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THE CANADIAN JOURNAL.

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CONTEMPORANEITY OF STRATA AND THE DOCTRINE OF GEOLOGICAL CONTINUITY.

BY H ALLEYNE NICHOLSON, M D, DSc, MA, FRSE, FGS, &c,
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When groups of beds in different parts of the earth's surface, however widely separated from one another, contain the same fossils, or rather an assemblage of fossils in which many identical forms occur, they are ordinarily said to be "contemporaneous." That is to say, they are ordinarily supposed to belong to the same geological period, and to have been formed at the same time in the history of the earth. They would, therefore, be unhesitatingly regarded as "geological equivalents," and would be classed as Silurian, Devonian, Carboniferous, and so on. It is to be remembered, however, that it is not necessary to establish such a degree of equivalency between widely separated groups of strata, that the fossils of each should be to any great extent *specifically* identical. It is sufficient that, whilst some few species are identical in both, the majority of the fossils should be "representative forms," or, in other words, nearly allied species. It is the object, however, of the present paper to show that groups of strata presenting the same fossils, if widely removed from one another in point of distance, can only exceptionally be "contem-

poraneous" in the strict sense of this term. On the contrary, in so far as we can judge from the known facts of the present distribution of living beings, the recurrence of exactly the same fossils in beds far removed from one another is *prima facie* evidence that the strata are *not* exactly contemporaneous; but that they succeeded one another in point of time, though by no long interval geologically speaking.

Most of the facts bearing upon this question may be elicited by a consideration of such a widely extended and well-known formation as the Mountain Limestone or Sub-carboniferous Limestone. This formation occurs in localities as remote from one another as Europe, Central Asia, North America, South America, and Australia; and it is characterised by an assemblage of well-marked fossils, amongst which *Brachiopods* belonging to the genus *Producta* may be specially singled out. Now, if we believe that the Carboniferous Limestone in all these widely distant localities was strictly contemporaneous, we should be compelled to admit the existence of an ocean embracing all these points, and, in spite of its enormous extent, so uniform in temperature, depth, and the other conditions of marine life, that beings, either the same or very nearly the same, inhabited it from end to end. We can, however, point to no such uniformity of conditions and consequent uniformity of life over any such area at the present day; and we have, therefore, no right to assume that this is the true explanation of the facts. Indeed, this explanation would almost necessarily lead us to the now abandoned theory, that each period in geological history was characterised by a special group of organisms spreading over the whole globe, and that there took place at the close of each period a general destruction of all existing forms of life, and a fresh creation of the new forms characteristic of the next period.

In our inability, then, to accept this view, we must seek for some other explanation of the observed facts. The most probable view, and the one which is supported most strongly, both by what we see at the present day, and by what we learn from numerous examples in past time, is this:—The Carboniferous Limestone was not deposited all over the world in one given period, by one sea, or at exactly the same time; so that it can not be said to be strictly "contemporaneous" wherever it is found. This would imply a uniformity of

conditions over vast distances, such as exists no where at the present day, and such as we have no right to assume ever existed. On the contrary, the deposition of the Carboniferous Limestone must have first taken place in one comparatively limited area—say in Europe—where fitting conditions were present both for the animals which characterise it, and for the formation of beds of its peculiar mineral and physical characters. How wide this area may have been, signifies very little. It may have been as large as the area now covered by the Pacific, or larger, and yet it could not include all those localities in which strata of Carboniferous age with identical or representative fossils are already known to exist. At the close of the deposition of the Carboniferous Limestone in its original area, the conditions there present must be supposed to have become unsuitable for the further existence in that area of the assemblage of animals, which had been its inhabitants, or, at any rate, for a great many of them. The change from suitable to unsuitable conditions must, it is hardly necessary to say, have been an extremely slow and gradual one; and would doubtless be connected with the progressive shallowing of the sea, the diversion of old currents of heated water or the incoming of new currents of cold water, or other physical changes tending to alter the climatic conditions of the area. What, then, would be the result of such a change of conditions as we have supposed upon the animals inhabiting the area?

A. Some of them would, doubtless, be sufficiently hardy and accommodating as to bear up under the new state of things; and these would persist into the ensuing period, without any perceptible change, it might be, or more probably in the form of varieties or species allied to the old ones. In this case, therefore, we should get a certain number of species which would pass from the Carboniferous Limestone up into the Yoredale series, the Millstone-grit or the Coal-measures; or, if we did not find any species exactly the same in all these groups, we should still find in the later groups some forms which would be varieties of those of the older, or which would be allied or representative species.

B. There would, in the second place, be a certain number of species which would be utterly unable to withstand the altered conditions of the area; and these would gradually die out and become wholly extinct. We should thus get a certain number of fossils, which

would be either exclusively confined to the Carboniferous Limestone in general, or which, perhaps, might not be found out of the Carboniferous Limestone of a single region or even a single particular locality.

C. Lastly, some species would yield so far to the altered conditions of the area that they would "migrate," and seek elsewhere a more congenial home. This term is apt to convey false impressions; and it will be well here to consider what is meant by the "migration" of species or groups of animals. It is quite obvious that only animals like birds, fishes, mammals, insects, &c., which enjoy, when grown up, the power of active locomotion, can actually "migrate" in person, supposing they find themselves placed under unfavourable conditions. There are many animals, however, such as most shell-fish, corals, sea-urchins, &c., which have, when adult, either no power of changing their place, or at best a very limited one. Still in these cases even, though the *individual* has no means of removing its quarters to some more favoured spot, there may be a "migration" of the *species* from an unsuitable to a suitable locality. This is effected through the medium of the *young*, which have the power of choosing where they will settle, and are endowed with vigorous powers of locomotion. If, for example, a bed of oysters should become placed under conditions unsuitable for the development of these molluscs, it is clear that the old oysters cannot change their location. The young oysters, however, swim about freely, and these will move away from the original bed till they find a place which will suit them. By a repetition of this process there may be in course of time a removal or "migration" of a species for almost any distance, irrespective of the fact that the adult is permanently rooted.

To return, then, to the case which we have been considering:—when the conditions of life in the seas of the Carboniferous Limestone became unfavourable for the further existence of their fauna, some species would migrate to a more congenial area. In this way a greater or less number of the species characteristic of the Carboniferous Limestone, probably the greater number of them, would ultimately be transferred to another area. Here they would mingle with the forms already inhabiting that area, perhaps more or less completely supplanting these, perhaps merely succeeding in maintaining a precarious existence. In the course of their migration also, they would doubtless become more or less modified in their

character, so that, on reaching their new destination, some of them might be hardly recognisable as the same species. This would be further aided and increased by their having to compete with strange competitors. In any case, their remains would be preserved in the sedimentary rocks of the new area.

When, millions of years afterwards, we come to examine the earth's crust, and we find in two widely remote areas two series of strata containing certain identical and characteristic species, we naturally say: "These rocks are contemporaneous." It is clear, however, that if they had been formed in the manner we have been supposing, we should be wrong in this conclusion. The rocks in question would belong to the same geological period, and they would in part contain the same fossils; but they would belong to different stages of the same period, and they would not, therefore, be strictly "contemporaneous." To use a term applied by Professor Huxley to rocks believed to hold this relation to one another, they would be "homotaxeous" deposits.

What I have just said about the Carboniferous rocks would apply with equal justice to all the great formations, and to many of the smaller rock-groups all over the world. The Silurian rocks of Europe, North America, South America, Australia, &c., contain very similar fossils, and are undoubtedly "homotaxeous." Nothing, however, that we can see at the present day, would warrant us in believing that they are "contemporaneous," in the strict sense of this term. This is more especially the case with some of the minor subdivisions of the Silurian and Cambrian rocks, which have been shown to contain exactly the same fossils in parts of the world widely removed from one another. (For example, some of the peculiar Graptolites of the Quebec or Skiddaw series, are common to Canada, the north of England, and Australia.) The very closeness of the resemblance of the fossils, or the very identity of the species, is just what proves that the beds in question, from their geographical position, can not have been deposited exactly at the same time, though they doubtless belong to the same period; and may even be said to be related to one another by lineal descent. Similar remarks might be made about the Devonian, Permian, Triassic, Jurassic, Cretaceous, and other formations; but it is unnecessary to multiply examples.

If we take into consideration the converse of this, namely, how beds, which we know to be contemporaneous in the strict sense of the word, necessarily contain, in many cases, wholly different fossils, we shall be further convinced of the propriety of the views here advanced. If one could suddenly remove the sea from the earth, we should find at various points thus rendered accessible, deposits of different kinds, now concealed from us by the ocean, or only partially known by soundings or dredgings. Thus, where now rolls the Pacific Ocean, we should find vast accumulations of calcareous matter in the form of coral rock, and coral reefs. In high northern and, in low southern latitudes, we should find great deposits of fine mud and sand, with angular blocks of stone; the whole derived from the great ice-fields of Arctic and Antarctic lands. Over wide areas, again, of the deep Atlantic, we should meet with an impalpable calcareous mud or "ooze." All these different deposits are obviously and necessarily "contemporaneous," not only in the loose geological acceptation of the word, but in its strictest sense. In spite of this fact they would not contain the same fossils, and indeed, they would be characterised by organic remains which would be wholly different in each case. The coral reefs of the Pacific would be mainly characterised by the abundance of the remains of corals, though they would also present the *exuvias* of other tropical forms of animals, especially Brachiopods and Echinoderms. The glacial mud of northern seas would contain the remains of arctic Molluscs, along with such other animals as delight in severe cold. Lastly, the "ooze" of the deep Atlantic would contain innumerable *Foraminifera*, along with siliceous sponges, sea-urchins, and Crinoids. We learn from this, therefore, that contemporaneous deposits not only do not necessarily contain the same fossils, but that, if widely separated geographically, they may be characterised by wholly dissimilar assemblages of organisms.

It may happen, again, as pointed out by Sir Charles Lyell, that deposits belonging to different geographical provinces may, as regards space, be extremely close together; and as regards time, may be actually contemporaneous; and yet may not contain any fossils in common, or only a very few. If, for example, any sudden upheaval were to lay bare what is now the floor of the Red Sea, together with that of the Mediterranean, we should find each to be occupied by

deposits absolutely synchronous as regards the time of their deposition, and very little removed from one another in actual distance, and yet containing, upon the whole, entirely distinct groups of organic remains. This arises from the fact that the marine faunæ of the Red Sea and Mediterranean belong to different zoological provinces; and the Isthmus of Suez constitutes an impassable obstacle to their inter-migration. We learn, therefore, from this, that owing to the existence of geographical barriers, it is possible for contemporaneous formations, to be found in close contiguity, in a single region, and yet to contain very different fossils.

We are now in a position very briefly to discuss the question of what may be called "geological continuity." As is well known, the entire series of sedimentary or fossiliferous rocks admits of a natural division into a certain number of definite rock-groups or "formations," each of which is characterised by a peculiar and distinctive assemblage of fossils, constituting the "life" of the "period," in which the formation was deposited. The older geologists held, what, perhaps, everyone would at first sight be tempted to think, that the close of each formation was signalled by a general destruction of all the forms of life characteristic of the period, and that the commencement of each new formation was accompanied by a creation of a number of new forms, destined to figure as the characteristic fossils of the same. This theory, however, not only invokes forces and processes which it can in no way account for, but overlooks the fact that most of the great formations were separated by lapses of time unrepresented by any deposition of rock, and yet as long or longer than the whole time occupied in the production of the formation itself. Indeed, we are compelled to admit that what we call the great "formations" are purely artificial divisions, rendered possible by the gaps in our knowledge only, and that if we had a complete series of rock-groups, we could have no such divisions.

Now-a-days, then, most geologists hold that there was no such sudden destruction of life at the close of each great geological epoch, and no such creation of fresh forms, at the commencement of the ensuing period. On the contrary, they hold that there is a geological "continuity," such as we see in other departments of nature; and that the lines which we draw between the great formations merely mark periods of time, the rocks deposited in which are at present

unknown to us, or, it may be, have been subsequently destroyed by denudation.

We may arrive at some solution of this question by considering what we must believe to have occurred at the close of any great geological period—say the Cretaceous period. If we reject, as we must do, the belief that the close of the Cretaceous period was marked by a sudden and universal destruction and extinction of the Cretaceous forms of life, there is only one other view that we can accept. We know, from unmistakable physical evidence, that the close of the Cretaceous period in Europe was accompanied, or rather caused, by an upheaval of the Cretaceous area, and the obliteration of the Cretaceous sea, which must, at that time, have extended from southern Britain at least as far as the Crimea eastwards. As a matter of course, this upheaval was effected, not suddenly, but with extreme slowness, and it must have resulted in bringing about changes most seriously affecting the animals which swarmed in the Cretaceous ocean. At the commencement of the upheaval, as the sea gradually began to shallow, the marine animals would find their conditions of life changed; and as the upheaval went on, the state of things would become gradually worse, till finally, the area was converted into dry land. Some of the Cretaceous forms of life would, from the very beginning, be probably unable to accommodate themselves to the new *regime*, and these would die out. Some few would undergo no changes, but would simply migrate to a more favorable area. Many, lastly, would migrate, and in the process of migration, by reason of coming into contact with strange neighbours and untried conditions, would become gradually modified, till they might assume a form in which they would be regarded as distinct varieties or even distinct species. The ultimate result of the whole process would be the transference of many characteristic Cretaceous species to some sea more or less removed in point of distance from their original home. Not only so, but many of the transferred species might have undergone such modifications *in transitu* that they would now no longer be specifically identical with the forms of the chalk, but would be regarded as merely allied or representative species, though truly the lineal descendants of the Cretaceous animals.

It is perfectly clear that the process of rock deposition which was going on in Europe towards the close of the Cretaceous period was

not *abolished* by the elevation of the European Cretaceous area, but was simply *transferred* to some other region. In this particular case we do not happen to know where this new area of deposition may have been situated. It is quite certain, however, that in whatever area the Cretaceous animals of Europe took refuge, there rock must have been deposited in course of time, though it does not follow in any way that the rocks of the new area should have any likeness in mineral composition to those of the later Cretaceous period. If we should at any time discover these rocks, it may be pretty safely predicted what we should meet with in the way of fossils. We should find, namely, some characteristic Cretaceous species, but with certain points of difference; in addition there would be a certain proportion of forms of life wholly unknown in the Cretaceous rocks, and more or less resembling those of later periods; and, lastly, there would be a marked absence of certain characteristic species of the chalk. In other words, such deposits as we have been speaking of, would contain an assemblage of fossils more or less intermediate in character between those of the Cretaceous period and those of the lowest tertiary beds (Eocene) which rest upon the chalk. In point of fact, we have actually traces of such deposits (in the Mæstricht beds of Holland, the Pisolitic Limestone of France, the Faxøe Limestone of Denmark, and the Thanet Sands of Britain); and we find in these evident traces of such an intermixture of cretaceous with tertiary types.

It may be well here to consider for a moment how it is that we may never hope to find a complete series of deposits intermediate between any two great formations, such as the Cretaceous and Eocene rocks. In the first place, only a limited portion of the earth has as yet been properly examined, and we have therefore no right to wonder that we have not yet hit upon the area to which the process of rock forming may have been transferred at the close of the Cretaceous period in Europe. We have, however, every reason to expect that we shall ultimately find formations which will have to be intercalated in point of time between the white chalk and the Eocene rocks; and, as before said, traces of such are already known to us. Secondly, many of these intermediate deposits may have been destroyed at some time subsequent to their formation by "denudation." Thirdly, many of these missing deposits may have been

concealed since their formation by the deposition on them of other newer rocks; or they may be situated in areas which are at present hidden from us by the ocean. Fourthly, there may have been times in which great changes in life were actively progressing in areas in which there might be little or no contemporaneous deposition of rock.

From these and similar causes, it is almost certain that we shall never be able to point to a complete series of deposits linking one great geological period, such as the Cretaceous, to another, such as the Eocene. Still, we may well have a strong conviction that such deposits must exist, or must have at one time existed, though all traces of them may now be lost. Upon any theory of "evolution," at any rate, it is certain that there can be no break in the great series of stratified deposits, but that there must have been a complete "continuity" of life and of deposition, from the Laurentian period to the present day. There was and could have been no such continuity in any one given area; but it is not credible that the chain should ever have been snapped at one point, and taken up again at another wholly different one. The links may, indeed must, have been forged in different places; but the chain nevertheless remained unbroken. From this point of view, there would be little impropriety in saying that we are still living in the Silurian period; but we could say so in a very limited sense only. Most geologists probably would admit that there must in nature have been such an actual continuity of the great geological periods. Nevertheless it remains certain that we can never dispense with the division of the stratified series into definite rock-groups and life-periods. We can never hope to discover all of the lost links of the geological chain, and the great formations will ever be separated from one another by more or less pronounced physical or palæontological breaks or by both combined. The utmost we can at present do is to arrive at the conviction that the lines of demarcation between the great formations only mark gaps in our knowledge, and that there can be in nature no *hiatus* in the long series of fossiliferous deposits.

The theory, then, of geological "continuity" may in practice be carried so far as to be useless or even injurious to the progress of science. This would seem to be the case with a recent attempt by Professor Wyville Thomson to show that "we are still living in the

Cretaceous period," and that the "ooze" now forming at great depths in the North Atlantic is merely a continuation in time of the great and well-known deposit of the white chalk. The points of resemblance by which this is sought to be established, are these:—1. The Atlantic "ooze" is a whitish or grayish-looking mud containing about sixty per cent. of carbonate of lime, with from twenty to thirty per cent. of silica, and a variable quantity of alumina. When dry, and especially if consolidated, it would, therefore, approximate more or less closely in mineral composition and texture to white chalk. 2. The abyssal mud of the Atlantic is to a very large extent composed of the microscopic shells of *Foraminifera*, some of which are specifically identical with cretaceous forms; whilst, as shown by Mr. Lonsdale, the chalk is mainly composed of the *debris* of these minute organisms. 3. The Atlantic "ooze" contains numerous siliceous sponges, in many respects comparable with the sponges which are so characteristic of the Cretaceous period. 4. The Atlantic "ooze" contains numerous Echinoderms, especially sea-urchins and Crinoids, such as abounded in the chalk period; whilst one of the latter is referable to a Cretaceous type, hitherto believed to be extinct. 5. We have reason to suppose that the conditions under which the white chalk was formed, were very similar to those now present in the Atlantic at great depths.

On the other hand, as pointed out by Sir Charles Lyell and Mr. Prestwich, the difference between the Atlantic ooze and the white chalk are; to say the least of it, quite as numerous and as weighty as the resemblances:—1. The white chalk differs to an important extent from the "ooze" in mineral composition; for it is composed of from at least eighty up to as much as ninety nine per cent. of pure carbonate of lime. 2. Little stress can be laid upon the occurrence of identical species of *Foraminifera* in both deposits; for it is well known that such lowly-organized forms of life have an extraordinary power of persistence, surviving geological revolutions which are fatal to higher organisms. 3. The presence of some Cretaceous forms in the Atlantic ooze is far more than counterbalanced by the total absence of all those fossils which may be considered pre-eminently *the* fossils of the Cretaceous period; such as the various forms of *Cephalopoda*, especially the *Ammonitidae*; and the Bivalve Molluscs.

Mr. Prestwich, therefore, concludes that although it is probable

that "some considerable portion of the deep sea bed of the mid-Atlantic has continued submerged since the period of our chalk, and although the more adaptable forms of life may have been transmitted in unbroken succession through this channel, the immigration of other and more recent faunas may have so modified the old population, that the original chalk element is of no more importance than is the original British element in our own English people. As well might it have been said in the last century that we were living in the period of the early Britons, because their descendants and language still lingered in Cornwall, as, that we are living in the Cretaceous period, because a few Cretaceous forms still linger in the deep Atlantic. Period in geology must not be confounded with 'system' or 'formation.' The one is only relative, the other definite. A formation is deposited or takes place during a certain time; and that time is *the* period of *the* formation; but *a* geological period may include several formations, and is defined by the preponderance of certain orders, families, or genera, according to the extent of the period spoken of; and the passage of some of the forms into the next geological series does not carry the period with them, any more than would any particular historical epoch be delayed until the survivors of the preceding one had died out. Period is an arbitrary time division. The chalk on the 'London clay' formations mark definite stratigraphical divisions. We may speak of the period of the London clay, or we may speak of the Tertiary period. It merely refers to the 'time when' either were in course of construction. The occurrence of Triassic forms in the Jurassic series, of Oolitic forms in the Cretaceous series, and of Cretaceous forms in the Eocene, in no way lessens the independence of each series, although it may sometimes render it difficult to say where one series ceases and the other commences. The land and littoral faunas are necessarily more liable to change than the deep-sea fauna, because an island or part of a continent may be submerged and all on it destroyed; while the fauna of the adjacent ocean would survive; and as we cannot suppose the elevation of entire ocean beds at the same time, the maritime fauna of one period must be in part almost necessarily transmitted to the next."

