitoulin and adjacent series of islands lying off the north shore of Lake Huron. Geologically, it forms a continuation of the Ontario and Erie Districts, being underlaid essentially by Silurian strata, striking nearly due east and west, and following each other in ascending order from north to south. The principal subdivisions comprise the Black River-and-Trenton, Utica, Hudson River, Medina-and-Clinton, Niagara, and Guelph formations. In the Great Manitoulin, the northern portion contains numerous lakes, and the north coast is indented by deep bays, originating, apparently, in anticlinal undulations. The Niagara escarpment, with its steep face towards the north, runs through the entire island; and, southwards, bare outcrops of flat limestone strata extend over many acres. In other places the rocks are mostly covered by Glacial and Post-Glacial deposits, yielding tracts of average fertility.

(6.) *The District of the Upper Lakes.*—This district comprises a vast area of a more or less mountainous character, extending, from the north shores of Lake Huron and Lake Superior, to the boundaries of the Province in the north and west. It is essentially a

wooded district, underlaid by hard crystalline rocks, and lying at an average elevation of from 1,000 to 1,500 feet above the sea—Lake Huron being 578 feet, and Lake Superior 600 feet above the sea level. Gneissoid Laurentian strata occupy the greater portion of its area; but these are overlaid along a large portion of the north shore of Lake Huron, and in other localities (as in the country adjacent to Thunder Bay, &c.) by belts of Huronian slates, semi-crystalline conglomerates, and other metamorphic strata; and intrusive masses of granite and trappean rock appear in many places. A higher series of strata, known provisionally as the "Upper Copper-bearing rocks of Lake Superior," overlie these Huronian and Laurentian formations around Thunder Bay and elsewhere in the Lake Superior region. They consist of an under series, mostly of dark slates, and a higher series of indurated marls and calcareous sandstones, the whole traversed or overlaid by enormous masses of trap, as seen at Thunder Cape, &c. Finally, Glacial boulders, clays, and gravels, and Post-Glacial sands, &c., in many places in the form of high terraces, are distributed over the region generally. The Laurentian rocks of the district appear to be destitute of economic minerals, but the Huronian and higher beds are penetrated by numerous metalliferous veins containing copper-pyrites, native silver, silver glance, galena, and other ores. Beds and veins of hæmatite and magnetic iron ore are also present in the Huronian strata of the region; and native gold has been found in rocks of the same age in the Lake Shebandowan country. The copper pyrites and zinc blende of the higher strata around Thunder Bay are also more or less auriferous.

PROVINCE OF MANITOBA,
AND
REGION OF THE NORTH-WEST TERRITORY.

The geology of this vast area—extending from the western boundary-line of Ontario (not yet permanently established) to the Rocky Mountains—is only known at present in its broader or more general features, but it appears to indicate a natural subdivision of the region into four leading districts. These comprise:—(1) The Eastern or Laurentian District; (2) The Eastern Prairie or Lake Manitoba District; (3) The Central Prairie District; and (4) The Mountain District.

(1.) *The Eastern or Laurentian District.*—An elevated rocky region, more or less densely wooded: a continuation of the Lake

Superior country, described, under the District of the Upper Lakes, in the geology of Ontario. It includes all the country lying between the boundary-line of Ontario (not yet definitely settled), and the Winnipeg River and Lake, with probably a wider extension of area towards the north-west. It is occupied essentially by Laurentian strata of micaceous and syenitic gneiss, quartzite, &c., with overlying belts, in various places, of micaceous, chloritic, and hornblendic slates, and slaty conglomerates, of Huronian age. These Crystalline strata form the surface in many parts, but in others, and especially on the south-east shore of Lake Winnipeg, they are covered by thick deposits of Glacial and Post-Glacial clays and sands. The average altitude of the district is about 1,200 feet—the ground rising in places to 1,500 or 1,600 feet above the sea, but descending to 710 feet at Lake Winnipeg.

(2.) *The Eastern Prarie, or Lake Manitoba District.*—This subdivision comprises the country immediately west of Lake Winnipeg, Deer Lake, Lake Arthabasca, &c., and the entire area around Lake Manitoba, Lake Winnipegosis and connected series of lakes, with the valley of Red River and the lower courses of the Assiniboine, Swan River, and Saskatchewan. It forms essentially the "First Prairie Steppe" of the north-west, and occupies an elevation of about 750 or 800 feet above the sea, stretching to the base of the second prairie along the line of hilly country defined by the Pembina, Riding, Duck, and Porcupine Mountains and the Basquia Hills. It is underlaid in its more eastern portion (including Fort Garry, the lower course of Red River, the western shores of Lake Winnipeg, Cedar Lake, &c.) by Lower Silurian strata belonging essentially, if not wholly, to the Trenton formation, and consisting chiefly of dolomitic limestones in horizontal or nearly horizontal beds. The more western and north-western portion (including Lake Manitoba, Dauphin Lake, the west shore of Lake Winnipegosis, Swan Lake, &c.) is underlaid by Devonian strata, consisting most probably of the higher portion of the series. Numerous brine springs, and, here and there, outflows of petroleum, appear to mark the Devonian area generally; but the surface of the district is almost entirely covered by Glacial and Post-Glacial deposits, mostly in the form of stratified marly clays.

(3.) *The Central Prairie District.*—This is essentially a prairie region, but interspersed with patches of woodland, and forming on the whole a rolling and often hilly country. It comprises the second

and third prairie-steppes, rising in the east, above the line of elevation between Pembina Mountain and the Basquia Hills to an altitude of about 1,600 feet above the sea, and in its more western extension on the third prairie (west of the Grand Coteau, Eagle Hills and Thickwood Hills) to from 2,000 to over 4,000 feet. It encloses many sterile tracts, but over a large portion of its area the soil appears to be of good fertility. Ranging west of the Pembina, Riding, Porcupine, and Basquia Hills, it extends over the vast region traversed by the Qu'Appelle River, the Upper Assiniboine, north and south branches of the Saskatchewan, and the upper course of the Arthabasca, and rises gradually into the eastern slopes of the Rocky Mountains. The eastern section—and probably the greater portion of the entire district—is occupied by Cretaceous strata, consisting mostly of sandstones and shaly clays in generally horizontal beds, overlaid more or less by sands of Glacial or Post-Glacial age; whilst towards the west, but without any strongly-marked lines of demarcation, these Cretaceous strata are succeeded by Cainozoic deposits. The latter consist chiefly of sandy clays, with associated beds of lignite and ironstone. Lignite occurs also in the Cretaceous strata of the district. In many of its beds, as in the Qu'Appelle valley and southwards generally, it presents the usual woody or earthy character, but on the Upper Saskatchewan and elsewhere, much of it is of a comparatively dense compact quality, and closely resembles ordinary bituminous coal.

(4.) *The Mountain District.*—Includes the foot-hills and eastern ranges of the Rocky Mountains, and extends westward to the boundary-line of British Columbia. This eastern portion of the Rocky Mountain chain enters the North-west Territory in the form of several distinct ranges which curve towards the north-west, and appear gradually to intermingle. Southwards, the mountains present an average elevation of about 8,000 feet above the sea, with occasional points of higher altitude; but in their northern extension—as seen in the transverse valley of the Peace River, and elsewhere towards the Arctic Ocean—their altitude becomes greatly diminished. They are composed essentially of dolomites, limestones, and sandstones, apparently of Devonian, or of Devonian and Carboniferous age. Probably, older Palæozoic and more recent formations, will eventually be found amongst them. In some few places their uplifted strata still retain their original horizontality, but as a rule they occur in highly-tilted, broken, and contorted beds, with deeply escarped faces

fronting abruptly on the east, and strong westerly dip towards the central part or axis of the chain. Gneissoid rocks and crystalline schists—which make up the main mass of the Rocky Mountains in New Mexico and Colorado, and which occur also immediately west of the chain in British Columbia—appear to be altogether wanting in these eastern ranges. Finally, it may be pointed out, as a characteristic feature of the district, that, along the base and gorges of the mountains, terraced accumulations of gravel and limestone-shingle are seen at varying elevations; and in many cases these shingle terraces or beaches extend along the river-valleys far into the prairie region to the east.

PROVINCE OF BRITISH COLUMBIA.

This Province—extending westward from the boundary-line of the North-West Territories in the Rocky Mountains, to the Pacific coast and outlying islands—admits of a convenient and more or less natural subdivision into four areas. These may be named as follows:—(1) The Eastern Mountain District; (2) The District of the Central Table-land; (3) The Coast and Western Mountain District; and (4) The Island District.

(1.) *The Eastern Mountain District.*—This includes the western ranges of the Rocky Mountains proper, and the adjacent ranges of the Selkirk, Gold, and Cariboo Mountains. Physically, it consists of a number of roughly-parallel chains, running in a general north-west direction, and presenting an average elevation of from 8,000 to 10,000 feet above the sea, with many isolated points of greater altitude. Among the latter, some of the more striking in the main chain include Mount Sabine, Mt. Forbes (13,460 ft.?), Mt. Balfour (14,431 ft.?), Mt. Murchison (16,000 ft.?), Mt. Hooker (15,700 ft.?), and Mt. Brown (15,990 ft.?) Several points in the Selkirk Mountains also exceed 12,000 feet; and glaciers occur in the higher valleys or gorges of both chains. Tilted and contorted strata of limestone and sandstone, apparently for the greater part of Devonian and Carboniferous age, occur on the western as on the eastern slopes of the Rocky Mountains proper, and terraced accumulations of gravel and limestone-shingle are seen at various elevations. The Selkirk, Gold, and Carriboo ranges, which are only separated from the western flanks of the central mountains by comparatively narrow valleys, appear, on the other hand, to consist largely of talcose and micaceous

schists. It is through these ranges, therefore, rather than along the line of the "Rocky Mountains" as defined on maps, that the core of the great chain would seem to be continued to the north.

(2.) *The District of the Central Table-Land.*—This district comprises the great plateau which extends from the Selkirk and other mountain ranges, on the east, to the Cascade and Coast Mountains on the west. It lies at an average elevation of from 2,000 to 4,000 feet above the sea, and presents for the greater part a more or less mountainous character. Numerous lakes occur upon its surface and it is traversed by the Columbia, Fraser, and other rivers, flowing mostly in deeply-cut channels or cañons. In many places it is thickly wooded; but gravelly and comparatively sterile tracts prevail over considerable areas, and swamps are also numerous. So far as known at present, its lower rocks appear to consist of granitic, talcose, and micaceous formations (more or less tilted or contorted), succeeded by shales, conglomerates, and limestones of Middle and Upper Palæozoic age, or by more recent strata of alternating sandstones, shales and lignites, with bedded volcanic products (partly of trappean, and partly of scoriaceous lava-like aspect)—the whole overlaid, very generally, by accumulations of sand and gravel. The latter, as seen more especially in the valleys of the Fraser, Thompson, and other rivers, often form sharply-defined terraces or beaches at varying elevations on the flanks of the older rocks. These sands and gravels, especially in the streams which descend from the Cariboo and Gold ranges, and in the valley of the Lower Fraser, are more or less auriferous. The lignite-bearing strata and associated volcanic beds are probably in part Cretaceous, although chiefly of Cainozoic age.

(3.) *The Coast and Western Mountain District.*—This is essentially an alpine region, forming the western margin of the high Table-land, and extending from the latter to the coast-line of the Pacific Ocean. With the exception of some comparatively restricted areas upon the coast, as at the mouth of the Fraser and smaller rivers, it is occupied entirely by the northern ranges, and their spurs, of the Cascade Mountains, which present an average elevation, in this district, of from 5,000 to 7,000 feet above the sea, with perhaps here and there a peak of somewhat higher altitude.* Glaciers occur in many of the higher gorges; and deep fiords, between, in many places, high walls

* Mt. Baker, Mt. Hood, and Mt. Regnier or Rainier, although referred to in many works on Physical Geography as belonging to British Columbia, lie south of the Province boundary-line as now adopted—*i.e.*, the parallel of 49°.

of perpendicular rock, strike far inland from the sea. Very little is known respecting the geology of the district; but the mountain ranges appear to consist largely of granitic or crystalline formations, broken through by volcanic rocks of comparatively recent origin. Outlying patches of intervening Palæozoic strata, and more recent coal-bearing beds, probably occur amongst these, with overlying terraced deposits of sand and gravel, as seen in the Table-Land District on the west.

(4.) *The Island District.*—This subdivision comprises Vancouver Island, Queen Charlotte Islands, and the numerous smaller groups lying between these and along the coast generally. All are essentially of a mountainous character; and the larger islands contain isolated peaks, or are traversed by broken ranges—northern outliers of the "Sea Alps" of California, and thus, undoubtedly, composed in part of volcanic rocks—of comparatively high elevation. In Vancouver Island, amongst other elevated points, the Beaufort Range exceeds 5,000 feet in altitude; and Mt. Arrowsmith is 5,970 feet, Victoria Peak 7,484 feet, Mt. Albert Edward 6,963 feet, and Mt. Alexandra 6,395 feet above the sea. In the Charlotte Islands, the ranges are apparently of nearly equal height. In both of these island groups, however, comparatively level tracks, well adapted for agricultural settlement, occupy extensive areas. The geology of the district, so far as at present known from the Reports of Mr. Richardson of the Canadian Survey, Mr. Bauerman, Dr. Brown, and others, may be briefly summarized as follows: The smaller islands lying more immediately along the coast consist principally of crystalline hornblendic strata, associated with beds of semi-crystalline limestone, and holding in some localities—as on Texada Island, more especially—valuable beds of magnetic iron ore. Rocks of a similar kind occur upon the flanks of the mountain ranges in Vancouver and other islands to the east—these westerly and easterly exposures seeming to form the edges of a long trough, or series of troughs, filled with coal-bearing Cretaceous strata. The semi-crystalline limestones contain in places many imperfectly preserved fossils of Carboniferous or Upper Palæozoic types. The coal-bearing strata consist mostly of alternations of sandstones, conglomerates, and shales (the first greatly predominating), with layers of iron-stone nodules and seams of coal, the latter varying from a few inches to about five or six feet in thickness. These coal strata are characterized by the presence of many well-known Mesozoic types—Ammonites, Belemnites, &c.

Those of the Queen Charlotte Islands to the north, apparently indicate Lower Cretaceous deposits, or beds of passage between Jurassic and Lower Cretaceous formations, whilst the fossils of the coal strata of the Vancouver group are clearly Upper Cretaceous. The coal of the northern islands is more or less anthracitic in character, but that of Vancouver Island is of ordinary bituminous quality, identical in all essential respects with the coals of the Coal Measures proper. These Cretaceous strata are covered very generally by thick deposits of sand and clay, forming high cliffs in many places; and over a large portion of Vancouver Island, the latter deposits are again overlaid by a dark vegetable soil, holding, here and there, layers of marine shells, belonging apparently to existing species. Brine springs occur on one of the islands of the Vancouver group, and the sands of Leech River and other streams have yielded considerable amounts of gold.

NOTE.—As the composition of the iron ore of Texada Island has not hitherto been made known, the following analysis (by the writer) of a sample received from Mr. de Cosmos, M.P., on whose property on the island a large display of the ore occurs, may not be out of place. A description of the exposure will be found at page 99 of the Geological Report for 1873–4.

The ore, as regards the sample analysed, is of a coarse-granular texture, and is strongly magnetic, but shows polarity only in special places. Its specific gravity=4.71: the average weight *per cubic foot* is thus equal to 293¾ lbs; and 6.81 cubic feet (of solid ore) will make a Canadian ton, and 7.63 cubic feet an English ton.

The analysis yielded:—

Protoxide of iron	28.33
Sesquioxide of iron	67.31
Oxide of manganese	tr. only
Titanic acid	0.11
Phosphoric acid	0.07
Sulphuric acid	0 09
Insoluble siliceous matter	3.97

Metallic Iron=69%

Another trial, in which all the iron was calculated from the Fe^2O^3 obtained, (without separation of FeO), gave Fe^2O^3 98.49=Metallic Iron 68.91%.

*** The concluding portion of this article, embracing the Eastern Provinces — Quebec, New Brunswick, Nova Scotia, and Prince Edward Island—will appear in the next issue of the Journal.

ON THE

EARLY GAZETTEER AND MAP LITERATURE OF WESTERN CANADA.

BY HENRY SCADDING, D D.

All books consisting of descriptions and statistics of new countries become, as a matter of course, speedily obsolete, and are superseded by others which in their turn have to give place to fresh essays of the same class. Even in old countries, in these days, the changes constantly going on are so many, as to require the issue periodically of new accounts. Thus we have a Murray, a Black, a Bradshaw, a Baedeker, putting forth year after year, not merely new editions of their "guides," but those "guides" reconstructed throughout, curtailed here, expanded there, so as to be in accordance with the real situation of affairs. But volumes having reference to the growing colonies of Great Britain, become superannuated in a particularly short space of time, so very rapid is the progress made therein; and in such quick succession come the changes. After all, however, although a person who is seeking for the latest information in regard to a new country, desires, and must have, the latest book on the subject, yet, let only a sufficient number of years pass away, and the books which from time to time had become obsolete, again recover a value, and are gladly resorted to for purposes of comparison or for the verification of partially forgotten facts. To each generation the actual state of things must be that which chiefly absorbs the attention. But society amongst us has been all along in a state of flux; and each person, though still of necessity kept busy by the calls of the moment, cannot help looking back to particular stages of the past with a peculiar interest: to the era, for example, when he himself was first called to take part in the serious battle of life, and to his surroundings then; or it may be, his regards are turned to one remove further—to the time when a father, perhaps, or grandfather

commenced a career in the new land and laid a foundation on which his heir has built. In such a case as this, many books which in a certain point of view are entirely out of date, at once regain a value as important helps to the mind in a desired resuscitation of a particular period of the past. Furthermore, in the lapse of time—in the lapse of even a few years—in some instances, a certain pleasant flavour of age is acquired by the language employed in local books; and a volume in itself perhaps of no especial intrinsic merit is, for this reason, sought after and enjoyed.

The first Gazetteer of Upper Canada, compiled soon after the organization of the Province in 1793, attracted my attention a few years since; and, as it is a work which has become scarce, and the contents of which seem likely to interest those who concern themselves about the early history of the country, I thought it would not be unfitting to reproduce it by instalments in the pages of our Canadian Journal, accompanying each part with such annotations as might throw light, where needed, on the origin of the names.

The perusal of this Gazetteer has led me to the consideration of other early topographical sketches of Canada, and other Gazetteers, antecedent or subsequent, having reference to Canada. And I have supposed that a short account of such productions, with brief specimens, would not be uninteresting or out of place.

The earliest Gazetteer that I have seen, embracing accounts of Western Canada, is one published in London, soon after the conquest of Canada in 1759, by G. Robinson, Paternoster Row. Its title is "The North American and the West Indian Gazetteer." It contains accounts of all the British Colonies of North America, none of which in 1759 had revolted. A copy of the second edition of this work, published in 1778, is in my possession. I have seen mentioned an "American Gazetteer, containing an account of all the parts of the New World. 3 vols., 12mo. Maps. 1762," but upon this work I have not been able to lay my hands. I think it was printed on this continent, and not in England.

The North American and West Indian Gazetteer has no notice of the locality on which Toronto is situated, and from which it took its name. But Toronto appears very plainly on the folding map prefixed to the book, and the same name is attached to a lake north of Lake Ontario, and also to the chain of lakes and water communication connected with the Trent and the Bay of Quinté. We do not find

even Cataraqui in this Gazetteer—the germ of Kingston—but of Montreal we read as follows:—"It is a well-peopled place, of an oblong form, the streets very open, and the houses well built. The fortifications are pretty strong, being surrounded by a wall, flanked with eleven redoubts, which serve instead of batteries; the ditch is about eight feet deep, and of a proportionable breadth, but dry, encompassing the town, except that part which lies towards the river. It has five gates, one of them very small. It has also a fort or citadel, the batteries of which command the streets of the town from one end to the other; and over the River St. Peter is a bridge." Then follows an account of the monastic institutions, &c.

Our Lake Ontario is thus described:—"A large collection of fresh water, above 270 miles in length from E. to W., and 65 in breadth from N. to S. The fortress of Oswego stands on the southern shore of this lake. It has a small rising and falling of the water, like tides, 12 or 18 inches perpendicular. The snow is deeper on the south side of this lake than any other, and its water does not freeze in the severest winter out of sight of land." (This is all.)

In the article on Canada, the limits of the country are thus given: "The limits of this large country are fixed by an Act of Parliament in 1763 as follows:—The north point, even the head of the river St. John, on the Labrador Coast; its westernmost point, the south end of Lake Nipissing; its southernmost point, the 45th parallel of north latitude, crossing the river St. Lawrence and Lake Champlain; and its easternmost, at Cape Rosiers, in the Gulf of St. Lawrence; including about 800 miles long, and 200 broad; which boundaries, in 1774, were extended southward to the banks of the Ohio; westward to the banks of the Mississippi; and northward to the boundary of the Hudson's Bay Company." Further on still larger limits are assigned; Louisiana is included within them. "Canada, in its largest sense, is divided into Eastern and Western, the former of which is commonly known by the name of Canada, and the latter, which is of later discovery, Louisiana, in honour of the late Louis XIV. * * * The number of the inhabitants in 1763 was 42,000, but since they have increased very considerably. Its trade employs 34 ships and 400 seamen. The exports to Great Britain consisted of skins, furs, ginseng, snakeroot, capillaire, and wheat, all which amounted annually to 105,500, which was nearly the amount of the articles sent from England to them." The article IROQUOIS reads as

follows:—"The most considerable and best known of all the Indians, as well as the strongest and most powerful. Their country lies between lat. 41 and 44, and extends 70 or 80 leagues from E. to W., from the source of the river of the Iroquois (St. Lawrence) to that of Richelieu and Sorel; from the lake of St. Sacrament to the Fall of Niagara; and upwards of 40 leagues from N. to S., viz., from the springhead of the River Agniers to the Ohio, which, together with Pennsylvania, forms the southern boundary. * * * They are divided into several cantons, the five principal of which are the Tsonontonons, Goyogoans, Onnontagues, Onnogoats, and Agniez. These five nations have each a large village, consisting of mean huts, about 30 leagues from one another, mostly seated along the southern coast of Lake Ontario." The Hurons are "savages inhabiting the country contiguous to the lake of the same name in Canada. Their true name is Y-en dats. The country inhabited by these people at the beginning of the last century, [*e.g.*, 17th], had the Lake Erio to the south, the Lake Huron to the west, and Lake Ontario to the east. It is situated between Lat 42 and 45 N. Here they have a good many cantons or villages, and the whole nation still consists of between 40,000 and 50,000 souls." After speaking of the forests:—"Here are some stones that can be fused into metal, and contain veins of silver. This country is well situated for commerce, whence, by means of the lakes by which it is almost surrounded, it would be an easy matter to push on discoveries even to the extreme parts of North America." A long article is devoted to the Esquimaux, who, in 1759, were in the habit of coming down to lower latitudes than they are wont to do at the present time. They are spoken of with great horror:—"Their name is supposed," the Gazetteer says, "to be originally Esquimantsic, which, in the Albenaquin dialect, signifies eaters of raw flesh, they being almost the only people in those parts that eat it so, though they use also to boil, or dry it in the sun. * * * They hate the Europeans, and are always ready to do them some mischief, so that they will come to the water side, and cut their cables in the night, hoping to see them wrecked upon their coast against the next morning. * * * The Esquimaux are the only natural inhabitants ever seen on the coasts of Newfoundland, who pass thither from the mainland of Labrador, in order to hunt and for the sake of traffic with Europeans. One of their women was brought to England and presented at Court in 1773." [This is

in the second edition, dated 1778.] Tadousac, in this Gazetteer, is said to be "a place of great traffic and resort for the wild natives, who bring hither large quantities of furs to exchange for woollen cloths, linen, iron and brass utensils, ribbons and other trinkets. The mouth of the river on which it stands is defended by a fort erected on a rock almost inaccessible."

In 1765, Major Robert Rogers published in London "a Concise Account of North America, containing a description of the several British Colonies on that Continent, &c." Major Rogers' account of the particular locality which we inhabit, is as follows:—"The country on the west and north of the lake (Ontario), down to the River Toronto (Humber), which is about 50 miles, is very good. At the west end (of this lake) a river runs in, from which are carrying-places both to Lake St. Clair and Lake Erie, or to rivers that flow into them. The country upon the lake between St. Lawrence (where the St. Lawrence leaves the lake) is inhabited or owned by the Mississagas, and, by the fair and lofty timber upon it, is a good soil. Here is likewise great plenty of grape vines. By one of the branches of the River Toronto (the Humber) is an easy communication with the rivers flowing into Lake Huron. Upwards of a hundred miles from Toronto, at the north-easterly corner of the lake, the River Cataraqui flows into it: there are likewise several smaller streams between these. From Cataraqui is a carrying-place to the Attawawas River, which joins St. Lawrence near Montreal. This country is also owned by the Mississagas, as far northward as Cataraqui: they likewise claim all the west side of Lake Ontario, and north of Lake Erie, but live a roving unsettled life, literally without any continuing city or abiding habitation, as hath been already remarked of them." Major Rogers further reports that "in the rivers round Lake Ontario are salmon in great plenty during the summer season; and at the entrance of the River St. Lawrence (*i.e.* at Kingston) are, during the winter season, an abundance of a kind of fish called white fish, which seem to be peculiar to this place, there being none such anywhere else in America, excepting some few at Long Point; nor can I learn that any such are to be seen in Europe. In summer they disappear, and are supposed to be during that season in the deep water, out of soundings. They are about the size of shad, and very agreeable to the palate. Here is great plenty of water fowl, and game of all kinds common to the climate. In a word, the country round this lake is

pleasant, and apparently fertile, and capable of valuable improvements." The narrative then goes on to say that "the River St. Lawrence takes its leave of Lake Ontario at the north-east corner of it. Near the lake it is ten or twelve miles wide, having several islands on it, on one of which, the most northerly, at the head of the rifts, is a small fortress erected by the French and now kept up by us." The Major uses, we will observe, the good old English word "Rifts" for "Rapids"—or parts of a river where the bed is broken into steps or precipices: this is, in fact, the exact representative of the word *Cataract*, which properly denotes a broken, rocky bed of a river, rather than an abrupt fall of the whole stream.