In accordance, therefore, with the principles here laid down, we may conclude that it is not correct to say that we are "living in the

Cretaceous period," in any other sense than one might say, we are living in the Silurian period; with this difference only, that the Cretaceous period is much nearer to us in point of time than the Silurian, and that we can thus trace a relationship between certain living types and certain Cretaceous forms, such as we can not hope to establish in the case of Silurian fossils.

Lastly, it is to be observed that certain classes of animals are always likely to prevail under certain favouring conditions, wholly irrespective of any generic connexion between successive faunæ thus represented. Thus, the conditions present in the deep Atlantic are such as favour the existence of numerous *Foraminifera*, siliceous sponges, Echinoderms, and Brachiopods. Similar conditions existed in the seas in which the chalk was deposited, and we need not, therefore, be surprised that similar groups of organisms abounded in the cretaceous ocean. Similarly, there are portions of the incalculably older Carboniferous Limestone fairly comparable to the chalk in texture (making allowance for the vast difference of age), and containing forms of life, which may be regarded as representative of the Cretaceous fauna, such as *Foraminifera*, smooth *Terebratulæ*, and other Brachiopods, with Crinoids and sea-urchins. The conditions, however, present in the deep Atlantic cannot be exactly similar to those of the Cretaceous seas; for the *Cephalopoda* of the chalk seem to have no representatives in the abyssal mud of the Atlantic, whilst this class was well represented in Carboniferous times; so that there is, if anything, a closer genetic connexion between the chalk and the Carboniferous Limestone than between the chalk and the Atlantic "ooze."

THE COPTIC ELEMENT IN LANGUAGES OF THE INDO-EUROPEAN FAMILY.

BY THE REV. JOHN CAMPBELL, M.A., TORONTO.

Read before the Canadian Institute, February 10th, 1872.

Professor Max Müller wisely holds that the classification of races and of languages should be quite independent of each other¹. By this he means that the science of language in its classificatory stage and that of ethnology in the same should not be mixed up together by the student of both. He does not, and cannot, mean that we are not to expect to find intimate and important relations subsisting between the two classifications. If it be true that there are clearly defined species of mankind, it is exceedingly probable that there are corresponding clearly defined families of language. A multiplicity of protoplasts must, of necessity, imply various beginnings of speech. If again we favour the development theory in connection with the origin of the human race, we are almost compelled to adopt a similar theory in regard to the origin of language; and the classification, which proceeds upon subsequent development, will be as applicable to the one as to the other. Finally, supposing that theory to be the true one which finds in the human race no well marked species, but a number of varieties shading into one another by almost imperceptible differences, and defying anything like a scientific classification, may we not lawfully look for something of the same kind in the domain of that purely human faculty—speech? Professor Max Müller is a firm believer in the common origin of mankind, and has demonstrated the possibility of a common origin of language; yet he is disposed to draw very distinct lines between groups of languages, and to throw very far back into the past the time of their relative divergence from the simplest form of articulate speech.

Various attempts have been made to form a general classification of languages. Friedrich Schlegel divided them into two classes; the first of which “denotes the secondary intentions of meaning by an internal alteration of the sound of the root by inflection,” and comprises the languages of the Indo-European family. The second, in-

¹ Lectures on the Science of Language; series 1, lecture viii.

cluding the Semitic tongues, "denotes the secondary intentions of meaning by the addition of a word, which may by itself signify plurality, past time, what is to be in the future, or other relative ideas of that kind." Bopp shows us that neither this division, nor that of Augustus Schlegel, into "languages without grammatical structure, languages that employ affixes, and languages with inflections," are valid, inasmuch as the inflections meant do not necessarily exist in, nor are characteristic of, the Indo-European languages, which represent the latter class. Bopp's own classification is into three classes. First, "languages with monosyllabic roots, without the capability of composition, and hence without organism, without grammar." This includes the Chinese.² Secondly, "languages with monosyllabic roots, which are capable of combination, and obtain their organism and grammar nearly in this way alone." Here the Indo-European and so-called Turanian languages are found. Thirdly, "languages with dissyllabic verbal roots, and three necessary consonants as single vehicles of the fundamental meaning." The Semitic languages alone make up this class, "which produces its grammatical forms not simply by combination, but by a mere internal modification of the roots."² In this latter definition of his third class, Bopp falls into the opposite extreme to that for which he blames Friedrich and Augustus Schlegel. Internal modifications of the root are common to both the Semitic and Indo-European languages, and thus peculiar to neither. The best classification is that of Prof. Max Müller into languages in the Monosyllabic, Terminational, and Inflectional stages. The first still includes the Chinese; the second, in which one of the roots uniting to form a word loses its independence, embraces the Turanian languages; and the third, in which both of two roots uniting to form a word, lose their independence, contains the Indo-European and the Semitic families.³ The author of this last classification, however, states "that it is impossible to imagine an Aryan language derived from a Semitic, or a Semitic from an Aryan language. The grammatical framework is totally distinct in these two families of speech." Ernest Renan goes much farther, and says, in his *Histoire Générale et Système Comparé des Langues Semitiques*, "We must give up the search for any connection between the grammatical systems of the

² A Comparative Grammar of the Sanscrit, Zend, &c., Languages, by Prof. F. Bopp. Translated from the German by E. B. Eastwick, F.R.S., &c. 2nd edition. London, 1858; vol. I, p. 99-103.

³ Lectures on the Science of Language; series I; lecture viii.

Shemitic languages and the Indo-European ones. They are two distinct and absolutely separate creations." An able writer in the *British and Foreign Evangelical Review* has shown, with some recent German philologists, that the grammatical differences here spoken of are greatly exaggerated. He proves that the mechanism of the Semitic verbs has so many points of similarity with that of the same parts of Aryan speech as to fail to constitute a fundamental difference between the two systems; that in the Celtic branch of the Indo-European family nouns are construed together as in the Semitic languages; and that there is a correspondence between the modes of inflection, internal and external to the root, in both groups which cannot be accidental.⁴ It is important to notice the Celtic element which the *Reviewer* introduces, inasmuch as it has been generally overlooked in comparisons of the Aryan with the Semitic languages. The custom with philologists like M. Renan has been to compare typical or extreme representatives of each class, in order to justify their conclusion; thus the Hebrew and the Sanskrit have taken places which it would better have served the interests of truth to have given to the Punic or the Coptic and the Celtic tongues. Mr. Taylor professes, even from a comparison of the Hebrew and Greek and Latin languages, partly through the medium of the Gaelic, to be satisfied of the truth of the position "that, at the time when the Aryan and Shemitic linguistic families parted company, they were not only furnished with a good vocabulary of radical words, but possessed in germ, and in much more than infantile development, almost all the grammatical methods which are now so divided between them as to have led some philologists to describe the systems as entirely separate creations."

Passing from form to matter, from grammar to vocabulary, from inflections to roots, we find the Indo-European and Semitic families drawn still closer together. Professor Max Müller says, "the comparisons that have been instituted between the Semitic roots reduced to their simplest form, and the roots of the Aryan languages, have made it more than probable that the material elements with which they both started were originally the same."⁵ Even Renan is constrained to admit "that the two families possess a considerable num-

⁴ The Variation of Languages and Species, by the Rev. William Taylor; *British and Foreign Evangelical Review*; No. lxxviii; October, 1871.

⁵ Lectures on the Science of Language; series I, lecture viii.

ber of common roots outside of those which they have borrowed from one another in historic times." 6 It is on the ground of many radical words being the common property of the two families of language that many philologists, whose opinions Renan combats, have maintained their primeval unity. Some instances taken almost at random from the Hebrew lexicon, will suffice to show this identity of root in the Semitic and Aryan tongues :

Heb., HAKHAU or CHAKHAU; *Eng.*, hook; *Ger.*, haken; *Dutch*, haak; *Dan.*, hage.

Heb., HANAK or CHANAK; *Eng.*, hang; *Ger.*, henken; *Dutch*, hangen; *Dan.*, hoenge.

Heb., YALAL; *Eng.*, wail, howl, yell; *Gr.*, oluluzō; *Lat.*, ululo.

Heb., KHAPHAR; *Eng.*, cover; *Slavon*, kover;? *French and Romance*, couvrir, &c.

Heb., LAPID; *Eng.*, lamp; *Gr.*, lampas-ados.

Heb., LAKAT; *Eng.*, collect; *Lat.*, lectum.

Heb., LAKAK; *Eng.*, lick; *Gr.*, leichō; *Lat.*, lingo; *Ger.*, lecken.

Heb., AGABAH; *Eng.*, love; *Gr.*, agapē.

Heb., ATZAD or GATZAD; *Eng.*, adze, axe; *Gr.*, axinē; *Dan.*, oexo; *Ger.*, axt.

Heb., PARAD; *Eng.*, part, separate; *Lat.*, pars-tis.

Heb., KOL; *Eng.*, voice, call; *Gr.*, kaleō; *Sans.*, kal.

Heb., KEREN; *Eng.*, horn; *Lat.*, cornu; *Gaelic*, corn.

Heb., TZIPPOR; *Eng.*, sparrow; *Goth.*, sparwa; *Ger.*, sperling.

Heb., SHAKAPH; *Eng.*, look, see, scope; *Gr.*, skopeō.

Heb., SHARAK; *Eng.*, whistle; *Gr.*, surigx;? *Eng.*, shriek.

The mere casual survey of a lexicon of any of the Semitic tongues, Hebrew, Chaldee, Syriac or Arabic, must convince the unprejudiced student in philology how unjustifiable is the broad line of demarcation drawn between them and languages of the Indo-European stock.

Dr. Hyde Clarke, in a letter to the *Athenaeum* of the 23rd of September last, cites a large number of Hebrew geographical names, with their phonetic equivalents in Greek and Latin. He says in conclusion, "I may state what I now know to be the fact, that the language of these names is Caucasian." Two statements of Sir Henry Rawlinson, in his essay on the Early History of Babylonia, merit attention in this connection. "There was not, perhaps, in the very earliest ages, that essential linguistic difference between Hamite and Semitic nations which would enable an enquirer at the present day, from a mere examination of their monumental records, to determine posi-

⁶ *Histoire Générale et Système Comparé des Langues Semitiques*, par Ernest Renan, *vide* article of Rev. William Taylor, *British and Foreign Evangelical Review*. The position of the Shemitic nations in the History of Civilization, English translation, together with An Essay on the Age and Antiquity of the Book of Nabathæan Agriculture. London, 1862. Trübner, p. 116.

tively to which family certain races respectively belonged. Although, for example, the Hamite language of Babylon, in the use of postpositions and particles and pronominal suffixes, approaches to the character of a Scythic or Turanian rather than a Semitic tongue, yet a large portion of its vocabulary is absolutely identical with that which was afterwards continued in Assyrian, Hebrew, Arabic, and the cognate dialects; and the verbal formations, moreover, in Hamite Babylonian and in Semitic Assyrian exhibit in many respects the closest resemblances." "One of the most remarkable results arising from an analysis of the Hamite cuneiform alphabet, is the evidence of an Aryan element in the vocabulary of the very earliest period, thus showing, either that in that remote age there must have been an Aryan race dwelling on the Euphrates among the Hamite tribes, or that (as I myself think more probable) the distinction between Aryan, Semitic and Turanian tongues had not been developed when picture-writing was first used in Chaldea; but that the words then in use passed indifferently at a subsequent period, and under certain modifications, into the three great families among which the languages of the world were divided."⁷ If we confine ourselves to the vocabulary, disregarding grammatical forms, it will not be difficult to prove the kinship of the whole race. Professor Müller quotes the statement of Dr. J. Rae, to the effect that all the Indo-European languages have their root and origin in that of Polynesia, a statement in which Dr. Rae is in part justified by the presence in many of the Malay dialects of roots identical in form and meaning with those of the Aryan languages.⁸ Dr. Bleek thinks that the Kaffir and Hottentot languages, the latter of which is supposed to have old Coptic connections, are fitted to shed great light upon the most important problems of language in general;⁹ and the Revs. H. M. Waddell, and Alex. Robb, missionaries in Old Calabar, find in the Efik, one of the Nigro-Hamitic tongues, a grammatical construction of Semitic form, and a vocabulary possessing radical affinities with the Nilo-Hamitic, Semitic and Indo-European families of speech.¹⁰ I observe that Dr. Edkins, of Pekin,

⁷ Rawlinson's Herodotus, App. Book i; essay vi; section 18.

⁸ Lectures on Science of Language; series ii, lecture i. Dr. Leyden long ago (*Asiatic Researches*, vol. x,) set forth the same truth, which modern theorists in language have rejected as interfering with their *a priori* conclusions.

⁹ Lectures on Science of Language; series ii; lecture 1.

¹⁰ Twenty-nine years in the West Indies and Central Africa, by Rev. Hope Masterton Waddell; appendix. vi. Notes on the Efik language.

has just prepared a work on Chinese philology, the aim of which is to prove the common origin of Asiatic and European languages.

In the above somewhat lengthy preface it has been my endeavour to show that, while important differences of grammatical structure do exist between certain groups of languages, these groups themselves cannot be clearly defined; and that even where points of similarity in grammatical structure are almost or entirely wanting, a community of roots may still attest true relationship. It is on these grounds, as well as on the ground of my belief already stated in a previous paper,¹¹ that Egypt was the cradle of the race, that I am emboldened to present, under the title of this essay, the result of some recent studies in comparative philology—studies which, I may state, were commenced and carried on in perfect independence of any theory.

The language in which I profess to have found a link or links binding together the Aryan and Semitic families, is the old Egyptian. The researches of M. Quatremère de Quincy first revealed the fact that this ancient language survived in the Coptic, which was used in Egypt as late as the twelfth century of the Christian era. After many foreign elements have been rejected from the Coptic, it is found to consist mainly of monosyllabic roots, many of them formed with only one consonant, and these apparently the radicals of Semitic words of similar signification. In the earliest stages of this language there does not appear to have been any well-marked distinction between the parts of speech, although, at a later period, a construction similar to that of the Semitic languages, especially in the case of the verb, manifests itself.¹² Professor Max Müller will hardly allow that the Coptic and Berber languages of North Africa are of a well-defined Semitic character; neither will he erect them into a separate family.¹³ These languages, together with the Ethiopic, Nubian, Abyssinian and similar East African tongues, down to the old Malagasy, have been formed into a group called the Nilotic or Nilo-Hamitic, which Bunsen and others looked upon as sprung from the same stock as the Semitic, and as forming with them a single family. Sir Gardner Wilkinson makes the following interesting statements in regard to the old Coptic. "The Egyptian language might, from its grammar, appear to claim a Semitic origin, but it is not really one of that

¹¹ The Birthplace of Ancient Religions and Civilization.—*Canadian Journal*, August, 1871.

¹² Benfey, über das Verhältnisz der ägyptischen Sprache zum semitischen Sprachstamm. Leipzig, 1844.

¹³ Science of Language; series i; lecture viii.

family, like the Arabic, Hebrew, and others; nor is it one of the languages of the Sanskritic family, though it shows a primitive affinity to the Sanskrit in certain points; and this has been accounted for by the Egyptians being an offshoot from the early undivided Asiatic stock, a conclusion consistent with the fact of their language being 'much less developed than the Semitic and Sanskritic, and yet admitting the principle of those inflections and radical formations, which we find developed, sometimes in one, sometimes in the other, of those great families.' Besides certain affinities with the Sanskrit, it has others with the Celtic, and the languages of Africa; and Dr. Ch. Meyer thinks that Celtic, 'in all its non-Sanskritic features, most strikingly corresponds with the old Egyptian.'"¹⁴ Sir J. G. Wilkinson adds: "It is also the opinion of M. Müller that the Egyptian bears an affinity 'both to the Aryan and Semitic dialects,' from its having been an offshoot of the original Asiatic tongue, which was their common parent before this was broken up into the Turanian, Aryan and Semitic."¹⁵

From what has been said above, we need not be astonished to find instances of connection between the Egyptian language on the one hand, and the Semitic and Indo-European families of tongues on the other. First, in regard to the vocabulary, I may cite a few instances in which the names of persons, places and things are common to two or more of the languages compared. The poet Euripides represents Menelaus, a wanderer in the land of Egypt, as acquainted with such a correspondence.

" Πολλοὶ γὰρ, ὡς εἶξασιν, ἐν πολλῇ χθονὶ
 " ὀνόματα ταῦτ' ἔχουσι, καὶ πόλις πόλει
 " γυνὴ γυναικί·τ' οὐδὲν οὖν θαυμαστόν."¹⁶

Among proper names of persons we have those of certain of the gods and goddesses:

Eg., AMUN; *Heb.*, AMMON; *Gr.*, Haimōn.

Eg., ANOUBE; *Heb.*, HANOCH; *Gr.*, Anagkē, Ogka.

Eg., ANUBIS; *Heb.*, ANUB; *Gr.*, Oinopiōn, Oinops.

Eg., ATHOM; *Heb.*, ETHAM; *Gr.*, Athamas.

Eg., ATHOR; *Heb.*, ATARAH; *Gr.*, Aithrē.

Eg., HECT; *Heb.*, JAHATH or JACHATH; *Gr.*, Hecate.

Eg., HORUS; *Heb.*, HORI; *Gr.*, Ōros,

Eg., MONTH; *Heb.*, MANAHATH; *Gr.*, Menoitia.

¹⁴ Rawlinson's Herodotus, App. Book II; chapter I.

¹⁵ Rawlinson's Herodotus, App. Book II; chapter I.

¹⁶ Eurip. Helena, 497-499.

Eg., NεIRTH; *Heb.*, NAHATH; *Gr.*, Anaitis.

Eg., CHONS; *Heb.*, KENAZ; *Lat.*, Consus.¹⁷

The royal lists of Manetho and others furnish names that are the property not of Egypt alone but of the whole world. These names have received confirmation from the study of the Egyptian monuments. Such are MENES and ATHOTHES, corresponding to the German Mānnus and Tait, the Welsh Monw, the Gallic Teutates, the Indian Menu and Greek Minos and the Phœnician Taautus and Hebrew Hathath or Jetheth. BOETHUS and CECHOUS are reproduced in the Indian Buddha and Okkaka, and in the Greek Bœotus and Ogyges. Okkaka, the *gourā*, answers exactly to the Coptic and Semitic *kus*, a word having the same meaning, and of which CECHOUS is a reduplicate form, as is well seen in the CHOOS of Eusebius. In OURDES we find Gordys, Cretheus, and the common termination, *cartus*; in BIENNECHES the Greek Phoenix, and Indian Pingacsha; in TLAS, Atlas; in RATHURES, Erythrus of Greek, Roudra of Sanskrit, and Arthur of British mythology; in PACHNAN, the Persian Pecheng or Pushang, and the eponymus of *Pachynum* in Sicily; in TOTHMES, Teutamias of Assyria. Other names unite the Semitic and Indo-European languages, such as the following:

Eg., SIROIS; *Heb.*, SERAIAM; *Gr.*, Seirios; *Sans.*, Surya.

Eg., MARES; *Heb.*, MARESHAH; *Gr.*, Marsuas.

Eg., CHEBRON; } *Heb.*, HEBRON;
Eg., CEPHREN; } Septuagint, *Chebron*; *Gr.*, { Kebrān.
 Huperiōn.