This Major Rogers was the officer sent up by General Amherst from Montreal, in 1760, to take possession of the French posts in the west, evacuated after the conquest

In 1799 appeared David William Smith's Topographical Description and Provincial Gazetteer of Upper Canada. Its full title runs as follows:—"A Short Topographical Description of His Majesty's Province of Upper Canada, in North America, to which is annexed a Provincial Gazetteer. London: published by W. Faden, Geographer to His Majesty and to His Royal Highness the Prince of Wales, Charing Cross, 1799. Printed by W. Bulmer and Co., Russell Court, Cleveland Row, St. James'."

It is said in the preface to have been drawn up by "David William Smith, Esq., the very able Surveyor-General of Upper Canada, on the plan of the late Captain Hutchins, for the River Ohio and the countries adjacent."

This work gives briefly the name and situation of all the original townships, towns, counties, and districts of Upper Canada, together with names and situations of all the lakes, bays, islands, and rivers. As being the first record of the kind, it has now acquired, as I have said, a certain historical interest. What I have attempted to do in the republication of this Gazetteer in the Canadian Journal is, to subjoin to the several names such information as may seem needful for elucidation: if a native name, to give, if possible, the interpretation: if a name transferred either from the British Islands or from from France, to point out the place or object bearing that name in the mother-countries of the Colony, or the statesman, nobleman, or prince sought to be complimented or commemorated by this application of his name.

The larger Almanacs or Calendars of former days contain a good deal of information about Canada.

In the Quebec Almanac and British American Royal Calendar for 1819, we have "A brief account of Canada written in 1811." It is there stated that "the largest quantity of wheat ever exported from Canada, was in 1802. It amounted to 1,010,033 bushels. There were besides exported that year, 28,301 barrels of flour and 22,051 cwt. of biscuit. Animal food has generally been furnished in abundance in Lower Canada. * * * The value of the exportations from the St. Lawrence in 1810 has been estimated by mercantile men at 1,200,000 pounds sterling, including disbursements of ships employed in the trade, the number of which was 661, men 6,578, tonnage 143,893, and also the value of 5,896 tons of new ships built in the Province. A considerable proportion of the produce of the United States, and all the furs obtained in the Indian countries, are included in the general amount. The price of labour in the towns," it is added "for four years past may be estimated at four shillings ($\frac{4}{5}$ of a dollar) per day throughout the year, one half of which sum has been paid for board and lodging. Bread has been at about 2½d. per lb., and beef 5d."

In 1813 there was published at Philadelphia, "A Geographical View of the Province of Upper Canada," by M. Smith. Mr. Smith appears to have been a citizen of the U. S. He dates his preface from Winchester, Connecticut, and he says, "I was induced to this business about three years ago, while in Canada, from a belief that a full and impartial account of the Province would be acceptable and useful to my fellow citizens, as of late years many have been in the habit of moving there. And I also knew that a correct geographical account of the Province of Upper Canada had never been published: whatever had been, was brief and defective. I may add that the mildness of the climate, fertility of the soil, benefit of trade, cheapness of the land, and morals of the inhabitants, so far exceeded my expectations and the apprehensions of the public in general, I deemed it my duty to make known the same. I will also observe, that I have wrote from experimental knowledge, and not merely from what has been suggested by others. Some may imagine, because I write thus, that I have a partiality for the English, but this I solemnly deny. I only describe things in their true characters, with the impartiality of an historian. I began this work before the war. I

undertook it with an earnest desire to benefit some, I care not who. If any are benefited I shall be gratified. In short, I write this *pro bono publico.*"

He may, perhaps, have thought that his glowing descriptions would whet the appetite of his fellow-citizens for Canada, its conquest by the United States being fully expected. His account of the London District is very inviting. "The district of London," he says, "is certainly much the best part of Canada. It is sufficiently level, very rich, and beautifully variegated with small hills and fertile valleys, through which flow a number of pearly streams of almost the best water in the world. In this district there is a large quantity of natural plains, though not in very large bodies, and not entirely clear of timber. This land has a handsome appearance, and affords fine roads and pasture in summer. Here the farmer has little to do, only to fence his land, and put in the plough, which, indeed, requires a strong team at first, but afterwards may be tilled with one horse. These plains are mostly in the highest part of the ground; are very *rich, and well-adapted for wheat and clover. The surface of the* earth in this district is almost entirely clear of stone. It is of a sandy quality (especially the plains) which renders it very easy for cultivation. This district is situated in the 41st degree, and 40 minutes of north lat., and is favoured with a temperate climate. The summers are sufficiently long to bring all the crops to perfection, if planted in season. Indeed, there is hardly ever any kind of produce injured by the frost. This is the best part of Canada for wheat, and I believe of any part of the world. From 20 to 35 bushels are commonly gathered from one acre of ground, perfectly sound and clear from smut. Corn thrives exceedingly well, as also all other kinds of grain. Apples, peaches, cherries, and all kinds of fruit *common to the United States, flourish very well here. Woodland* sells from two to five dollars an acre. The timber of this district consists of almost all kinds common to the U. S. The inhabitants of this district enjoy a greater degree of health than is common to observe in most places, but doubtless there are reasons for this." He enumerates their temperance and moderation, the excellence of the climate, and water and vegetables, and sixthly, he says, "The people of this Canadian paradise are more contented in their situation of life than is common to observe in most places, which also very much preserves the health of man, while a contrary disposition tends to destroy it."

Mr. Smith was in Canada at the beginning of the war. He thus speaks of the capture of Detroit by General Brock:—"The capture of Hull and his army, with the surrender of the fort of Detroit, and all the Michigan territory, were events which the people of Canada could scarcely believe, even after they were known to be true. Indeed, when I saw the officers and soldiers returning to Fort George, with the spoils of my countrymen, I could scarcely believe my own eyes. The most of the people in Canada think that Hull was bribed by the British to give up the fort." Mr. Smith's description of York, our present Toronto, reads as follows:—"This village is laid out after the form of Philadelphia, the streets crossing each other at right angles, though the ground on which it stands is not suitable for building. This, at present, is the seat of Government, and the residence of a number of English gentlemen. It contains some fine buildings, though they stand scattering, among which are a court-house, council-house, a large brick building, in which the King's store for the place is kept, and a meeting-house for Episcopalians, one printing and other offices. This city lies in north latitude 43 degrees and some minutes. The harbour in front of the city is commodious, safe, and beautiful, and is formed after a curious manner. About three miles below or east of the city, there extends out from the main shore, an arm or neck of land about 100 yards wide, nearly in the form of a rainbow, until it connects with the main shore again about a mile above or west of the city, between it and where the fort stands. About 300 yards from the shore, and as many from the fort, there is a channel through this circular island, merely sufficient for the passage of large vessels. This basin, which in the middle is two miles wide, is very deep and without rocks, or any thing of the kind. While the water of the main lake, which is 30 miles wide in this place, is tossed as the waves of the sea, this basin remains smooth. The fort in this place is not strong; but the British began to build a very strong one in the year 1811." Thus far Mr. M. Smith.

In 1815, Joseph Bouchette, Surveyor-General of Lower Canada, and Lieutenant-Colonel Canadian Militia, published his Topographical Description of Lower Canada, with remarks upon Upper Canada, and on the relative connection of both Provinces with the United States of America.

"What is said of the Province of Upper Canada," the author observes, "is the substance of notes and memoranda made in that

country very recently, as well as a knowledge obtained of it during an anterior service of six years as an officer of the Provincial Navy, upon the lakes: these have been corroborated and enlarged from other sources of undeniable intelligence and veracity."

An excellent engraved plan of Toronto harbour is given, shewing the singular conformation of the Peninsula, of which more presently.

A plan of Kingston harbour is also given, with the different channels leading to it from the lake.

In 1822, Robert Gourlay published his statistical account of Upper Canada. In consulting this work for statistics and topographical information, the attention is inconveniently drawn aside to other matters—especially to the personal grievances of the author, which, doubtless, were many: and they are set forth at great length. The idea with which he started of collecting statistics from all quarters of the country in the form of replies to a circular, was, of course, quite a natural one; but it was a novelty in the young colony, and offended the susceptibilities of the local authorities, who charged Gourlay with disaffection to the Government. This soon transformed the diligent gatherer of statistics into a violent political agitator. Subsequent topographical writers have gleaned much from the three volumes of Gourlay. The information which they contain is in reality of the date 1818. The maps that accompany the work are excellent; and, as a vignette, on the engraved title-page of each volume is as good a little picture of the Falls of Niagara, seen from the heights on the Canadian side, as any that are in circulation now taken by photography.

In 1831, appeared Bouchette's larger work: — "The British Dominions in North America, or a Topographical and Statistical Description of the Provinces of Lower and Upper Canada, New Brunswick, Nova Scotia, the Islands of Newfoundland, Prince Edward, and Cape Breton." This work consists of two volumes, 4to., with 23 plates of views and plans.

Four chapters are devoted to Upper Canada. Goderich is thus spoken of: "The town is very judiciously planned, and peculiarly well situated, upon the elevated shores of the lake, and on the southern side of the harbour formed by Maitland River. This harbour is capable of affording safe shelter to vessels of 200 tons burden, and is well calculated to admit hereafter of the construction of quays, to facilitate the loading and unloading of produce and merchandise.

The River Maitland affords of itself many important advantages, arising out of the numerous sites it presents for the erection of mills of every description, and likewise for the excellence of the fish with which it abounds. The lake is equally well stored, and yields especially great quantities of sturgeon. The broad expanse of its beautifully transparent waters, whilst it adds to the interest of the locality, and favourably influences the atmospheric changes, affords an advantageous means of forwarding and receiving goods to and from the lower extremities of the Province through the straits, lakes, and canals, by which, in fact, an uninterrupted water communication is opened to the Atlantic Ocean."

The personal appearance of Colonel Bouchette, the author of the work now quoted from, is familiar to most persons from the portrait prefixed to it, which also appeared in the volume of 1815, and has been reproduced in a pamphlet, setting forth the claim of M. Bouchette's heirs to certain sums of money alleged to be due from the Government of Canada.

Bouchette was the first to lay down with accuracy the outlines of the peninsula which formed the harbour of Toronto. In a reduced plan in his 4to. work, we can see how the peninsula was gradually generated. We can see that there has been (1) a constant drift of materials from the east, and (2) a constant tendency in this drift to be turned northwards, and then back again eastwards by the action of southerly and westerly winds. At one period, the inward tendency was so successful as actually to form a connection with the shore, the only interruption in the continuity of the material being the outlet of the Don. Probably at this period the Scarboro' heights extended far out into the lake, and sheltered the sandy embankment which had been formed. After the establishment of this union with the shore, a steady drift from the east still went on, carrying material year after year westward, that material, however, now spreading itself more than before, but still showing a tendency continually to turn in towards the mainland, forming a succession of irregular hooks.

This remarkable wing-shaped breakwater was the *raison d' être* of Toronto. It attracted the eye of the first organizer of Upper Canada, and led him to lay the foundations of the capital of the new province where now it stands. The coolness with which the demolition of this all-important peninsula is beheld by the general public is some

thing amazing. The work of destruction carried steadily forward, now during a series of years, by the relentless surges of Lake Ontario, appears to be regarded simply as a curious spectacle arranged for the entertainment of "the judges, magistrates, and gentry of the province;" for the delectation of the merchant princes, the great manufacturers, the railway directors, the civil engineers, the common council and aldermen of Toronto, who look on, like the chorus in a Greek play, and prattle to each other about some nefarious deed which is being perpetrated before their eyes, but never seem to be aware that common sense points to action of some kind on their part, with a view to the prevention, if possible, of the direful result which is threatened.

In 1832, appeared Dr. Dunlop's Statistical Sketches of Upper Canada. We have here no formal topographical arrangement, but much excellent matter of use for Gazetteer purposes, and abounding with humour. The climate, especially, is graphically described. Field sports, fishing, shooting, and hunting are dwelt upon. Each chapter has a motto, like Sir W. Scott's novels, some of them extemporized.

In 1832, Mr. Andrew Picken published in London (*Effingham* Wilson, Royal Exchange), a book, entitled "The Canadas," containing information for Emigrants and Capitalists. One division of this book consists of Geographical and Topographical Sketches (1) of Lower and (2) of Upper Canada. We have here virtually a brief Gazetteer of the latter Province, principally confined to an account of the soil, the advantages and disadvantages of position. Mr. Picken derived the materials of his volume chiefly from Mr. Galt, formerly "Chief Commissioner" of the Canada Company. In his dedication to that gentleman, Mr. P. uses the following language: "It is proper that a work of this kind should be inscribed to you, from the services you are known to have rendered to Canadian *colonization*. Of the extent and value of those services—services which will hereafter connect your name with the history of this interesting colony—it is to be hoped, for your own sake, that the public at home may yet become as fully aware, as the settlers are in those parts of the Province where the effects of them are more particularly felt." Mr. P. gives as the population of York (Toronto), in 1832, between four and five thousand; and of the whole Home District, including the neighbouring District of Newcastle, 36,264 (in 1828).

Effingham Wilson, the publisher of Picken's book in 1832, published in 1833, "Sketches of Canada," by W. L. McKenzie. In this work, which had a political object, there is no systematic topography, but the writer very truly says: "Without giving occasionally, minute sketches of the progress of the new settlements from a state of wilderness to cultivated farms, villages, dwellings, chapels, school-houses, orchards, barn-yards, and fruitful fields, the property of a happy and intelligent population, a correct knowledge of America is unattainable." Accordingly, we have numerous graphic notices, with statistics, of localities in Upper Canada scattered about, amidst articles on public affairs and public institutions, and characteristic anecdotes of public and private personages of the United States and British America.

In 1836 Dr. Thomas Rolph, of Ancaster, Gore District, Upper Canada, published a Statistical Account of Upper Canada, in connection with "Observations made during a visit in the West Indies, and a tour through the United States of America."

In his Preface, Dr. R. says (1836): "The inhabitants of Great Britain have been too apt to consider Canada as merely a region of ice and snow, of pine forests and lakes, of trappers and Indians, with a few forts and villages intermixed, and producing only moccasins, furs, and ship timber. But this is a very imperfect view of that interesting country, which is growing in population, and improving in cultivation more rapidly, perhaps, than any part of the United States, if we except the territory of Michigan, and which must become, at no very distant period, a wealthy, powerful, and populous Province." Dr. R.'s account of Belleville contains some archæological information, such as one would like to see recorded whenever it exists: "The site of the town of Belleville is situated between Kingston and Toronto, on the shore of the Bay of Quinté, originally claimed by the Mississaga Indians as a landing-place, and called by them Saganashcogan, where they usually received their presents from Government, demanding a yearly acknowledgment from its settlers for their possessions. The late J. W. Myers afterwards claimed it under a 99 years' lease, said to have been granted to him by that tribe; hence the creek or river running through the adjacent lot took the name of Myers' Creek, described in a grant to one Singleton, as Singleton's River. Since the town has been laid out, it has assumed the new and more appropriate name of the River Moira. * * *

In the year 1800, the village was laid out by Samuel Wilmot, Esq., King's Surveyor, under the immediate orders and instructions of Government, appropriating lots for a jail and court-house, churches, chapels, and for other public buildings; granting to individuals who had made improvements, the several lots they occupied. The main streets are 66 feet wide, called Front, Pinnacle, Park, and Rear Streets, intersected by cross streets of the same width."

Dr. Rolph speaks of the Township of Madoc and its mineral wealth: "The ore to be smelted is the magnetic oxide, and will produce about 70 per cent. of iron. This extensive and valuable bed of ore is on lot No. 11, of the 5th Concession, and was bought of the Canada Company, who, with a liberality rarely to be met with, have sold it to the present owners, at an advance beyond the ordinary price of lands in the neighbourhood, on condition only that they should improve it. This township contains other valuable minerals, such as beds of fine marble, zinc, lead, and probably copper, which might be worked to great profit. These, added to as fine a soil as the world produces, pure and abundant streams of water, fine timber, and a healthy country, all conspire to render Madoc, at this time, as desirable a location for the farmer, the capitalist, and the man of science, as any in the Province."

Peterborough is thus described: "This village stands on a fine elevated sandy plain, and in a very central situation in the District; it is divided by the River Otonabee, and is immediately adjoining and above the small lake. It commenced in 1825, under the superintendence of the Hon. Peter Robinson, who lived with a large body of Irish emigrants for some time. It is beautifully wooded with choice trees. A very good and substantial frame bridge has been erected across the Otonabee at this place. It contains a population of 1,000 persons, and continues still improving, &c., &c." He dwells on the importance of this situation, on the water communication between Lake Simcoe and the Bay of Quinté.

In Fothergill's Almanac of 1839, and in preceding issues of the same periodical, we have a "Sketch of the present state of Canada, drawn up expressly for this work by Charles Fothergill, Esq." I extract a sentence giving statistics of Upper Canada in 1839: "The settled parts of Upper Canada contain 500,000 souls. The largest towns are Toronto and Kingston, of which Toronto is the most populous, containing 12,500 inhabitants (1839)."

The following will give an idea of the facilities for travelling in 1839: "The navigation from Quebec to Buffalo, with all the present interruptions, may be performed in a week; and from thence to the River St. Clair, either to Detroit, or Sandwich, in three days. From thence into the Lakes Huron, Michigan, and Superior, the impediments are few and trifling. From the Island of Anticosti, at the mouth of the St. Lawrence, to the head of Lake Superior, we have a navigation of an extent little less than 3,000 miles, the greater part of which is ship navigation, and may be run over, with all the present obstacles, during the summer months, at the rate of about 80 miles per day; and that through the greatest extent of fertile country to be found, in continuity, in any part of the world, and a climate highly favourable to agricultural labour."

Though the present railway system, at least of the Grand Trunk, had not yet been thought of, a railroad is, nevertheless, projected. We have it mentioned at the close of some unavailing, but curious, lamentations over the cession of Michigan to the United States in by-gone times:—"Ever since the emigration from the Eastern to the Western States of the Union by the route of Lake Erie, the Canadians have been constantly twitted by tourists and others with the contrast of superiority exhibited on the Detroit frontier over that of our own opposite to it, forgetting that it could not have been otherwise, since we were fools enough to cede the Michigan territory to our rivals, and not only give them the *landing-place*, but the *grand portage* itself, to boundless regions. Having committed this incalculably mad and egregious error, could we wonder that the shores of our beautiful little peninsula, directly *in view*, but *out of the line*, remained commercially desolate. All that the magnificent undertaking of the WELLAND CANAL has done, or all that it ever can do, will not make amends to the Western and London Districts for the great loss sustained in the cession of Michigan, since it can merely transfer the shipping from one lake into the other. But there is a measure which would go far to recompense the evil that has been inflicted. It has been much talked of; but, as yet, little has been done in it. We mean the Lake Huron Railroad from Toronto. There will be no end to the advantages arising from this national work, if it is undertaken on the scale and in the spirit in which such public works should be undertaken. Enterprising merchants at Oswego have long regarded this great measure as one of superlative importance."

In 1846, Mr. Wm. Henry Smith published at Toronto, his "Canadian Gazetteer," comprising statistical and general information respecting all parts of the Upper Province or Canada West, &c.

To collect the materials of his work, Mr. Smith travelled about, personally visiting the parts described, "walking," he says in his preface, "over more than 3,000 miles of ground, through both the heats of summer and the snows of winter." He gives a brief but careful record of the population of each town, township, and village, the value of the ratable property, the leading features of each locality as regards soil and climate, and the average value of land.

About four years after the appearance of the Gazetteer, Mr. Smith published his more elaborate work, entitled "Canada, Past, Present, and Future, being a Historical, Geographical, Geological, and Statistical Account of Canada West." Again did our author make a perambulation of the country, and gather in a copious store of useful information. Again, in his preface, Mr. S. alludes to the toils undergone: "The journey through a new country in search of statistical information is not, by any means, a path of roses," he says. "And to arrive at the necessary amount of facts within a given time, requires a constant exertion of both body and mind, and a resolution to encounter and to conquer all those various accidents by flood and field that travellers are heirs to—drenching showers, snow storms, mud holes, dust, broiling sun, thunder storms, tough beef steaks, damp beds, loss of luggage, and breakages."

Mr. Smith's greater work contains ten County Maps, and one General Map of Canada West, clearly drawn in outline on stone. Three introductory chapters contain a carefully-compiled history of the discovery and early settlement of Canada, and a special notice of the population, resources, trade, and commerce of Upper Canada. And at the end of the work, after a seriatim description of the counties and towns, there is a general account of the natural productions of the country, animate and inanimate, animal, vegetable, and mineral; and of its climate.

A few years after the publication of Mr. Smith's Canada, Past, Present, and Future, viz., in 1871, Mr. Lovell's Dominion Directory appeared, which virtually was also a Gazetteer, with admirable sketches of the villages, towns, and cities; and an abundance of introductory matter, containing a general history of the country, and of its progress. This volume is very bulky—a royal 8vo. of over

2,500 pages. The publisher humorously styles it, on the outer cover, in gold letters, a "Pocket Gazetteer of Canada."

In 1873, appeared Lovell's Gazetteer of British North America, containing the latest and most authentic descriptions of 6,000 cities, towns, and villages; 1,500 lakes and rivers, with tables of routes. Edited by P. A. Crossby. All this being accomplished in a small 8vo. volume of less than 600 pages, the space allotted to each locality is small, and the information very much condensed. It is, nevertheless, minute and satisfactory. The statistics have been gathered with great care.

In the introduction the proposed Canadian Pacific Railway is thus referred to: "Heretofore Canada has been to the traveller little better than a *cul de sac*, as he could only journey as far as the extremity of Lake Superior; but when the entire Dominion can be traversed from the Atlantic to the Pacific, he will be enabled with ease to take a rapid survey of these wide spreading dominions belonging to the British Crown, and measure their political and commercial importance. He will then become convinced that the Dominion is rich in coal measures, slate quarries, gold, silver, copper, iron, and almost every mineral of commercial value; that the climate is favourable to health, and that there are millions of acres of grain-raising and pasture lands awaiting colonization in the fertile belt of the North-West and British Columbia."

The following are given as the limits of the Dominion: "It is bounded east by the Atlantic Ocean, Davis Strait, and Baffin's Bay; west, by Alaska, the Pacific Ocean, and Queen Charlotte's Sound; north, by the Arctic Ocean; and south, south-east, and south-west, by the United States. Area, 3,330,162 square miles, 393,996 square miles larger than the United States. Of this immense area, nearly equalling in extent the Continent of Europe, about 700,000 square miles are covered with water."

With this notice of the latest Gazetteer of Canada, I draw this part of my paper to a close. The great handiness of Mr. Lovell's volume is surprising, when the breadth of area which it covers is considered, and the mass of information which it contains.

The occasion of the present rapid notice of early topographical Sketches and Gazetteers of Canada, particularly Western Canada, was, as I have already said, the republication in the Canadian Journal of the first Gazetteer of Upper Canada, published in 1797,

by David William Smith. In each successive instalment of that work in the Journal, I have added annotations, explanatory of the names attached to the several localities, thinking that it would be a matter of some interest to intelligent persons to be acquainted with the source of the appellation by which their neighbourhood or their own place of abode, was generally known, which appellation is occasionally, in some sense and degree attached to themselves also.

The Gazetteer of 1797 is, of course, a book of moderate size, and the list of names to be remarked upon, not extensive. To annotate in a similar way, the whole of a modern Gazetteer would be a different thing; yet an addition of the kind referred to, would, doubtless, be an enhancement to the value of the work in an historical point of view. For many years to come in Canada, there will be new areas to be surveyed and set off into townships, and new local names to be found and applied. Wherever it is possible to make use of the aboriginal Indian names, it is plainly in good taste to retain them. Uncouthness of form and sound may be frequently got rid of by certain modifications, in accordance with principles of euphony and structure obtaining in the English language. It is in this way, that Niagara, Acadia, Canada itself, and many other beautiful proper names, have acquired their present form. Algoma, Muskoka, Manitoba, are other more recent instances. Spadina, here in Toronto—and the word Toronto itself, may be also mentioned. The retention of the old French names, attached to former distant outposts of traffic, &c., is to be commended. But a favourite method of designating newly surveyed townships, adopted in the Crown Lands Department of late years, as in the past too, is the application thereto of the names of ministers, or ex-ministers, of the Crown, Judges, Chancellors, Civil Engineers, and other public characters of the country. It has become, indeed, a kind of perquisite of high office for the holder to have his name inscribed on the map as the designation in all future time of a township, village, or county. To the articles in Gazetteers from time to time hereafter, it will be of use to add brief annotations on such names. We may all know very well who Mr. Malcolm Cameron, for example, was; but the inhabitants of the areas distinguished by his name will, perhaps, not be so fortunate, and they may be desirous of indulging a not unnatural curiosity on the point.

MAP LITERATURE OF CANADA.

In 1872, there was published in Paris by Tross, a well-known bookseller, a work entitled "Notes Subsidiary to the History, Bibliography, and Cartography of New France, and adjoining countries from 1545 to 1700." The compiler was the author of the *Bibliotheca Americana Vetustissima*, Mr. Harisse, if I mistake not. The division of the book, embracing Cartography, contains a description of (1) 76 inedited, and (2) 111 engraved maps, or plans. Most of the inedited maps, &c., are among the public archives of France. Some of the most important of them have been copied for the Canadian Government, and the Canadian Institute at Toronto possesses tracings from portions of six of them: (1) Of a map of 1643 of Nouvelle France, in which Lake Erie is scarcely distinguishable. (2) Of a map of 1670, shewing the route of the French Missionaries Dollier and Galinée. (In this map, the spectator is supposed to be standing on the north side of the great lakes, and to be looking south. Hence, at first sight, the map has the appearance of being upside down. Fort Frontenac is not yet established. Quinté is spelt Kenté). (3) Of Joliet's map (about the same date as the preceding), on which Lake Ontario figures as Lake Frontenac. (It bears an address from Joliet to the Comte de Frontenac). (4) Of a map of 1688, in which the Bay of Quinté is called Lac St. Lion. (This map also looks upside down. No Fort Frontenac is marked). (5) Of a map subsequent to the erection of Fort Frontenac. (Lake Erie is here called Teiocharontiong). (6) Of a map of the Saguenay country, by the Jesuit Laure (1731). It is dedicated to the Dauphin. Among the engraved maps in Tross' catalogue are included several published in Italy, Holland, and England. One dated in 1680—a general map of North America—is described, and dedicated to Charles II. The maps given by Hennepin and Lahontan, in their respective books, are also included.

The list in the above-mentioned work gives no maps dated subsequently to 1700. I do not observe in this list the maps figured in Ramnusio's Collection of Voyages and Travels, printed in Venice in 1556, which must have been copied from even older maps. I place on the table the volume of Ramnusio, which has the maps of the New World, and of New France, and the one that shews the plan of the aboriginal Hochelaga, or Montreal of the time of Jacques Cartier.

The rude primitive sketches from which these delineations were made, were derived in great measure from the verbal reports of the natives, whose own knowledge of the interior of the continent, in any comprehensive sense, was vague, and whose language and gestures would often, of course, be greatly misapprehended. With the map in Ramusio of "New France, Newfoundland, Island of Demons, &c.," may be compared Janssonius' Amsterdam map, entitled "Novi Belgii Novæque Angliæ necnon Partis Virginiæ Tabula," wherein the waters of the St. Lawrence and the Ottawa are seen curiously connected together far back in the interior of the country, doubtless as reported by the natives and coureurs-de-bois.*

I shew a General Map of North America of the year 1762, by John Rocque, Topographer to the King. On it are delineated "the new roads, forts, and engagements, taken from actual surveys and operations made in the army employed there from 1754 to 1761." On this map Toronto is marked, and the word is spelt exactly as we spell it. On this map are several curious memoranda of concessions of territory on the north side of the lakes, by the Iroquois of the south side, to the British authority. Also, a map engraved by T. Bowen, in Benjamin Martin's "Miscellaneous Correspondence" for the years 1755-56, published in London in 1759, evidently derived from the same sources as Rocque's map. The "bounds of Hudson's Bay by the treaty of Utrecht" are marked,

* Generally, in these primitive maps, the lakes and rivers partially explored by the European, are made to appear of exaggerated dimensions, while the parts known only as yet from hearsay, are comparatively dwarfed and distorted. Hence Lahontan's famous map of the Rivière Longue is by no means to be summarily rejected. It was maps of this kind that Cluverius had before him in 1629, when compiling his "Introductio ad Universam Geographiam." Cluverius' notice of Canada is as follows:—"Canada à fluvio cognomine dicta, insula an pars continentis parum adhuc constat. Quantum ejus cognitum est, dividitur in Estotilandiam, Corterealem, Terram Laboratoris et insulas a jacentes, ingentis magnitudinis: quarum præcipuæ, Golesme, Beauparis, Mont de Lions, et Terra Nova, eadem et Terra de Baccalaos dicta, ob ingentem hujusmodi piscium in ejus pelago multitudinem, qui etiam naves transeuntes retardant." The sailor's hyperbole, here given as a grave fact, throws light on the origin of many historical marvels. The soil, climate, productions, and inhabitants of Canada and New France are thus described:—"Solum Canadæ quantumvis accerrimis frigoribus obnoxium, eximie tamen fertile, aurique metallis dives; incolæ satis ingeniosi et artium mechanicarum peritissimi, pellibus amicti degunt: cæterum Gallorum regis imperio subjecti. Nova Francia (this is distinguished from Canada) à Gallis Regis Francisci primi auspicus detecta, præter raras segetes et leguminа quædam, omnium rerum inops, à feris ac quibusdam in locis anthropophagis, in universum idolatricis gentibus incolitur. Pars tamen ejus, quæ ad mare accedit Norimbega ab urbe cognomine dicta, cœlo potitur salubri soloque fecundo." Norembega appears to have denoted the New England region; and the name has been thought by some to have come from a vague local reminiscence of the Norwegian origin of settlements on the coast in that direction.

and the "Northern bounds of New England by Charter of Nov. 3rd, 1620, which extend westward to the South Sea."

A fine inedited MS. map of the Province of Quebec, as well as of all known Canada at the time, on a large scale, by Major S. Holland, is preserved in the Crown Lands Department at Toronto. A reproduction of this document in facsimile would be an acceptable boon.

David W. Smith's Gazetteer was drawn up to accompany a map of Upper Canada, published by authority in London in 1799, by W. Faden, Geographer to the King and Prince of Wales. This was the first engraved map of Upper Canada. The second edition of this Gazetteer was put forth to accompany another map of Upper Canada, published in London by the same Faden in 1813. The publication of the second edition was superintended by Governor Gore, who was in London at the time.

Bouchette's map, published in 1815, accompanied by his first work, "A Topographical Description, &c.," was one of Lower Canada only. But his map published in 1831, to which his quarto was a companion, was one of both Provinces; and of this, which is a splendid work of art, a copy lies on the table. This may be regarded as the standard map up to the year 1852, when Col. Bouchette's son, Joseph Bouchette, the Second Deputy Surveyor-General, published a large general map of all the British Provinces, according to the Treaties of 1842 and 1846. This map exhibits workmanship of the first-class, and was executed in London. In 1862, Tremaine's large map of Western Canada appeared, and in the same year its rival, Tackabury's map; both exhibiting clearly and beautifully, all the new surveys, &c. These were both most creditable Canadian productions.

The British Admiralty also put forth, many years ago, a series of charts for the navigation of the lakes, constructed by Admiral H. W. Bayfield. Many elaborate maps, too, have appeared in connection with the Geological Survey of Canada. And there have been separate maps executed of the several counties of Western Canada by Mr. Rankin and others, and engraved by Ellis and Rolph, of Toronto.

Two official reports presented to the Ontario Parliament in 1872 and 1873 respectively, have furnished those who are interested in early Canadian maps, with reproductions of several valuable documents not easily accessible before.

1. Mr. Mills' Report on the Boundaries of the Province of Ontario, has attached to it copies of the following:—(1). John Senex's Map,

A. D. 1710; (2). Map of North America, by William Delisle, Amsterdam, A. D. 1739; (3). Jeffery's Map of the north part of North America, A. D. 1762; (4). Peter Bell's Map of the British Dominions in North America according to the Treaty of 1763, A. D. 1772; (5). D'Anville's Map of North America, A. D. 1775; (6). Governor Pownall's Map of North America, A. D. 1776; (7). Kitchen's Map of North America, shewing the boundaries of Canada after the Treaty of 1783, A. D. 1794; (8). Map of North America, shewing the territories claimed by France in 1756, with the French forts marked; (9). Map of the boundary line between the Northern Colonies and the Indians, established by the Treaty of Fort Stanwix, 1768; (10). Map of the French Settlements in Illinois, by Thomas *Hutchins, Captain, 60th Regiment.*

2. Mr. Chas. Lindsey's "Investigation of the Unsettled Boundaries of Ontario, presented to Parliament in 1873," supplies us with copies of (1) Carte des nouvelles découvertes dans l'Ouest du Canada dressée sur les memoires de M. de la Vérandrie et donnée au Dépôt de la Marine, par M. de la Galissonière, 1749. (2) Carte du Canada ou de la Nouvelle France, &c., par Guillaume Delisle, 1703. (3) A new Map of North America, by H. Moll, 1708.

The year 1875 will mark an era in the Cartography of Canada, as it was in that year that our map literature culminated in two complete Canadian Atlases, each containing maps in minute detail of all the Provinces of the Dominion.

(1.) The Atlas compiled and edited by Mr. H. F. Walling, executed chiefly in lithography by able artists at Montreal and Toronto, and published by Mr. G. N. Tackabury. There are contained within this Atlas one hundred and thirty maps, or plans, including maps of Europe, and the United States of North America. The shape of the book is the large square folio which is customary with Atlases on a considerable scale. The delineation, shading, and lettering of the several plates are perspicuous, and generally agreeable to the eye; but here and there the colouring would be more pleasing, had it been more delicate. In some of the plates the fine division lines between the 200 acre lots have been somewhat indistinctly printed. The maps of the Parry Sound and Muskoka Districts are fine specimens of workmanship, the labyrinthine intricacies of the coast-lines, and the innumerable minute islands being particularly well represented. The map of British Columbia shews, in a striking

manner, the mountainous character of that region, and the curious way in which its western coast is penetrated and zigzagged through with fiords. Preceding the Atlas proper, are 97 pages, of three columns each, occupied with carefully written essays on subjects proper to be discussed in such a work. Dr. H. H. Miles, of Lennoxville, gives a résumé of the Civil History of the Dominion. Dr. Sterry Hunt treats of its Topography and Physical Geography. The Geology of Upper and Lower Canada has been undertaken by Mr. Robert Bell, that of the other Provinces by other equally competent hands. Drs. Nicholson and Ellis contribute an interesting chapter on our Zoology. Dr. Canniff gives a lucid history of Steam Navigation in Canada. Dr. Hodgins has described our system of Public Education. Our Railways are discussed at great length, and our Climatology is not overlooked.

(2.) Walker and Miles' New Standard Atlas of the Dominion of Canada. This is a folio volume, 14 × 18 inches in size. It contains elaborately constructed and beautifully executed maps of the Provinces of Ontario, Quebec, New Brunswick, Nova Scotia, Newfoundland, Prince Edward Island, Manitoba, and British Columbia, on a large scale; maps of the Coal Regions, the Lumber Districts, and Timber Lands, and the Military Defences; a chart of the world, shewing the relative positions of the Dominion, and the other British Possessions, and the Ocean Steamships' connections on both sides of the Continent with the Railway systems of Canada. Preceding the maps are fifty 3-column pages of printed matter, giving briefly the most recent statistical information in regard to all the Provinces of the Dominion, their Railways, their Post Offices, their Banks, their Geology and Mineral productions, with lists, and descriptions of the cities and chief towns. On the title-page is a well-executed shield, combining the arms of the Provinces of Ontario, Quebec, New Brunswick, Nova Scotia, and British Columbia. The whole work is dedicated, by permission, to the Earl of Dufferin.

A remarkable lithograph Railway Map of the Province of Ontario was published at Toronto in 1876, at the office of the *Nation* newspaper. By means of heavy black tracings it shewed the railways in existence and the railways in prospect. It was intended to be, to the public eye, a kind of *reductio ad absurdum* of the multitudinous schemes for new lines of railway which were being perpetually started, irrespective of the actual necessities of the population, and which the Government was asked to subsidize.

LIST OF PLANTS

COLLECTED IN THE VICINITY OF THE TOWN OF BARRIE.

BY H. B. SPOTTON, M.A.

RANUNCULACEÆ.

Hepatica acutiloba, D. C.
Thalictrum dioicum, L.
" cornuti, L.
Ranunculus abortivus L.
" sceleratus, L.
" recurvatus, Poir.
" Pennsylvanicus, L.
" bulbosus, L.
" acris, L.
Caltha palustris, L.
Coptis trifolia, Salisb.
Aquilegia Canadensis, L.
Actæa spicata, L., var. rubra, Mx.
" alba, Bigel.

MENISPERMACEÆ.

Menispermum Canadense, L.

BERBERIDACEÆ.

Caulophyllum thalictroides, Mx.
Podophyllum peltatum, L.

NYMPHÆACEÆ.

Brasenia peltata, Pursh.
Nymphæa tuberosa, Paine.
Nuphar advena, Ait.

SARRACENIACEÆ.

Sarracenia purpurea, L.

PAPAVERACEÆ.

Chelidonium *majus*, L.
Sanguinaria Canadensis, L.

FUMARIACEÆ

Dicentra cucullaria, D. C.
" Canadensis, D. C.
Corydalis glauca, Pursh.
" aurea, Willd.

CRUCIFERÆ.

Nasturtium *officinale*, R. Br.
" palustre, D. C.

CRUCIFERÆ—*Continued.*

Dentaria diphylla, L.
Cardamine pratensis, L.
Sisymbrium *officinale*, Scop.
Brassica *Sinapistrum*, Boissier.
Capsella *Bursa-pastoris*, Mœnh.

VIOLACEÆ.

Viola blanda, Willd.
" Selkirkii, Ph. Goldie.
" cucullata, Ait.
" canina, L., var. sylvestris, Regel.
" rostrata, Pursh.
" Canadensis, L.
" pubescens, Ait.

CISTACEÆ.

Lechea minor, Lam.

HYPERICACEÆ.

Hypericum pyramidatum, Ait.
" *perforatum*, L.
" corymbosum, Muhl.
Elodes Virginica, Nutt.

CARYOPHYLLACEÆ.

Saponaria *officinalis*, L.
Silene *noctiflora*, L.
Lychnis *Githago*, Lam.
Stellaria *media*, Smith.
Cerastium *vulgatum*, L.

PORTULACACEÆ.

Portulaca *oleracea*, L.
Claytonia Virginica, L.

MALVACEÆ.

Malva *rotundifolia*, L.
" *moschata*, L.

TILIACEÆ.

Tilia Americana, L.

LINACEÆ.

Linum *usitatissimum*, L.

GERANIACEÆ.

Geranium Carolinianum, L.
" Robertianum, L.
Impatiens fulva, Nutt.
Oxalis acetosella, L.

ANACARDIACEÆ.

Rhus typhina, L.
" toxicodendron, L.

VITACEÆ.

Vitis cordifolia, Mx.

RHAMNACEÆ.

Rhamnus alnifolius, L'Her.

SAPINDACEÆ.

Acer spicatum, Lam.
" saccharinum, Wang.
" dasycarpum, Ehr.
" rubrum, L.

POLYGALACEÆ.

Polygala paucifolia, Willd.

LEGUMINOSÆ

Trifolium *pratense*, L.
" repens, L.
Medicago *Lupulina*, L.
Desmodium acuminatum, D. C.
Lathyrus palustris, L., var. myrtifolius, Muhl.
Apios tuberosa, Mœnch.

ROSACEÆ.

Prunus Americana, Marshall.
" Virginiana, L.
" serotina, Ehrhart.
Spiræa salicifolia, L.
Agrimonia Eupatoria, L.
Geum strictum, Ait.
" rivale, L.
Waldsteinia fragarioides, Tratt.
Potentilla Norvegica, L.
" anserina, L.
" palustris, Scop.
Fragaria Virginiana, Ehrhart.
Dalibarda repens, L.
Rubus odoratus, L.
" triflorus, Richardson.
" strigosus, Mx.
Rubus occidentalis, L.
" villosus, Ait.
Rosa *rubiginosa*, L.
Cratægus coccinea, L.
Pyrus arbutifolia, L., var. erythrocarpa.

SAXIFRAGACEÆ.

Ribes cynosbati, L.
" floridum, L.
" rubrum, L.
Parnassia Caroliniana, Mx.
Mitella diphylla, L.
" nuda, L.
Tiarella cordifolia, L.
Chrysoplenium Americanum, Schwein.

CRASSULACEÆ.

Penthorum sedoides, L.

ONAGRACEÆ.

Circæa Lutetiana, L.
" alpina, L.
Epilobium angustifolium, L.
" palustre, L., var. lineare.
" coloratum.
Œnothera biennis, L.
Ludwigia palustris, Ell.

LYTHRACEÆ.

Nesæa verticillata, H. B. K.

UMBELLIFERÆ.

Sanicula Canadensis, L.
Cicuta maculata, L.
" bulbifera, L.
Sium lineare, Mx.
Cryptotænia, Canadensis, D. C.
Osmorrhiza brevistylis, D. C.

ARALIACEÆ.

Aralia racemosa, L.
" nudicaulis, L.
" trifolia, Gray.

CORNACEÆ.

Cornus Canadensis, L.
" stolonifera, Mx.
" alternifolia, L.

CAPRIFOLIACEÆ.

Linnæa borealis, Gronov.
Lonicera parviflora, Lam.
" ciliata, Muhl.
" oblongifolia, Muhl.
Diervilla trifida, Mœnch.
Triosteum perfoliatum, L.
Sambucus Canadensis, L.
" pubens, Mx.
Viburnum Lentago, L.
" acerifolium, L.
" lantanoides, Mx.

RUBIACEÆ.

Galium triflorum, Mx.
" circæzans, Mx.

RUBIACEÆ—*Continued*

Galium boreale, L.
Cephalanthus occidentalis, L.
Mitchella repens, L.
Houstonia purpurea, L., var. longifolia.

VALERIANACEÆ

Valeriana sylvatica, Richards.

COMPOSITÆ.

Eupatorium purpureum, L.
" perfoliatum, L.
" ageratoides, L.
Aster corymbosus, Ait.
" macrophyllus, L.
" Tradescanti, L.
" Novi-Belgii, L.
" puniceus, L.
Erigeron Canadense, L.
" bellidifolium, Muhl.
" Philadelphicum, L.
" strigosum, Muhl.
Solidago, Canadensis, bicolor, L.
Inula *Helenium*, L.
Rudbeckia laciniata, L.
" hirta, L.
Bidens connata, Muhl.
" chrysanthemoides, Mx
Achillea millefolium, L.
Leucanthemum *vulgare*, Lam.
Tanacetum *vulgare*, L.
Artemisia *absinthium*, L.
Gnaphalium decurrens, Ives.
" polycephalum, Mx.
Erichthites hieracifolia, Raf.
Senecio *vulgaris*, L.
Centaurea *cyanus*, L.
Cirsium lanceolatum, Scop.
" muticum, Mx.
" *arvense*, Scop.
Lappa *officinalis*, Allioni.
Nabalus albus, Hook.
Taraxacum, dens-leonis, Desf.

LOBELIACEÆ.

Lobelia cardinalis, L.
" syphilitica, L.
" inflata, L.

CAMPANULACEÆ.

Campanula aparinoides, Tursh.

ERICACEÆ.

Gaylussacia resinosa, Torr. and Gr.
Vaccinium oxycoccus, L.
Epigæa repens, L.
Gaultheria procumbens, L.
Cassandra calyculata, Don.

ERICACEÆ—*Continued*

Andromeda polifolia, L.
Kalmia glauca, Ait.
Ledum latifolium, Ait.
Pyrola rotundifolia, L.
" secunda, L
Moneses uniflora, Gray.
Chimaphila umbellata, Nutt
Monotropa uniflora, L.

PLANTAGINACEÆ.

Plantago *major*, L.
" *lanceolata*, L.

PRIMULACEÆ.

Trientalis Americana, Pursh.
Lysimachia thyrsiflora, L.
" stricta, Ait.
" ciliata, L.

LENTIBULACEÆ.

Utricularia vulgaris, L.

OROBANCHACEÆ.

Epiphegus Virginiana, Bart.

SCROPHULARIACEÆ.

Verbascum *Thapsus*, L.
Linaria, *vulgaris*, Mill.
Chelone glabra, L.
Mimulus ringens, L.
Veronica Americana, Schw.
" serpyllifolia, L.
Pedicularis Canadensis, L.

VERBENACEÆ.

Verbena hastata, L.
" urticifolia, L.
Phryma leptostachya, L.

LABIATÆ.

Mentha Canadensis, L.
Lycopus Virginicus, L.
Calamintha clinopodium, Benth.
Monarda fistulosa, L.
Nepeta *cataria*, L.
Brunella vulgaris, L.
Scutellaria galericulata, L.
" lateriflora, L
Marrubium *vulgare*, L.
Leonurus *cardiaca*, L.

BORRAGINACEÆ.

Echium *vulgare*, L.
Echinospermum *Lappula*, Lehm.
Cynoglossum *officinale*, L.
" Morisoni, D. C.

HYDROPHYLLACEÆ.

Hydrophyllum Virginicum, L.

CONVOLVULACEÆ.

Calystegia sepium, R. Br.
" spithamæa, Pursh.

SOLANACEÆ.

Solanum *dulcamara*, L.
" *nigrum*, L.
Datura *stramonium*, L.

GENTIANACEÆ.

Gentiana crinita, Froel.
" Andrewsii, Gris.
Menyanthes trifoliata, L.

APOCYNACEÆ.

Apocynum androsæmifolium, L.

ASCLEPIADACEÆ.

Asclepias cornuti Decaisne.
" incarnata, L.

OLEACEÆ.

Fraxinus Americana, L.
" sambucifolia, Lam.

ARISTOLOCHIACEÆ.

Asarum Canadense, L.

PHYTOLACCACEÆ.

Phytolacca decandra, L.

CHENOPODIACEÆ.

Chenopodium *album*, L.
Blitum capitatum, L.

AMARANTACEÆ.

Amarantus retroflexus, L.

POLYGONACEÆ.

Polygonum amphibium, L., var. terrestre, Willd.
" *Persicaria*, L.
" amphibium, L., var. aquaticum, Willd.
" Virginianum, L.
" aviculare, L.
" *convolvulus*, L.
Rumex *obtusifolius*, L.
" *Acetosella*, L.

THYMELEACEÆ.

Dirca palustris, L.

ELÆAGNACEÆ.

Shepherdia Canadensis, Nutt.

EUPHORBIACEÆ.

Euphorbia Cyparissias, L.

URTICACEÆ.

Ulmus fulva, Mx.
" Americana, L.
Laportea Canadensis, Gaudichaud.
Pilea pumila, Gray.
Cannabis *sativa*, L.

CUPULIFERÆ.

Quercus alba, L.
Fagus ferruginea, Ait.
Carpinus Americana, Mx.

BETULACEÆ.

Betula lenta, L.
" papyracea, Ait.
Alnus incana, Willd.

SALICACEÆ.

Salix cordata, Muhl.
" livida, Wahl., var. occidentalis, Gray.
Populus tremuloides, Mx.
" balsamifera, L.

CONIFERÆ.

Pinus resinosa, Ait.
" strobus, L.
Abies nigra, Poir.
" alba, Mx.
Larix Americana, Mx.
Thuja occidentalis, L.
Taxus baccata, L., var. Canadensis, Gray.

ARACEÆ.

Arisæma triphyllum, Torr.
Calla palustris, L.
Acorus calamus, L.

TYPHACEÆ.

Typha latifolia, L.
Sparganium eurycarpum, Engelm.
" minimum, Bauhin, Fries.

ALISMACEÆ.

Triglochin maritimum, L.
Alisma plantago, L., var. Americana, Gray.
Sagittaria variabilis, Engelm.

ORCHIDACEÆ.

Orchis spectabilis, L.
Habenaria viridis, R. Br., var. bracteata, Reich.
" hyperborea, R. Br.

ORCHIDACEÆ—*Continued.*

Habenaria rotundifolia, Richards.
" psychodes, Gray.
Goodyera pubescens, R. Br.
Spiranthes Romanzoviana, Chamisso.
" cernua, Richards.
Calopogon pulchellus, R. Br.
Calypso borealis, Salisb.
Corallorhiza innata, R. Br.
Cypripedium parviflorum, Salisb.
" pubescens, Willd.
" spectabile, Swartz.
" acaule, Ait.

IRIDACEÆ.

Iris versicolor, L.

SMILACEÆ.

Smilax herbacea, L.
" hispida, Muhl.

LILIACEÆ.

Trillium grandiflorum, Salisb.
" erectum, L.
" erectum, L., var. Album, Pursh.
" erythrocarpum, Mx.
Medeola Virginica, L.
Zygadenus glaucus, Nutt.
Uvularia grandiflora, Smith.
Streptopus roseus, Mx.
Clintonia borealis, Raf.
Smilacina racemosa, Desf.
" stellata, Desf.
" trifolia, Desf.
" bifolia, Ker.
Polygonatum biflorum, Ell.
Lilium Philadelphicum, L.
Erythronium Americanum, Smith.

PONTEDERIACEÆ.

Pontederia cordata, L.

CYPERACEÆ.

Scirpus validus.
" atrovirens, Muhl.
Eriophorum polystachyon, L.
Carex crinita, Lam.
" irrigua, Smith.
" plantaginea, Lam.
" Emmonsii, Dew.
" tentaculata, Muhl.
" intumescens, Rudg.

EQUISETACEÆ.

Equisetum arvense, L.
" limosum, L.

FILICES.

Adiantum pedatum, L.
Pteris aquilina, L.
Asplenium Filix-femina, Bernh.
Phegopteris polypodioides, Fée.
" Dryopteris, Fée.
Aspidium thelypteris, Swartz.
" spinulosum, Swartz, var. intermedium.
" cristatum, Swartz.
" marginale, Swartz.
" acrostichoides, Swartz.
Cystopteris bulbifera, Bernh.
Struthiopteris Germanica, Willd.
Onoclea sensibilis, L.
Osmunda regalis, L.
" cinnamomea, L.
Botrychium Virginicum, Swartz.

LYCOPODIACEÆ.

Lycopodium lucidulum, Mx.

SYNOPSIS OF THE FLORA OF THE VALLEY OF THE ST. LAWRENCE AND GREAT LAKES,

WITH DESCRIPTIONS OF THE RARER PLANTS.

BY JOHN MACOUN, M.A., *Botanist to the Geological Survey.*

AND

JOHN GIBSON, B.A., F.G.S., F.B.S.E.

PHÆNOGAMIA. Flowering plants.

I. DICOTYLEDONÆ OR EXOGENÆ. Dicotyledons or Exogens.

Sub-class I. ANGIOSPERMÆ. Angiosperms.

A. POLYPETALOUS EXOGENS.

RANUNCULACEÆ.

CLEMATIS, L. Virgin's Bower. Traveller's Joy.

C. verticillaris, DC. Whorl-leaved Clematis.

Indigenous. Trailing over Laurentian and limestone rocks from New Brunswick (G. F. Mathews) to Thunder Bay (Macoun). Quebec (Brunet). Montreal, and Belœil Mountain (Maclagan). Hamilton, Ontario (Logie). Westward to the Saskatchewan River (Bourgeau). Quesnelle, Cariboo (Macoun). Rocky Mountains and N. W. Coast to lat. 54° (Torrey and Gray). N. to lat. 56° (Macoun).