Eg., SPANIUS; *Heb.*, ISHPAN; *Gr.*, Hispania; *Pers.*, Isfahan.

Eg., ACHTHORS; } JAHATH;
Eg., OTHORS; } *Heb.*, JACHATH;
 Septuagint, *Jeth.* *Gr.*, { Aktaios, Aktaiōn.
 Attis, who is Papas.

Eg., ARCHLES; *Heb.*, { AHARHEL;
 ACHARCHEL; *Gr.*, Hēraklēs; *Lat.*, Hercules.

Eg., RAMESES; *Heb.*, RAM; *Lat.*, Rome, Remus; *Sans.*, Rama.

We have the authority of Diodorus Siculus for locating the myth of Prometheus in Egypt and on the bank of the Nile.¹⁸ On the Pelusiæc branch of that river we find PHARBOETHUS, the modern HEURBAYT, which answers, *m* replacing its equivalent *b*, to the eighth old Egyptian month PHARMUTHI, which immediately preceded the season of inundation, with which Diodorus connects the myth of the

¹⁷ The Hebrew equivalents of the above names and of others that follow, are almost exclusively derived from the first few chapters of the first book of Chronicles, where I am persuaded that they do not designate the descendants of the patriarch Jacob. All attempts to turn the 2nd and 4th chapters into genealogies of the twelve tribes have failed.

¹⁸ Diod. Sic. i; 19.

eagle. The later Coptic form of this word is BARAMOODEH, which at once calls to mind San Lucar de *Barrameda*, a Spanish town on the Guadalquivir, in which was an ancient temple of Phosphorus, who, like Prometheus, brought light from heaven.¹⁹ Still another connection is found in the Indian Perimuda, mentioned by Aelian as a famous place for pearls.²⁰ In SETHRUM, ARCHANDROPOLIS, ANTAEOPOLIS, and ILITHYIA, appear Saturn, Archander, son of Phthius, the latter a name strongly resembling the Egyptian Phthah, Antaeus, son of Terra, and the goddess Ilithyia. In another paper I have called attention to THEBES, PHYLACE and TENTYRA as finding counterparts elsewhere. Mounts CASIUS and TOURRAH are reproduced in the Caucasus and Taurus of other lands. Aderbijan and Karug-sar represent in Persia the Egyptian ATARBECHIS and CERCASORUM. CONOSSO gives GNOÛSSUS, TAIHPENES Daphne, and ABYDOS is common to the Thebaide and the Troade. There was a BABYLON in Egypt, and a GOSHEN in Palestine; and the Minyae, before they dwelt in Greece, inhabited the wide Middle Egyptian District of MINIEH, and sojourned for a while about Khan Minyeh or Capernaum, on the sea of Galilee. Lofty Rome may owe its origin to those who once dwelt in Egyptian RAMESES, or Palestinian Rama, both of them meaning *the high or lifted up*; and its Romulus might easily pass from a Coptic RAMLIEH, on the east of the Nile, to an Arabic Ram-allah not far from Jerusalem, reproduced again in the Persian story as Roum, now Roumelia, in Turkey. The Palestinian Er Ram and the Egyptian HEROUM are one and the same, doubtless connecting with the Armenian Erzeroum. ATTIKEH *præ* FOSTAT, *Pastu* or *Astu*, where Cairo now is, must not be altogether disconnected from the Indian region of Attock, the Palestinian Athach, and the Greek state, Attica. From a very early period the Arabs were familiar with the name of the Egyptian town ATHRIBIS, as applied to their own Yathrib, and the Greeks of Oeta and Parnassus in vain attempted, by means of *drus*, the *oak*, and *ops*, a *voice*, to turn their form Dryopis into the original of the Laureate's "Babbler in the land," the Talking Oak.

Turning from names of places to those of things, the old Egyptian word, UK, presents itself as intimately related to our Saxon equivalent, *week*. CHRIB is the name of the rolling beetle, which encloses its eggs in a ball of manure and earth, and rolls this ball sometimes

¹⁹ Strab. ; l. iii. ; c. i. ; § 2.

²⁰ Aeliani de Animal. xv, 8.

great distances to a hole prepared for or fit to receive it.²⁰ We at once detect in it the Greek *karabos* and the Latin *scarabæus*, from which comes the French *escarbot*; nor are we astonished to find that the Sanskrit for locust is *carabha*, since the locust belongs to a natural order of insects closely related to that in which the beetles are found. The Hebrew equivalent of CHRB, however, is the word AKRAB, with which the Arabic agrees in form and sound, and which designates the scorpion and a warlike engine named from it. With this word Gesenius rightly connects the Greek *scorpios*, the scorpion, which, according to Liddell and Scott, who quote Hesychius upon the subject, is from the same root as *skarabos*, *karabos*, coming through *skorobaios*, and also denotes an engine of war. The Greek *karabos* not only denotes the beetle, but also the *crab*, which we find in the French *écrevisse* and the German *Krebs*. LABOI, the lion, is the original of the Hebrew LABI and the German Löwe; THMEI, truth, is the Hebrew THOM and the Greek *Themis*. IOH is Coptic for moon, and we find *Io* as a name of the same luminary in Argos. ERMAN, pomegranate, IERO, stream, LAS, tongue, SES, horse or mare, SHMOUN, eight, are almost identical in form with the Hebrew words denoting the same thing. Other words, such as MAUT, mother, ME, love, MEN, establish, ORK, swear, RRO, king, TEI, give, exhibit manifest connection with both Semitic and Indo-European languages.

These examples are, I think, sufficient to show that the old Egyptian, as far as its vocabulary is concerned, stood in the relation either of borrower from, or lender to, two families of language, to neither of which it has been generally supposed to belong. I propose to show, however, that the Indo-European tongues, and probably the Semitic, borrowed from the old Egyptian, by reference not so much to the vocabularies of these languages, as to a feature which can only be explained by the grammar of the Coptic. The Coptic definite article masculine is *p* or *ph*, and in the Egyptian language is closely bound up with many words to which it had been prefixed, and from which it has not been distinguished and separated by those who have transplanted such words to other soils.²¹ We must expect to find the

²⁰ Osburn, Monumental History of Egypt, i, 205. Cuvier, Le Règne Animal, Paris, 1817, tome iii, 277. Carpenter's Zoology. Bohn, ii, 127.

²¹ The sign of the masculine article is Theban *pe*, *p*, Memphitic *pi*, *p*, *ph*, and Baschmuric, *pe*, *pi*, *p*. It is derived from the pronominal suffix of the third person singular masculine, which is *f*, the Coptic *fei*. This sometimes assumes the form of *b* or *vida*.—Peyron. *Gram. Ling. Copt.*; Benfey, *die ägyptische Sprache*.

Coptic article in all the various forms through which the *p* sound is seen to pass in etymology, as *p*, *ph*, *f*, *b*, *v*. The Bible and Herodotus present us with two examples of the use of this article. The town called by the Greeks Bubastis, is sacred to the goddess BASHT or PASHT, and is rendered in Ezekiel xxx, 17, PI-BESETH or PI-PASHT. Herodotus, in the 143rd chapter of his second book, states that the Egyptian word PIROMIS means a man, noble and good, or a gentleman. Now, ROME is the Coptic for man, and PI the definite article. Similar examples are found in PI-THOUM, PA-CHONS or BE-SHENS, PH-AMENOPH, PI-LAKH, PH-RE. PAPERIS is P-IBRIM, and FAYOUM is PI-YOM. A learned writer is of the opinion that PIROMIS and Brahma, as denoting original and absolute man, are the same word.²² I have little doubt that PIROMIS, or else PIRAMA, the mountain, hence pyramid, is the original of the Latin *primus*, which shows its true root in the Scythian *arima*.²³ The Coptic PHRE, a solar god, is transported, article and all, into the Scandinavian mythology, where he becomes Frey, the symbol of the sun.²⁴ Still another example of the migration of the Coptic article is found in Bambyce, a town in Syria of which Strabo speaks.²⁵ Pliny mentions the same town not only as Bambyx, but also as Mabog.²⁶ Now, the latter half of this name is identical with the word BEK or BAKI, the Coptic for town, found in ATARBECHIS, in Egypt, and also in BAALBEC, another Syrian city. The *b* which is kept by the Greek geographer, and discarded by the Latin, is undoubtedly the same element as that which changes the Egyptian ISEUM or HEBAIT into BEBAIT, and this is the Coptic article. There are even Coptic roots that may be supposed to show the very originals of language, which, with the addition of the article, have passed into other tongues, and in these are regarded as radicals themselves. Thus EIT, a house, which is the same as the Welsh *tj*, and Gaelic *tigh*, or better still the German *Hütte*, and our English *hut*, becomes the Assyrian BIT, the Arabic BEIT, the Hebrew BETH, the Erse *boih*, and thus the well-known words *booth* and *bothy*. NUM, spirit, is the Greek *pneuma*; TAU, life, appears in the Latin *vita*, which is the Gaelic and Erse *beatha*, and the Welsh *bywyd*; and MEN, a shepherd, after receiving an initial vowel, passes into the Greek *poimēn*. By means of this part of speech, presupposing of

²² Guignaut, Religions de l'antiquité; Tom. I, 323.

²³ Herodot. iv., 27.

²⁴ Mallet's Northern Antiquities, Bohn, 110, 551.

²⁵ Strab., xvi, 1, 27.

²⁶ Plinii Nat. Hist. v, 19.

course an Egyptian connection, a simple explanation, otherwise impossible, can be given of the once extensive use of the Aeolic digamma, which at a later period passed out of the Greek language; of the *v* which took its place in Latin, although even here a Sabine form in *f*, that did not find its way into classical Latinity, may with equal or greater force claim to be its representative; and of the *p*, which so commonly in German, but so rarely in Danish or Dutch, precedes a root beginning with *f*, e. g., Pfad, Pferd, Pflanz, &c. To the Coptic element in language must also be referred what has been called the Cretan aspirate, which makes *polchos* out of *olchos*, a word supposed to be identical with *vulgus* and *folk*. We can thus at once account for the double form which the same word sometimes presents, and for the similar forms of two words closely allied in meaning, in the same language. In Greek I may cite the proper names *Peisandros* or *Isandros*, the son of Bellerophon; *Periboia* or *Eriboia*, wife of Telamon; *Halisarna* in Mysia and the island of Cos, and *Phalassarna* in Crete; *Iachos* and *Bakchos*, *Heosphoros* and *Phosphoros*, as also the common names *ortux* and *perdix*, of which an intermediate form is the Sanskrit *varitika*; *sittakos* and *psittakos*, the parrot; and probably, *astēr* and *phōstēr*. Latin presents us as examples with *Isauris* and *Pisaurus*; *Ractavi* and *Praetavi*; *Vesper* and *Hesperus*; *vitulus* and *Italus*; *pinguis* and *unguen*: in the Sabine form above mentioned with *hædus* and *fedus*, *hircus* and *fircus*, *hordeum* and *fōrdeum*; and also with instances of verbs which, doubtless, assumed the article in the substantive form, from which, in spite of Oriental grammarians, I believe the verb to have been derived, such as *uro* and *buro*, *actum* and *factum*. Other languages present the same phenomenon. Sanchoniatho's Phœnician fragment speaks of *Sidon* and *Poseidon* as children of Pontus; the Sarmatian deities *Lebus* and *Polebus* are but one; and Scandinavian mythology preserves the name of the first of the giants as *Orgelmir* and as *Bergelmir*. The Irish *átha* and *fátha* equally denote a lawn or plain; and the English *eat* and *bite* correspond to the German *essen* and *beissen*. We borrow *brim* from the Saxon and *rim* from the Welsh; and it is universally allowed that *'ump*, *clump*, *plump*, are all variations of the same root.

I am inclined to believe that the Coptic root is nearer that of the original language than the Hebrew or any other Semitic tongue, and that we may find in the latter, as already indicated in the example BETH, instances of the transference of the Coptic article along with

the original root. The Assyrian BILU consists undoubtedly of the well-known ILU, the name of the supreme god of Babylonia, and thus of all deities, and a softened form of the Coptic article. The analogy of EIT and BIT would aid in coming to this conclusion; but stronger evidence for the truth of it is furnished by the Hebrew. In that language the name of the Most High God is AL, while the word corresponding to BILU, meaning *lord*, and applied to neighbouring gods, is BAAL. In parts of Arabia, strange to say, the article seems to have been, at least for a time, knowingly retained, although the Arabic *al* or Himyaritic *ka* were at hand to supplant it. Thus, we find Pliny, about the 70th year of the Christian era, mentioning the Thimanei,²⁸ an inland people of the peninsula; while Agatharchides, who wrote more than two hundred years earlier, described them as the Buthemanei.²⁹ Still, it is to the Indo-European languages that we must chiefly look for traces of this venerable prefix. A Semitic root meaning strong, and, in a secondary sense, fortified, is SHADAD, SHEDID. Hence came the Hebrew, or rather Philistine, word ASHDOD, which is the same as the name given to Egyptian Babylon, FOSTAT. Although the Pishdadian line of Persia has been supposed by many to owe its name to a root of similar form denoting *justice*, there is much reason to believe that "the good old rule" of their time may have developed justice out of strength. At any rate there is little doubt that the Coptic article is as much part of the name Pishdad, which Hushang first bore, as it is of his other Persian name Pushang, which the Arabs harden into Fushang. Old Greek dropped the reduplicated *t* of the Egyptian FOSTAT in *Fastu*, the Homeric form of *Astu*, the city, which we have the authority of Didorus Siculus for connecting with the Egyptian town.²⁹ From this old word, originally meaning *the strong* or *the fortified*, and thence, by syntactical convertibility *the strong and fortified place*, such as all cities were in ancient times, have come, through different channels, our English words *state* and *city*. The former we owe, not to the Latin *status*, but to the German *Stadt*; and the latter comes doubtless from a simpler form of the Latin *civitas* such as we find in the Spanish *ciudad*, or better still the Portuguese *Cidade*, a word as like the old ASHDOD as we may reasonably expect so modern a term to resemble so ancient a one. It is interesting to note that

²⁷ Id. vi., 32.

²⁸ Agatharchides, de Mare Rubro, Hudson, 57, &c.

²⁹ Diad. Sic. i., 16. Vide et. Strab. i., ix., 16.

while the examples given of the presence of this root in the Indo-European tongues are, with the exception of the Aeolic *Fastu*, destitute of the article, we find that prefix in the German *Feste*, meaning *strength* and a *strong place* or *fortress*, whence comes our English word *fastness*, a stronghold. It is also found in the languages of India whether we regard the old form *vastu* or the modern Hindustani *basti*, a village. The horse and his near relations seem also to show even in some of the Semitic words which stand for them, as well as in those of Indo-European tongues, traces of the Coptic article. The wild ass is called in Hebrew ARAD, but PERED in the same language denotes a mule. The first of these gives the Sanscrit *arvat*, and the second the Dutch *paard*, or with the article reduplicated, the German *pferd*, both meaning a horse. The Arabic and Persian FARAS, and the Hebrew PARASH, the name of the horse proper, look back to an older root RAASH, applied in several places in the book of Job to the actions of the noble animal which the inspired writer so well describes,³⁰ from which root the German *Ross* and our English *horse* may have been derived. EIL, the Hebrew for *foal* is the ancestor of our English word, which might equally be derived from the Greek *pōlos*, the Latin *pullus* or the Saxon *fole*. A word somewhat similar in sound is ALEH, denoting *leaf* or *foliage* in the language of the Old Testament, and giving us the original of the Erse *billeog*, the Greek *phullon* and the Latin *folium*. Still another instance, making with the two last mentioned a threefold cord not easily broken, is that of the Hebrew root YAAL, to be *foolish*, with the derived EVIL, a *fool*, which, besides our English word, accounts for the Irish *bille*, and the Welsh *fwl*. Almost every one who has taken even a passing glance at etymology is familiar with the widespread character of the root of our English word *wine*. The Coptic for wine is *erp*, a double root, doubtless allied to the Hebrew ARAB or GHARAB, to be *sweet or agreeable*, to the Persian *sherab*, *wine*, to our English word *grape*, and to the German *Rebe*, the *vine*, and *Traube*, the *grape*. But the most common root is that which the Hebrew gives as YAIN, a word almost identical with the Greek *oinos*, to which the Armenian *gini* and the Welsh *gwyn* approach. The old Greek form *foinos* is almost reproduced in the Irish and Gaelic *shion*, that passes through the Latin *vinum* into the German *Wein*, from which our eclectic

³⁰ Job xxxix. 20, 24; xli. 21.

English language has taken not only *wine* but *vine*, the equivalent of *Rebe*.³¹ Almost as universal is the old root which appears in the Hebrew as YADA, perceive or know; in the Greek, with the same signification, as *eido*, *oida*; and in the Welsh as *gwyddoni*, to gather knowledge. The Homeric form with the digamma turns *eido* into the Latin *video*, the Danish *vide*, the Dutch *weet*, our English *wit* and *wot*, and still more distinctly, into the Sanskrit *budh*.³¹ Another verbal root is the Hebrew HALAK, *walk* or *follow*. The two words which indicate its meaning in English are derived from it. The first of these requires no explanation; the second comes through the German *folgen* or the Dutch *volgen*. Still further examples of a verbal root with the prefix are afforded in RAAM, *resound*, *roar as the sea*, *thunder*; RAA or RAGAG, *break*, and RATZATZ, *bruise*, *burst*; the first of which gives us the Greek *bremo* and the Latin *fremo*; the second (the Hebrew *y* having for its equivalent the Greek *γ*) the German *brechen*, the Greek *rēnumi*, and the Latin *frango*, *fregi*; and the last, the Latin *presso*, the French *briser* and the English *bruise*.³¹ Similarly the Hebrew LAKAH or LAKACH, *take* or *seize*, which in Swedish assumes the form *luka* with the slightly altered signification to draw, connecting with the German *locken*, to entice, becomes the word *pluck*, common to the Germanic languages.³¹ The last examples from a similar verbal root which I shall present are the Latin *positus* and English *post*, which, equally with the Latin *sto*, the Greek *histēmi*, the German *sitzen*, the English *set*, and the Welsh *gosod*, may trace their origin to the two Hebrew forms YASAD and SHITH, *set*, *placed*, *established*.

Among nouns the Hebrew APHAL, *swell*, and hence *tumour*, becomes the Latin *papilla* and *papula*, whence our *pimple*; ESHCOL, *a cluster*, is the Latin *fasciculus*; LAHEM, *war*, gives us the Greek *polemos* and the Latin *Bellum*; ZEBUB, *fly* or *bee*, furnishes the Latin *vespa* and our *wasp*. The Hebrew UR, *fire*, is identical with the Armenian *hur* and shows itself in the Latin *uro*, but is also the same word as the Greek *pur* and the German *feuer*. One of the words for *city* in the same language is AR, which is rendered in the old Persian by *var*,³² and in the Sanskrit by *pur*. Prithivi is Sanskrit for the *earth* and resembles the Welsh *pridd* meaning the same thing. Remove the Coptic article and our English *earth* and its

³¹ Vide Gesenius' Hebrew and Chaldean Lexicon, notes in loc.

³² Var Djemschid, the enclosure or town of Djemschid.

German relative *erd* remain, both of which come from the Hebrew **ERETZ**. The Irish *pluc*, the *cheek*, can at once be referred to the Hebrew **LECHI**; and the Persian *bez*, a *goat*, and *bezer*, *seed*, to **EZ** and **ZERA** in the same language, the latter word being connected with the Latin *sero*. As the borrowing of the Latin betrays itself by the presence of the Coptic article in the Romance languages, so the borrowing of the Sanskrit appears in the Hindustani dialects. *Admi*, a man, *ma*, a mother and *beti* a daughter are so like the Arabic **ADEM**, **Um** and **BINT** (Heb. **BATH**) that they must have come directly from some such Semitic source; but *hap*, a father and *bhai*, a brother, must have picked up the *b* which precedes the **AB** and **AH** or **ACH** (Arab. **AKH**) of the Hebrew during an older period than that of the Hindustani.

It is not to be supposed that in every case in which we find the same root with and without the prefix *p*, *ph*, *b*, *v*, in the same or different languages we are to conclude necessarily that we have to deal with the Coptic article. A very common German verbal prefix *be*, as in *bedecken*, *bedenken*, *befehlen*, is an inseparable intensative particle, while *ab* and *bei* as in *abschneiden*, *beifügen*, are separable particles with ablative and dative powers. Either of these particles might readily be mistaken for the article. Another interesting case in which the same error might happen is that of the word with which our Hebrew scriptures begin, **BRESHITH**. There is no doubt whatever that this word is the original of our English *first*, which ignorant etymologists have derived from a superlative form of the Anglo Saxon *feor*, *far*. The Danish *först*, while agreeing with our English ordinal, shows how mistaken is such an etymology, and the Dutch *eerst* and German *erst* make it still more apparent by the absence of the initial *f*. The Dutch and German forms present us with the Hebrew original **RESHITH**, the *first* or *beginning*, the *b* which is replaced in Danish and English by *f* being the preposition *in*. Although this example is introduced as a beacon to warn against an indiscriminating reference of all initial *p* and *b* sounds to a Coptic original, I may be permitted to say in passing that both Theology and Geology would be gainers were the literal "First" to replace "In the beginning" at the commencement of our English version of the Bible.

It is doubtful whether the Armenian *hink*, the numeral five, as contrasted with the *pancha*, *penj*, *panch*, *pianch*, *penc*, &c., of the

Sanskrit and other Oriental languages of the Indo European family, is to be regarded as the root without the article or as the corruption of an early form beginning with *p*, inclining towards the *quinque* of the Latin. In the majority of cases that have come under my notice in which *p* and *k* sounds replaced each other in the beginning of words or rather of syllables or roots, I have been able to account for the transformation by reference to the Semitic form of the root. This I have found almost invariably to begin with such letters as the Hebrew ה, ח and ע, the first two of which are represented by the Arabic *hha* and *kha*, and the last by *ain* and *ghain*. Our English translation of the Bible, like the Septuagint version, varies in its rendition of these letters as they occur in proper names. Generally, however, it gives the softer sound, even where the Septuagint is hard. Thus חֶבְרוֹן is made Hebron while the Septuagint is *Chēbrōn* and יַעֲבֵץ sinks the ayin in Jabez while the Greek version reads *Igabēs*.²³ In the passage of Hebrew words through other languages this disagreement and inconsistency holds good; sometimes we find the letters mentioned represented by simple vowels and sometimes by aspirates and gutturals even to the hardest of hard *k checks*. When the Coptic article has been prefixed to a root of this kind the power of the aspirate is either lost altogether or else it is absorbed in the prefix, which assumes the form of *ph, f, v*. When the article is not prefixed, the guttural sounds of ח and ע remain, or are exaggerated into those of *k* and *g*, or become softened into that of *s*: e. g. Phanuphis and Canopus from the root עֲנוּב. I must admit, however, that there are many cases which cannot be explained in this way, and among these that of the numeral *five* is one. It would not be difficult to connect the first part of the Hebrew, Syriac and Arabic HAMESH or CHAMSAH, the Ostiak *chajem*, the Siamese, Thibetan, Chinese and Burmese *cha, gna, ong, ngah* with the Armenian *hinc* and the Latin *quinque*, since *m* and *n* are interchangeable, and it is as possible for final *s* to be hardened as for the *k* sound to be softened. Dropping the *k* sound and prefixing the Coptic article, we might embrace the Scandinavian *fem* and *fimm*, the Sanskrit *pancha* and the Persian *penj*; but the Æolic *pempe*, the Welsh *pump*, the Maesogothic *fimf* and the modern German *fünf*, by means of their final *p* or *f*, almost threaten with destruction the whole theory of the Coptic article, more especially as we find that termin-

²³ 1 Chron. ii. 42, 43, iv. 9, 10.

ation even where the radical *m* or *n* is missing, as in the Anglo-Saxon, *fi*, the Frisian *fi*, the Dutch *vijf* and our English *five*, which follow the analogy of the Gaelic and Irish *coig* and *cuig*. The Coptic five, *TOU*, cannot help us here. Such cases, however, are no more to be accepted as offering opposing testimony to those which vouch for the truth of the general principle here illustrated than were the Irish criminal's ten witnesses, who sought to negative the evidence of ten men that had seen him commit the crime for which he was being tried by stating that they had not.

Without referring to Semitic roots I may instance some additional examples among Indo-European words of the presence of the Coptic article. The Sanskrit *udan*, the Greek *hudor*, the Gaelic and Irish *ad*, signifying *water*, have thrown off what the old Phrygian retained in *bedu* and the Slavonic in *voda*. Another Sanskrit word *pavaka*, fire, on the other hand retained the article, while the Latin *focus* and the Gothic *bac* rejected it; but the Sanskrit *urana*, goat, becomes the Lithuanian *baronas*, as the Greek *rhigos* and *oregō* are transformed into the Latin *frigus* and *porrigo*. Bopp is quite right when he says "the Latin Rog (*rogo*, interrogo) appears to be abbreviated from Frog."⁴⁴ This is seen in the Sanskrit *prach* and the German *fragen* both meaning to *ask*. Another instance in which the Sanskrit shows an affinity with the Aeolic and Sabine dialects of Greek and Latin is afforded by the word *pum*, a man, the Latin *homo*. The Welsh *oer* and the Gaelic and Irish *fuar*, cold, the Greek *phrēn* and the Latin *renes*, the English *rap* and the French *frapper*, the Greek *husteros* and the Latin *posterus*, the Welsh *oes* and the Greek *bios*, the English *order* and the German *fordern*, completely set at nought every law of phonetic change forming part of the physical science of language in the attempt made by such means to account for their differences. The science of language has a place among the historical as well as among the physical sciences; and its historical element is as distinct from the physical as are the objects of Palaeontological from those of Mineralogical study, the fossils from the mere strata in which they are imbedded. Following out the analogy, we may compare the subjects of our present philological researches to the Crinoids of many formations, some of which are still attached, or may we not say articulated, to the old Coptic foundation, while others, that once occupied the same position, have floated free, and

⁴⁴ Bopp's Comparative Grammar, I., 116.

are now found under the conditions of an earlier stage of existence. In such a free state we find the Latin *latus*, broad, with the Welsh *llydan*, the Gaelic *leud* and the Irish *lead*, while the Greek *platus*, the German *platt*, the Dutch *plat*, the Danish *flad* and our English *flat* remain fixed by the old Coptic stem. The same relation between the Greek and the Celtic languages subsists in the case of a word for *ship*, which is *ploion* in Greek, but *llong* in Welsh and *long* in Gaelic and Erse. A still more familiar example is that of the Gaelic and Erse *athair* as compared with the Greek and Latin *pater* and our English *father*. The order of relation is, however, inverted in the word denoting anger; this being *orgē* in Greek, but *fearg* in Gaelic and Erse and *froch* in Welsh. Nor do we find the Celtic tongues agreeing among themselves, for while the Welsh *pysg* accords with the Latin *piscis*, the Germanic *Fisch* and our English *fish*, the Gaelic *iasg* and the Irish *iasc* have divested themselves of the prefix and appear in a form nearer to that of the original word. The root of our English *flame* is not easily recognized under the various forms it assumes in different languages nearly related to each other. In Coptic it is *LOPSH*, in Hebrew *LAHAB*, the same in Æthiopic, and in Arabic *LEHIB*. The *b* of the Semitic form becomes *m* by one of the commonest of all processes in language, exemplified in the change of the Hebrew name of a town of the Philistines, *JABNEH*, to the Greek *Iamnia* or *Iamneia*. Thus the *LOPSH*, *LAHAB*, *LEHIB*, of the Coptic and Semitic are transformed into the old Saxon *leoma* and the Celtic *laom*, the broad *o* of the Coptic reasserting itself and taking the place of the Hebrew and Arabic aspirates. In the Gothic, however, the final *b* or *m* is dropped, and the aspirate in consequence acquires additional power, *LAHAB* becoming *log*, a word presenting much resemblance to the Latin *lux*. To this the article is prefixed in Greek, and *phlox* appears, in Romaic *phloga*. But, meanwhile, the final *m* has not been lost sight of, for, in the same language, *phlegma* displays the full proportions of the word. The Latin accepts the prefix but rejects the aspirate in *flamma*. While, however, the later Germanic tongues restore the article, which Gothic and old Saxon had discarded, as in *flamme* and *vlam*, the Spanish, daughter of the Latin, reverses the process, and, although she still recognizes *flama* in her vocabulary, makes use more frequently of the form *llama*. Finally, to show yet more clearly the relation of the hard *g* of Gothic and Greek to the root,

we find the Danish *lue*, the German *lohe* and the Lowland Scotch *low* reproducing what I believe must have been the original word meaning *flame*. The English word *flagon* which is *flacon* in French, *lagēnos* in Greek and *lagenā* in Latin, may doubtless be referred to the Hebrew LOG, a liquid measure containing over twenty-four cubic inches. Varro informs us that the Ionians called *ear* the spring, *bēr*,³⁶ which is nearer to the Persian *behar* than the Latin *ver*, and may not improbably connect with the Erse and Gaelic *ur* and *feur* meaning *green* and *grass*. Professor Müller says, "Beech is the Gothic *boka*, Latin *fagus*, Old High German *puocha*. The Greek *phēgos*, which is identically the same word, does not mean beech but oak. Was this change of meaning accidental, or were there circumstances by which it can be explained? Was *phēgos* originally the name of the oak, meaning the food-tree from *phagein* to eat? And was the name which originally belonged to the oak (the *Quercus Esculus*) transferred to the beech, after the age of stone with its fir trees, and the age of bronze with its oak trees had passed away, and the age of iron and of beech trees had dawned on the shores of Europe!"³⁷ No doubt the author of these words is right in his conjecture, which he hardly dares to take out of the category of hypotheses. The Danish *eeg* is the Greek *phēgos*; the German *eich* is its own *buch* and the English *beech*; while English *oak* and Dutch *eik* represent the Gothic *boka*. These are variations of an old root that must have stood for tree in general, just as we find the words EIL, ELON in Hebrew standing for an oak, a terebinth or any conspicuous tree, and THOR the Coptic and *drus* the Greek *oak* as forms of a root that furnishes the Germanic, Celtic and Slavonic languages with the equivalent of our English *tree*.

One of the most striking instances of a double or even treble phonetic change in the passage of a root through various languages is afforded in the word *god*. I regret that in setting 'his forth it will be necessary to come into conflict with the views of one who is universally recognized *facile princeps* among philologists, and a high authority in oriental literature. I allude to Professor Müller, who speaks most condemningly of Sir William Jones, because "he actually expressed his belief that Buddha was the same as the

³⁶ Varronis de lingua Latina, l.v.

³⁷ Science of Language, Series ii. Lect. v.

Teutonic deity Wodan or Odin."³³ Professor Müller is aware that Sir William Jones was not alone in this belief; but that, together with other orientalists, a large number of northern European mythologists, and among them, some who possessed far greater opportunities of judging in the matter than Sir William Jones, have homologated the opinion of that distinguished father of Eastern learning. I have looked into some, and carefully studied other works to which Professor Müller refers the student of Buddhism, such as the Rev. Spence Hardy's Manual; and although such studies have left me in doubt as to the time when the Buddhist system was fully organized, they have confirmed me in the belief that away in the distant past, long before that period of development, there lived a Gotama Buddha, who is identical with the German and Scandinavian Odin. At present, however, we are not dealing with mythology, but with that language of which Professor Müller fancifully calls it a disease. The same writer says truly "God was most likely an old heathen name of the Deity."³⁴ Now we are acquainted with the old heathen names of the Deity among the northern peoples who make use of this word; and the nearest to it of these names is that of the Lombard and Westphalian *Guodan*.³⁵ In the Germanic languages the name appears in such forms as to show either that the initial *g* is not an essential part of the root, or that it marks the original presence of a letter similar to the Hebrew *y*, which might be retained as a broad vowel, a simple breathing, or a guttural. I hold to the latter opinion, and find the rendering by the broad vowel in Odin, Oden, Oðinn of the Scandinavian. Grimm connects Gwydion, son of Don, of the Welsh mythology⁴⁰ with Odin, making them the same person. It is hard to distinguish this personage from Æddon, who is Buddwas, and who came originally from the region of Gwydion.⁴¹ Æddon presents us with the same form of the root as Odin, while Gwydion is guttural, like Guodan. The prefix of

³³ Chips from a German Workshop, Vol. i., Art. ix., on Buddhism, Art. xi., Letter on the Meaning of Nirvana.

³⁴ Science of Languages, Series ii., Lect. vi.

³⁵ In Florence of Worcester's Chronicle, A.D. 849, it is said of Gaetwa, an ancestor of Woden, that the pagans formerly worshipped him as a god. The Church Historians of England, London, 1853, Vol. ii., Part i., 209. The same statement is made by the historian, Nennius, who calls him Gaet. Six Old English Chronicles. Bohn, 396.

⁴⁰ Grimm, Deutsche Mythologie, 137.

⁴¹ Davies, British Druids, 118.

the Coptic article to the vowel form would give some such word as Bodan or Buodan ; but, with the aspirate, it would make the Mæso-gothic Vodans and the old Saxon Wuodan or Wodan, which the old High German, strictly in accordance with Grimm's law here, changes to Wuotan. The final *n*, which so far has appeared in every form of our word, is not an essential part of it. The Frisian Weda drops it, and it is wanting in the Welsh Aedd, in which we see the Danish *Gud* and the German *Gott*. Now this is the same as the *Choda* of the Persian, a language that has many remarkable points of resemblance to the Germanic tongues. The same word is found in the Sanskrit, and survives in the Hindustani *Khuda*. But the names of Buddha, which are by no means well understood, are simply the names for *God* with the termination restored, not as *n*, but as *m*. These are Codam, Godama, Gotama or Gautama ; and give us back again the Gotan and Guotan of the Teutonic dialects. A link of great importance is furnished by a name of Woden, *Wegtam, the Wanderer*, which preserves the initial *g* along with the softened form of the Coptic article, and gives the termination of Gautama. Buddha, different as it appears in every respect from the word with which it is often ignorantly joined, is in reality the same, having doubtless come into the Sanskrit through some other channel than that by which Gautama entered. In it we find the final liquid wanting, the German *w*, in plain disregard of Grimm's law, changed to *b*, and the Frisian Weda reproduced. In confirmation of this I may refer to the case of identity already established between the Germanic *wot* or *wuot* and the Sanskrit *budh*, to perceive or know, of which the Welsh form is by no accidental coincidence *gwyddoni*. Thus in Buddha, Wotan and Gwydion we find not only the supreme god of the northern families of the Aryan stock, but also the symbol of knowledge among those different peoples.

(To be continued.)

LAHONTAN.

BY THE EDITOR.

(Continued from page 250.)

We begin with a letter, written at Michilimackinac in May, 1688, addressed by Lahontan to the Marquis de Seignelay, Minister for the Colonies, in relation to a leave of absence, which had been obtained for him to visit France for the purpose of attending to some private family affairs. We give this letter first, because in it Lahontan records some particulars in regard to his father. Also the family business which it mentions, repeatedly comes up in subsequent letters, and requires to be borne in mind. The document will explain itself. The Marquis de Seignelay is the son and the successor in office of the famous Colbert. Louis Quatorze is the reigning king. "Honoured Sir," Lahontan says, "I am the son of a gentleman that spent three hundred thousand crowns in deepening the water of the two Gaves of Bearn. He had the good luck to compass his end by conveying a great many brooks to these two rivers; and the current of the Adour was by that means so far strengthened as to render the bar of Bayonne passable by a fifty-gun ship, whereas in former times a frigate of ten guns durst not venture over it. It was in consideration of this great and successful attempt that his Majesty granted to my father and his heirs forever, certain duties and taxes amounting to the sum of three thousand livres a year. This grant was confirmed by an act of the Council of State, dated January 9th, 1658, signed Bossuet, collated, &c. Another advantage accruing to the King and the Province from my father's services, consists in the bringing down of masts and yards from the Pyrenean mountains, which could never have been effected, if he had not by his care, and by the disbursing of immense sums, enlarged the quantity of water in the Gave of Oleron to a double proportion. These duties and taxes which had been jointly entailed upon him and his heirs, ceased to be ours when he died; and to inflame the disgrace, I lost his places, viz: that of being an honorary judge of the parliament of Pau and Reformateur du Domaine des Eaux et Forêts for the Province of Bearn, all which were mine by inheritance. These losses are now followed by an unjust seizure which some pretended creditors have made of the Barony of Lahon-

tan, of a piece of ground that lies contiguous to it, and of a hundred thousand livres that lay in the hands of the Chamber of Bayonne. These faithless creditors have no other reason to sue me, but that I am now at the extreme end of the world, and that they are rich and supported by the credit and protection of the parliament of Paris, where they hope to make good their unjust pretensions in my absence. Last year I obtained leave to return to France, in order to take care of this matter; but now M. de Denonville has sent me with a detachment to these lakes; from whence I humbly petition that your Honour would vouchsafe me leave to come home the next year, and at the same time honour me with your protection. I am, with all possible respect, your Honour's, &c., &c."

When this memorial was addressed to the Marquis de Seignelay, Lahontan had been in Canada nearly five years. The first letter of the series of which Lahontan's volumes principally consist was written in 1683. It is dated at Quebec, Nov. 8th, in that year. Attached as a junior officer to one of three companies of marines, Lahontan had just arrived from Rochelle, in a frigate. He had not at the time completed his sixteenth year. De la Barre, the Governor-General of New France, had asked for a re-inforcement of six or seven hundred men to assist against the Iroquois, but only the force just named was sent, it being considered unadvisable to risk more on the seas at such a late season of the year. The time occupied in the passage is not exactly specified. No bad weather was experienced until the Banks of Newfoundland were reached. Here they caught incredible numbers of cod in 32 fathoms of water, and here the sailors performed on those who had never before made the voyage the ceremonies practised on novices crossing the Line, passing through the straits of Gibraltar, the Sound, the Dardanelles, &c.; persons of note and character, however, Lahontan observes, obtaining exemption on furnishing five or six bottles of brandy for the ship's crew. An officer and some men died of scurvy in the passage. On the Banks, the needle varied twenty-three degrees to the northwest. When only thirty leagues below Quebec they were on the point of turning back to France, the ice encountered in the river and the snowy appearance of the surrounding country alarming them.

The second letter is dated at Beaupré, [near Quebec,] May 2, 1684. Lahontan has now experienced one Canadian winter. His marines had been cantoned at Beaupré ever since their arrival. They were

now under orders to be in readiness to embark for Montreal in fifteen days. "Most of the inhabitants of Canada," he says, "are a free sort of people that removed hither from France, and brought with them but little money to set up withal. The rest are those who were soldiers about thirty or forty years ago, at which time the regiment of Carignan was disbanded and they exchanged a military post for the trade of agriculture. Neither the one nor the other paid anything for the grounds they possess, no more than the officers of the troops, who marked out to themselves certain portions of wild and woody lands; for this vast continent is nothing else than one continued forest. The governors-general allowed the officers three or four leagues of ground in front with as much depth as they pleased; and at the same time the officers gave the soldiers as much ground as they pleased, upon the condition of the payment of a crown per arpent by way of fief." After describing the exceptional mode in which, as he was informed, wives were provided for the rank and file of the settlers, he continues: "In this country every man lives in a good and well-furnished house; and most of the houses are of wood and two storeys high. Their chimneys are very large, by reason of the prodigious fires they make to guard themselves from the cold which is there beyond all measure from the month of December to that of April."

The third letter is dated Quebec, May, 15, 1684, and in it Lahontan describes Quebec and the Island of Orleans. During the winter he had been out on a hunting excursion with thirty or forty young Algonquins, "well made, clever fellows," he says. "My design in accompanying them," he explains, "was to learn their language, which is highly esteemed in this country, for all the other nations for a thousand leagues around (excepting the Iroquois and the Hurons) understand it perfectly well. Nay, all their respective tongues come as near to this as the Portuguese does to the Spanish. I have already made myself master," he adds, "of some words with a great deal of facility; and they being mightily pleased in seeing a stranger study their tongue, take all imaginable pains to instruct me."