C. Virginiana, L. Virginian Clematis.

Indigenous. River banks and low grounds along streams. New Brunswick (G. F. Mathews). Nova Scotia (Prof. Lawson). Quebec and Ontario, common. Thunder Bay, Lake Superior (Macoun). Lake Winipeg (Drummond). Columbia River (Douglas). Common. July to September.

ANEMONE, L. Anemone. Windflower.

A. parviflora, Michx. Small-flowered Anemone.

Indigenous. Wet rocks. Labrador (Brunet, Pursh, T. & G). Gaspé (Dr. Bell). Anticosti (A. L. Verrill). North shore of Lake Superior (Agassiz). Valleys of Athabasca and Peace River (Macoun). North to Arctic Sea, lat. 70°; Kotzebue Sound (Hooker). Rare. June, July.

A. multifida, DC. Red Windflower.

Indigenous. Rocks and gravelly banks. Gulf of St. Lawrence (Goldie). Gaspé (Dr. J. Bell). Pic River, Lake Superior (Macoun). Nipigon and Slave

Lake (Dr. Schultz, Prof. Lawson). Westward across the plains to the Rocky Mountains (Macoun). Rare. June.

A. cylindrica, Gray. Cylindrical-headed Anemone.

Indigenous. Dry sandy plains and pine barrens. Kingston, Ont. (Prof. Lawson). Belleville and Rice Lake plains (Macoun). Hamilton (J. M. Buchan). Between Snake Hill and Pembina (Dr. Schultz, Prof. Lawson). Plains of the Saskatchewan (Bourgeau). Rare. May, June.

A. Virginiana, L. High Anemone.

Indigenous. Woods, fields, and barren hill sides. Abundant from Gaspé (Dr. Bell) to Fort William, Lake Superior (Macoun). Between Snake Hill River and Pembina (Dr. Schultz, Prof. Lawson) St. Joachim (Provancher). Western plains, through Peace River Valley to the Rocky Mountains (Macoun). Abundant. June to August.

A. Pennsylvanica, L. Round-headed Anemone.

Indigenous. Mud flats and low rocky places along rivers and streams. Abundant from New Brunswick (Mathews) to Thunder Bay, Lake Superior (Macoun). Lake Nipigon, Saskatchewan and McKenzie Rivers (Prof. Lawson). Edmonton, through Peace River Valley to Rocky Mountains (Macoun). North to Arctic circle (Hooker). Abundant. June to August.

A. nemorosa, L. Var. quinquefolia, L. Wood Anemone.

Indigenous. Rich shady woods. Kent Co., New Brunswick (Mathews, Dr. Fowler). Common at the Saguenay (Provancher) Co. Hastings (Macoun). Hamilton (Logie). Kamanistiquia River, Lake Superior; Lake of the Woods (Macoun). Lake Winipeg (Richardson). Plains of the Saskatchewan (Bourgeau). British Columbia and Peace River (Macoun).

A. narcissiflora, L. Narcissus-flowered Anemone.

Indigenous. Rocky places. Borders of the River Restigouche (Brunet). N. W. America (Menzies) to Kotzebue Sound, Unalaska (Fisher, Torr. & Gray). Villous, leaves palmately 3-5 parted, segments cuneiform, incisely many-cleft, lobes linear, acute; involucre somewhat similar, sessile, leaflets 3-5 cleft; pedicels several, unbeled, leafless, 1-flowered; flowers white, carpels without tails, much compressed, roundish oval, glabrous (T. and G.; Pursh; Hooker, T. p. 8).

HEPATICA, Dillen. Hepatica. Liver-leaf.

H. triloba, Chaix. 3-lobed Hepatica.

Indigenous. Rich woods. Very common in Ontario, but infrequent eastward. Isle of Orleans (Brunet). Point Levis, Quebec (Dr. Thomas). Windsor, Nova Scotia (Prof. How). Petit Cap St. Joachim (Provancher). River Winipeg (Capt. Back, Prof. Lawson). Rocky Mountains, lat. 55° (Drummond). Abundant. May.

H. acutiloba, DC. Acute-leaved Hepatica.

Indigenous. Rich shady woods. Abundant in Ontario, but of local occurrence. Point Levis (Brunet). Woods near Prescott (B. Billings). Abundant in Counties Northumberland and Hastings (Macoun). Kingston, Ont. (Prof. Lawson). London, Ont., scarce (Saunders). Hamilton (Logie). Sitka, Pacific Coast (Bongard). Abundant. May.

THALICTRUM, Tourn. Meadow Rue.

T. anemonoides, Michx. Rue Anemone.

Indigenous. Open woods. As yet reported only from the Niagara Peninsula. St. Davids, Niagara District (Dr. Maclagan). Vicinity of Niagara Falls (Hooper). Oaklands, Hamilton (Logie). Rare. May.

T. dioicum, L. Early Meadow Rue.

Indigenous. Rich damp woods. Very abundant from Anticosti (A. E. Verrill) and Labrador (Brunet) to Thunder Bay, Lake Superior (Macoun). Between Severn and Trout Lake (Gov. McTavish). Fort Simpson, McKenzie River (Prof. Lawson). Manitoba and Peace River Valley (Macoun). May.

T. Cornuti, L. Tall Meadow Rue.

Indigenous. Low grounds along streams and amid the gravel of river beds. Extends from Newfoundland (J. Richardson), Anticosti (Verrill), and Labrador (Brunet) to Thunder Bay, Lake Superior (Macoun). Assinaboine River (Dr. Schultz, Prof. Lawson). Westward through Peace River Valley to the Rocky Mountains (Macoun). Abundant. May.

T. alpinum, L. Alpine Meadow Rue.

Indigenous. Rocky grounds. Stem simple, nearly naked; leaves 2-3 ternate; leaflets roundish, somewhat lobed, crenately toothed; flowers perfect in a simple raceme, nodding; filaments filiform; anthers oblong linear; carpels, few, ovate, corsile; stigmas thick and pubescent; stems 2'—8' high (Sereno Watson, in Clarence King's Expedition of the 40° parallel).

Island of Anticosti (Pursh and Verrill). Newfoundland (In herb. Banks). Behring's Strait (S. Watson). Rocky Mountains (Parry). Rare. Fruits in September.

RANUNCULUS, L. Crowfoot. Buttercup.

R. aquatilis, L Var. trichophyllus, Chaix. White Water Crowfoot.

Indigenous Lakes and streams of slow current and muddy bottom New Brunswick (Mathews). Along the White River, Quebec (Brunet). In Ontario is abundant from Prescott (Billings) to the Kaministiquia River, Lake Superior (Macoun). St. Tite (Provancher). Saskatchewan (Bourgeau). Peace River (Macoun). Arctic America (Hooker & Arnott). Common. July to October.

R. multifidus, Pursh. Yellow Water Crowfoot.

Indigenous. Ditches and muddy pools. New Brunswick (Dr. Fowler). Windsor, Nova Scotia (Prof. How). Conway's Creek, Prescott (Billings). Abundant at Belleville (Macoun). Glandford, Ont. (Logie). Malden (Maclagan.) Manitoba, westward to the Rocky Mountains (Macoun). Saskatchewan (Bourgeau). Extreme Arctic America, Kotzebue Sound (Hooker). Common. May.

R. multifidus, Pursh. Var. repens., Hooker. Kidney-leaved Buttercup.

Creeping; lower leaves many-cleft, with linear segments; the upper ones reniform, palmately many cleft; carpels in small globose heads, flowers quite small and bright yellow. Creeping over the muddy bottom of creeks and partially-dried ponds, North Hastings and Northern Townships of Addington, July, 1870 (Macoun). In pools west of the Assinaboine River, Rocky Mountains, and Peace River (Macoun).

R. Flammula, L. Var. reptans. Flame Crowfoot.

Indigenous. Among gravel and sand by lakes and rivers. Extends from Newfoundland (T. & G.) New Brunswick (Mathews). Labrador (T. & G.) to Lake Superior (Macoun). Rivière Chaudière (Brunet). Abundant along the Rivers Moira and Trent, and by the shore of Lake Ontario. Toronto, Laprairie (Prof. H. Croft). St Joseph's Island, Muskoka (Prof. Ellis). Lake Winipeg and Athabasca River (Gov. McTavish, Prof. Lawson). Saskatchewan River (Bourgeau). Lake Athabasca (Macoun).

R. Cymbalaria, Pursh. Seaside Crowfoot.

Indigenous. Salt marshes and the seaside. Musquodoboit River, Nova Scotia (Prof. Lawson). Windsor, Nova Scotia (Prof. How). Fredericton (Dr. Robb). New Brunswick (Rev. Dr. Fowler). Anticosti (Verrill). Bay of Fundy (Mathews). Gaspé Bay (Dr. Bell). St. Joachim and Rimouski (Brunet). Fort William, Thunder Bay, Lake Superior (Macoun). Lake Winipeg (Barnston). From Lake Superior westward to Peace River Valley (Macoun). Arctic Sea, lat. 68° (Torr. & Gray). West coast of Newfoundland (Dr. Bell). Throughout British Columbia (Macoun).

R. Cymbalaria, Pursh. Var. alpina, T. & G. Alpine Crowfoot.

Very small; leaves 3-toothed at the apex; scape 1-flowered (Torr. & Gray).
Indigenous. Rocky shores. Island of Anticosti (Brunet). Sea shore, Rivière-du-Loup (Dr. Thomas). Rare. August.

R. pygmæus, Wahl. Diminutive Crowfoot.

Stem erect, never creeping, 1'—2' high, 1-flowered; leaves glabrous, 3-5 cleft; radical ones petioled, cauline ones sessile; calyx glabrous, longer than the somewhat reflexed petals; heads oblong; carpels sub-globose, not margined at the back, pointed with a short-hooked style.
Indigenous. Rocks. Labrador (Pursh). Arctic America and Rocky Mountains, in lat. 55° (T. & G.) Unalaska, Kotzebue Sound (Hook. & Arnott, in bot. Beechey). Mount Selwyn, 6,000 feet above the sea, lat. 56° N. (Macoun). Arctic. August.

R. nivalis, L. Arctic Crowfoot.

Radical leaves on long petioles, dilated, lobed, the lobes somewhat ovate; cauline ones nearly sessile, palmate, stem erect, about 1-flowered, shorter than the obovate entire petals (Torr. & Gray).
Indigenous. Rocks. Coast of Labrador (Hooker). Kotzebue Sound (Beechey). Rocky Mountains of B. N. America to Alaska (S. Watson). August.

R. affinis, R. Brown.

Radical leaves petioled, usually pedately multifid; cauline ones sub-sessile, digitate, with broadly linear lobes; stem erect, few-flowered; carpels with recurved beaks in oblong cylindrical heads, more or less pubescent throughout.
Indigenous. Rocks. Isle of Grues (Brunet). Melville Island and north-east coast (Hooker). Rocky Mountains and Kotzebue Sound, as variety leiocarpus, which is the western form. August.

R. rhomboideus, Goldie. Rhomboid-leaved Crowfoot.

Indigenous. Dry sandy hills and plains. Near Montreal (Dr. Holmes). Sandy plains near Castleton; Murray Town Hall, Northumberland County, Ont. (Macoun). Sand hills on the banks of the Humber (Prof. Lawson).

Lake Simcoe (Goldie). Near London, Ontario (Saunders). Toronto (Prof. Croft). Sandy plains of the Rivière aux Sables, County Lambton (Gibson) Lake Winipeg (Barnston). Saskatchewan River (Bourgeau). Lake of the Woods (Macoun). Abundant. May.

R. abortivus, L. Small-flowered Buttercup.

Indigenous. Pasture fields, woods, and roadsides. Very abundant. Extends from Newfoundland (Verrill), Belœil (Dr. Bell), New Brunswick (Dr. Fowler), Anticosti (Verrill), through Quebec and Ontario to Thunder Bay, Lake Superior (Macoun). Lake Winipeg (Barnston). Fort Garry (Dr. Schultz, Prof. Lawson). Plains of the Saskatchewan (Bourgeau). Common. May, June.

R. abortivus, L. Var. micranthus, Nutt.

Indigenous. Margins of ponds and lakes. North shore of Lake Superior (Agassiz). Along the canal at the Sault Ste. Marie, north of Lake Huron (Macoun). Very rare. June, July.

R. sceleratus, L. Noxious Buttercup.

Indigenous. In ditches and ponds. From Belœil Mountain (Dr. Bell), and New Brunswick (Mathews), through Quebec and Ontario to Sault Ste. Marie (Macoun). Rainy and Slave Lakes (Capt. Back, Prof. Lawson). Lake Winipeg (Barnston). Saskatchewan (Bourgeau). Manitoba to the Rocky Mountains (Macoun). B. N. America, lat. 67° (Hooker). Common. June, July.

R. recurvatus, Poiret. Hook-fruited Buttercup.

Indigenous. Shady, wet woods. Labrador (Hooker), Kent County, New Brunswick (Dr. Fowler), through Quebec and Ontario to the Kaministiquia River, Lake Superior (Macoun). Pied du Cap Tourmente (Provancher). Prescott, Ont (Billings). Nicolet and Chippewa, Ont. (Dr. Maclagan). Toronto (Prof. Croft). Sulphur Springs, near Ancaster, Ont. (Logie). Banks of Cove, London, Ont. (Saunders). Huron County, Ont. (Gibson). Lake of the Woods (Macoun). May, June.

R. Pennsylvanicus, L. Bristly Buttercup.

Indigenous. Moist meadows and borders of streams. New Brunswick (Mathews). District of Montreal (Brunet). Rivière du Loup (Thomas). Abundant, River Rouge (D'Urban). Wastes, Prescott (Billings). Nicolet and Chippewa (Maclagan) Moist meadows and borders of streams, Central Canada; Owen Sound; Prince Arthur's Landing, Thunder Bay, Lake Superior (Macoun). St. Cathermes (Saunders). Toronto (Croft). Fort Garry, (Dr. Schultz, Prof. Lawson). In the wooded country from Lake Superior to the Rocky Mountains (Macoun). West Coast of Newfoundland (Dr. Bell) Athabasca River, lat. 57° N. (Macoun).

R. fascicularis, Muhl. Bundle-rooted Buttercup.

Indigenous. Dry gravelly soil in open woods. Reported from Somerset by Provancher (Dr. Lawson). Belleville, Trenton, and Toronto (Macoun). Kingston Mills, Chippewa, and Malden, (Maclagan). London (Saunders) Hamilton (Logie). Common in Western Ontario (Gibson). Lake Winipeg (Hooker).

R. repens, L. Running Buttercup.

Indigenous. Overflowed places along streams and rivers. New Brunswick (Mathews). Rivière du Loup, not common (Dr. Thomas). Common near

Quebec (Brunet). Near Prescott (Billings). Central Canada (Macoun) 10 miles up the Kaministiquia River, and Current River, Thunder Bay; and Sydenham River, Owen Sound, Ont. (Macoun). Common at London (Saunders). Common at Hamilton (Logie). Chippewa and Malden (Maclagan). Introduced. Form not known in Ontario, but found in the Eastern Provinces. On the Saskatchewan River (Bourgeau). Westward through Peace River Valley to the Rocky Mountains (Macoun). McKenzie River (Barnston). West coast of Newfoundland (Dr. Bell).

R. acris, L. Yellow Weed.

Introduced. Very common in meadows, pastures, dry roadsides. Newfoundland (J. Richardson). Nova Scotia (Prof. How.) Central Canada (Macoun). Toronto (Prof. Croft). Hamilton (Logie), Co. Huron, Ont. (Gibson). Garden River, Sault St. Marie, and Fort William, in such abundance as to monopolize the ground (Macoun). Lake Manitoba (Dr. Schultz, Prof. Lawson). Vancouver Island and British Columbia (Macoun).

MYOSURUS, L. Mouse-tail.

M. minimus, L. Mouse-tail.

Indigenous. Generally found on alluvial soil overlying flat rocks. At the Ferry House, and east of Albert College, Belleville As yet reported from no other district of British North America. Vancouver Island (Macoun).

CALTHA, L. Spring Cowslip.

C. palustris, L. Marsh Marigold.

Indigenous. Common in swamps, marshy meadows, and by streams. Extends from Newfoundland, Straits of Belleisle (Richardson), Mingan and Anticosti (Verrill), through Quebec (Brunet), and Ontario, to Thunder Bay, Lake Superior (Macoun). Saskatchewan Plains (Bourgeau). From Lake of the Woods to the Rocky Mountains (Macoun). West coast of Newfoundland (Dr. Bell). May.

C. natans, Pallas.

Indigenous "Stem procumbent, floating; leaves reniform—cordate, crenate, with the lobes somewhat approximated, obscurely crenate towards the base, toothed towards the summit; sepals oval; carpels with a straight beak" (Torr. & Gray). Creeping on the surface of deep sphagnous swamps in the wooded central districts of B. N. America from Canada to lat 60° N., rare (Dr. Richardson). Flowing stream 20 miles west of Fort Edmonton; Peace River, Methy River, near Methy Portage, lat. 56° (Macoun).

COPTIS, Salisbury. Gold Thread.

C. trifolia, Salisb. 3-leaved Gold Thread.

Indigenous. Low damp woods and cedar swamps. Halifax County, Nova Scotia (Prof. Lawson). Kent County, New Brunswick (Dr. Fowler). Labrador (Brunet). Anticosti (A. E. Verrill). Gaspe Basin (Dr. Bell). Nicolet, Montreal, Kingston and Port Robinson, Ont. (Dr. Maclagan). Belleville (Macoun). Hamilton (Logie). Lake Huron, Ont. (Gibson). Lake Superior, Shore of Little Slave Lake (Macoun). N. W. America, Sitka and Unalaska (Hooker). Methy Portage (Macoun).

AQUILEGIA, Tourn. Columbine.

A. Canadensis, L. American Columbine.

Indigenous. Rocky hill sides and open woods. Common from Isle of Orleans (Dr. Thomas), Belœil Mountain (Dr. Bell), through Quebec (Brunet), and Ontario, up to the Kaministiquia River, Lake Superior (Macoun). Lake Winipeg (Capt. Back, Prof. Lawson). Saskatchewan Plains (Bourgeau). Hudson's Bay (Hooker). Not found north of 56° N. according to Barnston. California to Alaska, according to S. Watson.

A. brevistyla, Hooker.

Indigenous. Rocky grounds. Stems low, 6'—8' high, spreading; leaves biternate; leaflets 3-lobed, crenate, 6"—9" long; crenatures ovate, rotund; flowers small, blue, about 6" long including the spur; sepals oblong-ovate; petals a little exceeding the stamens; spurs hooked at the tip; styles shorter, included (Fl. of Colorado by T. C. Porter and J. M. Coulter). Western Canada (Drummond). Lake Nipigon, chiefly near Lake Superior (Gov. (McTavish, Prof. Lawson). Native of Western Canada (Richardson). Rocky Mountains (Bourgeau). Telegraph Trail, Upper British Columbia; Peace River, lat. 56° (Macoun).

A. vulgaris, L. Common Columbine.

Introduced from Europe. Spur of the petals incurved, capsules hairy, stem leafy, many-flowered; leaves nearly glabrous; styles as long as the stamens (Hooker's British Flora). Abundant in the grounds at the Prince's Lodge, Halifax County, and in spots along the railway line, and Windsor Road (Prof. G. Lawson). Bass River, Kent Co., New Brunswick (Rev. Dr. Fowler). June.

DELPHINIUM, Tourn. Larkspur.

D. Consolida, L. Field Larkspur.

Introduced from Europe. Banks of the St. Lawrence, west of Prescott, Ont. (Billings). Gardens and wheat fields near Belleville, Ont. (Macoun). June, July.

HYDRASTIS, L. Herb Yellow Root.

H. Canadensis, L. Orange Root.

Indigenous. Rich shady woods. Mirivin's Woods, near Prescott, rare (Billings). Malden, Ont. (Dr. Maclagan). Township of Williams, Ont. (Saunders). Co. of Norfolk (Dr. Nichol, Montreal.) It seems to be almost wholly confined to the Western Peninsula. May.

ACTÆA, L. Baneberry.

A rubra, Bigel. Red Baneberry.

Indigenous. Extends, in great abundance, from Newfoundland (Richardson), to Lake Superior (Macoun), and across the Continent through the wooded country to the Rocky Mountains (Macoun). West coast of Newfoundland (Dr. Bell).

A. alba, Bigel. White Baneberry.

Indigenous. Rich woods and flats of streams. Extends in abundance from Nova Scotia (Dr. How), Anticosti (A. E. Verrill), through Quebec and Ontario

to the Kaministiquia River, Lake Superior (Macoun); and across the Continent through the wooded country to the Rocky Mountains and westward to the Cascades (Macoun). May.

CIMICIFUGA, L. Snakeroot.

C. racemosa, Elliott. Black-rooted Snakeroot.

Indigenous. Rich woods. Cayuga, Grand River (Maclagan). Co. Norfolk, Ont. (Dr. Nichol). Near St. Thomas, Ont. (Macoun) So far reported only from the western portion of Ontario. Rare. July.

MAGNOLIACEÆ.

LIRIODENDRON, L. Whitewood. Tulip Tree.

Magnolia acuminata, L.

At the Falls of the Niagara. (Provancher, Wood).

L. Tulipifera, L. Whitewood.

Indigenous. Sunny hill-sides, rich woods. St. Catharines, Ont (Saunders). Vicinity of Hamilton, on Dundas road (Logie). Niagara Falls (Maclagan). St. Thomas and Chatham, Ont. (A. T. Drummond). Bosanquet Township, County Lambton, a few miles south of Kettle Point; Township of Tuckersmith, Huron County, Ont., its most northern point in America (Prof. Gibson). June.

ANONACEÆ.

ASIMINA, Adanson. North America Papaw.

A. triloba, Duval. Common Papaw.

Indigenous? Banks of streams in rich soil. On the road to Queenston, Niagara District, Ont. (Prof. J. B. Cherriman.)

MENISPERMACEÆ.

MENISPERMUM, L. Moonseed.

M. Canadense, L. Canada Moonseed.

Indigenous. Low rich woods and along streams. Montreal—Isle de Jesus—(Brunet). Common in woods, near Ottawa (Billings). Vicinity of Belleville, and Owen Sound, Ont. (Macoun.) Two miles west of London (Saunders). St. Catharines and Malden (Maclagan). Vicinity of Hamilton, not common (Buchan). Lake Winipeg (Bourgeau). Lake St Charles, Quebec (Provancher).

BERBERIDACEÆ.

BERBERIS, L. Barberry.

B. vulgaris, L. Common Barberry.

Introduced from Europe. Waste places. New Brunswick (Rev. Dr. Fowler). Point Lévis, Quebec (Brunet). Not authoritatively reported from Ontario. Newfoundland, (Morrison, Hooker). June.

CAULOPHYLLUM, Michx. Blue Cohosh.

C. thalictroides, Mx. Cohosh. Pappoose-root.

Indigenous. Rich woods. Gilmour's Woods, Quebec (Brunet). Common in woods, Prescott (Billings). Abundant in rich woods, Belleville, Ont., and Owen Sound, Ont. (Macoun). Kingston, Chippewa and Malden, Ont. (Maclagan.) Mountain side near Hamilton (Logie). Common near London, Ont. (Saunders). Woods, County Huron, Ont (Prof. Gibson). Common. May.

JEFFERSONIA, Barton. Twin-leaf.

J. diphylla, Pers. Twin-leaf. Rheumatism-root.

Indigenous. Woods and rich soils. Near Napanee, Ont. (Rev. A. Scott). Point Peter, and near Consecon, Prince Edward Co., Ont. (Macoun). Banks of the river, near Cove, common, London, (Saunders).

PODOPHYLLUM, L. May-apple. Mandrake.

P. peltatum, L. May-apple.

Indigenous. Rich shady woods and pastures. Very common throughout Ontario, but as regards Eastern Canada has only been reported from Montreal Mountain by Brunet and Maclagan. May.

NYMPHÆACEÆ.

BRASENIA, Schreber. Water Target.

B. peltata, Pursh. Common Water-shield.

Indigenous. Borders of lakes, ponds, and slow streams. Point St. Charles, Montreal (Brunet). Abundant in lakes and ponds, River Rouge, Quebec (D'Urban). Lakes and ponds north of the Counties Addington, Hastings, Peterborough and Victoria, Central Canada (Macoun). Lakelet, Howick Township, Huron Co., Ont. (Prof. Gibson). Near Rainy Lake, Dawson route (Macoun). Rare. July.

NYMPHÆA, Tourn. Water Nymph.

N. odorata, Aiton. Fragrant Water Lily.

Indigenous Still waters of rivers, lakes, and ponds. Common everywhere to the Lake of the Woods. June to September.

N. odorata, Aiton. Var. minor, Sims.

Indigenous. Shallow water. In a small lake south-east of Marmora Village, County Hastings, Ont., July 18, 1867. South Lake, Township of Snowdon, Peterborough County, July 29, 1868 (Macoun). Rare. July.

N. tuberosa, Paine. Tuber-bearing Nymphæa.

Indigenous. Still water. Found in all the marshes along the Bay of Quinte, and abundant in mud flats along Lake Ontario, from Presqu'ile eastward, and is suspected by the writers to be the "Nymphæa," of Burlington Bay, as reported by Messrs. Logie and Buchan. At Lakelet, Howick Township, County Huron, Ont (Gibson). Easily distinguished from N. odorata by its scentless flowers. Frequent. July.

NUPHAR, Smith. Yellow Pond Lily.

N. advena, Aiton. Spatterdock.

Indigenous. Ponds, ditches, pools, and rivers. Very common through Eastern and Western Canada. Found in Lake of the Woods, Little Slave Lake, and westward to the Rocky Mountains (Macoun). Cariboo, Labrador (Butler). West coast of Newfoundland (Dr. Bell). Athabasca River, lat. 57° (Macoun).

N. luteum, Smith. Var. pumilum, Gray. Small Yellow Pond Lily.

Indigenous. Tranquil water. New Brunswick (Dr. Fowler). Saguenay River, and Lake St. John (Brunet). Lakes and ponds, Riviere du Loup (Dr. Thomas). Nation River, railway crossing (Billings). Black Creek, Hastings County; North River, and Crow Lake, Belmont Township, Peterborough County (Macoun). North Shore of Lake Superior (Agassiz). East of Rainy Lake (Macoun). River Saskatchewan (Bourgeau). Subarctic America (Dr. Richardson). Sitka (Bongard). June, July.