Letters four, five, six, seven, and eight were all written at Montreal. The first three are descriptive of the country, and of the habits and customs of the people, native and immigrant. The seventh gives an account of De la Barre's abortive expedition against

the Iroquois in 1684. Lahontan and the three companies of marines accompanied De la Barre from Fort Frontenac to La Famine or Salmon River on the opposite side of Lake Ontario, where the final interview between the Governor and Grangula (La Grande Gueule), the representative of the Five Nations, took place. "All the world blames our General," Lahontan writes, "for his bad success. It is talked publicly that his only design was to cover the sending of several canoes, to traffic with the savages in those lakes for beaver skins. The people here," he says, "are very busy in wafting over to Court a thousand calumnies against him; both the clergy and the gentry of the long robe write to his disadvantage. Though after all," Lahontan asserts, "the whole charge is false, for the poor man could do no more than he did." The truth being that the force under M. De la Barre's command was immensely reduced in strength by a deadly fever which raged amongst them at Fort Frontenac, while preparing to penetrate the Iroquois territory. In returning to Montreal from this expedition, Lahontan and his marines descended the rapids in flat-bottomed boats made of deal, the first time such a thing had ever been done; accomplishing the distance from La Galette to Montreal in two days. The ascent from Montreal to Fort Frontenac had occupied twenty days.

The eighth letter is written from Montreal in June of the following year (1685). In it Lahontan describes M. de Callieres' preparations for the fortification of the town. All the inhabitants of the place and vicinity were ordered to cut down and bring in great stakes, fifteen feet in length. "During the winter," he says, "these orders were pursued with so much application that all things were now ready for making the enclosure, in which five or six hundred men are to be employed." Lahontan passed a portion of the winter again in a hunting excursion with the Algonquins. The rest of it was made unpleasant to him by the officiousness of the gentlemen of the Seminary, the "Seigneurs ecclesiastiques," as he speaks. On one occasion, he says, M. le Curé came to his lodgings when he was out, and observing among the books on the table a certain Romance he cruelly mutilated it, by tearing out a number of leaves. Lahontan was greatly enraged. "Ils ne se contentent pas," he exclaims, "d'étudier les actions des gens: ils veulent encore fouiller dans leurs pensées!" On the 30th of March he is sent with a small detachment to Chambly; but in the following October he is at Boucherville.

His ninth letter is dated there. In it he speaks of the arrival of M. de Denonville to take the place of M. de la Barre as Governor-General. The new Governor has brought over with him from France some additional companies of marines: and he is now at Montreal, whither he has proceeded with some 600 regulars, after a rest of a few weeks at Quebec. The army is put in winter quarters round Montreal. "My quarters," Lahontan says, "are at Boucherville which is at a distance of three leagues from Montreal." Letters ten and eleven were also written at Boucherville, and dated July 8, 1686, and May 2, 1687, respectively. The principal incidents narrated of the two intervening winters are moose-hunts, deer-hunts, otter-hunts and grouse-hunts. "Besides the pleasure of so many diversions," however, he says in the letter of May 2, "I was likewise entertained in the woods with the company of some of the worthies of former ages. Honest old Homer," he explains, "the amiable Anacreon, and my dear Lucian, were my inseparable companions. Aristotle too," he continues, "desired passionately to go along with me, but my canoe was too little to hold his bulky equipage of peripatetic syllogisms. So that he was even fain to trudge back to the Jesuits, with whom he is quite at home. I had a great deal of reason to rid myself of that great philosopher's company," he affects to say, "for his ridiculous jargon and his senseless terms would have frightened the savages out of their wits."

The twelfth letter is dated at "St. Helen's, over against Montreal," June 8, 1687. Lahontan has just heard that his relations in France have procured for him, with considerable difficulty, leave to return home to attend to his family affairs, and that the sooner he is in Paris the better. But M. de Denonville informs him that he cannot be spared just now. Great preparations were being made for a second expedition against the Iroquois, this time on a larger scale than before. The chevalier de Vaudreuil had come out to take command of the forces. A considerable army consisting of regulars and militia and 500 converted Indians (*sauvages Crétiens*) was assembled in and about Montreal. He was about instantly to set off for Fort Frontenac on the way to the Iroquois country. After the campaign, Lahontan would be permitted to go.

The thirteenth letter opens with some obvious moralizing on the disappointments men are subject to. "It has been a maxim in all ages, that the events of things are not always answerable to men's

expectations. When men form to themselves a promising prospect of compassing their ends, they frequently meet with the mortification of seeing themselves disappointed. This I speak by way of application to myself," he says to his correspondent; "for instead of going to France pursuant to the contents of the letter I wrote to you two months ago, I am now obliged to proceed to the end of the world, as you will find by the following narrative of our expedition." This letter is dated at Niagara, Aug. 2, 1687. The incursion into the territory of the Iroquois had been made. Some bands of Indians from the far west had joined the force, at the mouth of the river of the Tsonontouans (the Genesee),—and fortunately, for after marching inland through woods seven leagues, Denonville and Vaudreuil with their men fell into an ambuscade and suffered severely at the hands of the Iroquois, when a complete panic prevailed, and the "Christian" and other savages did good service by attacking their red congeners, the Iroquois, putting them to flight, pursuing them to their village and slaying many of them. In this affair, on the French side ten Indians and one hundred soldiers were killed and twenty-two wounded. The French Indians brought back to Denonville eighty Iroquois heads. After laying waste and plundering the surrounding country the expedition withdrew and passed on up the Lake to the mouth of the Niagara River. Here, on the south or Iroquois side, a palisade fort with four bastions was erected. It was only three days in building. This was of course the original of the existing Fort Niagara. The Indians from the west who had accompanied Denonville, now dispersed, extremely dissatisfied with their white military chief for his supposed want of vigour. Denonville however had assured them of his fixed resolution to carry on the war against the Iroquois until they should be exterminated. To give confidence in that quarter, he decided to send to the west a small force; and as Lahontan had acquired a knowledge of the Algonquin dialects he was considered the proper person to be put in charge of the detachment. Accordingly on the very day of the departure of the Indian allies, "the general," says Lahontan in his 13th letter, "called for me and acquainted me that inasmuch as I understood the language of the savages, I was to go with a detachment to cover their country pursuant to their request. At the same time he assured me," Lahontan adds, "he would inform the Court of the reasons that moved him to detain me in Canada notwithstanding that he had orders to give me leave to go home.

You may easily guess," he continues, "that I was thunderstruck with this news, when I had fed myself all along with the hopes of returning to France, and promoting my interest which is so much thwarted. However I was forced to be contented, for the greater power bears the sway all the world over." He then describes his preparations for this expedition to the west and speaks of some of the persons who are to accompany him. "Pursuant to my orders," he says, "I made all suitable preparations for my journey without loss of time. I took leave of my friends who singled out the best soldiers for me, and made me presents of clothes, tobacco, books, and an infinity of other things which they could spare without inconvenience because they were then on their return to the colony (*i. e.* Quebec) which affords them everything that one can desire. By good luck," he continues, "I brought with me my astrolabe from Montreal, which will enable me to take the latitude of the lakes and to make several other useful observations, for, to all appearance, I shall be out two years or thereabout. The men of my detachment," he then says, "are brisk proper fellows and my canoes are both new and large. I am to go along with Mr. Duluth, a Lyons gentleman, who is a person of great merit, and has done his king and his country very considerable services. Mr. De Tonti makes another of our company; and a company of savages is to follow me. Mr. De Denonville will set out for the colony by the north side of Lake Frontenac in two or three days. He designs to leave at Fort Frontenac a number of men and ammunition equal to what he leaves here." (He had previously mentioned that 150 men were to be left at Fort Niagara under the joint command of M. des Bergeres and M. De Troyes, with ammunition and provision for eight months.)

Letter fourteen is written at Michilimackinac, and is dated May '26, 1688. Nearly a year has elapsed. He has grown somewhat indifferent to the situation of his private affairs in France, which he has just been informed by a letter, continues to be bad. "I am at a loss to determine," he says to his friend and patron, "whether it is owing to stupidity or to greatness of mind, that the loss of my estate which I infallibly foresee, does not at all affect me. Your letter is but too shrewd a confirmation of my prophecy. However I cannot but pursue your seasonable advice in writing to Court." To this letter is appended the memorial to the Marquis de Seignelay, which has already been given. He then proceeds with a narrative

of his journey westward from Fort Niagara in the preceding year. "I embarked at Niagara," he says, "on the 3rd of August in a canoe manned with eight soldiers of my detachment; and after running three leagues against the current of the strait, came that same day to the place where the navigation stops. There I met with the Sieur Grisolon de la Tourette, brother to M. Duluth, who had ventured to come from Michilimackinac in a single canoe to join the army. On the 4th we commenced the grand portage to the southward, being obliged to transport our canoes from a league and a half below the great Falls of Niagara to half a league above it. Before we got at any beaten or level path we were forced to climb up these Heights, upon which a hundred Iroquois might have knocked us all on the head with stones. While we were employed on this transport-service, we were alarmed twice or thrice, which cautioned us to keep a strict guard and to transport our baggage with all possible expedition. Nay, after all our precautions, we were forced to leave one-half of our baggage about half way upon the discovery of a thousand Iroquois that marched towards us. Do you judge, Sir, if we had not some reason to be alarmed, and whether we would stand to sacrifice all to the natural principles of self-preservation; though indeed we were in danger of losing our lives as well as our baggage; for we had not embarked above the Fall half a quarter of an hour when the enemy appeared upon the bank of the strait. I assure you I escaped very narrowly; for about a quarter of an hour before, I and three or four savages had gone five hundred paces out of our road to look upon that tremendous cataract, and it was as much as I could do to get at the canoes before they put off. To be taken by such cruel fellows was no trifling thing. *Il morir e niente, ma il vivere brugiando e troppo.* "To die is nothing, but to be burnt alive is too much."

He then briefly speaks of the Falls of Niagara. "This *Sault* or Leap," he says, "is seven or eight hundred feet high and about a half a league wide." He had, as we have seen, only a hurried glimpse of the Falls. He had just been accomplishing the distance from Queenstown, as we should speak, under difficulties. His imagination over-estimated the total height. In the same way the hostile Iroquois observed along the river bank may not have been exactly one thousand. By rowing strongly all night they reached the outlet of Lake Erie on the following morning. He remarks on the swiftness of the current. They coasted along the north shore

and frequently saw on the sands flocks of fifty or sixty wild turkeys. On the 6th of September they enter the Detroit river; on the 8th they are through Lake St. Clair, which is twelve leagues in circumference; on the 14th they are at the mouth of Lake Huron. Here was the Fort which Lahontan with his soldiers was to take charge of. This fort, we are informed, had been built by M. Duluth at his own expense and manned by the *coureurs de bois*. "The garrison surrendered their post," Lahontan says, "very cheerfully to my detachment, and then pursued their commerce with the savages, for everyone had leave to go where he pleased." This post is known as Fort St. Joseph. Its present representative is Fort Gratiot, nearly opposite our Canadian Port Sarnia. From some Iroquois prisoners captured by a party of Hurons and brought into Fort Joseph, Lahontan learns that the new Fort at the mouth of the Niagara river is beleaguered by eight hundred Iroquois, who intend, after reducing that post, to come on and attack Fort St. Joseph. His provisions running short he starts on the 1st of April, 1688, with some of his men, for Mackinaw to collect Indian corn. He reaches Mackinaw on the 18th and finds corn very scarce. Whilst staying there, some of La Salle's party arrived with dispatches, as they assert, for France *via* Quebec. But Lahontan suspects that La Salle is dead: which was the fact. He had been murdered by his companions Duhaut and Liotot on the 19th of the preceding March, (1687), in the neighbourhood of the southern branch of the river Trinity in Texas, while endeavouring to strike the Mississippi. "On May the 6th," Lahontan says, "M. Cavelier arrived here being accompanied by his nephew, Father Anastase, the Recollet, a pilot, one of the savages and some few Frenchmen, which made a sort of party-coloured retinue. These Frenchmen were some of those that M. de la Salle had conducted upon the discovery of the Mississippi. They gave out that they are sent to Canada, in order to go to France with some dispatches from M. de la Salle to the King, but we suspect that he is dead, because he does not return along with them. I shall not spend time," he adds, "in taking notice of their great journey overland, which by the account they give cannot be less than 800 leagues." The M. Cavelier here mentioned was the Abbé Cavelier, a brother of La Salle's.

After purchasing sixty sacks of corn of about 50 lbs. each, Lahontan goes on to the Sault Ste. Marie with the hope of inducing some

of the Sauteurs or Outchipoués as he calls them, to join him in an expedition against the Iroquois. "Forty young warlike fellows" are persuaded to do so. They start together for the Fort St. Joseph, coasting the north and east sides of Lake Huron, after being joined by the soldiers whom he had left at Mackinac and a party of Ottawas. The forty young Chippeways occupied five canoes, each of which held eight men. They departed from the Sault on the 13th of June and reached Fort St. Joseph on the 1st of July. "We coasted the Manitoualin island," he says, "a whole day, and being favoured by a calm, crossed from isle to isle till we made the east side of the Lake. In this passage we crossed between two islands that were six leagues distant the one from the other; and upon that occasion our canoe men, who were not used to venture so far out in their boats, were fain to tug hard at their oars. The savages stood out at first and refused to venture so far from land, for they would have rather gone fifty leagues about; but at last I overpersuaded them by representing that I would have been very loth to venture my own person if I had not been sufficiently provided against all danger by an exact knowledge of the winds and the storms. The calm continuing we made the River Theonontaté on the 25th." The two islands six leagues asunder were probably those known at the present day as Fitzwilliam island and the isle of Caves: the latter just off Cape Hurd. The River Theonontaté was, as we may suppose, the Maitland.

On the 3rd of July they are all on the move for Lake Erie. This excursion is described in the fifteenth letter, dated September 18th, 1688. On the 7th of July they are at the entrance of the river Condé (Cataraugus creek) towards the eastern extremity of the Lake. They here fell trees and build a kind of barricade. The Sauteurs and Ottawas proceed two days' march up the stream intending to plunder some villages. They suddenly come upon a large party of Iroquois and instantly take to flight. Lahontan is startled to hear the sentinel in the redoubt crying out *aux armes! notre parti est battu et poursuivi!* No enemy appeared however until the following day: and then no engagement took place. Lahontan learned from one Cha-ou-a-non, an escaped slave, who came into the redoubt, that the number of the Iroquois band was four hundred, and sixty more were expected from the Miami country with prisoners or slaves. Cha-ou-a-non was able also to report that at the time when Denonville was concocting measures with the Iroquois for peace, an agent

of the Governor of New York, dissuaded them from listening to Denonville. The name of this emissary is here given as Aria. (It was doubtless the interpreter, Arnout Cornelsson Viele, who, as other authorities state, was known among the Iroquois as Arie). The Sauteurs and Ottawas now propose to move westward and intercept the sixty Iroquois and rescue the prisoners. On the 24th, accordingly, Lahontan's party begin to retrace their course along the south shore. On the 28th, while resting on an island, they descry canoes at a distance. The Sauteurs contrive to pass over to the main land and conceal themselves in the woods, the Ottawas and soldiers remaining where they were. The boats near the island, but on observing a band of men on the shore they sheer off to the mainland, where they are assaulted by the Sauteurs. Of twenty Iroquois three are killed, five are wounded. The rest are captured, and the prisoners, twenty-four in number, including seven women, are liberated. Four Sauteurs however lose their lives. It is learned that the remainder of the Iroquois band, having with them thirty-four prisoners, male and female, are on their way eastward by land. It was resolved to intercept these also. On the 4th of August this was accomplished, but the precipitancy of the Ottawas who fired too soon, enabled the Iroquois to escape, with the exception of ten or twelve who were killed. The prisoners were all rescued. On the 13th the whole party are in the Detroit river, where they rest, among the islands, for eight days, and feast on venison, wild turkeys, and wild fruit, "which was fully ripe." On the 24th they are all again at Fort St. Joseph. Here Lahontan finds a party of fifty Miami Indians commanded by one Michitonka, who had just returned from a hostile excursion in the Iroquois country in the neighbourhood of Fort Niagara. Michitonka reported that the scurvy had carried off all the men left at that post with the exception of twelve. M. de Troyes, the commandant of the Fort, had died, and M. de Bergeres had removed with the twelve survivors to Fort Frontenac, where a like mortality had prevailed. The Governor of Canada, Denonville, was negotiating a peace with the Iroquois, and Michitonka had been desired to return to his country with his band, and to undertake no more hostile expeditions for the present against the Iroquois. Under the circumstances, Lahontan, after due consideration, resolved to abandon Fort St. Joseph and retire to Michilimackinac. On the 27th they set fire to

the Fort and started for Michilimackinac, by the south shore. The Miamis return home overland. At Michilimackinac Lahontan finds M. de la Durantaye, commander of the Coureurs de bois in the far west and south, who has lately come up from Quebec. He has brought to Lahontan funds wherewith to pay his men, and orders to return to Quebec, with his soldiers, at once, if the season should permit; if not, in the following spring. The French and natives give it as their opinion that it would be unsafe to set out now. It was this detention that led to the famous expedition to the Mississippi and up the Rivière Longue. "I am on the point of undertaking another journey," he says at the close of his fifteenth letter, "for I cannot mew myself up here all this winter. I design to make the best use of my time, and to travel through the southern countries of which I have heard so much, and I have engaged four or five good huntsmen of the Ottawas to go along with me." The sixteenth letter is taken up with an account of this expedition. He leaves Mackinaw on the 29th of September with his detachment and five Ottawa huntsmen. "All the soldiers," he says, "were provided with new canoes loaded with provisions and ammunition, and such commodities as are proper for the savages." On the 9th of the following month he is at Fort Outagamis, and his party is increased by the addition of ten Outagamis warriors who understood the language of the Eokoros up the Rivière Longue. On the 19th he has reached the river Wisconsin, after performing the usual portage, and in four days more he is on the Mississippi. On the 3rd of November he enters the Long River. On the 8th they have reached the country of the Eokoros. On the 12th they proceed on, accompanied by an escort of five or six hundred Eokoros. On the 21st he is among people "who are very civil and so far from a wild savage temper that they have an air of humanity and kindness." Their huts were long and rounded at the top, made of reeds and bulrushes and cemented with a sort of fat earth. The men and women go naked. The chief of the village here presented him with six slaves of the Essanapés, a tribe hostile to his, inhabiting about 60 leagues up the river. On the 27th they reach a village of the Essanapés. On the 3rd of Dec. they arrive at the principal village of the Essanapés. The head chief here furnishes him with a convoy of two or three hundred men, to accompany him to the country of the Gnacsitares who were allies of the Eokoros, against especially the Mozeemleks, "a nation who never took the

field, the Eokoros said, without 20,000 men at least." Lahontan leaves his canoes at the chief village of the Eokoros, and proceeds in five "pirogues" or log-canoes. Four days after leaving the village of the Eokoros the party were put to some inconvenience from the cold. "The first day (after leaving the village) we had enough to do," Lahontan says, "to run six or seven leagues by reason of the bulrushes with which the lake is encumbered. The two following days we sailed 20 leagues. The fourth day a west-north-west wind surprised us with such a boisterous violence that we were forced to put ashore and lay two days upon a sandy ground where we were in danger of perishing from hunger and cold; for the country was so barren that we could not find a chip of wood wherewith to warm ourselves or to dress our victuals, and as far as our eye could reach there was nothing to be seen but fens covered with reeds and clay, and naked fields. Having endured this hardship, we started again and rowed to an island upon which we encamped, but found nothing there but prairie; however to make some amends we fished up great numbers of little trouts upon which we fed very heartily. At last, after sailing six days more we arrived at the point or land's-end of that island which you see marked with a *fleur de lis* in my map. It was then the 19th day of December, and the severity of the winter had not as yet been great." On the 19th of December villages of the Gnacsitaires are sighted. The Essanapé messengers whom he sends to the village are at first badly received, because it is imagined that Lahontan and his soldiers are Spaniards from New Mexico. The Gnacsitaires instantly send swift runners to a tribe 80 leagues to the south, who were acquainted with Spaniards. Some of these speedily arrive and pronounce the new comers not to be Spaniards. Friendly relations are then speedily established between Lahontan and the Gnacsitaires. He remained in the neighbourhood until the 26th of January, when, after setting up a pole bearing the arms of France engraved on a plate of lead, he began his return. The site of this pole the soldiers named "Lahontan's limit." On the 5th of January he is again in the country of the Essanapés. On the 2nd of March he is floating on the Mississippi. By the 17th he has descended to the mouth of the Missouri. An excursion is made up this river as far as the Osage. They then return. On the 25th they are again in the Mississippi. On the 29th they are at the mouth of the Wabash. Lahontan regretted that he had not time to make an ex-

ursion up that stream, which was navigable, he was assured, for 100 leagues. He now reascends the Mississippi and is at the River Illinois on the 9th of April. On the 16th he is at Fort Crevecoeur on that river. On the 24th he has made the portage and is at Chicago. On the 28th he has pushed across the lake to the mouth of the St. Joseph, where La Salle had once established a fort. On the 22nd of May he arrives at Michilimackinac.