SARRACENIACEÆ.

SARRACENIA, Tourn. Pitcher-plant.

S. purpurea, L. Side-saddle Flower. Pitcher-plant.

Indigenous. Peat bogs and swamps. New Brunswick (Dr. Fowler). In swamps, Quebec (Brunet). Between Ottawa and Prescott (Billings). Bogs and beaver meadows, River Rouge (D'Urban). North of the Counties Frontenac, Hastings, Peterborough, Victoria, and Northumberland; Point Rich, Owen Sound; North Shore of Lake Superior (Macoun). Common in Ontario and Quebec. Cockburn Island, Georgian Bay (Dr. Bell) Height-of-Land Portage, Dawson route; West of the N. Saskatchewan (Macoun). Saskatchewan plains (Bourgeau). Hudson's Bay (T. & G.) West of Little Slave Lake (Macoun). West coast of Newfoundland (Dr. Bell).

PAPAVERACEÆ.

PAPAVER, L. Poppy.

P. somniferum, L. Common Poppy.

Introduced from Europe New Brunswick (Dr. Fowler). Waste places near Belleville, Ont. (Macoun). Waste places, County Huron, Ont. (Gibson). Toronto (Prof. Croft). Rare. July.

Papaver nudicaule, L.

Coast of Labrador, and west to the Rocky Mountain, Unalaska.

CHELIDONIUM, L. Celandine.

C. majus, L. Celandine.

Introduced from Europe. Waste places. Quebec, St. Foy's Road (Dr. Thomas). Three Rivers, Quebec (Brunet). Desett's Woods, near Prescott (Billings). Montreal (Maclagan) Roadsides, Brighton, Picton, and Belleville (Macoun). Mountain side near Hamilton (Logie). Not uncommon at London, Ont. (Saunders). Dundas, Ont. (Prof. Ellis). May to September.

Sanguinaria, Dillen. Blood-root.

S. Canadensis, L. Canadian Blood-root.

Indigenous. Rich woods and borders of fences. Rivière du Loup, not very common (Dr. Thomas). Quebec, common (Brunet). Clearings on crystalline limestone, River Rouge (D'Urban). Montreal; Wolfe Island and Malden, Ont. (Maclagan). Rich woods, Ottawa (Billings). Common in Central Canada and Owen Sound (Macoun). Mountain side, Hamilton (Logie). London, Ont., common (Saunders). County Huron (Gibson). Centre of St Joseph's Island, Lake Huron) Dr. Bell. Saskatchewan plains (Bourgeau). May.

FUMARIACEÆ.

Adlumia, Rafinesque. Fumitory.

A. cirrhosa, Raf. Alleghany Vine. Cypress Vine.

Indigenous. Wet woods and rocky hills along rivers. River du Loup, rare (Dr. Thomas). Temiscouta Portage (Maclagan). Vicinity of Kingston, Ont. (Brunet). Woods, Heeley Falls, Northumberland County; and woods east of Belleville; Owen Sound (Macoun). Hamilton, Ont. (Logie). Gore Bay, Georgian Bay (Dr. Bell). N. W. America (T. & G.)

Dicentra, Berkhausen.

D. cucullaria, DC. Dutchman's Breeches.

Indigenous. Rich low woods. Common in rich woods from New Brunswick and Nova Scotia, through Quebec and Ontario, to Lake Huron.

D. Canadensis, DC. Squirrel Corn.

Indigenous. Rich rocky soil and shady woods. Frequent throughout Ontario and Quebec.

D. eximia, DC. Purple, Choice Dicentra.

Indigenous. Rocky woods. This plant is inserted solely on the authority of Brunet's Catalogue (Catalogue des Plantes Canadiennes), "Plante tres-rare. Environs de Montréal. Plante envoyée par M. J. Lyman, Pharmacien." Probably the D. formosa of the Gardens. Its presence in Canada is doubted by Provancher.

Corydalis, Vent.

C. glauca, Pursh.

Indigenous. On rocks, chiefly Laurentian. New Brunswick (Dr. Fowler). Woods of St. Foy, Quebec (Brunet). 16-Island Lake, and Huckleberry Rapids, River Rouge (D'Urban). Exposed rocks, Brockville; Chelsea, Quebec (Billings). Kingston Mills, Ont. (Maclagan). Laurentian rocks, Co. Hastings; abundant north shore of Lake Superior (Macoun). Island East of Thessalon River (Prof. Bell). St. Joseph's Island, McLeod's harbour, Cockburn Island, Sidgrave's Cove, Georgian Bay (Dr. Ball). Rocky banks of the Maitland and Saugeen Rivers (Gibson). Dawson route, near Lake Shebandowan; Fort Assiniboine on the Athabasca; Telegraph Trail, Upper British Columbia (Macoun). Saskatchewan Plains (Bourgeau). Cacouna, Q. (Prof. Croft). Yale, on the Fraser River; Methy Portage (Macoun).

C. aurea, Willd. Golden Corydalis.

Indigenous. Rocky woods. Rocky woods along the Restigouche River (Brunet). Rocky banks and sandy fields, Seymour, banks of the Trent and Moira Rivers (Macoun). Maitland Valley, Co. Huron, Ont. (Gibson). Cockburn Island, McLeod's Harbour, Georgian Bay (Dr. Bell). North shore of Lake Superior (Agassiz). Michipicoten Island and Dawson route, Lake Superior; Fort Edmonton; Fort Assiniboine on the Athabasca; Dunvegan, Peace River, (Macoun). Plains of the Saskatchewan (Bourgeau). Saguenay River, Quebec (Provancher).

FUMARIA, L. Fumitory.

F. officinallis, L. Officinal Fumitory.

Introduced from Europe. Waste places and about dwellings. Quebec (Brunet). Gardens at Picton, P. E. County, Ont. (Macoun). Burlington Beach (Logie). County Huron (Gibson). July, August.

CRUCIFERÆ.

NASTURTIUM, R. Br. Water-cress.

N. officinale, R. Br. Water-cress.

Introduced from Europe. Cold streams and ditches. Rivulet, Castleton; small stream, Rice Lake plains; Campbellford, Northumberland Co.; ditches at Picton, P. E. Co.; along the Sydenham River, Owen Sound (Macoun). Near London, Ont. (Saunders). Galt (Miss Crooks, Logie). Niagara Falls (Maclagan). Stanley, Co. Huron, Ont. (Gibson). North-west coast (Scouler). May to September.

N. palustre, DC. Marsh Cress.

Indigenous. Alluvial lands, ditches and swamps. Very abundant from the Mouth of the St. Lawrence to Lake Superior. North Saskatchewan; Little Slave Lake; Dunvegan, Peace River (Macoun). Plains of the Saskatchewan River (Bourgeau). Arctic America (T. & G.)

N. palustre, DC. Var. hispidum, Gray.

Indigenous. Inundated banks of rivers and streams. New Brunswick (Dr. Fowler). Detroit River (Maclagan). Vicinity of Hamilton (Buchan).

N. lacustre, Gray. Lake Cress.

Indigenous. In mud along river-banks. River Trent at Myersburgh; in Crow Bay, and abundant in still water between Heeley's Falls and Hasting's Village; River Trent, Ont. (Macoun). Canada (Dr. Holmes). Grand River, Malden, (Maclagan). Near Prescott, Ont. (Provancher).

N. Armoracia, Fries. Horse-radish.

Introduced from Europe. In gardens and waste places. New Brunswick (Dr. Fowler). Wastes, Quebec (Brunet). Wastes and gardens, abundant, Belleville (Macoun). Common, London (Saunders). Rare. June, July.

DENTARIA, L. Pepper-root.

D. diphylla, L. 2-leaved Pepper-root.

Indigenous. In cedar swamps, wet meadows, and around springs New Brunswick (Dr. Fowler). Quebec and Isle of Orleans (Brunet). Rivière du

Loup and St. Modeste (Dr. Thomas). Rocky woods, River Rouge (D'Urban) Montreal, St. Valentine, Smith's Falls, Kingston, and Chippewa (Maclagan). Prescott, abundant (Billings). Woods, Belleville, Ont. (Macoun). Mountain side (Hamilton). Bayfield River, Huron Co., Ont. (Gibson). May.

D. Maxima, Nutt. Many-leaved Dentaria.

Indigenous. In shady moist places. Found at Galt by Miss Crooks (Logie). Having seen no specimens of this species from Canada, we are extremely doubtful of its existence in Western Ontario, and are of the opinion that the plant so designated by Logie is the D. laciniata, and that the D. heterophylla reported from Hamilton by J. M. Buchan is the same plant. May.

D. laciniata, Muhl. Cut-leaved Dentaria.

Indigenous. Rich shady woods and low grounds. Valley of the St. Francis, rare (Brunet). Ameliasburgh, P. E. County, Ont. (Macoun). Banks of Cove, common, London (Saunders). Mountain west of Hamilton (Logie). Chippewa, Navy Island and Malden (Maclagan). Penetanguishene (Hooker, Fl. Bor. Am.) Rare. May.

CARDAMINE, L. Spring Cress.

C. rhomboidea, DC. Spring Cress.

Indigenous. Wet meadows and springs. Meadow near Stinson's Mills; wet woods east of Belleville (Macoun). Wet places, common (Saunders). Galt (Kate Crooks). Malden, Ont. (Maclagan). Rare. May, June.

C. rhomboidea, DC. Var. purpurea, Torrey.

Indigenous. Moist woods and springs. London, Ont. (A. T. Drummond). Woods west of Hamilton (Logie). Rare. May, June.

C. rotundifolia, Michx. Mountain Water-cress.

Indigenous. Cool shaded springs. Chippewa and St. Catharines (Maclagan). Hudson's Bay, Rocky Mountains, Lake Superior (Torr. & Gray). Rocky Mountain defiles, lat. 52° to 51° N. (Drummond). Rare. May.

C. pratensis, L. Cuckoo Flower.

Indigenous. Wet meadows and swamps. Swamps, Labrador and Quebec (Brunet). Near Ottawa and Prescott Railway; vicinity of Prescott Junction (Billings). Three miles south of Ottawa (Billings). Meadows and swamps, Belleville (Macoun). Near Millgrove, Ont. (Logie). Shore along Lake Burwell, Co. Lambton, Ont. (Gibson). Whisky Island, Georgian Bay (Dr. Bell). Arctic Islands, Behring Straits, and Hudson's Bay (G. Barnston). May, June.

C. hirsuta, L. Common Bitter Cress.

Indigenous. In rivulets, springs, and ditches. Very common from mouth of the St. Lawrence through Quebec and Ontario to Lake Superior. Fort Assinaboine on the Athabasca; Little Slave Lake; Dunvegan and Fort St. John, Peace River (Macoun). Arctic Sea coast (Barnston). Arctic America (Torr. & Gray). British America (Richardson). West coast of Newfoundland (Dr. Bell). Throughout the season.

C. hirsuta, L. Var. sylvatica, Gray. Bitter Cress.

Indigenous. Dry rocks, especially Laurentian. Rocks of the Montmorenci Falls (Brunet). Dry Laurentian rocks at Shannonville, Ont. (Macoun). Galt

Ont. (Miss Crooks). Jones' Falls, Ont. (Maclagan). Sturgeon Lake, Dawson route (Macoun). Rare June to August.

Arabis, L. Wall Cress. Rock Cress.

A. alpina, L. Alpine Rock Cress.

Indigenous. Stem branching, somewhat diffused, and, with the leaves, clothed with a villous branched pubescence; leaves many-toothed; radical ones somewhat petioled; cauline cordate, clasping; peduncles nearly glabrous, longer than the calyx (Hook. Fl. Bor.-Am. I. p. 42). Reported only from the coast of Labrador on Hooker's authority. Forteau Bay, Labrador (Butler).

A. lyrata, L. Rock Cress.

Indigenous. Rocky banks and sandy hills along the great lakes. Niagara Falls, whirlpool (Maclagan). Not common, London? (Saunders). Shore of Lake Huron, at Fishing Islands; Shore of Lake Superior from Sault Ste. Marie to Pic River; Lake Shebandowan; Lake of the Woods; Fort Assinaboine, on the Athabasca? (Macoun). McLeod Lake, British Columbia, lat. 55° N. (Macoun). Rare. June, July.

A. petræa, Lam. Rock Cress.

Indigenous. On rocks. Crevices of rocks, about five miles north of Michipicoten harbour, Lake Superior (Macoun). Cockburn Island, Lake Huron, (Dr. Bell). Canada (Hooker). Arctic America and N. W. Coast (Torr. & Gray). Unalaska (Chamisso). Rare. July.

A. hirsuta, Scopoli. Hairy Rock Cress.

Indigenous. Rocky banks and sandy plains. New Brunswick (Dr. Fowler). Moist rocks. Falls of Montmorenci (Brunet). Sea shore, Rivière du Loup (Dr. Thomas). Rice Lake plains; banks of the Moira and Trent; Owen Sound, Ont; dry banks up the Kaministiquia, Lake Superior (Macoun). Galt, Ont. (J. M. Buchan). At Cove, near London (Saunders). Banks of Rivière aux Sables, Co. Lambton, Ont. (Gibson). Saskatchewan plains (Bourgeau). Fort Assinaboine, on the Athabasca; Dunvegan, on the Peace River (Macoun). Hudson's Bay coast; shores of the Pacific to Sitka (G. Barnston). May to July.

A. lævigata, DC. Smooth Rock Cress.

Indigenous. Rocky woods and low grounds. Rocks, Heeley Falls, Seymour, Co. Northumberland; Gibson's Mountain, Prince Edward Co.; Shannonville; Woods; Royston Park, Owen Sound (Macoun). London, Ont. (Saunders). Malden, Ont. (Maclagan). Valley of Rivière aux Sables, Co. Lambton, Ont. (Gibson). North shore of the St. Lawrence above Quebec (Barnston). June, July.

A. Canadensis, L. Sickle-pod.

Indigenous. Rocky hillsides. Laurentian rocks at Shannonville, Ont.; hills near of Picton, Prince Edward Co.; woods near Fenelon Falls, Victoria Co. (Macoun). Vicinity of Hamilton (Logie). Maldon, Ont. (Maclagan). Bosanquet Township, Co. Lambton, Ont. (Gibson). Fort Edmonton, north Saskatchewan River (Macoun). June, July.

A. hesperidoides, Gray.

Indigenous. Borders of streams. Has only been reported from the vicinity of London, Ont., by Mr. W. Saunders. June.

A. perfoliata, Lam. Smooth Tower Mustard.

Indigenous. Rocky woods and meadows. New Brunswick (Mathews). Counties Hastings and Northumberland, Ont.; 15 miles up the Kaministiquia, Lake Superior; Owen Sound, Lake Huron (Macoun; Amherstburg and islands in Detroit River (Maclagan). Whisky Island, Lake Huron (Dr. Bell). North shore of Lake Superior (Agassiz). Valley of the Saskatchewan (*Bourgeau*). Fort Assiniboine on the Athabasca; west of Little Slave Lake (Macoun). Hudson's Bay to the Rocky Mountains (Hooker). Upper British Columbia (Macoun). June.

A. Drummondii, Gray.

Indigenous. Rocky banks of rivers and wooded banks of streams. Rocky banks of the Moira and Trent Rivers, Ont.; Gibson's Mountain, Prince Edward County; up the Kaministiquia River, Lake Superior; Fishing Islands, Lake Huron (Macoun). Near *Prescott, Ont.* (*Billings*). Rideau Canal, Kingston Mills, *Islands in* Detroit River (Maclagan). Whisky and Mississagui Islands, Lake Huron (Dr. Bell). Fort Edmonton, North Saskatchewan; Fort Assiniboine on the Athabasca; Portage between Little Slave Lake and Peace River; Peace River west of the Rocky Mountains, and the Telegraph Trail Upper *British Columbia* (Macoun).

A. retrofracta, Graham.

Indigenous. Plant erect, more or less canescently pubescent; radical leaves lanceolate, linear, sparingly hirsute, petioled, toothed or nearly entire; cauline leaves sagittate-amplexicaul or simply clasping; stems several, from one root, 10'—18' high, virgate, branching near the summit; flowers, light rose-colour or nearly white, small, nodding; petals oblong-oval, the limb exserted; siliques linear, elongated, more or less reflexed; seeds in two rows, margined. The plant is readily distinguished from A. Drummondii by its shorter and retrofract pods. Reported by Prof. Gibson from Portage du Fort, Ottawa River. California to Arctic Circle (S. Watson). Hudson's Bay to Rocky Mountains, and N. to lat. 68 (Hooker). Abundant west of Rocky Mountains (Macoun). June.

BARBAREA, R. Brown. Water Cress.

B. vulgaris, R. Brown. Yellow Rocket.

Introduced. Roadsides and fields. Vicinity of Quebec (Brunet). New Brunswick (Dr. Fowler). June to August.

B. vulgaris, R. Brown. Var. Stricta, Andrz.

Indigenous. Shores of Lake Huron and Superior. Owen Sound Bay; Chicken Bay, east shore of Lake Huron; north shore of Lake Huron; north shore of Lake Superior from Thunder Bay to Sault Ste. Marie (Macoun). Mississagui Island, south side of St. Joseph's Island, Whisky and Cockburn Islands, Lake Huron (Dr. Bell). Saskatchewan plains (Bourgeau). Edmonton, North Saskatchewan (Macoun). Oregon, and N. W. America (T. & G.) Sitka (Bougard). Vancouver Island; Peace River Valley (Macoun). June, July.

B. praecox, R. Br. Tongue Grass. Scurvy Grass.

Introduced from Europe. New Brunswick (Dr. Fowler). Canada (Goldie in Hooker). Cultivated in gardens. North-western America to lat. 68°, N. (Barnston). June, July.

ERYSIMUM, L. Worm-seed Mustard.

E. cheiranthoides, L. Worm-seed Mustard.

Indigenous. Moist grounds along streams, in gardens, and cultivated fields. Montreal (Maclagan). Prescott Junction, rare (Billings) Gardens and waste places around Belleville (Macoun). Near London, Ont. (Saunders). Hamilton, roadsides (Logie). Bosanquet, Co. Lambton, Ont. (Gibson). Newly-cleared lands, Owen Sound; 11 miles up the Kamnistiquia, Lake Superior; Telegraph Trail, Upper British Columbia (Macoun). Pacific coast, lat. 47° N. (Barnston). Banks of the McKenzie River, lat. 67° N. (Hooker). Fort Francis, Dawson route (Macoun). July to September.

HESPERIS, L. Sweet Rocket.

H. matronalis, L. Sweet Rocket.

Introduced from Europe. In waste places, escaped from gardens, Belleville (Macoun). Shore of Lake Huron (Dr. Todd, *vide* Hooker). June.

(To be Continued.)

CANADIAN INSTITUTE.

ANNUAL REPORT OF THE COUNCIL FOR THE YEAR 1874-75.

The Council of the Canadian Institute beg leave to submit their Annual Report of the proceedings of the Institute for the past year, and to congratulate the Institute on the fact of a noticeable increase in the attendance and interest of the members at the ordinary meetings.

During the year a large number of papers and communications of varied scientific, literary, and historical interest have been read, a list of which is annexed.

There is also annexed a statement of the financial position of the Institute, by the Treasurer, together with the certificate of the Auditors, and an appendix which sets out in detail the titles of the various gifts of books, pamphlets, and papers received by the Institute during the year, as well as of the various periodicals and journals received by way of exchange for the *Canadian Journal*, or by way of subscription by the Institute.

The Council have also to report that during the year they had under consideration a project for the erection of a new building for the use of the Institute.

A scheme was matured and adopted by the Council, under which it was provided that if the Institute should obtain promises of contributions which (if added to the available funds of the Institute) would amount to $10,000, the work should be proceeded with.

It was found that a suitable building could be erected on the present site, and completed for the sum of $16,000, and that without completing the Lecture Room it could be erected and otherwise completed for $11,000

The amount of contributions promised upon a canvass for that purpose amounted in the aggregate to about the sum of $2,000.

As the amount promised did not realize the sum required by the scheme adopted, the determination of the question of proceeding with the erection of the new building, under the circumstances, was remitted to a special general meeting of the members of the Institute held on the 6th of July last, which resolved to record its thanks to Mr. Loudon for his exertions in procuring plans and estimates for the proposed new building, and promises of contributions for its erection, and to earnestly invite the members to follow up his exertions with a view to commencing the building in the spring and, if possible, to complete the entire plan, including the Lecture Room.

All of which is respectfully submitted.

MEMBERSHIP.

The present state of Membership:

Members at commencement of Session, Dec. 1, 1874	339
Members elected during the Session, 1874-'75	9
	348

Deduct.

Deaths during the year, 1874-'75	2	
Withdrawn	4	
		6
Total, November 30th, 1875		342

Composed of

Honorary Members	5
Life Members	18
Corresponding Members	4
Ordinary Members	315
Total	342

COMMUNICATIONS.

The following valuable and instructive papers and communications were read and received from time to time, at the ordinary meetings held during the session.

December 5, 1874.—Rev. Dr McCaul, LL D., on "Ancient Persia and Parthia, illustrated by Numismatics."

December 12, 1874.—Communication from John Paterson, Esq., accompanied by a specimen of perforated stone found near Coboconk.

December 12, 1874.—Prof H. A. Nicholson and Dr. W. H. Ellis, M.A., on "A Remarkable Fragment of Fossil Wood from the Rocky Mountains."

December 19, 1874.—Annual Report of the Council of the Canadian Institute.

December 19, 1874.—Rev. Dr Scadding exhibited several old Maps of North America, with remarks thereon.

January 16, 1875.—Prof. Daniel Wilson, LL.D., on "A Summer Ramble among the Antiquities of Ohio, U. S."

January 23, 1875.—Prof. H. H. Croft, D.C L., on "Messrs. Gibson and Macoun's Report on the Botany of the eastern shore of Lake Huron."

January 30, 1875.—Rev. Dr. Scadding, on "A Review of Oxford and Cambridge Historical Autographs"

February 6, 1875.—Dr. W. H. Ellis, M.A., on "Nitro-Glycerine; its properties and application."

February 13, 1875.—A. Elvins, Esq., on "Rainfall and Storm Cycles."

February 20, 1875.—M. Cummings, Esq , M.A., on "The Primitive History of the Ionians," by the Rev. Prof. Campbell, Montreal.

February 27, 1875.—Rev. Dr. Scadding, on "The early Gazetteer and Map Literature of Western Canada, with several old Gazetteers and Maps relating to the early history of Canada."

March 6, 1875.—J. M. Buchan, Esq., M.A., on "The Flora of Hamilton."

March 6, 1875.—H. B Spotton, M.A., on "The Flora of Barrie."

March 13, 1875.—Prof J. Loudon, M.A., on "The Properties of Light."

March 20. 1875.—Mr. Elwin, on "A new theory of the Aurora Borealis, illustrated by Electrical Experiments."

March 27, 1875.—Prof. E J. Chapman, Ph.D., on "The Sub-division of the Province of Ontario, into several Geological areas."

April 3, 1875.—Prof. D. Wilson, LL.D., on "The Man of the Mammoth Period."

April 3, 1875.—W. Oldright, M.A., M.D., on "Hints to dwellers in City Houses."

CANADIAN INSTITUTE, IN ACCOUNT WITH S. SPREULL, TREASURER.

Debtor.

1874.				
Dec. 8.	To paid	Western Assurance, premium on $5,000		$100 00
8.	"	Hart & Williamson, account 1874, omitted		63 00
1875.				
Jan. 9.	"	Mr. Cumming, Assist. Secretary and Librarian		50 00
Apr. 10.	"	*Mail* account, Advertising		17 20
10.	"	*Globe* account, Advertising		16 00
10.	"	Bain's account, *Blackwood* and Reviews		18 00
10.	"	James Myles, account Firewood		28 50
17.	"	Hart & Rawlinson, account 1875		63 00
May 10.	"	Provincial Building Society, Instalment		130 00
July 14.	"	Copp, Clark & Co., to account printing *Journal*		250 00
Sep. 17.	"	*Globe*, Advertising		9 70
18	"	Royal Insurance, Premium on $1,800 (Building)		22 50
Nov. 5.	"	Copp, Clark & Co., to account		200 00
30.	"	Librarian, Salary	$364 00	
30.	"	Wood and Coal	43 20	
30.	"	Stationery, Postages and P. O. Box	12 75	
30.	"	Express Charges	14 05	
30.	"	Oil, &c., Lighting	7 04	
30.	"	Repairs	7 35	
30.	"	Waggon hire	0 50	
30.	"	Balance due by Assist. Secretary	11 00	
				459 89
30.	To Balance forward			862 55
				$2,290 34

Creditor.

1874.				
Dec. 1.	By Balance			$803 51
31.	"	Interest on Deposit to 31st December		29 20
1875.				
Feb. 3.	"	Government Allowance		750 00
Apr. 10.	"	Half-yearly Dividend on Stock		120 00
June 30.	"	Interest on Deposit to 30th June		37 74
Oct. 10.	"	Half-yearly Dividend on Stock		90 00
Nov. 30.	"	Balance due by Assist. Secretary to Treasurer	$68 46	
30.	"	Subscriptions	170 00	
30.	"	Rents	120 00	
30.	"	*Journals* sold	51 43	
30.	"	Cash from Treasurer to Assist. Secretary	50 00	
				459 89
				$2,290 34

1875.
Dec. 1. By Balance in Deposit Provincial Building & Savings Society, $862 55

TORONTO, 1st December, 1875.

SAMUEL SPREULL, *Treasurer.*

The undersigned Auditors have compared the vouchers for the above items of these accounts, with the Cash Book, and find them to agree. The balance in the hands of the Treasurer is $862 55.

W. J. MACDONELL,
JOHN PATERSON, } *Auditors.*

TORONTO, Nov. 30th, 1875.

APPENDIX.

BOOKS AND PAMPHLETS RECEIVED IN EXCHANGE FOR THE CANADIAN JOURNAL.

1. Report of Progress of the Geological Survey of Canada, 1873-74.
2. Transactions of the Nova Scotian Institute of Natural Sciences, Halifax, 1873-74.
3. The Canadian Entomologist, vol. vii, 1875.
4. Report of the Entomological Society, Province of Ontario, 1874.
5. The Pharmaceutical Journal, vol. ix, 1875.
6. The Journal of Education, vol. xxviii, 1875.
7. Report on the Stevenson Phosphate Location, Townships of Portland and *Buckingham* (2). By E. J. Chapman, Ph.D.
8. Dawson's, A. M., Report on the Geology and Resources of the Forty-ninth *Parallel*, 1875.
9. The Great Dominion. By E. J. Jenkins, M.P.
10. Third Report of the Meteorological *Office*, Dominion of Canada, 1873.
11. Reports of the Meteorological, Magnetic, and other Observatories of Canada. Supplement No. 4.
12. Abstracts and Results of Magnetic, and Meteorological Observations of the Magnetic Observatory, Toronto, 1875.
13. Speech of Lord Dufferin, Governor-General of Canada, on the Dominion.
14. The Canadian Militia. By Capt. R. J. Wicksteed, 1875.
15. Proceedings of the Royal Geographical Society, vol. xviii, 1874.
16. Journal of " " " vol. 42 & 43.
17. Proceedings of the Society of Antiquarians of Scotland, vol. vii, Part 2, vol. viii, Part 1.
18. Journal of the Royal Geological Society of Ireland, vol. iv, Part 1.
19. List of Members of the Royal Geological Society of Ireland, 1873-74.
20. Quarterly Journal of the Royal Geological Society, vol. xxix, Part 4; vol. xxx, Parts 1, 2 & 3.
21. *Proceedings of the Literary* and Philosophical Society of Liverpool, 1873-74.
22. Report of Council of the Art Union, London, 1875.
23. *Annual Report of the Manchester* Science Students' Association, 1873.
24. Report of the Proceedings of the Cobden Club, 1874.
25. List of Members of the *Anthropological* Institute of Great Britain and Ireland.
26. Transactions Royal Society of *Edinburgh*, vol. xvii, Part 2, 1873-74.
27. Journal Linnæan Society; Botany, Nos. 77, 78, 79, 80; Zoology, Nos. 58, 59.
28. Report Belfast Naturalists' Field Club, 1873-74.
29. Guide to Belfast. By ditto.
30. European Mail, February, 1875.
31. British Trade Journal, January and July, 1875.
32. Journal of the Society of Arts.
33. Proceedings of the Royal Society of Edinburgh, 1874.
34. Memoirs of the Geological Survey of India, vol. x, Part 2; vol. xi, Part 1.
35. Palæontologia Indica (Fauna of Fluviatile Deposits), vol. 1, Part 1.

86. Records of the Geological Survey of India, vol. vii, Parts 1, 2, 3, 4.
87. American Journal of Science and Arts, vol. ix, 1875.
88. Journal of the Franklin Institute, vol. xcix, 1875.
89. Memoirs of the Boston Society of Natural History, vol. ii, Part 4, Nos. 2, 3; Part 3, Nos. 4, 5.
90. Proceedings of the Boston Society of Natural History, vol. xvii, Parts 1, 2, 3, 4; vol. xviii, Part 1.
91. Eighth Annual Report of the Trustees of the Peabody Institute.
92. Proceedings of the Academy of Natural Sciences, Philadelphia, 1874-75.
93. Annals of the Lyceum of Natural History, New York, vol. xi, Nos. 3-6, 1875.
94. Bulletin of the Essex Institute, vol. vi, Nos. 1-12.
95. Proceedings of the American Antiquarian Society, 63 & 64, 1875.
96. Transactions of the Academy of Science, St. Louis, vol. iii, No. 2.
97. Occasional Papers of the Boston Society of Natural History; the Spiders of the United States, ii, 1875.
98. Accidents, Emergencies and Poisons.
99. Mémoires de la Société Royale Des Antiquaires du Nord, 1850-60, 1868.
100. La Question de L'Equidomoide et des Cristalloides Géométriques. By Le Cte. Leopold Hugo, 1875.
101. Annales des Mines, tome 6, Part 5; tome 7, Part 2, 3.
102. Bulletin de la Société Géologique, Paris, tomes xix, xx, xxi.
103. Cosmos, di Guide Cora, Torino, vol. ii, Nos. 4, 5, 6, 7, 8, 9; vol. iii, No. 1.
104. Vierzehnter Bericht über die Thatigkeit des Offenbacher Vereins fur Naturkunde, 1873.
105. Abhandlungen herausgegeben vom Naturwissenschaftichen Vereine zu Bremen, 1873, 1871, 1875.
106. Verhandlungen des Vereins fur Naturwissenschaftliche unterhaltung, zu Hamburgh, 1871-1874.
107. Ueber die Wasserabnahine in den Quellen, Flüssen und Strömen. Wien, 1873.
108. Beilage No. 3, 4 zu den Abhandlungen des Naturwissenschaftlichen, Vereins zu Bremen, 1874. Bremen.
109. Dreizehnter Bericht uber die Thatigkeit des Offenbacher Vereins fur Naturkunde im Vereinsjahre, 1871-1872.
110. Forhandlinger i Videnskabs-Selskabib i Christiania, 1872-73.
111. Nyt Magazin for Naturvidenskaberne, 1873, 1874.
112. Jættegryder og Gamle Strandlinier I Fast Klippe, 1874, Christiania
113. Om Skuringsmærker, Glacialformationen Tenasser og Strandlinier, 1873, Christiania.
114. Grundtrœkkene I Den Ældste Norske Proces, 1874, Christiania.
115. Enumeratio Insectorum Norvegicorum, 1874, Christiania.
116. Die Ægyptischen Denkmaler in St. Petersburg, Helingfors, Upsala, und Copenhagen, 1873, Christiania.
117. Clavis Poëtica Antiquæ Linguæ Septemtrionalis. Hafniae.
118. Norske Fangst-Skipperes Opdagelse of Kong Karl-Land, 1872.
119. "Alberts" Expedition ti Spidsbergen I November og December, 1872, Christiania.

70. Om Vigse Virkinnger of Stromme paa Vandets of Luftens Temperatur, 1873, Christiana.
71. Tillag Til Aarboger for Nordisk Oldkyndighed og Historie Aargang, 1866, Kjobenhaven.
72. Det Kongelige Vorste Frederiks Universitets, 1873, Christiania.
73. Postola Sogur, 1874, Christiania.

The following publications have been subscribed for by the Institute, and received during the year:—

The Edinburgh Review.
The Westminster Review.
The London Quarterly Review.
The British Quarterly Review.
The Contemporary Review.
The Fortnightly Review.
The Saturday Review.
Blackwood's Magazine.
The London Lancet.
The Medical Times and Gazette.
The British and Foreign Medico-Chirurgical Review.
The American Journal of Medical Sciences
The Half-yearly Abstract of Medical Sciences.
The Medical News and Library.

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MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETICAL OBSERVATORY, TORONTO, ONTARIO—DECEMBER, 1875.

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 Average.	Tension of Vapour.				Humidity of Air.				Direction of Wind.				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	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.	Resultant.	6 A.M.	2 P.M.	10 P.M.	Result't	MEAN		
1	29.886	29.869	29.964	29.9112	°4.8	°12.4	°11.3	°9.45	—°21.08	.051	.066	.064	.059	95	88	90	89	N E	N E	N E	N 28° E	11.5	8.0	7.2	9.97	10.00	...	11.0
2	30.056	30.096	30.046	30.0638	12.7	24.3	25.0	20.80	— 9.25	.062	.104	.089	.085	83	79	66	76	N	E	E	N 78 E	7.4	11.5	16.0	9.47	11.35	...	...
3	29.956	29.895	29.896	29.9133	17.4	30.8	25.0	23.73	— 5.82	.078	.134	.109	.103	82	78	81	80	N E	S	N	N 59 E	7.2	1.5	7.0	2.36	5.68	...	...
4	.813	.772	.709	.7652	26.1	31.9	32.2	29.88	+ 0.78	.124	.165	.169	.151	88	91	93	90	N E	N E	N E	N 35 E	6.8	5.6	4.0	5.78	6.04	...	...
5	.600	.450	.353	.4492	30.0	35.0	32.0	31.83	+ 3.20	—	—	—	—	—	—	—	—	N E	N E	N E	N 60 E	10.6	16.2	11.8	11.91	12.03	.030	...
6	.335	.337	.304	.3310	29.7	30.8	32.6	31.10	+ 2.93	.162	.148	.165	.157	98	86	89	90	N E	N E	E	N 57 E	8.0	7.4	13.9	9.50	9.73	...	0.5
7	.226	.093	.060	.1233	29.7	31.9	31.9	31.65	+ 3.93	.162	.173	.180	.174	98	95	100	97	N E	N E	N E	N 56 E	11.5	12.4	10.1	11.26	11.31	.170	0.1
8	.074	.118	.235	.1543	30.1	30.4	29.1	29.72	+ 2.43	.164	.150	.145	.153	98	88	91	93	N	N E	N	N 23 E	4.0	2.4	1.0	3.35	3.45	.040	1.9
9	.324	.392	.525	.4272	27.2	26.5	25.4	26.05	— 0.82	.124	.126	.118	.122	85	88	86	87	N	N	N	N 23 W	6.2	11.2	11.6	7.91	8.07	...	0.4
10	.408	.665	.633	.6365	25.4	28.2	26.8	26.43	— 0.02	.118	.113	.122	.115	86	73	84	80	N W	W	W	N 71 W	9.0	9.7	6.6	6.75	7.93	...	...
11	.437	.260	.252	.3083	30.4	33.3	31.9	31.98	+ 5.93	.160	.180	.169	.171	95	95	94	95	S W	S	W	S 16 W	3.5	5.5	4.8	3.83	4.83	...	1.3
12	.300	.260	28.900	.1423	23.0	26.0	32.2	27.32	+ 1.69	—	—	—	—	—	—	—	—	W	S W	S W	S 58 W	5.0	13.5	18.0	11.75	13.74	...	0.3
13	28.810	28.999	29.167	.0122	32.2	28.2	20.3	26.67	+ 1.40	.162	.086	.092	.113	89	55	82	76	W	W	N W	S 88 W	21.5	29.5	14.0	21.83	22.71	...	0.1
14	29.307	29.385	.492	.4115	8.8	18.2	10.9	12.57	—12.32	.052	.076	.055	.062	82	78	78	81	N W	W	W	N 66 W	3.0	20.5	5.8	9.70	10.31	...	...
15	.406	.099	.161	.2142	21.0	27.9	33.3	27.82	+ 3.27	.108	.152	.156	.143	96	100	82	93	S W	S E	W	S 42 W	6.5	16.5	29.5	8.15	12.33	...	1.8
16	.355	.279	.216	.2835	24.3	29.7	24.7	25.73	+ 1.56	.111	.103	.099	.105	84	63	75	74	W	S W	W	S 59 W	6.8	12.6	9.4	9.23	9.66	...	...
17	.222	.431	.541	.4233	17.1	10.2	2.6	8.58	—15.32	.086	.048	.037	.053	92	71	78	80	S W	N W	N	N 73 W	15.8	24.5	10.2	14.58	16.10	...	0.1
18	.589	.428	.551	.5303	- 4.5	13.1	10.9	4.55	—19.05	.052	.059	.061	.048	93	76	86	87	N W	S W	N	N 87 W	1.6	18.8	17.4	8.21	10.69	...	...
19	.900	30.078	30.112	30.0448	-12.5	- 8.5	- 6.4	-8.33	—31.65	—	—	—	—	—	—	—	—	N	N	N E	N 13 W	10.4	9.0	10.0	7.90	8.21	...	0.1
20	.915	29.703	29.734	29.78.3	15.3	28.3	36.9	27.27	+ 4.20	.076	.126	.175	.129	88	81	79	83	S E	S E	S W	S 37 E	10.5	3.2	7.6	4.63	6.98	...	...
21	.670	.533	.560	.5775	39.1	43.4	40.9	40.70	+17.85	.215	.233	.228	.224	90	83	89	88	S W	S W	S W	S 44 W	12.5	15.0	4.4	10.01	10.22	.150	...
22	.550	.359	.234	.3645	35.1	41.2	45.2	41.23	+18.62	.182	.216	.246	.223	90	83	81	85	S W	S W	S W	S 41 W	5.0	19.0	16.0	12.11	12.55	...	...
23	.215	.442	.769	.5105	40.2	43.4	31.6	36.73	+14.32	.229	.178	.119	.169	92	63	67	76	S W	N W	N	N 77 W	7.0	17.5	12.2	8.24	12.83	..	...
24	.837	.428	.165	.4420	26.1	31.1	36.9	31.67	+ 9.45	.124	.167	.218	.174	88	95	99	95	E	E	E	N 85 E	18.4	28.0	8.8	17.10	17.53	.210	...
25	.060	.466	.670	.4043	40.0	38.7	31.0	36.32	+14.28	—	—	—	—	—	—	—	—	S W	W	N W	N 87 W	8.0	20.0	3.5	11.73	13.59	.180	...
26	.650	28.940	.250	.2817	31.0	40.0	37.0	35.50	+13.62	—	—	—	—	—	—	—	—	E	E	W	N 72 E	15.5	9.8	21.0	5.00	13.50	.860	1.0
27	.754	30.035	30.045	.9708	27.2	22.8	25.0	24.57	+ 2.83	.124	.081	.116	.105	85	66	86	79	N W	N	S E	N 44 W	20.5	6.0	10.0	7.72	12.91	...	0.1
28	.905	29.751	29.808	.8208	26.1	30.8	26.1	27.12	+ 5.50	.124	.118	.124	.118	88	68	88	80	N E	S E	N	N 75 E	7.0	3.6	4.8	5.57	6.52	...	...
29	.843	.659	.547	.6760	25.4	23.3	38.7	32.98	+11.47	.125	.181	.215	.177	92	94	91	93	N E	E	E	N 65 E	10.8	13.0	10.5	10.07	10.45	Inap.	...
30	.583	.652	.732	.6667	39.8	45.6	35.5	39.93	+18.48	.206	.272	.202	.223	83	89	97	90	E	S	E	S 34 E	1.8	5.0	1.0	1.93	3.31	...	...
31	.714	.555	.575	.6147	39.4	55.3	57.4	50.47	+29.07	.240	.353	.431	.337	99	80	91	90	E	S W	S W	S 42 W	2.0	19.0	11.4	5.76	8.34	Inap.	...
	29.6461	29.4971	29.5228	29.5244	24.44	29.49	28.19	27.16	+ 2.30	131	.146	.150	.142	90	81	86	86	.....	.....	.....	.....	8.88	12.75	10.31	.....	10.42	1.620	18.7

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR DECEMBER, 1875.

NOTE.—*The monthly means of the Barometer and Temperature include Sunday observations. The daily means, excepting those that relate to the wind, are derived from six observations daily, namely, at 6 A.M., 9 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 .....30.112 at 10 p.m. on 19th } Monthly range=
Lowest barometer .....28.810 at 6 a.m. on 13th } 1.302.

Self-register-ing Ther.
- Maximum temperature ..... 61°0 on 31st } Monthly range=
- Minimum temperature ..... —13°2 on 19th } 74°2
- Mean maximum temperature ..... 34°97 } Mean daily range=
- Mean minimum temperature ..... 19°95 } 14°02.
- Greatest daily range ..... 47°7 from n.m. to p.m. of 20th.
- Least daily range ..... 3°8 from a.m. to p.m. of 9th.

Warmest day .....31st; mean temperature.....5°47 } Difference=58°80.
Coldest day.....23rd; mean temperature..... —53°33 }

Maximum Radiation
- Solar .....104°0 on 31st } Monthly Range=
- Terrestrial .....—19°8 on 19th } 123°8.

Aurora observed on 1 night, viz., 25th.

Possible to see Aurora on 13 nights; impossible on 18 nights.

Raining on 9 days; depth, 1 620 inches; duration of fall, 43.3 hours.

Snowing on 13 days; depth 18 7 inches; duration of fall, 84.3 hours.

Mean of cloudiness, 0.78.

WIND.

Resultant direction, N 64° W.; resultant velocity, 1.75 miles.

Mean velocity, 10.42 miles per hour.

Maximum velocity, 31.0 miles, from noon to 1 p.m. of 17th

Most windy day, 13th; mean velocity, 22.71 miles per hour.

Least windy day, 30th; mean velocity, 3.31 miles per hour.

Most windy hour, 2 p.m.; mean velocity, 12.75 miles per hour.

Least windy hour, 5 a.m.; mean velocity, 8.70 miles per hour.

Fog on 20th, 30th and 31st.

Solar halo on 16th.

Lightning on 25th and 29th.

Thunder storm on 26th.

Bay open again on 24th.

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.
	°	°	°	°	°					°		
1847	30.1	+ 4.3	49.6	0.3	49.3	7	1.135	8	0.8	...	...	0.55 lbs
1848	29.1	+ 3.3	48.8	1.1	47.7	7	2.750	7	10.6	S 83 W	1.12	6.44 mls
1849	26.6	+ 0.7	40.8	— 6.6	47.4	5	0.840	12	9.0	N 82 W	2.56	6.21
1850	21.7	— 4.1	48.8	— 9.0	57.8	2	0.190	18	29.5	N 44 W	2.03	7.40
1851	21.6	— 4.3	44.0	—14.8	58.8	6	1.075	15	19.7	N 82 W	4.00	7.37
1852	31.9	+ 6.1	51.0	13.2	37.8	7	3.995	10	20.1	S 69 W	1.03	6.54
1853	25.3	— 0.5	40.4	— 8.4	48.8	4	0.625	13	22.3	N 35 W	2.39	4.98
1854	21.9	— 3.9	44 8	— 7.0	51.8	5	0.590	12	17.2	N 44 W	4.30	8.56
1855	26.8	+ 1.0	47.0	— 5.2	52.2	6	1.845	10	29.5	S 88 W	5.29	11.38
1856	22.9	— 2.9	42.2	— 9.1	51.3	6	1.790	20	16.3	S 87 W	4.62	11.56
1857	31.9	+ 6.1	46.0	4.7	41.3	7	3.205	14	9.0	N 89 W	2.50	6 84
1858	27.4	+ 1.6	45.4	4.2	41.2	11	1.655	18	10 4	N 78 W	1.66	9.36
1859	17.9	— 7.9	54.8	— 6.0	60.8	3	1.035	23	37.4	N 53 W	4.29	10.77
1860	24.0	— 1.8	39.0	— 7.0	46.0	3	1.305	21	13.5	N 62 W	4.66	10.14
1861	31.1	+ 5.3	55.2	5.5	49.7	6	0.560	8	6.8	N 72 W	3.50	7.96
1862	25.8	+ 3.0	50.1	— 3.4	53.5	6	1.915	8	10.4	N 73 W	3.17	7.58
1863	27 9	+ 1.2	53.4	— 1.5	54.9	10	2.900	17	7.1	N 41 W	1.61	9.40
1864	24.7	— 1.1	50.4	—10.4	60.8	9	2 040	18	27.1	S 82 W	4.94	9.98
1865	27.7	+ 1.9	54.2	5.7	48.5	7	1.725	11	5.2	S 81 W	3.07	7 33
1866	25.1	— 0.7	51.0	— 5.0	56.0	7	2 790	13	15.5	S 88 W	4.98	9.91
1867	21.6	— 4.2	49.5	—12.8	62.3	7	1.405	21	13.6	S 81 W	4.82	10.32
1868	22 6	— 3 3	44.2	— 3.2	47.4	1	0.005	18	16.5	N 71 W	4.05	9.80
1869	28.7	+ 2.9	45.0	6.0	39.0	10	2.590	9	7.1	S 80 W	2.31	8.44
1870	26 5	+ 0.7	45.2	— 5.8	51.0	6	2.430	16	15.9	W 89 W	5.08	11.46
1871	19 9	— 5.9	48.2	—21.0	69.2	4	0.940	20	14.2	S 70 W	6.91	11.52
1872	18 7	— 7.1	40.0	—13.8	53.8	3	0.300	4	38.0	S 87 W	5.51	9.06
1873	29.8	+ 4.0	48.2	6.4	41 8	10	0.995	12	19.2	West.	2.95	5.93
1874	25.7	— 0.1	41.0	— 7.5	51.5	6	0.650	16	11.1	S 84 W	5.93	8 72
1875	27.2	+ 1.4	61.6	—13.2	74.2	9	1.620	13	18.7	N 54 W	1.75	10.42
Results to 1874	25.75	...	47.40	—3.94	51.34	5.74	1.550	13.89	14.95	N 78 W	3.40	8.66
Excess for '75	+ 1.36	...	+ 13.60	— 9.26	+ 22.86	+ 3.26	+ 0 070	— 0.89	+ 3.75	...	...	+ 1.76

GENERAL METEOROLOGICAL REGISTER

FOR THE YEAR 1875.

GENERAL METEOROLOGICAL

MAGNETICAL OBSERVATORY,

Latitude 43° 39′ 4″ North Longitude, 5h 17m 33s. West Elevation above

	JAN.	FEB.	MAR.	APR.	MAY.	JUNE.	JULY.
Mean temperature ...	18.67	10.16	24.08	36.35	52.29	66.95	66.57
Difference from average (35 years)...	— 6 89	—12.74	— 5.20	— 4.49	+ 0.60	— 0.81	— 0.85
Thermic anomaly (Lat. 43° 40′)	—16.73	—24 54	—16.02	—12.85	— 5.81	— 3.65	— 2.13
Highest temperature.....	39 0	47.6	51.5	62 2	79 2	86.8	88.0
Lowest temperature	— 8.8	— 16.0	— 1.5	10 0	27 0	37.4	46.4
Monthly and annual ranges.....	47.8	63.6	53.0	52.2	52.2	49.4	41.6
Mean maximum temperature	23.20	19.17	30.81	44.05	61.45	72.30	77 25
Mean minimum temperature	7.84	—0 65	15.43	28.98	41.63	49.06	55 75
Mean daily range	15.36	19.82	15.38	15.07	19.80	22 64	21.50
Greatest daily range	31.2	46.0	33.0	29.6	31.6	34.8	28.1
Mean height of the barometer	29 7593	29 6496	29 6587	29.5872	29 5483	29 6001	29.5998
Difference from average (34 years)...	+.1152	+.0241	+.0584	— 0026	—.0223	+ 0267	—.0030
Highest barometer	30 235	30 194	30.050	30.079	30 019	29.841	29 942
Lower barometer	29.224	28.916	28.905	28.892	28.751	29 270	29 327
Monthly and annual ranges	1.001	1.278	1.145	1.187	1.268	0.571	0.615
Mean humidity of the air	84	86	81	69	65	68	67
Mean elasticity of aqueous vapour.....	0 080	0.076	0.112	0.151	0.263	0.372	0.435
Mean of cloudiness	0.76	0.59	0.63	0 62	0 53	0.56	0 43
Difference from average (22 years)...	+ 0.03	—0.12	+ 0.01	+ 0.03	— 0.02	+ 0.04	— 0.08
Resultant direction of the wind	S. 88 W	S 88 W.	N. 23 W.	N 37 W	W. 46 W	N. 69 W.	S. 88 W.
" velocity of the wind	4 06	6.67	2.80	3 74	3.44	1.05	1.69
Mean velocity (miles per hour)	9.54	9.91	9.40	10.16	10.07	7 35	6.78
Difference from average (27 years)...	+ 1.16	+ 1.23	+ 0 27	+ 1.90	+ 3.19	+ 2.10	+ 1.75
Total amount of rain	Inapp	0.470	0.930	1.230	2.980	1.825	1.810
Difference from average (35 years) ...	—1.242	—0 389	—0.658	—1 232	—0.156	—1.058	—1.376
Number of days rain	1	5	3	10	14	7	6
Total amount of snow	32.3	9.1	30.0	2.7	3.1	...	...
Difference from average (32 years)...	+15.27	— 9.55	+17.55	+ 0.17	+ 3.04	...	...
Number of days snow.....	17	9	11	8	2	...	...
Number of fair days	14	16	17	13	14	23	25
Number of auroras observed	0	2	1	1	2	0	2
Possible to see aurora (No of nights)	14	19	18	16	19	20	24
Number of thunder storms	0	0	0	0	5	6	4

REGISTER FOR THE YEAR 1875.

TORONTO, ONTARIO.