At p. 245, we have spoken too strongly of the general improbability of the expedition up the Rivière Longue. On again inspecting the narrative the particulars which it recounts do not appear so unworthy of credit. The special character, circumstances and object of the writer must, as we have already intimated, be taken into consideration, and some allowance accordingly made for over-coloring. The winter of 1688-9 may have been unusually open and mild. It is to be remembered that westward of Lake Superior the climate is not everywhere what the parallel of latitude would indicate. So that, after all, it is possible that Lahontan may have made his way in the manner described, up the Minnesota River, as far as the western extremity of the Lac-qui-parle. On the continuation of the stream sketched on buckskin for him by the Indians, Big Stone Lake seems to be laid down. On the engraved map accompanying the letters, a bold double-dotted line is drawn vertically through the fleur-de-lis which marks the limit stated to have been reached—a point distinguished also by the word "Borne." The double-dotted vertical line divides the portion of the map sketched by the Indians from the portion drawn by the traveller from personal observation, and is inscribed in large letters, "Separation de ces deux cartes," showing that the two portions were to be regarded as two distinct maps. Over the Indian portion, moreover, is written in conspicuous letters, "Carte que les Gnacsitaires ont dessiné sur les peaux de cerfs, &c.;" while over the traveller's own portion is written in a similar manner, "Carte de la Rivière Longue, &c." Have we in the Essanapés, the Assiniboines; in the Gnacsitaires, the Chocktaws; in the Eokoros, the Absorokas, by the English called Crows?

Letter seventeen is dated at Quebec, Sept. 28, 1689. The writer left Mackinaw on the 8th of June. On the 9th of July he is at Montreal. "The navigation is pretty safe from Michilimackinac to French River," he says; "for in coasting along Lake Huron we meet with an infinity of islands which serve as a shelter. But in going up

that river there is some difficulty; for it has five cataracts which oblige us to turn out and carry all overland thirty, fifty, and an hundred paces. Having passed that river we entered Lake Nipissing, from whence we are forced to transport our canoes and baggage two leagues overland, to another river which has six or seven rapids, which the canoemen commonly shoot. From that river there is another land-carriage to the river Creuse, which falls with rapid currents into the great River of the Ottawas, near a place called Mataouan. We continue our course upon this great river till we come to the point of the island of Montreal, where it is lost in the great river St. Lawrence." Here within three leagues of Montreal Lahontan's canoe was upset in a rapid, and he narrowly escaped drowning. "This was the only time I was in danger through the whole course of my journeyings," he observes. On this occasion an Indian was drowned, and a canoe, with the packs of six savages, was lost. On the day after his arrival he waits on M. de Denonville and gives him an account of his travels. At the end of September a vessel from France brings the tidings that M. de Denonville is recalled, and that Frontenac is re-appointed Governor in his place. "The gentlemen, merchants and other inhabitants are making preparations for solemnizing his arrival, which they expect," Lahontan says, "with as much impatience as the Jews do the Messiah! The very savages," he continues, "show an uncommon joy upon the hopes of his return. And indeed," he observes, "we need not think it strange, for that Governor drew esteem and veneration, not only from the French, but from all the natives of this vast continent, who looked upon him as their guardian angel." Lahontan concluded his letter by saying, "I make account to set out for Rochelle, when the vessel that brings our new Governor returns to France." Nevertheless he is still at Quebec on 15th of the following November (1689), the date of the eighteenth letter. Frontenac wants his services in Canada, and the visit to France is again postponed. Lahontan has received the intelligence that his hereditary property near Pau had been actually sold; but that he may recover it by reimbursing the sum paid, and proving that he was actually in the King's service in remote parts of the world when the estate was sold. Frontenac proceeds to Montreal for a few days after his arrival, and takes Lahontan with him. M. Mantet is sent forward to Fort Frontenac to repair the works there.

Letter nineteen is dated at Montreal, Oct. 2, 1690. Nothing very

striking has been accomplished during the year. Frontenac has sent a messenger, "the Chevalier D'Eau," to treat of peace with the Iroquois; but the Chevalier had been handed over as a prisoner to the English, and the party that accompanied him had been cruelly burnt by the Iroquois, this in retaliation for the massacre of certain Iroquois envoys through treachery in the preceding year. Lahontan had declined this mission, and Frontenac afterwards remarked that out of twenty captains that offered to execute that service, he was the only one who had been capable of foreseeing its bad results. Lahontan had been out with a detachment to protect the reapers at Fort Roland, in the island of Montreal. Frontenac hears that an English fleet is coming up the river to attack Quebec. He hastens down, and Lahontan is in his train. They accomplished the distance between Montreal and Quebec in three days. In letter twenty, Sir Wm. Phipps' unsuccessful attempt on Quebec is described. Lahontan is sent by Frontenac with despatches to France. He leaves Quebec in a frigate so late in the season as the 20th of November. On the 12th of January he is writing letter twenty to his friend from Rochelle. He has heard that the Marquis de Seignelay is dead, to whom he had a strong recommendatory letter from Frontenac. In letter twenty-one, Lahontan describes his interview with the Minister Pontchartrain, De Seignelay's successor. Pontchartrain is acquainted with his affairs, and says that he may try what he can do in relation to them; but that he must return to Quebec in one of the autumn ships. Lahontan finds it too costly a thing to prosecute his suit for the recovery of his property. He takes a singular step. A relative of his, the Abbé d'Ecoutes had made him a present of one hundred louis d'or, and he laid them out in acquiring an admission into "the Order of St. Lazarus," an ancient military confraternity having, so to speak, benefit of clergy (privilege de clericature). He hoped that the same relation would bestow on him some simple benefice which he might throw in his way without injuring himself; but it seems," Lahontan says, "a scruple of conscience stood my enemy." He then, through M. Pontchartrain, asks "a place" of the King; and after fruitless solicitations for what, he says, I thought I had some title to in consideration of my services, I received this answer—that the King would order M. de Frontenac to provide for me as handsomely as he could when an occasion offered." He returns to Quebec in the ship *Honoré*, sailing from Rochelle on the 28th of July, 1691, convoyed as

far as Cape Finisterre by the Count d'Aunay. On the 6th of September the *Honoré* is in the Gulf, and is attacked by an English ship. "The fight lasted two hours, and both sides fired continually one upon another, but the sea being tempestuous we were obliged to sheer off as night came on, without suffering any other loss than the wounding of two seamen and the receiving of twenty-eight or thirty shot in our masts, sails and rigging." On the 18th they are at anchor at Quebec. Letter twenty-three is written on the 25th of October in the following year (1692). Lahontan is now once more back in France. He writes from Nantes. He has been sent over by Frontenac to obtain the royal sanction to a scheme of defence against the Iroquois—a scheme which Lahontan himself has suggested, and which he is to carry into effect if the proper authorization can be procured. "I project," he says, "to build and maintain three forts upon the course of the lakes, with some vessels that shall go with oars, which I will build according to my fancy; but they being light and of great carriage may be managed either with oars or a sail, and will also be able to bear the shocks of the waves. I demand fifty seamen of the French Biscay, for they are known to be the most dexterous and able mariners that are in the world. I must also have two hundred soldiers, chosen out of the troops of Canada. I will build three fortresses in several places: one at the mouth of the Lake Erie; the second where I maintained a fort in 1687 and 1688 (Fort St. Joseph) at the southern extremity of Lake Huron; and the third at the mouth of the Bay of Toronto, upon the same lake (Matchedash bay). Ninety men will be sufficient to garrison these three redoubts, and perhaps a smaller number; for the Iroquois who never saw a cannon but in a picture, and to whom an ounce of powder is more precious than a louis d'or, can never be persuaded to attack any kind of fortification. I desire of the King for putting this project in execution, 15,000 crowns a year for the maintenance, entertainment, subsistence and pay of these 250 men. It will be very easy for me to transport, with the above-mentioned vessels, 400 savages into the country of the Iroquois whenever I have a mind. I can carry provisions for 2000, and transport as many sacks of Indian corn as are necessary for maintaining these forts both winter and summer. It is easy to have plenty of hunting and shooting in all the isles, and to contrive ways for crossing the lakes; and it will be so much the more easy to pursue the Iroquois in their canoes and sink them, that my vessels are light and my men

fight under a cover." Lahontan sailed from Quebec on the 28th of July, in the *St. Anne* frigate. On the 18th of August he has put into Placentia bay, in Newfoundland. While lying there an English fleet appears before the place—five vessels, one of them, the *St. Albans*, carrying 66 guns and 600 men. In the fort was a force of only 50 men, with a scant supply of ammunition. It was supposed that the English would land and get in rear of the fort, which was fully commanded from behind. Just as the boats from the fleet, fifty in number, carrying six or seven hundred men, were nearing the only practicable landing place, Lahontan and sixty Biscayan sailors suddenly present themselves on the shore, when the boats draw off and row to another point. The Biscayans were premature in thus discovering themselves, but Lahontan could not restrain them. The effect on the invaders, however, was that which has been described. It was gathered after wards from a French pilot that it was imagined by the English officers that there was a body of fourteen or fifteen hundred seamen in Placentia; and that the detachment seen at the landing places was simply a decoy to an ambuscade. The next day, after cannonading the fort with little effect for nearly five hours, and setting fire to the building at Pointe Verte, the fleet set sail. On October the 6th, the *St. Anne* proceeds on her way, accompanied by a number of vessels. On the 23rd they are at anchor in the harbour of St. Nazere, eight leagues from Nantes.

On the 10th of May in the following year (1693) Lahontan is again writing at Nantes. He has been to Versailles. The scheme for the forts has been laid by M. de Pontchartrain before the king; but the project is not sanctioned. The king has sent out orders to M. de Frontenac to make peace with the Iroquois on any terms. Lahontan's former prayer for a "place" is however complied with. He is appointed "Lieutenant du roi" for Newfoundland and Acadia, with the command of a "free company" of 100 men. And this is in acknowledgment, he is told, of his gallantry at Placentia in the preceding August. Nevertheless, he adds, it was not he, but the sixty impetuous Biscayans whom he could not restrain, that prevented the landing of the English. "Thus how often it happens," he observes, "that such persons are preferred, who have no other patrons in the world but chance." He would have chosen rather to return to Canada for, says he, a solitary life is most grateful to me

and the manner of the savages are to my taste." He is now at Nantes expecting to sail in a few days from St. Nazere in a vessel supplied by the government to the Messrs. d'Angui, merchants of Nantes, who, in return for a royal monopoly granted them, undertake to maintain the garrison at Placentia. In letter twenty-five he informs his friend that after a detention of some fifteen days at St. Nazere he sailed on the 12th of May. He arrives at Placentia on the 20th of June, having captured on the Banks, an English ship laden with tobacco. "After landing," he says, "I went to salute M. Brouillon, Governor of Placentia, and declared to him how glad I was to obey the orders of so wise a commander. He answered that he was much surprised to find that I had solicited to be employed there without acquainting him with it the preceding year, and that he now plainly perceived that the project about the lakes of Canada, which I had mentioned to him, was a mere sham pretence. I endeavoured in vain to persuade him to the contrary, for it was not possible for me to undeceive him. Nevertheless, he goes on to say, I landed my goods and hired a private house till such time as I could build one for myself, a work which I carried on with so much diligence that it was finished in September by the assistance of the ship carpenters, who were lent me gratis by all the Biscay captains in the harbour. Irreconcilable differences arose between Lahontan and his superior. These at length came to such a pass that Lahontan decided to throw up his position and escape from the country, for from representations sent home by Brouillon, secretly as the latter mistakenly supposed, he expected that orders would come out for his arrest and transhipment to France, where probably a tedious detention in the Bastille would be his fate. "Fancying that I had solicited my employment," Lahontan says, "without taking notice of him, Brouillon treated me with all manner of reproaches and outrages from the time of my landing to that of my departure, and was not satisfied with appropriating to himself the profits and advantages of the free company that was given me, but likewise stopped without any scruple the pay of the soldiers that were employed in the cod-fishing by the inhabitants, and made the rest work without wages. I shall take no notice," Lahontan continues, "of his public extortion, for though he has formally contravened the ten articles contained in the orders of Louis XIV., yet he had so many friends in all the

courts that he could not be found guilty. There is some pleasure in making gifts after his fashion: for by them he has made 50,000 crowns *per fas et nefas* in the space of three or four years. If I offered to give you a particular account of all the trouble and vexation he gave me, I should never have done." On the 14th of December he gets on board a small vessel, the last of the season that is leaving for the other side of the Atlantic. The captain engages to land him on the coast of Portugal for 1,000 crowns. Lahontan had learnt that Brouillon had taken the precaution to forward orders for his arrest to the governors of Belleisle, Ré and Rochelle, in the event of his disembarking at either of those places. They had a very stormy passage and are attacked when nearing the Portuguese coast, first by a Flushing privateer and then by a corsair from Sallee. Towards the end of January he is landed at Viana in Portugal. "As soon as we came to an anchor," Lahontan says, "I paid down my 1,000 crowns to the captain, who has reason to look upon this act of his as one of the best he ever did in his lifetime. The long boat was no sooner in the water," he continues, "than I went ashore with all my baggage; as soon as I came into the city I procured ammunition and provisions for the ship with such expedition that the captain weighed anchor the very next day and so continued his course to France."

On the 20th of April, 1694, Lahontan is writing to his aged friend from Lisbon, giving him a copious account of the country, the inns, the manners of the people, &c. It appears that he had been making some further application to Pontchartrain in relation to his affairs, without success. "After the receipt of some bad news relating to my business," he says, "I find I have spirit enough to brave all the jolts of fortune. The universe which swallows and Jesuits take for their country must likewise be mine until such time as it please God to send to the other world some persons that do Him very little service here." At the close of the letter he is more clear. "I am setting out immediately," he says, "for the northern kingdoms of Europe, waiting patiently until it pleases God that M. Pontchartrain should either remove to Paradise, or do justice to him who shall always be yours more than his own." Lahontan is not very explicit in regard to himself. He does not account for his movements. His next letter is written at Travemunde (the port of Lubeck, on the

Baltic) in 1694, no other date is given, and contains "an account of the author's voyage from Lisbon to Guernsey: his adventure with an English man of war and a privateer: a description of Rotterdam and Amsterdam: the dimensions of a Flemish sloop: a description of the city of Hamburg: the author's journey from thence to Lubeck, and a description of that city." The following letter is written at Copenhagen, September 12th, 1694. It contains "a description of the port and city of Copenhagen: a view of the Danish court: and of the humours, customs, commerce, forces, &c., of the Danes." He appears to have found a friend in M. de Bonrep-
eau, the French ambassador in Denmark; and protected by letters from him, he ventures once more to Paris, to explain in person his conduct at Placentia. The next letter is written at Paris and is dated December 29th, 1694. It contains "a Journal of the Author's travels from Copenhagen to Paris." The passage in it that concerns us in the present inquiry is the following. "Immediately upon my arrival at this place I repaired to Versailles to deliver M. de Bonrep-
eau's letters: but the persons to whom they were addressed used their utmost efforts to no purpose in soliciting M. de Pontchartrain to allow me to justify my conduct at Placentia. He answered them very coldly that His Majesty's inflexible spirit would never admit of any justification from an inferior in opposition to his superior. This answer which in some measure tarnishes the shining merit and judicious conduct of so wise a prince, gave me to know that the serenity of M. de Pontchartrain did not proceed so much from a principle of equity as from a stiff Iroquois temper. In the meantime," he continues, "I was like to die for grief, notwithstanding that all my friends endeavoured to solace me in advising me to raise my mind above the shocks of bad fortune, till a change of government happened." The next letter was written at Erleich near Lahontan in Basse Navarre, July 4, 1695. It gives "a view of the superstition and ignorance of the people of Bearn: their addictedness to the notions of witchcraft, apparitions, &c., and the author's arguments against the delusion." Lahontan has taken a run down to his native province. "Doubtless you will be mightily surprised when you hear I am now in sight of a country, of which I retain no more than the bare name; but your surprise will be yet greater when you are informed that all the recommendations of persons of the first

quality about court could not influence M. de Pontchartain, whose prepossession against me is invincible. I left Paris with a melancholy mind and went to solace myself for some months in a certain province of the kingdom which you will easily guess." He gives a hint to his old patron that he is in want of money. "The country I am now in is a very good country," he says, "but I do not find money stirring amongst us, which, by my troth, I do not like, for among the Europeans one cannot live without money as they do among the Hurons of Canada. I always think of that country with regret," he says, "when my pocket is at low-water mark and my mind disquieted with care and anxiety, in contriving how to fill it with a precious metal that gives life and spirit to the poorest sort of men and inspires them with good qualities." The following letter is dated at Huescon, July 11, 1695. It contains "an account of the author's wonderful escape; he being taken for a Huguenot and examined by the ignorant curés." While at Erleich he receives a letter from "a certain person" at Versailles, the tenor of which made it advisable for him to cross the lines into Spain as speedily as possible. "I had no sooner read my letter," he says, "than I marched straight to my lodging to contrive within myself some way to get safe out of the kingdom. You may be sure my council was soon assembled, for such a headpiece as mine does not use to spend much time in consultations. I determined," he says, "to delude my landlord by desiring him to give me an account in writing of the road to Agen where I pretended to have some business. The best of the matter is I have already got out of my farmers nearly 200 pistoles and a fine horse, which I was obliged to for my lucky deliverance. I got up by the break of day and desired a guide to conduct me out of one of the gates of the city that leads a quite different way from that I had in my eye." At Laruns, the last village of Bearn, he is suspected to be a Huguenot escaping out of the country, but he contrives to satisfy the local curé before whom he is interrogated. By the aid of a guide mounted on a mule he crosses the Pyrenees and the day after leaving Laruns he is at Sallent in Spain. The final letter of Lahontan's book is written at Saragossa, October 8, 1695. It is taken up with "a description of Saragossa, a view of the government of Arragon, and an account of the customs of the people." It contains nothing illustrative of the personal history of Lahontan.

The first edition of the Letters, published at the Hague in 1703, was inscribed to the King of Denmark, Frederick IV., who it would seem exhibited sympathy for Lahontan's case, probably through the representations of M. de Bonrepeau, the French ambassador. The English translation, published soon after in London, is dedicated to the Duke of Devonshire, who appears to have patronized Lahontan when in England after his visit to Denmark. The following is the text of the Dedication: "To his Grace, William, Duke of Devonshire, Lord Steward of Her Majesty's Household, [Anne has just succeeded William III.,] Lord Lieutenant of the County of Derby, Chief Justice in Eyre of all Her Majesty's Forests, Chaces, Parks, &c., Trent-north; one of the Lords of Her Majesty's Most Honourable Privy Council, and Knight of the Most Noble Order of the Garter. My Lord, Since I had the honour to present the King of Denmark with the first part of this Book, I presume to make a present of the latter to your Grace. In making the first dedication, I had no other inducement than a due regard to the benefits I received from his Majesty's favour; and the same motive in reference to your Grace has prompted me to make this acknowledgment of the undeserved favours you kindly vouchsafed me. I did not dare to launch out into the praise of his Danish Majesty, who has a just title to all sorts of encomiums, by reason that the little French I had has been forgot among a sort of people that take panegyrics to be affronts. It is with the same view, my Lord, that I decline the pleasure of publishing those distinguishing qualities that place your Lordship at the head of the most accomplished grandees of the world, and the most zealous patriots of their country. I am, with all gratitude and veneration, your Grace's most humble and most obedient servant, Lahontan."