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

AUG.	SEPT.	OCT.	NOV.	DEC.	1875.	1874.	1873.	1872.	1871.	1870.	1869.
65.21	55.46	43.23	31.75	27.16	40.77	44.30	42.94	42.92	43.81	45.93	43.13
— 1.01	— 2.74	— 2.66	— 4.36	+ 1.41	— 3.31	+ 0.22	— 1.14	— 1.16	— 0.27	+ 1.85	— 0.95
— 3.29	— 6.04	—10.57	—11.45	— 8.84	—10.24	— 6.70	— 8.06	— 8.08	— 7.19	— 5.07	— 7.87
81.9	84.5	63.0	51.0	61.0	88.0	95.0	89.5	96.0	89.5	88.4	89.0
48.0	32.0	27.6	— 5.0	— 13.2	— 16.0	— 7.5	— 18.4	— 13.8	— 21.0	— 6.6	— 5.4
33.9	52.5	35.4	56.0	74.2	104.0	102.5	107.9	109.8	110.5	95.0	94.4
74.39	65.45	50.92	38.02	34.07	...	...	...	...	...	...	...
56.75	46.21	35.88	25.51	19.45	...	...	...	...	...	...	...
17.64	19.24	15.04	12.51	14.62	17.38	17.43	16.93	17.59	16.46	15.71	14.61
27.7	31.8	25.5	37.5	44.7	46.0	46.5	37.9	37.8	34.6	36.2	33.6
29.6140	29.6210	29.5529	29.6756	29.5244	29.6151	29.6452	29.5964	29.6079	29.6066	29.5956	29.5970
—.0101	—.0458	—.0940	+.0652	—.1283	—.0014	+.0287	—.0201	—.0086	—.0099	—.0109	—.0195
30.015	30.082	30.036	30.271	30.112	30.271	30.416	30.246	30.231	30.388	30.212	30.226
29.198	29.102	28.960	29.173	28.810	28.751	28.538	28.797	28.789	28.673	28.186	28.793
0.817	0.980	1.076	1.098	1.302	1.520	1.878	1.449	1.442	1.715	2.046	1.430
76	76	80	79	86	76	74	78	75	73	76	77
0.477	0.346	0.228	0.149	0.142	0.236	0.255	0.257	0.259	9.242	0.279	0.252
0.51	0.54	0.69	0.77	0.78	0.62	0.63	0.60	0.59	0.64	0.62	0.66
+ 0.03	+ 0.04	+ 0.08	+ 0.03	+ 0.02	+ 0.01	+ 0.02	— 0.01	— 0.02	+ 0.03	+ 0.01	+ 0.05
S. 56° E.	S. 88° W.	N. 88° W.	N. 66° W.	N. 64° W.	N. 70° W.	N. 61° W.	N. 58° W.	N. 72° W.	N. 72° W.	N. 46° W.	N. 64° W.
1.58	1.89	2.52	3.03	1.75	2.31	2.67	1.98	2.91	2.49	1.61	2.55
6.70	8.09	9.31	9.73	10.42	8.96	8.03	7.96	6.78	8.24	7.33	7.20
+1.43	+2.56	+3.11	+ 2.07	+ 1.76	+ 1.88	+ 0.95	+ 0.88	— 0.30	+ 1.16	+ 0.25	+ 0.12
1.880	2.820	2.415	1.000	1.620	18.980	17.574	20.232	18.588	22.771	33.898	31.182
—1.013	—0.777	+0.035	—1.798	+0.070	—9.594	—11.000	—8.342	—9.986	—5.803	+5.324	+2.608
14	13	15	6	9	103	103	110	115	110	116	115
...	...	3.8	7.8	18.7	107.5	67.7	113.8	67.5	99.6	122.9	84.6
...	...	+3.01	+ 3.81	+ 3.75	+37.05	— 2.75	+43.35	— 2.95	+29.15	+52.45	+14.15
...	...	2	8	13	70	75	79	77	84	77	81
17	17	15	18	12	201	197	170	185	187	185	180
0	6	0	2	1	17	28	60	67	55	77	47
19	20	17	13	13	212	197	203	236	209	206	182
3	4	1	0	3	26	23	22	28	22	34	32

TEMPERATURE.

	1875.	Average of 35 years.	Extremes.	
Mean temperature of the year	49.77	44.08	48.36° in '40	40.77° in '75.
Warmest month	July.	July.	July, 1868.	Aug., 1860.
Mean temperature of the warmest month	66.57	67.42	75.80	61.46
Coldest month	February.	February.	Feb., 1875.	Feb., 1848.
Mean temperature of the coldest month	10.16	22.90	10.16	26.60
Difference between the temperature of the warmest and coldest months	56.41	44.52	...	...
Mean of deviations of monthly means from their respective averages of 35 years, signs of deviation being disregarded	3.65	2.45	3.62 in 1843.	...
Month of greatest deviation without regard to sign	February.	January.	Feb., 1875.	...
Corresponding magnitude of deviation	12.74	3.64	12.74	...
Warmest day	July 4.	...	July 14, '68.	July 31, '44.
Mean temperature of the warmest day	74.25	77.73	84.50	72.75
Coldest day	Dec. 19.	...	Feb 6, 1855. Jan. 22, 1857.	Dec. 22, '42.
Mean temperature of the coldest day	—8.33	—1.40	—14 38	9.57
Date of the highest temperature	July 26.	...	Aug 24, 1854	Aug. 19, '40.
Highest temperature	88.0	91.02	99.2	82.4
Date of the lowest temperature	Feb. 13.	...	Jan. 10, 1859.	Jan. 2, 1842.
Lowest temperature	—16.0	—12.45	—26 5	1.9
Range of the year	104.0	103.47	115.2	87.0

BAROMETER.

	1875.	Average of 34 years.	Extremes.	
Mean pressure of the year	29.6151	29.6165	29.6770 in 1849.	29.5602 in 1864.
Month of the highest mean pressure	January.	September	Jan., 1849	June, 1864.
Highest mean monthly pressure	29.7593	29.6668	29.8946	29.6525
Month of lowest mean pressure	December	May	March, 1855.	Nov., 1849.
Lowest mean monthly pressure	29.5244	29.5706	29.4143	29.5586
Date of the highest pressure in the year	Nov. 22.	...	Jan 8, 1866.	Jan. 14, 1870.
Highest pressure	30.271	30.368	30 940	30.212
Date of the lowest pressure in the year	May 1.	...	Jan. 2, 1870	Mar. 17, '45.
Lowest pressure	28.791	28.692	28.166	28.939
Range of the year	1.520	1.686	2.133 in 1866.	1.303 in 1845.

RELATIVE HUMIDITY.

	1875.	Average of 33 years.	Extremes.	
Mean humidity of the year	76	77	82 in 1851.	73 in 1858
Month of greatest humidity	Feb., Dec.	January.	Jan., 1857.	Dec., 1858.
Greatest mean monthly humidity	86	83	89	81
Month of least humidity	May.	May.	Feb., 1843.	April, 1849.
Least mean monthly humidity	68	71	58	76

EXTENT OF SKY CLOUDED.

	1875.	Average of 22 years.	Extremes.	
Mean cloudiness of the year	0.62	0 61	0.69 in 1869	0.57 in 1856.
Most cloudy month	December.	Decemb r.	...	...
Greatest monthly mean of cloudiness	0.73	0.75	0.83	0.73
Least cloudy month	July.	August.	...	...
Least monthly mean of cloudiness	0.43	0.49	0.29	0.50

WIND.

	1875.	Result of 27 years.	Extremes.	
Resultant direction	N. 70° W.	N 62° W.	...	...
Resultant velocity in miles	2.31	1.97	...	...
Mean velocity without regard to direction	8.96	7.08	8.55 in '60.	5.10 in '53.
Month of greatest mean velocity	December.	March.	March, 1874	Jan , 1848.
Greatest monthly mean velocity	10.42	9.13	13.24	5.82
Month of least mean velocity	August.	July.	Aug , 1852,	Sept , 1860.
Least monthly mean velocity	6.70	5.03	3.30	5.79
Day of greatest mean velocity	5iay 2.	...	Nov. 15, '71.	Dec. 2, 1848.
Greatest daily mean velocity	26 67	23.90	32.16	15.30
Day of least mean velocity	Sept. 15.	...	...	...
Least daily mean velocity	1.86	...	...	...
Hour of greatest absolute velocity	May 2, 1 to 2 & 2 to 3 p m.	...	Dec. 27, '61. 9 to 10 a m.	Mar. 14, 1853 11 a m. to n.
Greatest velocity	40.0	40.0	46.0	25.6

RAIN.

	1875.	Average of 35 years.	Extremes.	
Total depth of rain in inches	18.980	28.574	43.555 in '43.	17.574 in '74.
Number of days in which rain fell	103	109	130 in '61.	80 in 1841.
Month in which the greatest depth of rain fell.	May.	September	Sept , 1843.	Sept., 1848.
Greatest depth of rain in one month	2.980	3.597	9.760	3.115
Month in which the days of rain were most frequent	October.	October.	June, 1869. October, '64.	May, '41.
Greatest number of rainy days in one month	15	13	22	11
Day in which the greatest amount of rain fell	Sept. 16.	...	Sept. 14, 1843	Sept. 14, '48
Greatest amount of rain in one day	1.360	2.004	3.455	1.000

SNOW.

	1875.	Average of 32 years.	Extremes.	
Total depth of snow in inches	107.5	70.5	122.9 in '70.	38.4 in '51.
Number of days in which snow fell	70	64	87 in 1859.	33 in 1848.
Month in which the greatest depth of snow fell	January.	February.	March, 1870.	Dec., 1851.
Greatest depth of snow in one month	32.3	18.6	62.4	10.7
Month in which the days of snow were most frequent	January.	January.	Dec., 1872.	Feb., 1848.
Greatest number of days of snow in one month	17	14	24	8
Day in which the greatest amount of snow fell.	December.	...	Feb. 5, '63. / Mar. 27, '70	Jan. 10, 1857.
Greatest fall of snow in one day	11.0	9.8	16.0	5.5

DIFFERENCE OF CERTAIN METEOROLOGICAL ELEMENTS FROM THEIR NORMAL VALUES FOR EACH QUARTER AND FOR THE YEAR.

Quarters.	Barometer.	Temperature	Rain.	Days Rain	Snow.	Days Snow.	Velocity of Wind.	Clouded Sky.
		°	in.		in.		miles.	
Winter	+.0659	−8.28	−2.289	−5.94	+23.27	+0.14	+0.88	−0.03
Spring	+.0006	−1.57	−2.446	−2.52	+ 3.21	+5.91	+2.40	+0.02
Summer	−.0196	−1.53	−3.166	+0.08	...	...	+1.91	0.00
Autumn	−.0524	−1.87	−1.693	+2.04	+10.57	−0.09	+2.31	+0.04
Year	−.0014	−3.31	−9.594	−6.34	+37.09	+5.96	+1.88	+0.01

PERIODICAL OR OCCASIONAL EVENTS, 1875.

January... 8. At 3 45 p.m., shock of an earthquake felt in Toronto.
March..... 12. Robins seen.
" 14. First lightning. 15th. First thunder storm.
" 15. Crows seen. 31st. Wild pigeons.
April..... 2. Blue birds. 5th. Butterflies seen.
" 13. Bay open. 14th. First schooner arrived.
" 20. First vessel left with cargo.
" 26. First steamer to Niagara.
" 27. "Ontario" frozen over from Lighthouse to entrance of Niagara River. Ice from ¼ to ½ inch in thickness.
May..... 1. Furious snow storm. 2nd Last snow of season.
" 5. Swallows seen. 8th. Frogs heard.
" 17. May bugs. 21st. Yellow birds. 19th Last frost.
" 21. Humming birds. Mosquitoes.
" 23. Baltimore birds. Wild strawberries in flower.
" 24. Plum trees in flower. 28th. Apple trees in flower.
June..... 11. Fireflies.
July..... 24. Humming birds numerous.
August.... 29. Swallows gone.
" 31. Night hawks numerous.
September 11. First frost of season.
" 20. First ice of season.
October.... 17. First snow of season.
November 29. Bay frozen. 30th. First sleighing.
December. 24. Bay open again.
" 26. Thunder storm. 29th. Lightning.

MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETICAL OBSERVATORY, TORONTO, ONTARIO—JANUARY, 1876.

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°. 6 A.M.	2 P.M.	10 P.M.	Mean.	Temp. of the Air. 6 A.M.	2 P.M.	10 PM	MEAN	Excess of Mean above Normal	Tension of Vapour. 6 A.M.	2 P.M.	10 P.M.	M'N.	Humidity of Air. 6 A.M.	2 P.M.	10 P.M.	M'N.	Direction of Wind. 6 A.M.	2 P.M.	10 P.M.	Res'l-tant.	Velocity of Wind. 6 A.M.	2 P.M.	10 P.M.	Res'l-tant.	MEAN.	Rain in inches.	Snow in inches.
					°	°	°	°	°												°							
1	29.716	29.637	29.444	29.5822	44.5	40.5	38.0	40.33	+19.00	.278	.248	.224	.242	94	98	98	96	N	E	E	N 53 E	5.0	17.4	11.0	6.72	9.02	.160	...
2	.240	.380	.550	.4217	43.0	46.0	37.0	42.17	+20.87	—	—	—	—	—	—	—	—	S W	N W	W	N 88 W	16.0	26.0	8.0	10.26	14.00	...	...
3	.686	.640	.882	.7553	33.3	39.4	18.5	29.98	+ 8.73	.163	.101	.058	.106	86	41	58	61	W	S W	N W	N 89 W	10.6	21.2	26.0	14.19	16.96	...	...
4	30.119	30.155	30.089	30.1267	13.8	19.6	21.0	17.95	— 3.28	.063	.065	.096	.071	78	62	84	72	N	N	E	N 16 W	10.2	4.2	7.6	5.66	8.45	...	...
5	29.846	29.514	29.468	29.5908	25.4	39.1	38.3	34.68	+13.47	.118	.155	.208	.162	86	64	89	80	E	S	W	S 59 E	14.0	5.0	2.2	4.93	10.34	.180	...
6	.686	.892	.987	.8730	31.1	26.5	25.0	27.17	+ 5.95	.153	.111	.109	.119	87	77	81	80	N W	N W	N W	N 48 W	18.0	11.8	3.6	12.18	13.32	...	S
7	.800	.763	.777	.7858	28.6	34.8	28.6	30.53	+ 9.32	.138	.146	.138	.141	87	70	87	83	S W	W	S W	S 52 W	8.2	6.0	2.4	6.23	6.77	...	...
8	.600	.325	.208	.3627	29.0	38.0	36.9	35.47	+14.25	.147	.186	.218	.192	92	81	99	92	E	S	S W	S 7 E	3.8	10.2	2.0	3.36	4.75	.100	...
9	.220	.145	28.703	.0252	42.0	46.0	44.0	43.67	+22.43	—	—	—	—	—	—	—	—	S W	E	S W	S 24 W	6.0	5.4	18.5	6.21	8.79	.090	...
10	.239	.443	29.669	.4850	26.5	18.1	14.6	18.40	— 2.87	.111	.062	.060	.076	77	63	71	74	S W	W	N W	S 80 W	30.0	29.0	24.0	27.62	28.88	...	0.1
11	.787	.681	.623	.6850	12.4	18.5	17.8	15.93	— 5.38	.066	.065	.084	.070	88	65	87	79	W	W	S W	S 81 W	6.6	21.0	13.0	14.23	15.07	...	...
12	.573	.625	.761	.6692	16.0	17.8	12.7	14.92	— 6.45	.074	.066	.053	.063	83	68	67	73	N	W	W	N 65 W	7.2	15.0	8.0	9.23	10.43	...	...
13	.922	.985	.924	.9432	6.6	14.9	20.0	13.85	— 7.57	.047	.056	.081	.062	82	67	74	74	N	W	S W	N 50 W	7.7	8.6	11.0	4.74	7.71	...	...
14	.756	.681	.801	.7395	21.0	24.3	27.2	24.47	+ 3.02	.096	.111	.124	.113	83	84	84	84	S W	S W	W	S 35 W	20.0	15.6	10.4	14.09	14.33	...	0.1
15	.785	.560	.462	.5898	27.2	34.4	37.3	32.97	+11.47	.124	.145	.195	.159	84	74	87	83	S W	S	S W	S 32 W	10.2	17.5	16.0	10.88	11.63	R	...
16	.650	.717	.640	.6678	30.0	39.6	36.0	34.77	+13.21	—	—	—	—	—	—	—	—	S W	W	S E	S 48 W	3.8	11.0	10.0	6.48	7.99	...	...
17	.453	.435	.468	.4537	35.5	39.8	34.0	37.17	+15.55	.206	.206	.171	.201	99	84	87	91	S W	S W	S W	S 34 W	6.0	18.0	4.6	8.57	9.44	.120	...
18	.391	.032	28.981	.1220	36.2	42.7	42.7	41.43	+19.75	.209	.260	.269	.253	98	95	98	96	S W	N E	S W	S 26 W	2.2	9.5	6.5	1.47	6.07	.620	...
19	.161	.125	29.299	.2068	37.6	40.2	33.3	35.90	+14.15	.200	.157	.120	.156	88	63	62	73	S W	W	W	S 75 W	2.5	25.0	20.6	14.01	14.94	R	S
20	.529	.716	.779	.6993	26.5	26.8	26.5	26.35	+ 4.53	.126	.088	.106	.102	88	61	72	71	W	W	W	S 87 W	24.0	16.0	15.0	20.29	20.81	...	...
21	30.011	30.131	30.216	30.1283	18.5	21.0	13.8	17.53	— 4.35	.077	.063	.063	.067	76	55	77	69	N W	N W	N	N 61 W	21.0	13.0	4.8	13.55	15.78	...	...
22	30.131	29.909	29.651	29.8697	13.5	25.0	30.1	23.40	+ 1.47	.072	.123	.157	.120	91	92	93	92	N E	E	E	N 72 E	12.4	22.0	13.8	12.87	14.24	.010	2.5
23	29.510	.660	.760	.6483	32.0	36.0	31.0	32.67	+10.67	—	—	—	—	—	—	—	—	E	N W	N W	N 58 W	0.6	18.0	8.0	5.18	7.44	.140	...
24	.852	.900	.924	.8973	27.5	24.6	25.4	25.12	+ 3.05	.135	.107	.125	.116	90	81	91	85	W	N W	S W	N 66 W	12.0	6.9	7.0	6.94	7.92	...	S
25	.739	.431	.595	.5870	25.0	28.6	20.0	24.65	+ 2.53	.123	.144	.087	.114	91	92	80	85	S W	S W	N W	S 74 W	8.0	15.1	9.0	9.98	11.47	...	0.3
26	.793	.750	.507	.6623	18.5	25.7	30.1	24.72	+ 2.53	.085	.094	.134	.109	84	67	80	80	N W	S	S E	S 4 E	1.4	10.4	13.0	4.74	6.51	...	...
27	.111	.369	.590	.3763	36.2	42.0	35.8	37.65	+15.42	.209	.177	.181	.189	98	66	86	84	S W	W	N W	S 71 W	8.6	16.4	1.0	5.28	8.51	.430	...
28	.602	.388	.224	.3855	35.8	35.5	36.7	36.20	+13.88	.189	.194	.217	.200	90	93	99	94	E	E	E	N 69 E	9.0	16.0	7.5	9.70	9.95	.110	...
29	.165	.470	.967	.5772	41.2	27.2	17.8	26.67	+ 4.28	.235	.112	.078	.132	90	75	80	83	S W	W	W	S 84 W	20.0	31.5	28.0	22.34	24.00	...	0.2
30	30.146	30.067	.900	30.0228	14.0	20.4	26.0	20.92	— 1.51	—	—	—	—	—	—	—	—	W	S	S	S 27 W	3.0	14.4	10.7	7.53	10.75	...	...
31	29.761	29.659	.569	29.6507	27.2	36.9	32.2	32.47	+ 9.98	.118	.134	.154	.135	80	60	85	74	S W	S	S E	S 21 W	8.6	10.8	1.2	8.73	9.19	...	...
	29.6443	29.6189	29.6264	29.6316	27.60	31.29	28.65	29.03	+ 7.35	.137	.130	.135	.134	87	73	83	81	.....	.....	.....	.....	10.21	15.09	10.46	.....	11.79	1.960	3.2

NOTE.—The monthly means of the Barometer and Temperature 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 .....30.216 at 10 p.m. on 21st } Monthly range=
Lowest Barometer .....28.703 at 10 p.m. on 9th } 1.513.

Self-registering Ther.
- Maximum temperature .....57°5 on 1st } Monthly range=
- Minimum temperature ..... 5.1 on 13th } 52°4
- Mean maximum temperature .....36°85 } Mean daily range=
- Mean minimum temperature .....22°47 } 14°38
- Greatest daily range.....37°0 from a.m. to p.m. of 10th.
- Least daily range ..... 3°4 from a.m. to p.m. of 28th.

Warmest day ..... 9th; mean temperature 43°67 } Difference=29°82.
Coldest day ..... 13th; mean temperature 13°85 }

Maximum Solar .....104°2 on 27th } Monthly range=
Radiation Terrestrial .....—2.0 on 11th and 13th } 106°2.

No Aurora observed.

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

Raining on 12 days; depth, 1.960 inches; duration of fall, 52.9 hours.

Snowing on 9 days; depth 3.2 inches; duration of fall 37.2 hours.

Mean of Cloudiness, 0.78.

WIND.

Resultant direction, S. 79° W.; Resultant Velocity, 6.31 miles.

Mean Velocity, 11.79 miles per hour.

Maximum Velocity, 39.5 miles from noon to 1 p.m. of 10th.

Most Windy day, 10th; Mean Velocity, 28.88 miles per hour.

I east Windy day, 7th; Mean Velocity, 4.75 miles per hour.

Most Windy hour, 2 p.m.; Mean Velocity, 15.09 miles per hour.

I east Windy hour, 8 a.m.; Mean Velocity, 9.71 miles per hour.

F og on 1st, 7th, 8th, 9th, 18th and 19th.

Solar halos on 15th and 31st.

I unar halos on 4th, 7th, 12th and 31st.

Large Meteor in N. W. at 9.35 p.m. of 25th.

COMPARATIVE TABLE FOR JANUARY.

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.
	°	°	°	°	°					°		
1848	28.7	+ 5.9	51.1	—11.4	62.5	7	2.245	8	7.1	N 82 W	2.03	5.82
1849	18.5	— 4.3	39.5	—14.2	53.7	4	1.175	10	9.2	N 63 W	3.06	6.71
1850	29.7	+ 6.9	46.4	9.9	36.5	5	1.250	8	5.2	N 37 W	0.69	5.80
1851	25.5	+ 2.7	43.4	—12.8	56.2	4	1.275	10	7.8	S 77 W	3.26	7.69
1852	18.4	— 4.4	37.3	—10.6	47.9	0	0.000	19	30.9	N 68 W	3.14	7.67
1853	23.0	+ 0.2	40.9	— 9.7	50.6	1	0.290	6	7.5	N 27 W	2.52	6.34
1854	23.6	+ 0.8	46.4	— 5.4	51.8	7	1.270	11	7.5	N 77 W	2.44	6.91
1855	25.9	+ 3.1	49.0	— 5.4	54.4	5	0.525	13	23.3	N 73 W	1.91	7.26
1856	16.0	— 6.8	34.4	—12.0	46.4	0	0.000	14	13.6	N 75 W	5.24	10.69
1857	12.8	—10.0	37.2	—20.1	57.3	3	Inap.	16	21.8	N 70 W	4.96	10.31
1858	30.0	+ 7.2	47.4	6.5	40.9	6	1.152	11	4.0	N 71 W	2.33	7.40
1859	26.4	+ 3.6	43.2	—26.5	69.7	6	1.449	19	16.4	S 81 W	3.17	8.76
1860	23.4	+ 0.6	46.4	— 6.8	53.2	6	0.740	16	8.7	S 89 W	6.09	9.37
1861	19.9	— 2.9	37.0	—11.2	48.2	4	0.685	23	20.6	N 86 W	2.92	9.30
1862	21.7	— 1.1	44.5	— 2.6	47.1	5	0.115	19	27.4	N 26 W	2.69	8.83
1863	28.1	+ 5.3	47.0	—14.0	61.0	10	1.122	17	20.6	N 61 W	1.13	7.23
1864	22.8	0.0	44.2	— 9.0	53.2	5	1.165	14	26.3	S 73 W	6.00	10.22
1865	17.7	— 5.1	37.2	— 9.0	46.2	1	0.440	18	14.8	N 85 W	4.80	9.39
1866	20.7	— 2.1	44.0	—14.0	58.0	4	0.522	19	10.3	N 75 W	2.98	9.34
1867	17.6	— 5.2	43.8	— 4.8	48.6	1	Inap	21	42.0	N 55 W	3.27	6.96
1868	19.0	— 3.8	39.0	— 7.0	46.0	2	Inap.	21	14.6	S 83 W	3.97	8.91
1869	27.7	+ 4.9	45.0	— 1.0	46.0	4	0.887	12	9.8	N 72 W	3.40	9.21
1870	24.4	+ 1.6	45.0	— 3.2	48.2	8	3.412	18	21.3	S 89 W	2.63	8.98
1871	21.3	— 1.5	46.4	—13.2	59.6	8	0.864	23	43.6	S 49 W	2.56	9.84
1872	22.4	— 0.4	41.8	— 2.5	44.3	5	0.220	15	3.9	S 87 W	4.73	8.87
1873	17.7	— 5.1	46.0	—18.4	64.4	4	1.110	17	39.2	N 78 W	2.96	10.01
1874	24.8	+ 2.0	57.5	— 4.0	61.5	13	2.820	15	12.2	N 61 W	3.42	8.58
1875	16.1	— 6.7	39.0	— 8.8	47.8	1	Inap.	17	32.3	N 88 W	4.06	9.64
1876	29.0	+ 6.2	57.5	5.1	52.4	12	1.960	9	3.2	S 79 W	6.31	11.79
Res'lts to 1874.	22.77	.....	43.57	—8.61	52.18	4.72	1.206	14.19	17.49	N 79 W	3.20	8.43
Excess for 1875	+ 6.26	.....	+ 13.93	+ 13.71	— 0.22	+ 7.28	+ 0.754	— 5.19	— 14.29	...	...	+ 3.36

MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETICAL OBSERVATORY, TORONTO, ONTARIO—FEBRUARY, 1876.