Frederick IV., of Denmark, was a contemporary of Charles XII., of Sweden, and was engaged in several unsuccessful conflicts with that warlike monarch. Lahontan may have hoped to obtain employment in his armies. The Duke of Devonshire addressed, was the first Duke and the fourth Earl, of the county named. Through his interest Lahontan may have hoped for some professional work under Marlborough, on the continent. The battle of Blenheim had lately been fought. In regard to the appearance of his letters in print, Lahontan makes the following declaration in the preface to the Eng-

lish edition: "Having flattered myself," he says, "with the vain hopes of retrieving the King of France's favour before the declaration of this war, I was so far from thinking to put these letters and memoirs to the press, that I designed to commit them to the flames, if that monarch had done me the honour of reinstating me in my former places with the good leave of the Messieurs de Pontchartrain, the father and the son. It was with that view that I neglected to put them in such a dress as might now be wished for, for the satisfaction of the reader that gives himself the trouble to peruse them." The two Pontchartrains he considers to be his enemies. Towards the end of his preface he speaks of them again. "I envy the state of a poor savage," he says, "who tramples upon laws and pays homage to no sceptre. I wish I could spend the rest of my life in his hut, and so be no longer exposed to the chagrin of bending the knee to a set of men that sacrifice the public good to their private interest, and are born to plague honest men. The two ministers of State I have to do with," he continues, "have been solicited in vain by the Duchess of Lude, Cardinal Brouillon, Count Guiscar, M. de Quiros, and Count d'Avaux. Nothing could prevail, he says, though all that is laid to my charge consists only in not bearing the affront of a governor whom they protect, at a time when a hundred other officers who live under the imputation of crimes infinitely greater than mine, are excused for three months' absence from Court. Now the reason is that they give less quarter to those who have the misfortune to displease the two Messieurs de Pontchartrain, than to such as act contrary to the King's orders."

What finally were the fortunes of Lahontan, and when and where he died, we have not been able to discover. At the time of the publication of his Letters in English (1704), he was still only about thirty-seven years of age, if, as he says, he was between his fifteenth and sixteenth year when he went to Canada in 1683. We part company with him in England; and it is pleasant to hear him at the beginning of the last century bearing the same grateful testimony to the character of his temporary home, which refugees from the adjoining continent and elsewhere have again and again been constrained to bear in almost every successive year that has since intervened. "After all my misfortunes"—these are the words with which Lahontan closes the preface to his work—"after all my misfortunes, I have

this to solace me, that I enjoy in England a sort of liberty that is not met with elsewhere. For one may justly say that of all the countries inhabited by civilized people, this alone affords the greatest perfection of liberty. Nay, I do not except the liberty of the mind," he says, "for I am convinced that the English maintain it with a great deal of tenderness. So true it is that all degrees of slavery are abhorred by this people, who shew their wisdom in the precaution they take to prevent their sinking into a fatal servitude."

It would not be fitting to discuss here the contents of a certain dialogue in the strain of Lucian, to be found only in the English edition of Lahontan's Letters. We simply note that the interlocutors are Lahontan himself and a Huron chief, Adario, popularly known among the contemporary Lower Canadian French as the Rat. The subjects handled are (1) Religion as set before the Indians by the Jesuits; and (2) the Laws, Morals, and Customs of Civilized Life, as represented by the France of the period of Louis XIV. (Adario is supposed to have travelled in Europe). Lahontan acts the part of apologist on the side of the Jesuits and French conservatives generally; but he puts into the mouth of the observant savage some criticisms that are very trenchant. The preface to the English edition of Lahontan's Letters makes us acquainted with the rather interesting circumstance that the Count de Frontenac had examined this dialogue, and had, in some degree, assisted in its composition and arrangement. One allusion occurs in it to the writer's personal affairs. Adario speaks of what he has heard of corrupt judges in the French courts. Lahontan replies, ironically of course: "The bad judges you speak of are as uncommon as white beavers; it is a question if there are four such in all France. [He could have named, perhaps with pleasure, the persons glanced at.] Our judges are men that love virtue, and have souls to be saved as well as thou and I," &c. "They curb libertinism, they redress disorders, and do justice to all that sue for it, without the least regard to what we call interest. As for my own part," Lahontan then adds, "I have lost my whole estate by being cast in three or four lawsuits in Paris; but I would be loth to believe that the judges are in fault, notwithstanding that my adversaries found both money and friends to back bad causes. It was the Law that gave it against me, and I take the Law to be just and reasonable, imputing my surprise upon the mat-

ter to my unacquaintedness with that study." To which Adario rejoins : " I protest I do not understand one word of what thou hast said ; for I know the contrary of what thou sayest to be true ; and those who informed me so of the judges are men of undisputed honour and sense."

The following is the account which Lahontan gives of the dialogue with Adario, of its appearance in an English dress, and of the assistance which the Count de Frontenac afforded him when moulding it into shape : " While my book was printing in Holland," he says, " I was in England ; and as soon as it appeared, several English gentlemen of a distinguished merit, who understood the French as well as their mother-tongue, gave me to know that they would be glad to see a more ample relation of the manners and customs of the people of that continent whom we call by the name of savages. This obliged me to communicate to these gentlemen the substance of the several conferences I had in that country with a certain Huron whom the French call Rat. While I stayed at that American village, I employed my time very agreeably in making a careful collection of all his arguments and opinions ; and as soon as I returned from my voyage upon the lakes of Canada, I showed my manuscript to Count Frontenac, who was so pleased with it that he took the pains to assist me in digesting the dialogues and bringing them into the order they now appear in ; for before they were abrupt conferences without connexion. Upon the solicitation of these English gentlemen, I have put these dialogues into the hands of the person who translated my Letters and Memoirs. And if it had not been for their pressing instances, they had never seen the light ; for there are but few in the world that will judge impartially and without prepossession of some things contained in them."

NOTE ON A
REMARKABLE BELT OF AURIFEROUS COUNTRY
IN THE TOWNSHIP OF MARMORA, IN ONTARIO.

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The occurrence of auriferous rock throughout the greater portion of the district of North Hastings, in Ontario, has long been known ; but much discredit has been thrown upon this region as a source of gold-supply by the extravagant and too often baseless statements, put forth from time to time, respecting the so-called "gold quartz" of the district ; as well as by the general want of success that has attended the gold mining operations carried on more especially in Madoc and adjoining townships. Much of this has arisen from a mistaken notion respecting the true gold-bearing ore of the district : or, in other words, from the almost universal assumption that gold was to be looked for only in association with quartz. Many of the quartz bands or veins of North Hastings undoubtedly contain a small amount of free gold ; but it cannot be too strongly insisted upon, that, in these pure quartz deposits, gold is only accidentally present, whilst it occurs invariably, and generally in paying quantity, in every vein or other deposit in which, in this district, arsenical pyrites is contained. So far as regards the district in question and the surrounding country, I am convinced from an overwhelming mass of evidence that the only matters likely to prove a permanent source of gold-supply are these arsenical ores. They are always, it is true, in a quartz gangue ; but all the gold, apart from a few small specks or nuggets, seemingly separated or rendered free by contact with the quartz, is contained in the arsenical mineral. I have proved this by numerous assays made on samples of ore obtained personally from various localities in the Hastings region and adjacent parts of Canada. In many of these samples, the mispickel, when carefully separated from the accompanying quartz, has yielded an amount of gold equivalent to more than five or six ounces in the ton, whilst the quartz itself, apart, perhaps, from an occasional speck of free gold, has proved entirely barren.

Although gold-bearing arsenical pyrites is very widely disseminated throughout the Hastings district, it appears to be more especially abundant in the eighth, ninth, tenth, and eleventh concessions of Marmora, in which it forms a series of roughly parallel zones, running in a general N.N.W. and S.S.E. direction, the course in most exposures being about N 20°—30°W. The gold-bearing ore consists of a mixture of arsenical pyrites and quartz, and it appears at first sight to be in the form of regular veins. This appearance, however, is probably deceptive, as the bands of ore run parallel with the stratification, and thus appear to be the analogues of the beds of magnetic iron ore which occur in these gneissoid rocks at other levels. It is not proposed in this communication to enter upon a discussion of their origin, but the inference may be hazarded that they will be found to be connected here and there with undoubted veins of similar composition. Their position in the locality more especially referred to here,—namely, in the more southern portions of the eighth, ninth, tenth and eleventh concessions of Marmora—is exhibited in the annexed general section.



In this section, the beds marked A are Laurentian strata, dipping, as regards the portion of country here shown, towards the west or south-west, but forming, actually, the eastern half of one of the numerous synclinal areas which occur throughout the Hastings country. The existence of these synclinals was intimated many years ago by Sir William Logan, but was first definitely established by the later researches of Mr. Vennor, of the Canadian Geological Survey. These Laurentian strata comprise, in this locality, a high ridge of syenitic rock, (marked H in the section) forming part of the so-called Huckleberry Mountains, or Red Hills of the district, and a succeeding series of gneissoid, ferruginous, and dolomitic beds, more or less hornblendic and micaceous. The Huckleberry ridge at this place, although apparently destitute in itself of stratification, is the axis of an anticlinal, separating the Marmora from the

Madoc synclinals. Under its western slope lies the belt of gold-bearing strata alluded to above. The strata marked B, are beds of horizontal or nearly horizontal Lower Silurian limestone, belonging to the base of the Trenton series. Marmora village is situated on these limestone strata, as at M in the section. Crow River, cutting through the limestones, and exposing the upturned edges of the underlying gneissoid rocks, is shown at C R; and the River Moira, here reduced to a comparatively small stream, is indicated by the initials R M. The observer, in reference to the section, is supposed to be facing the north.

Within the auriferous belt, lying, as remarked above, immediately west of the Huckleberry ridge, and extending roughly to a short distance beyond the line of the Moira, several well-defined bands of gold-holding arsenical pyrites have already been recognized, and the number will undoubtedly be increased as the country becomes more fully explored. These bands are apparently interstratified with the Laurentian strata, and consist essentially of mispickel associated with more or less quartz, although containing a certain admixture of iron pyrites, crystalline dolomite, fine particles of magnetic iron ore, and folia of brown and blackish-green mica. In some places, the foot-wall of these inclined bands of ore is marked by a layer of dark greyish-green 'alcoso slate, and thinner layers of the same substance occasionally run parallel with the walls within the mass of the ore. The dip or underlie of these bands, following the dip of the strata, is necessarily towards the west, and at an average angle of about 30° or 35° . The principal bands of ore at present discovered, are known as the "Gatling vein," on lot 9 of the 8th concession; the "Gillan vein" on lot 6 of the same concession; the "Cook" or "Williams vein" on lot 7 of the 9th concession; and the "Feigel vein," on lot 16, concession 11. On the Gatling exposure, a large shaft has been sunk on the slope of the vein, to a depth of about sixty feet. At this depth, the band presents a width of at least sixteen feet, and is constantly yielding good shows of free gold. A fair sample of the ore gave me, by assay, an amount of gold equivalent to \$112 per ton of 2000lbs; and a small piece of the mispickel, carefully separated from the accompanying quartz, &c., was found to contain the proportional amount of \$156 per ton. The Gillan band, on lot 6, of the 8th concession, is of a very similar character, so far, at least, as regards its surface conditions; but it has only been

opened at present by a small excavation of a few feet in depth. In order to obtain an average sample, I had a couple of blasts put in, at a distance of about twelve feet apart, at the bottom of the excavation in question; and from the fragments thrown out by these shots, I broke off nearly 40 lbs. of ore, taking a piece or two from each fragment. A trial-assay, made on a small portion of the pure mispikel in which no trace of free metal could be detected, gave an equivalent in gold of no less than 8 ozs. 3 dwts., or \$168, per ton; but portions taken fairly from the entire sample, and assayed side by side, gave the following results:

- | | | | | |
|-----|------------------|----------|---------|------------------|
| (1) | Gold.....6 oz. | 10 dwts. | 16 grs. | } in ton of ore. |
| | Silver.....0 oz. | 9 dwts. | 3 grs. | |
| (2) | Gold.....6 oz. | 8 dwts. | 8 grs. | } in ton of ore. |
| | Silver.....0 oz. | 7 dwts. | 20 grs. | |

Average amount of gold per ton (of 2000 lbs.) of ore=\$133.23.

The Cook or Williams band is situated about a stone's throw east of the Gillan exposure, on lot 7, of the 9th concession. A shaft has been carried down along the slope of this to a depth of seventy feet or more, and some drifting has been run along the course of the band. The ore consists essentially of a mixture of mispikel and quartz, and the free gold in it has yielded in the mill, during the last two or three years, a pretty constant return of about nine or ten dollars per ton. A very large amount of its contained gold passes, however, into the waste slimes or tailings of the mill. I have assayed a good many samples of this ore, taken from different parts of the shaft and drifts. The lowest value obtained (per ton) was \$25.30, and the highest, \$71: the difference depending chiefly on the relative amounts of quartz and mispikel, the highest yields being invariably obtained from samples in which quartz was sparingly present. On one occasion, I took the trouble to separate as carefully as possible a considerable quantity of mispikel from its associated quartz, and I assayed the two separately, making duplicate assays in each case. The quartz yielded merely a trace of gold, the buttons on the cupels indicating by measurement (they were too small to be weighed) about $1\frac{1}{2}$ dwt. per ton; whilst the mean of the two mispikel assays showed 2 ozs. 19 dwts. 9 grs. of gold, and 2 dwts. 6 grs. of silver: or, in value, about \$61 per ton. The so-called "Feigel mine" is situated on lot 16, of the 11th concession, on another metalliferous band of similar character. A considerable

amount of work has been done upon it, and some good, although fluctuating, mill-returns have been obtained from its ore.

In addition to these more prominent exposures, several other bands of intermixed gold-bearing mispickel and quartz are well known to occur within this area. It is evident, therefore, that an auriferous belt of great richness runs through this part of Marmora more especially; and from the constant occurrence of auriferous mispickel in other portions of the township, as well as in the adjacent townships of Madoc, Elzevir, &c., it may be legitimately inferred that the Hastings district is destined to take a leading rank at no distant day, among the recognised auriferous regions of the American continent. The chief obstacle, at present, to the working of the ore, is the difficulty involved in the extraction of its gold. The free gold can, of course, be separated more or less readily; but the gold present in the mispickel itself, is, I am convinced, in the form of an actual arsenide. Hence, whatever system be finally adopted for its extraction, the removal of the sulphur and arsenic must necessarily be resorted to as a preliminary operation; and, in reference to this, it cannot be too strongly enforced, that to subject the ore to an imperfect method of roasting is worse than useless. Any free gold that may be present is in that case almost inevitably arsenicised: and thus becomes entirely protected from the action of mercury or chlorine, the principal agents at present used in the separation of gold from associated rock matters. I have proved this abundantly by special experiments in the assay-furnace; and the same thing has been proved on a more practical scale by the abortive attempts made in Marmora and elsewhere to obtain gold from imperfectly roasted ores, whilst the same ores in their natural condition were constantly yielding, from their free gold, from five to eight pennyweights per ton.

* * In this communication, I claim to have made public the following facts: First, that in the Hastings region the mineral MISPICKEL is the true ore of gold; secondly, the existence of this gold-bearing mineral, in apparently inexhaustible quantities, throughout certain parts of the region in question; and, thirdly, the no less essential fact that free gold, if present in the ore, becomes arsenicised, and consequently lost, by imperfect methods of roasting.

LUNAR INFLUENCES.

BY THE REV. C. DADE, M.A.

NO. I.—SATURDAY MOON.

(Read before the Canadian Institute, February 3rd, 1872.)

Dr. Forester, of Bruges, in a communication some years since to the Astronomical Society, states that in a journal kept by himself, his father and his grandfather, from 1767 to 1849, every Saturday's new moon has been followed, nineteen times out of twenty, by twenty wet and windy days. A correspondent of the *Athenæum* has quoted several popular sayings to the same effect, as

“ Saturday's moon and Sunday's full
Never was fair, and never woll.”

and

“ If a Saturday's moon
Come once in seven years it comes too soon.”

Another correspondent says that he has heard it all his life from English, American, French and Spanish seamen, and once from a Chinese pilot. He added that he had himself constantly observed the phenomenon. A third again affirms that seamen would as soon sail on a Friday, as be in the Channel after a Saturday's moon. Accordingly, in a tale called “ Winter Cruisings,” published in the U. S. Journal for April, 1835, “ Wad,” the gunner, is introduced as saying, “ Matter enough; it's a new moon on Saturday.” “ Is that all?” said his auditors, laughing. “ Is that all?” repeated Mr. Wad, “ I wish it were all, for I never knew a Saturday's moon without bad weather all the month. I know all the fisherman dread a Saturday's moon.”

The late Prof. DeMorgan observes with respect to the above mentioned proverbs, “ All this is curious, whether the thing is true or false.” This we may readily admit, and may, perhaps, be disposed to class this opinion with that numerous tribe of superstitious dogmas of which our satellite is made the prolific mother. But, at the same time we must not forget that

“ There are more things in Heaven and earth, Horatio,
Than are dreamt of in your philosophy.”

Proverbs are the children of experience, the philosophy of the people. Various aphorisms have been handed down from time immemorial from father to son respecting the various phenomena around us, which, though couched in homely language, may contain the germ of some important truth. Surely it is not unreasonable to imagine that the life-long experience of men whose very lives and dearest interests are closely bound up with the watchful observance of phenomena daily and hourly forced upon their notice, must be entitled to some consideration. The shepherd on the hill, the hunter in the forest, the farmer in the field, the mariner on the deep, are from necessity practical philosophers; rude, perhaps, in speech, but not in knowledge.

The only sound and legitimate method of investigating the truth is, not by subtle theories and speculations, but by subjecting our theories to the test of experience, and building upon the solid foundation of accurate and long-continued observation.

The object of this paper is to give my experience, based on forty-one years of careful observation respecting the popular idea above alluded to, viz.: of the influence (if any) of a Saturday moon upon the weather. I have considered the circumstances of the weather for twenty days following the Saturday new and full moons, for their respective years from 1831 to 1871, both inclusive. The days marked (*f*) are intended to denote days without any gale, storm, or fall of rain sufficient to affect the rain guage. Snow and rain exceeding this amount, and all other phenomena of weather are classed under the heading (*s*). There is a difficulty in this classification, as some days are styled (*s*) which scarcely can be considered more than variable; and thus more is carried to the moon's credit than she is really entitled to, which would suit the ideas of those who consider her responsible for every influence, from the perturbation of a planet to the derangement of a kettle of soap.

From the inspection of the annexed Table, we derive the following conclusions:

No. of Saturday full moons	71
" " new "	73
No. of fine days after full moon	972
No. of stormy " "	438
No. of fine days after new moon	1007
No. of stormy " "	461

Hence the number of fine days in the twenty days following the Saturday full moon=2·21 stormy; and similarly after the new=2·18 stormy.