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 aver'ge	Tension of Vapour.				Humidity of Air.				Direction of Wind.				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	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.	Res'l-tant.	6 A.M.	2 P.M.	10 P.M	Res'l-tant.	MEAN		
					°	°	°	°	°												°							
1	29.414	29.170	28.863	29.1380	35.8	36.2	17.8	29.40	+ 6.85	.173	.193	.084	.148	82	90	86	87	S	S	N W	S 1 W	8.0	5.6	23.0	4.70	8.85	.100	4.0
2	.372	.778	29.993	.7542	3.0	3.4	—0.6	1.82	—20.80	.056	.034	.038	.038	100	68	85	80	N W	N W	N W	N 54 W	25.0	29.5	4.2	21.44	21.53	...	1.0
3	.932	.726	.556	.7267	7.7	18.3	18.9	15.30	— 7.37	.051	.093	.100	.082	85	94	97	91	S W	S	S W	S 38 W	8.0	12.0	11.6	7.65	8.64	...	5.0
4	.667	.887	30.185	.9502	14.9	14.9	—0.6	8.72	—14.00	.080	.075	.036	.059	95	87	84	88	N W	W	W	N 85 W	5.0	22.5	4.6	11.53	12.40	...	0.5
5	30.347	30.267	30.067	30.2105	—2.0	22.5	28.2	15.82	— 6.97	.035	.078	.131	.076	90	64	82	77	N	S	S	S 18 W	9.8	15.0	8.0	2.71	9.31	...	...
6	29.946	29.739	29.675	29.7798	25.0	40.0	37.5	35.00	+12.16	—	—	—	—	—	—	—	—	S W	S	S W	S 31 W	17.9	16.1	13.8	13.40	13.73	...	...
7	.853	.912	30.039	.9448	36.9	39.4	32.6	34.33	+11.43	.200	.151	.142	.154	91	62	77	78	N W	W	W	S 81 W	13.0	14.5	2.4	7.90	8.88	...	...
8	30.030	.976	29.966	.9885	28.2	35.8	31.5	31.78	+ 8.82	.136	.157	.151	.147	87	74	85	82	W	N	N E	N 22 W	4.0	4.0	2.2	2.73	4.15	...	...
9	29.833	.440	.361	.5340	29.0	27.9	26.8	27.17	+ 4.13	.140	.145	.137	.137	88	95	94	93	E	N E	N	N 65 E	18.0	20.0	14.0	12.82	14.06	.400	1.0
10	.673	.685	.508	.6092	23.2	30.1	33.3	28.87	+ 5.80	.102	.150	.181	.146	82	89	95	89	N	E	E	N 64 E	7.0	10.4	15.5	7.69	9.75	.150	...
11	.190	.195	.473	.3090	37.6	41.2	36.2	39.00	+15.83	.225	.245	.184	.221	100	94	86	92	N W	N W	W	S 78 W	6.0	10.8	12.2	4.00	9.33	.730	...
12	.672	.611	.615	.6325	30.1	38.7	38.0	35.30	+12.05	.142	.143	.152	.143	85	60	66	69	S W	S W	S W	S 44 W	10.0	20.0	11.5	10.80	11.56	...	...
13	.661	.606	.491	.5760	31.0	38.0	30.5	32.77	+ 9.45	—	—	—	—	—	—	—	—	N	E	E	N 63 E	9.8	15.0	22.0	10.16	12.52	...	...
14	.193	.320	.344	.2905	31.9	39.1	34.0	35.05	+11.65	.181	.205	.180	.190	100	86	92	93	E	N E	N E	N 72 E	12.0	1.4	6.6	8.56	8.85	.720	...
15	.141	28.973	.083	.0662	33.3	33.3	30.1	31.83	+ 8.33	.180	.150	.105	.142	95	78	63	78	N W	N W	W	N 70 W	10.0	25.0	26.0	16.01	18.44	.030	0.5
16	.192	29.296	.385	.3015	27.5	25.4	24.3	25.00	+ 1.42	.129	.097	.111	.107	86	71	85	79	W	W	W	S 76 W	24.0	25.5	18.0	25.16	25.19	...	0.1
17	.441	.579	.676	.5805	21.4	23.9	23.2	22.48	— 1.22	.104	.109	.102	.103	90	84	82	85	N W	W	W	N 82 W	11.4	21.0	3.6	11.25	12.05	...	1.2
18	.729	.748	.693	.7191	21.0	32.4	29.7	28.63	+ 4.83	.098	.137	.125	.124	87	75	75	79	W	W	S W	S 70 W	4.2	14.0	10.2	6.45	8.03	...	0.1
19	.530	.476	.611	.5415	32.2	37.3	29.0	32.83	+ 8.93	.162	.088	.133	.125	88	39	83	69	S W	W	W	S 62 W	15.6	29.5	14.4	15.82	17.50	...	0.3
20	.802	.927	30.006	.9242	20.0	27.0	19.0	22.17	— 1.88	—	—	—	—	—	—	—	—	W	W	N	N 61 W	17.0	8.2	7.6	7.77	8.82	...	...
21	.900	.583	29.296	.5920	24.7	32.6	32.6	29.17	+ 4.95	.113	.067	.165	.115	84	36	89	72	E	E	W	N 73 E	13.0	18.5	37.8	5.57	14.00	.170	...
22	.623	.485	.595	.5755	22.1	27.2	10.2	19.10	— 5.22	.102	.124	.052	.089	86	84	76	81	W	S W	N W	N 85 W	13.0	14.0	20.0	18.28	21.31	...	0.1
23	.783	.809	.820	.8095	—0.2	5.9	7.0	4.65	—19.83	.038	.038	.048	.042	85	68	82	78	N W	N W	N W	N 51 W	11.0	13.0	5.0	15.37	15.44	...	0.1
24	.832	.778	.833	.8158	4.4	15.6	8.8	9.62	—15.00	.045	.060	.050	.052	85	69	78	77	N W	N W	N W	N 50 W	9.8	9.2	6.0	8.72	8.96	...	...
25	.825	.802	.809	.8125	9.5	21.0	21.4	17.48	— 7.28	.053	.089	.097	.080	81	78	84	80	N	E	N E	N 42 E	7.6	7.0	8.6	6.07	7.75	...	S
26	.808	.835	.871	.8368	22.1	20.0	20.3	20.62	+ 4.38	.102	.067	.050	.069	86	62	45	61	E	N E	N E	N 55 E	13.4	19.0	16.0	13.58	13.83	...	...
27	.870	.750	.650	.7410	14.5	19.0	16.0	16.42	— 8.76	—	—	—	—	—	—	—	—	N E	N E	N E	N 53 E	15.5	16.0	17.0	16.54	16.58	...	2.2
28	.467	.417	.557	.4757	20.0	18.9	16.0	17.37	— 8.03	.100	.087	.087	.087	92	84	97	92	N E	N E	N E	N 45 E	23.2	10.0	7.0	12.24	12.92	...	4.0
29	.713	.840	.881	.8252	16.0	24.1	23.6	21.23	— 4.25	.074	.093	.105	.092	83	71	82	80	N W	W	W	N 67 W	5.2	7.0	8.0	6.45	6.79	...	...
	29.6703	29.6417	29.6518	29.6573	21.41	27.21	23.29	23.76	+ 0.12	.113	.115	.110	.111	89	74	82	81	...	...	...	...	11.98	14.96	12.23	...	12.45	2.300	20.1

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR FEBRUARY, 1876.

NOTE.—The monthly means of the Barometer and Temperature include Sunday observavations 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 of the wind are from hourly observations.

Highest Barometer.....30.350 t 8 a.m. on 5th. } Monthly range
Lowest Barometer .....28.863 at 10 p.m. on 1st. } 1.487.

Self-registering Ther.
- Maximum temperature.....44°1 on 11th. } Monthly range
- Minimum temperature.....—3.9 on 5th. } 48°0.
- Mean maximum temperature.....80°17 } Mean Daily range
- Mean minimum temperature.....16°07 } 14°10.
- Greatest daily range .....42°3 from a.m. of 1st to a.m. of 2nd.
- Least daily range ..... 5°2 from a.m to p.m. of 26th.

Warmest day ..... 11th; mean temperature.....39°00 } Difference=37°18.
Coldest day ..... 2nd; mean temperature..... 1°82 }

Maximum { Solar .....129°8 on 29th. } Monthly range
Radiation { Terrestrial ..... —15.0 on 4th. } 144°8.

Aurora observed on 2 nights, viz., 18th and 19th.

Possible to see Aurora on 11 nights; impossible on 18 nights.

Raining on 7 days; depth, 2.300 inches; duration of fall, 43.5 hours.

Snowing on 15 days; depth, 20.1 inches; duration of fall, 87.1 hours.

Mean of cloudiness, 0.73.

WIND.

Resultant direction, N. 63° W.; resultant velocity, 3.71 miles.

Mean velocity, 12.45 miles per hour.

Maximum velocity, 39.0 miles, from 11.30 p.m. of 21st to 0.30 a.m. of 22nd.

Most windy day, 15th; mean velocity, 25.19 miles per hour.

Least windy day, 8th; mean velocity, 4.15 miles per hour.

Most windy hour, noon; mean velocity, 15.34 miles per hour.

Least windy hour, 8 p.m.; mean velocity, 10.65 miles per hour.

Fog on 8th.

Thunder storms on 10th and 14th.

Solar halos on 8th and 23rd.

Lunar halos on 2nd, 7th, 8th, and 12th.

COMPARATIVE TABLE FOR FEBRUARY.

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.
	°	°	°	°	°					°		
1848	26.6	+ 4.0	46.6	0.0	46.6	4	0.775	8	10.8	N 65 w	2.53	5.69
1849	19.5	— 3.1	40.6	— 9.8	50.4	2	0.240	13	19.2	N 41 w	1.48	6.58
1850	26.0	+ 3.4	49.6	2.2	47.4	7	1.235	9	23.1	N 80 w	3.48	7.61
1851	27.6	+ 5.0	50.2	2.0	48.2	7	2.600	4	2.4	N 64 w	1.99	6.94
1852	23.4	+ 0.8	41.2	— 6.2	47.4	3	0.650	11	13.0	S 75 w	3.34	6.42
1853	24.1	+ 1.5	43.4	— 1.4	44.8	4	1.030	15	12.6	N 49 w	2.51	7.30
1854	21.1	— 1.5	42.8	—10.8	53.6	5	1.460	15	18.0	N 7 E	1.73	6.91
1855	15.4	— 7.2	39.0	—26.4	64.4	2	1.770	14	21.8	N 40 w	4.34	8.17
1856	15.7	— 6.9	37.8	—18.7	56.5	0	0.000	8	9.7	N 81 w	7.70	10.71
1857	28.5	+ 5.9	52.4	— 5.9	58.3	11	3.050	11	11.7	S 78 w	3.68	9.82
1858	17.0	— 5.6	42.4	— 7.3	49.7	1	1nap	16	26.7	N 72 w	3.22	9.12
1859	26.0	— 3.4	46.2	2.1	44.1	6	0.455	14	8.3	N 54 w	2.72	8.50
1860	22.8	+ 0.2	50.2	— 8.5	58.7	7	1.330	13	18.8	N 61 w	3.28	8.73
1861	26.1	+ 3.5	46.0	—20.8	66.8	4	0.815	17	29.7	N 77 w	3.86	10.58
1862	22.5	— 0.1	37.8	— 5.2	43.0	3	0.180	17	23.1	N 55 w	3.93	8.52
1863	22.4	— 0.2	41.5	—19.8	61.3	7	1.450	12	22.0	N 23 w	2.27	10.13
1864	24.3	+ 1.7	45.0	—15.0	60.0	2	0.397	14	9.5	S 84 w	6.48	10.11
1865	22.4	— 0.2	42.2	—10.0	52.2	5	0.810	11	16.8	N 23 w	3.95	8.23
1866	22.5	— 0.1	45.0	— 8.0	53.0	3	0.830	12	16.9	S 80 w	5.14	9.40
1867	28.9	+ 6.3	44.0	0.2	43.8	8	1.328	13	13.4	N 67 w	1.58	8.85
1868	17.2	— 5.4	45.0	—11.5	56.5	1	0.040	16	32.8	N 69 w	3.23	10.84
1869	25.0	+ 2.4	46.0	— 1.0	47.0	2	0.165	19	39.7	N 34 w	4.18	10.04
1870	21.5	— 1.1	40.6	— 6.6	47.2	2	0.520	18	20.1	N 29 w	2.84	8.10
1871	24.3	+ 1.7	48.0	—15.8	63.8	3	0.040	15	23.0	N 70 w	4.26	9.87
1872	20.7	— 1.9	45.2	— 3.6	48.8	5	0.350	9	7.3	N 61 w	3.32	8.93
1873	21.5	— 1.1	43.0	—10.5	53.5	0	0.000	11	10.4	N 68 w	4.29	10.21
1874	22.8	+ 0.2	42.0	0.4	41.6	6	1.150	15	19.1	N 24 w	2.46	8.12
1875	10.2	—12.4	47.6	—16.0	63.6	5	0.470	9	9.1	S 88 w	6.67	9.91
1876	23.8	+ 1.2	44.1	— 3.9	48.0	7	2.300	15	20.1	N 63 w	3.71	12.45
Res'lts to 1875.	22.55	.....	44.33	—8.25	52.58	4.00	0.848	12.39	18.36	N 67 w	3.24	8.73
Excess for 1876	+ 1.21	.....	— 0.23	— 4.35	— 4.58	+ 3.00	+ 1.452	+ 2.61	+ 1.74	...	...	+ 3.72

MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETICAL OBSERVATORY, TORONTO, ONTARIO—MARCH, 1876.

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 Average	Tension of Vapour.				Humidity of Air.				Direction of Wind.				Velocity of the 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.	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.	Res'l-tant.	6 A.M.	2 P.M.	10 P.M.	Res'l-tant.	MEAN		
					°	°	°	°	°												°							
1	29.865	29.773	29.759	29.7978	19.6	23.2	12.9	18.85	— 6.72	.097	.090	.056	.081	92	72	71	78	W	N	N	N 34 W	5.2	8.5	16.8	7.10	8.50	...	s
2	.861	.911	.972	.9215	10.6	20.0	10.9	13.78	—12.02	.057	.060	.055	.057	83	56	78	72	N	N W	N W	N 28 W	14.0	22.8	11.5	15.63	16.02	...	...
3	.952	.919	.965	.9490	8.4	27.9	22.1	20.37	— 5.65	.054	.097	.088	.079	87	62	75	72	N W	S	W	N 79 W	7.0	13.2	6.4	5.98	8.13	...	...
4	30.001	.919	.898	.9317	17.1	34.0	25.4	26.17	— 0.08	.073	.141	.111	.109	79	72	81	77	W	S	S	S 34 W	4.2	12.7	2.0	5.87	6.89	...	...
5	29.881	.783	.764	.8048	21.5	40.5	44.0	35.25	+ 8.73	—	—	—	—	—	—	—	—	S	S	S W	S 18 W	2.2	11.4	11.4	5.16	5.53	.050	...
6	.779	.685	.581	.6732	37.6	49.2	39.8	42.68	+15.92	.217	.263	.172	.215	96	75	69	78	S	S	S	S 11 W	2.0	6.0	0.8	3.74	4.27	.100	...
7	.449	.284	.285	.3450	42.3	47.2	42.7	43.10	+16.10	.219	.275	.234	.240	81	85	85	85	S E	S	W	S 12 W	6.8	10.0	16.8	2.20	6.32	.050	...
8	.534	.650	.746	.6602	21.0	25.7	22.8	22.95	— 4.35	.096	.101	100	.098	84	73	82	80	N W	W	N	N 60 W	18.0	14.0	9.0	12.81	13.78	...	s
9	.766	.738	.743	.7523	20.0	28.3	26.5	25.10	— 2.45	.093	.105	.119	.108	86	68	83	80	N	S E	E	N 67 E	4.6	7.3	5.0	2.32	5.17	...	...
10	.730	.666	.660	.6827	29.3	33.1	32.8	31.72	+ 3.85	.129	.130	.155	.137	79	68	83	76	E	E	E	N 74 E	11.5	20.0	20.0	14.71	14.75	...	...
11	.632	.600	.628	.6058	31.0	35.8	39.1	36.17	+ 8.03	.154	.173	.226	.187	88	82	94	86	E	N E	N E	N 70 E	14.0	12.0	2.8	9.95	10.27	.200	...
12	.552	.425	.367	.4498	41.0	38.0	34.0	36.83	+ 8.36	—	—	—	—	—	—	—	—	N	N	N W	N 26 W	4.4	13.8	13.2	8.34	8.83	.320	0.3
13	.542	.746	.984	.7853	16.0	20.7	12.0	15.62	—13.15	.081	.065	.054	.065	90	60	73	74	N W	W	N W	N 67 W	30.0	27.5	10.0	21.91	22.89	...	1.7
14	30.104	30.102	30.128	30.1055	8.0	20.3	13.8	14.17	—14.92	.048	.091	.051	.065	78	82	63	76	N W	S	N	N 39 W	6.0	5.6	10.2	6.55	7.73	...	...
15	30.138	30.090	29.967	30.0558	9.5	19.2	23.6	18.50	—10.92	.053	.062	.078	.068	80	80	61	66	N	N E	E	N 56 E	7.5	11.6	16.0	10.10	11.73	...	...
16	29.669	29.152	28.928	29.2218	21.4	24.8	27.2	24.77	— 4.98	.097	.125	.142	.124	84	94	96	93	E	E	E	N 74 E	28.0	31.0	13.0	24.14	24.21	...	4.1
17	28.943	28.985	29.285	.0915	32.6	32.6	14.9	26.10	— 3.98	.149	.158	.063	.123	81	85	73	81	S W	W	N W	N 69 W	9.5	15.5	19.0	7.85	12.92	...	0.2
18	29.547	29.774	.940	.7830	0.8	4.4	6.2	3.17	—27.27	.032	.036	.035	.036	74	69	61	72	N W	N W	N W	N 35 W	24.0	22.6	12.0	20.85	21.08	...	...
19	30.061	30.075	30.042	30.0578	2.5	22.0	16.0	14.50	—16.27	—	—	—	—	—	—	—	—	N W	W	N	N 67 W	4.8	10.0	6.0	5.46	6.87	...	...
20	29·878	29.568	29.234	29.5273	20.3	22.1	23.9	22.95	— 8.17	.091	.102	.128	.109	82	86	100	88	E	E	E	S 81 E	17.5	19.0	22.0	16.69	17.63	...	9.0
21	.041	.165	.370	.2107	23.6	27.2	20.0	22.20	— 9.27	.126	.097	.087	.097	99	65	80	81	N	N W	W	N 40 W	11.0	22.0	10.3	8.54	14.60	...	6.5
22	.568	.656	.708	.6503	22.8	28.4	22.8	24.38	— 7.45	.100	.084	.081	.085	82	53	66	66	W	W	W	N 89 W	12.9	22.0	4.5	13.53	13.61	...	...
23	.705	.689	.770	.7270	22.1	35.5	27.2	27.90	— 4.30	.088	.109	.112	.102	76	72	75	67	W	S W	N W	S 77 W	6.4	15.0	2.4	8.48	9.33	...	...
24	.834	.782	.573	.7130	18.9	34.0	31.5	29.10	— 3.47	.087	.141	.141	.127	84	72	79	78	N	N E	E	N 62 E	5.6	17.0	22.5	10.29	11.79	...	0.5
25	.323	.188	.157	.2132	32.6	32.9	32.9	32.87	— 0.07	.179	.181	.181	.180	97	97	97	96	E	E	N E	N 71 E	24.0	24.5	9.5	19.96	20.00	.530	4.5
26	.130	.202	.393	.2580	32.0	39.0	33.0	34.00	+ 0.70	—	—	—	—	—	—	—	—	E	S W	W	S 74 W	2.4	7.5	10.0	5.55	7.69	...	0.4
27	.491	.614	.658	.6028	29.3	30.4	27.5	28.95	— 4 73	.145	.102	.112	.116	89	61	74	73	W	W	W	N 77 W	6.5	19.0	7.3	13.21	13.31	...	...
28	.574	.295	28.873	.2078	26.1	26.8	29.0	27.67	— 6.38	.109	.137	.154	.134	77	94	97	89	N W	N E	N E	N 47 E	3.2	21.0	11.5	9.63	11.62	...	10.5
29	28.729	28.909	29.029	28.8995	27.2	28.2	22.8	25.37	— 9.08	.139	.107	.100	.114	94	68	82	82	S W	S W	S W	S 62 W	14.0	19.4	10.3	12.06	14.79	...	5.7
30	29.000	29.112	.412	29.1955	22.1	32.9	29.1	28.70	— 6.12	.102	.168	.129	.133	86	90	86	86	S W	N W	W	S 72 W	13.0	14.0	6.4	9.34	11.48	...	0.7
31	.564	.676	.832	.7038	30.1	36.7	31.9	32.82	— 2.37	.150	.128	.122	.135	89	59	67	72	W	N W	N	N 67 W	9.2	13.0	12.6	10.29	11.44	..	...
	29.6078	29.5848	29.6016	29.5994	22.49	29.71	25.75	26.02	— 3.95	.110	.123	.114	.116	85	73	79	79	...	...	...	...	10.63	15.77	10.68	...	12.04	1.250	44.1

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR MARCH, 1876.

NOTE.—The monthly means of the Barometer and Temperature 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..... 30.168 at 7 a.m. on 15th. } Monthly range
Lowest Barometer..... 28.729 at 6 a.m. on 29th. } 1.439.

Self-registering Ther.
- Maximum temperature..... 50°5 on 6th. } Monthly range
- Minimum temperature..... —2°9 on 18th. } 53°4.
- Mean maximum temperature ..... 33°35. } Mean daily range
- Mean minimum temperature ..... 18°85. } 14°50.
- Greatest daily range.....41°9 from a.m. of 17th to a.m. of 18th.
- Least daily range..... 5°4 from a.m. to p.m. of 28th.

Warmest day ..... 7th; mean temperature .....43°10 } Difference=39°93.
Coldest day.....18th; mean temperature ..... 3°17 }

Maximum Solar .....130°0 on 23rd. } Monthly range
Radiation Terrestrial ..... —14°2 on 19th. } 144.2.

Aurora observed on 1 night, viz., 30th.

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

Snowing on 14 days; depth 44.1 inches; duration of fall 97.0 hours.

Raining on 6 days; depth, 1.250 inches; duration of fall 31.5 hours.

Mean of cloudiness, 0.70.

WIND.

Resultant direction N. 29° W.; resultant velocity 3.43 miles.

Mean velocity 12.04 miles per hour.

Maximum velocity 31.0 miles, from noon to 1 p.m. of 16th.

Most windy day 16th; mean velocity 24.21 miles per hour.

Least windy day 6th; mean velocity 4.27 miles per hour.

Most windy hour 2 p.m.; mean velocity 15.77 miles per hour.

Least windy hour 6 a.m.; mean velocity 10.11 miles per hour.

Fog on 7th.

Solar halos on the 4th, 9th, 14th, 15th, 18th and 24th.

Lunar halos on the 1st and 6th.

COMPARATIVE TABLE FOR MARCH.

YEAR.	TEMPERATURE. Mean.	Excess above aver'ge	Maximum.	Minimum.	Range.	RAIN. No. of days.	Inches.	SNOW. No. of days.	Inches.	WIND. Resultant. Direction.	Vel'y	Mean Velocity.
	°	°	°	°	°							
1848	28.6	— 0.5	58.6	0.0	58.6	5	1.220	6	9.7	N 66 W	2.03	5.80
1849	33.5	+ 6.4	53.0	15.1	37.9	7	1.525	2	2.3	N 3 W	1.48	5.37
1850	29.8	+ 0.7	46.5	7.2	39.3	2	0.745	7	11.2	N 52 W	2.62	7.62
1851	32.4	+ 3.3	59.3	12.0	47.3	3	0.770	9	8.8	N 21 W	1.93	7.65
1852	27.7	— 1.4	44.8	— 7.4	52.2	8	3.080	12	19.5	N 8 W	0.71	5.81
1853	30.6	+ 1.5	56.3	0.0	56.3	6	1.080	8	7.1	N 58 W	2.60	5.96
1854	30.7	+ 1.6	55.1	7.4	47.7	9	2.425	3	2.8	N 53 W	3.39	8.03
1855	28.5	— 0.6	49.4	— 2.9	52.3	5	1.485	11	18.1	N 88 W	4.76	9.95
1856	23.1	— 6.0	41.4	—14.0	55.4	0	0.000	12	16.2	N 71 W	7.68	11.39
1857	27.8	— 1.3	57.6	— 5.5	63.1	4	0.335	15	11.3	N 63 W	6.63	10.84
1858	28.4	— 0.7	55.4	— 5.5	60.9	10	0.917	6	0.2	N 58 W	5.45	8.56
1859	36.3	+ 7.2	54.2	9.8	44.4	15	4.054	8	1.0	N 64 W	1.96	10.39
1860	34.5	+ 5.4	67.0	12.8	54.2	5	0.882	11	2.4	N 64 W	7.61	12.41
1861	26.9	— 2.2	47.4	— 5.2	52.6	8	2.125	14	7.1	N 54 W	4.33	10.56
1862	28.8	— 1.0	43.2	8.0	35.2	8	2.560	11	18.5	N 12 W	2.50	9.38
1863	25.8	— 3.3	42.2	— 4.0	46.2	4	0.687	17	11.4	N 27 W	2.62	9.27
1864	29.1	0.0	50.2	3.0	47.2	9	1.620	12	3.7	N 53 W	2.29	8.41
1865	33.6	+ 4.5	55.6	— 3.5	59.1	10	3.050	12	18.9	N 61 W	2.16	8.80
1866	27.6	— 1.5	45.8	7.5	38.3	8	1.915	18	7.2	N 78 W	6.84	11.51
1867	26.6	— 2.5	46.8	3.0	43.8	6	0.617	14	33.4	N 34 W	2.12	8.52
1868	31.3	+ 2.2	59.0	—15.6	74.6	7	2.660	5	4.2	N 21 W	2.12	8.58
1869	23.1	— 6.0	46.8	— 5.4	52.2	3	0.985	9	15.0	N 52 W	2.86	8.02
1870	26.3	— 2.8	44.0	5.2	38.8	2	0.755	18	62.4	N 18 E	4.73	10.13
1871	34.7	+ 5.6	58.5	17.0	41.5	8	2.782	12	13.0	N 31 W	2.59	8.31
1872	19.9	— 9.2	46.4	—10.8	57.2	2	0.700	14	16.3	N 66 W	5.36	10.48
1873	26.6	— 2.5	45.0	— 6.0	51.0	5	1.756	15	25.2	N 61 W	5.91	11.47
1874	28.7	— 0.4	57.0	5.5	51.5	10	1.390	10	2.6	N 65 W	7.47	13.24
1875	24.1	— 5.0	51.5	— 1.5	53.0	3	0.930	11	30.0	N 23 W	2.80	9.40
1876	26.0	— 3.1	50.5	— 2.9	53.4	6	1.250	14	44.1	N 29 W	3.43	12.04
Res'lts to 1875.	29.14	...	51.36	0.94	50.42	6.07	1.569	10.28	12.98	N 51 W	3.36	9.14
Excess for '76.	— 3.12	...	— 0.86	— 3.84	+ 3.98	— 0.07	— 0.319	+ 3.82	+ 31.12	...	...	+ 2.90