From this statement it appears that the results obtained, so far as Canada is concerned, are totally at variance with those arrived at by Dr. Forester, and also those popular opinions above alluded to embodied in proverbs current in the British Isles and elsewhere. Nor does this afford more than an apparent contradiction. What may be found true in the experience of the North Sea pilot or fisherman, contending day after day with hail, rain, fog, and stormy winds, in a climate, where, according to Havard, rain falls more or less every other day, can surely find no place in one like the Canadian, so opposite in all its features. Twenty wet and windy days after a Saturday moon is a phenomena not to be found in a climate where, for nearly five months in the year, little or no rain is met with, and where, in the summer months, an equal rainfall is so differently distributed. So far from the Saturday moons having anything formidable, they rather seem to be the harbingers of fine and serene weather. If we further examine the annexed table we shall find that in the years '35, '47, '52, '54, '58, '62, '64, '68, '69, there were three Saturday full moons and two Saturday new moons in the year. And also that in the years 1834, '48, '56, '61, '65, there were three Saturday new moons and two Saturday full. In the years '49, '53, '63, '70, there were no Saturday full moons, and in '33, '36, no Saturday new moons; but no year occurs in which both are found wanting. It is observable that the Saturday full moons in some degree seem to predominate.

Akin to the idea of a Saturday moon, of which the new, according to the popular notion, seems the most formidable, is that of the moon "on her back." Respecting which Jack's well-known adage will occur to our memories:—

" When the moon is on her back,
If near the shore, look out and tack."

Intimating that such an appearance is the precursor of a storm. In this opinion he is supported by the Red Indian of this country, who, it is said, is wont to remark that when you can hang a kettle on the moon's horn, it presages bad weather. To recount such sayings would be tedious and unprofitable, for their name is legion.

With respect to the crescent of the new moon, it always sets upon its back, and this is most observable in the spring of the year, when the declination of the growing moon is more northerly than that of the sun.

In respect to the various absurd ideas which we inherit from bygone ages, we may observe that Canada has had her full share of misrepresentation, and even at the hands of those from whom better things might have been expected. Steam, no doubt, has been a mighty instrument in dissipating error as well as in annihilating time and space, and bringing those together who were once put so far asunder. A few short years ago, this country was considered as a sort of Siberia, a region of frost and snow and thick ribb'd ice. This arose from the erroneous impressions caused by the early systems of geography formerly in use, and the absence of communication, and the scantiness of information respecting the country generally. The faulty notion respecting the climate alone, and which, no doubt, has had, and still has an injurious effect in retarding the progress of its settlement, is well known. Instances innumerable might be quoted on this head of climate in particular, which would form an apt appendage to Sir Thomas Brown's Book on "Vulgar Errors." Take the following example from Captain De Roos' Travels, p. 142, 143, published some years ago: "A friend of mine knew an instance of an ice-boat having crossed from York to Niagara (a distance of forty miles) in little more than three quarters of an hour." A statement not at all questioned by his reviewer, but matched by another drawing quite as literally upon the credulity of the reader. The celebrated Sydney Smith observes, "We might discover in Canada, or the West Indies, or the coast of Africa (mark the combination) a climate malignant enough or sufficiently sterile to avenge all the injuries inflicted on society by pickpockets, larcenists and petty felons."—*Ed. Review* for 1803.

In a speech made by the late Mr. Roebuck in the House of Commons, on the Hudson's Bay question, occurs the following passage:—"When it was said that much of this district was unfit for human habitation, it should be remembered that France and Gaul were once, in point of climate, what Canada is now . . . The description of Paris in the time of Julian might now very well be applied to Quebec, and if the same circumstances had taken place in Canada,

that country would be as flourishing and fertile as any in the world," The celebrated historian Allison, speaking on the same subject, observes, "In both provinces the same change has taken place which has been observed in Europe, and the climate every season becoming more mild, has undergone a change of 8° or 10° since the efforts of European industry were applied to the cultivation of their territory." If such an improvement upon the annual mean were likely to take place, we might surely look forward to halcyon days.

Without pursuing the subject further we have good reason to expect better views to prevail, especially since ample means have been afforded, both in material and men, of placing meteorological science on a firm basis, and in keeping pace with the spirit of the age, as far as Toronto is concerned. Many years ago, in a lecture delivered at Oakville, I took occasion to mention the excellent method adopted by the Regents of the High Schools in the State of New York, in requiring metrological reports from these institutions, and recommending the same plan. This, from whatever source, has been lately, to some extent carried out in Ontario. Without some such supplementary aid (for it is too much to expect that private individuals will put themselves to an outlay of time, cost and labor from a love of science in the abstract), any isolated efforts, however faithfully carried out, must necessarily be imperfect, and many important problems, for the solution of which long and widely extended observations, skilfully and energetically conducted, are indispensable, must remain undetermined.

TABLE.--(Referred to at page 336.)

FULL MOONS.				NEW MOONS.		
YEARS.	NO.	F.	S.	NO.	F.	S.
1831	2	27	13	1	13	7
1832	1	13	7	2	23	17
1833	1	12	8	0	none	0
1834	2	28	12	3	40	20
1835	2	27	13	2	28	12
1836	1	13	7	0	none	
1837	2	26	14	1	12	8
1838	2	26	14	2	38	12
1839	1	14	6	2	absent	
1840	1	14	6	2	26	14
1841	2	23	17	2	28	12
1842	2	24	16	2	28	12
1843	1	14	6	3	38	7
1844	1	13	7	1	13	13
1845	2	45	15	2	25	8
1846	2	27	13	1	12	11
1847	3	39	21	2	29	11
1848	2	23	17	2	29	11
1849	0	absent		1	15	5
1850	1	15	5	2	29	11
1851	2	27	13	2	28	12
1852	3	43	17	2	28	12
1853	0	none		2	25	15
1854	3	44	16	2	24	16
1855	1	12	8	1	14	6
1856	2	30	10	3	41	19
1857	2	27	13	2	25	15
1858	3	38	22	2	29	11
1859	1	15	5	2	29	11
1860	2	31	9	2	27	13
1861	2	27	13	3	43	17
1862	3	40	20	2	29	11
1863	0	none		1	16	4
1864	3	44	16	2	34	6
1865	2	30	10	3	40	20
1866	1	13	7	1	14	6
1867	1	13	7	2	23	17
1868	3	44	16	2	29	11
1869	3	41	19	2	29	11
1870	0	none		2	25	15
1871	2	30	10	2	29	11

THE SCOTT CENTENARY.

[We here place on record two addresses which would have appeared in an earlier number of the *Canadian Journal*, had it been possible to find room for them.]

THE GENIUS OF SCOTT.

(An Address delivered by PROF. DANIEL WILSON, M.L.D., at the Toronto Celebration of the Scott Centenary, 1871.)

We meet to-day to mark with specially significant symbols the lapse of another century. Throughout the world-wide empire of our English race and tongue is being commemorated this day the fact that, one hundred years ago, there was born one whose genius has added to the world's intellectual wealth, to its higher aims and achievements, in lines of research undreamt of by him whose genius thus lighted the way. Born in an age of progress; in that era of revolution which shook the thrones of Europe to their foundations, and proclaimed in thunder peals of warning and of promise that "old things were passing away:" it was the speciality of Scott to be the minister of the old past. He was to sing "The Lay of the Last Minstrel," and tell the last Makar's tale; to fix in all the enduring beauty of a sun-picture, by the light of his genius, fashions of old times that were soon to become as obsolete for us as the era of the mastodon. In an age in which the furor of political and social reconstruction eradicated with indiscriminating waste all that was old and venerable for the very reason that it was so, Scotland produced this apostle of æsthetic conservatism. While philosophy, emancipated from the shackles of superstition, too frequently marshalled intellect in antagonism to all that is purest and noblest in the healthful instincts of the human soul, it was the fortune of Scott to be born in one of those virtuous households of the sober, sedate middle class of Presbyterian Scotland, so well described ere long in "The Excursion" of his great contemporary:—

" Pure livers were they all, austere and grave,
And fearing God; the very children taught
Stern self-respect, a reverence for God's word,
And an habitual piety, maintained
With strictness scarcely known on English ground."

So the boy grew up in a healthy, kindly social element—not indeed to mature into the earnest piety, which, linked to his great genius, might have made of him another Knox, another Luther—"the solitary monk who shook the world;" but to exercise a very remarkable influence on its less vehement form of æsthetic veneration. He was an antiquary almost from his cradle; passionately conservative; venerated monks, minstrels, crusaders, kings; could see a certain poetry and beauty in the very Puritans that poets had loved to laugh at from the days of Ben Jonson to Butler; could discern how much that was heroic and chivalrous lurked under the rough home-spun of the peasant-martyrs of the

covenant; nay, at length, carried conservative veneration to such transcendental heights that, with a loyalty most genuinely devout, he bowed himself in the house of Rimmon, and did worship with an enthusiasm beyond all ridicule to that most unheroic embodiment of kingship, George the Fourth.

But the veneration which embraced with such devout comprehensiveness, elements so diverse, had its origin in higher sources than a mere antiquarian reverence for the past. Scott was a true poet. The dreams of his boyhood already bodied forth the forms of things unseen; and imagination busied itself with the fantasies of a world of its own creating. He lisp'd in numbers; and his biographer has preserved for us a kindly glimpse of old home sympathies amid which the young poet wrought. A little piece of verse, penned in a boyish hand, when but eleven years of age, was found after his death, folded up and inscribed in his mother's hand.—“*My Walter's first lines.*” Yet the vigorous, life-depicting powers, which were ere long to “hold as ’twere the mirror up to nature,” were of no hot-bed prematurity of growth. His fine, spirited rendering of Bürger's strange weird ballad of *Lenore*—his true assay piece as a poet, was not produced until his twenty-sixth year. He was not forced into premature manhood like Scotland's great peasant; either by the harsh necessities of poverty, or by the overmastering temptations of unbridled passion. All his early surroundings were healthy and healthful; and he grew up that strange compound of shrewd, sagacious, worldly common-sense; and of romantic, visionary longings after a lost golden age of his own fancy's creation: which wrought for him and for us the heroic tragedy of his life.

As a poet, Scott has not only been eclipsed by the splendour of his more brilliant prose romance; but he continues even now to be estimated below his worth. He is a poet of the old Homeric school,—graphic, truthful, natural. His virtues and his faults alike protect him from the subtleties of that metaphysical school begot amid the throes of the French revolution,—including the greatest names among the poets of the past generation,—who seem all beset by the same strange desire to upbuild the whole philosophy of human thought, wrecked in the convulsions of that wild revolt, which has repeated itself in a communistic reign of terror under our own eyes. As a poet, Scott had none of the tragic earnestness and profundity of Shakspeare—with whom, in his prose writings, he is more fitly paralleled. But he has a true eye for all the pathos and sublimity of inanimate nature, and, with artistic power, recreates for us the vision of beauty: the streams and mountains of his native land; “Sweet Teviot by her silver tide;” or Ochil's mountains in the morning rays, when

“As each heathy top they kissed
It gleamed a purple amethyst.”

And with all this was linked the passionate fervour of a warm Scottish heart, for which every rock and glen, every hill and valley of his native land was dear as the temple shrine of Jerusalem to the exiled Hebrew by the waters of Babylon.

A century unrivalled in heroic deeds and national triumphs, fills the completed cycle between that birth which we commemorate and this centenary day. The political map of Europe has been recast; its intellectual and moral statics have

undergone no less radical changes. Monarchies have become republics and republics empires. Philosophers and poets have triumphed in the intellectual arena; while soldiers have rivalled them in deeds on which the fate of nations hung. Patriots have recalled the acts of Wallace and Tell by like self-sacrificing heroism; and statesmen have been found equal to the perils of Europe's darkest hour. Yet among all who bore a part in this memorable century, Burns alone has yet challenged that recognition which with like cordiality we now accord to Scott.

It is well that Time's irrevocable flight should thus be associated with the noblest among those who have passed away. A hundred years ago, this birthday which now, by acclamation of the civilized world,

" In golden letters should be set
Among the high tides in the calendar,"

had its interests limited to one little family circle in the Colledge Wynd of old Edinburgh; as in some unheeded cradle now, perchance, lies the poet or the hero of the new century. Civic reform has swept away, not the house alone, but the antique wynd, from among the romantic sites of Scott's own romantic town; and the pilgrim has to seek his fitter memorial where the Tweed murmurs past Dryburgh's ruined aisle. He has gone to join the great immortals; but the world is richer by the Romancer's tale, and better for the Minstrel's lay. It is the fittest place to associate with the memory of him, who in an age of revolt against the effete relics of a worn-out feudalism, recalled it to a wise reverence for all that is noble and heroic in the past. It is a worthy shrine for Scotland's romantic poet, where, in his own native soil, and by the stream he loved so well, he is laid to rest under the ruined abbey, with the ashes of his sires, and the last of his line.

" Call it not vain : they do not err
Who say that when the poet dies
Mute Nature mourns her worshipper,
And celebrates his obsequies ;
Who say,—tall cliff and cavern lone
For the departed bard make moan ;
That mountains weep in crystal rill ;
That flowers in tears of balm distil ;
And rivers teach their rushing wave
To murmur dirges round his grave."

So the minstrel himself sang while life and hope were young; and when all its brightest visions had long faded into the light of common day, his final wish was gratified when the gentle ripple of the Tweed was alone audible as he breathed his last. To him, the idea—to which the Scot had yielded, under the schooling of stern necessity, in all ages—of emigration to such a land as this in which we now recall his name and fame, involved all that is most tragic in an enforced exile: and he gives expression to it in words wonderfully suggestive to us now. As Fitz Eustace responds to Marmion's call for some lay to beguile the time, the poet exclaims:—

" Such have I heard in Scottish land
Rise from the busy harvest band,
When falls before the mountaineer
On lowland plain the ripen'd ear.

Oft have I listen'd and stood still
 As it came softened up the hill,
 And deem'd it the lament of men
 Who languish'd for their native glen ;
 And thought how sad would be the sound
 On Susquehannah's swampy ground,
 Kentucky's wood-encumbered brake,
 Or wild Ontario's boundless lake,
 When heart-sick exiles in the strain
 Recall'd fair Scotland's hills again."

And here now, by the shores of wild Ontario's boundless lake, in no swampy jungle or cumbered brake, but amid all the appliances of modern civilization, a century after that poet's birth, we recall fair Scotland's old historic landscape in association with the poet's name who in the young hey-day of pride and hope exclaimed in the familiar lines of his Minstrel:—

"Breathes there the man with soul so dead,
 Who never to himself hath said :
 This is my own, my native land?"

And in whom, more than a quarter of a century thereafter, returning from bootless wanderings, shattered alike in mind and body, the poet-soul of the Last of the Minstrels flashed up into momentary fire at the gleam of his native mountains and the music of his native stream.

As a poet, Scott occupied no mean place amid the galaxy of genius which marked his era with an intellectual wealth, surpassed only by that of the Elizabethan age. As a novelist he remains unrivalled by all who have basked in the light of his genius, as by those whose works delighted elder generations with their gifted but impure romance. Yet looking to all that there was in Scott of masculine vigour, sagacious wisdom, shrewd practical sense, and genuine intellectual power, I cannot think he was true to the great gifts entrusted to him. He never "took unto the height the measure of himself," that, like Milton, he might create that which posterity would not willingly let die. Apollo's heavenly steed had been given to him, harnessed and bridled to his will, that he might soar to all the loftiest heights at his poetic behest. Apollo's lightnings had been entrusted to him in an age when millions of the embruted and down-trodden nations were longing and watching for the dawn. He dealt with the divine gift as though it were the merest merchandise of the trading mart, the paltry pelf of the exchequer, a means for accumulating acres, building storehouses and barns, and creating the poor mockery of a modern antique: that melancholy anachronism of genius, the Barony of Abbotsford. No one saw the folly of all this more keenly than himself, or laughed at it in more genial and hearty fashion, as in his Baron of Bradwardine and Laird of Monkharms. How was it that that shrewd, sagacious, thoroughly practical intellect succumbed to such folly? There are points in the inner life of the minstrel-novelist which have yet to be cleared up, ere he wholly cease to be for us still the Great Unknown. The secret of Scott's life has been purposely obscured. The laboured efforts of his biographer to shift on Callantyne and others the blame of his bankruptcy and financial ruin have been seen through. But other points await the truthful handling of the impartial biographer

Pardon me if I detain you a moment to indicate what appears to me to be the key to all this misdirection of a great and noble genius. Scott was eminently domestic in his tastes; kindly, genial, replete with all hearty sociality. No pictures of domestic life are pleasanter than those in which we see him helping with simplest appliances the economic details of youthful house-keeping for his daughter and son-in-law. He seems the very man to have basked in the sunshine of the domestic hearth, and exclaimed with Burns:—

"Princes and lords are but the breath of kings.
An honest man's the noblest work of God."

How was it that he yielded to such enslavement of a false ambition, stooped from the lofty vocation of genius; and followed the *ignis fatuus* of a romantic dream to its bitter awakening? In his twenty-sixth year, when he had just produced his '*Lenore*'; but while, as yet, no one dreamt of the genius that lay concealed within him, we glean, from his own, and other letters, glimpses of an attachment to a lady of his own social circle, in whom, as by-and-by appeared, he had misconstrued friendly greetings into the response of love. She married another. The disappointed lover did as many another has since done: gulped down his agony in a long solitary ride,—through scenes afterwards immortalized in his '*Lady of the Lake*;'—and, ere long, married in haste the first attractive woman he met: Miss Charlotte Margaret Charpentier, daughter of a French refugee. Unless I am deceived, I have seen and conversed with the lady of Scott's early love; a noble, high-principled woman, who "peradventure had she seen him first, might have made this, and that other world, another world for him." There is no time to dwell on this now. But enough is known—and much even may be gleaned amid all the reticence of Lockhart's biography,—to show how, cheated of the kindly simplicities of a domestic life most suited to his genial nature, Scott yielded to the dream of his later fancies, and sold his birthright of genius for the tawdry shams of *Rouge Dragon* and the *Lord Lyon King of an obsolete pedantry*.

Amid all his undoubted estimation of fame at its full worth, Scott wrote with no lofty aim; scarcely with a higher purpose than to please others, and make money for himself; and yet his great genius could not remain inoperative on his own, or on later ages. It is wonderful indeed, considering how poor was the aim he consciously set before himself, how great have been the fruits of his genius. It is difficult for us now fully to realize all that that elder generation felt and enjoyed in the resuscitation of the old life of by-gone centuries which Scott wrought for them. The literature of which it is the type is wholly the creation of his genius. As when Columbus had opened up the gates of the West, and revealed this long lost Atlantis to the men of his time, it was easy to follow in his wake, so this master's art is now free to all, and the modern apprentice has already forgotten to whom it is due. The old past appeared before that young present with a life as vigorous as its own. There they were, the old knights and dames, minstrels and men-at-arms, rough moss-troopers, gay cavaliers, grim roundheads and covenanters, royal crusader and sturdy commoner alike, in all the hardy naturalness of life. It was a world of literature as new and as real as that world which Columbus gave to Leon and Castile. How

much we owe to this is now difficult to exaggerate. A truth simple, but long forgotten flashed conviction into the minds of all men that history is the past-deeds of living men; that the past was once a living present like our own. To Scott we owe the wonderful vitality of modern history. Hallam, Macaulay, Carlyle, Motley, Froude, have all kindled their torch at the same lambent flame. And to him is no less due the wonderful living spirit of modern archæology. Antiquarian research is no longer the old Dryasdust of trifling dilettanteism; but the enlightened handmaid of history. Nay more: with that reanimation of old borderers and cavaliers, of knights and crusading barons, began the faith in the possibility of a resuscitated past, which has led us back, step by step, from historic to prehistoric man: Lyell and Huxley, Lubbock and Worsaae, De Perthes, Keller, Morlot and Lartet have each caught inspiration from the genius of Scott; and learned

"To seize events as yet unknown to man,
And dart his soul into the dawning plan."

It was the wonderful blending of the poet and the antiquary;—things previously deemed more irreconcilable than fire and water,—which thus breathed life into the dead ashes of the past, and lifted for us the hoary skirts of time. All this and much more we owe to the genius of Scott. A poet of the old Homeric school, a brother of the free minstrel of the brookside and public highway, of the genial sunshine of human sympathy; he not only rejected the subtleties of Coleridge's and Shelley's metaphysical verse, and the morbid anatomisings of Byron's subjective mind and vicious heart; but he breathed into the literature of fiction a healthful moral atmosphere which has revolutionized the republic of letters far more thoroughly than all the changes yet wrought on the body politic. To his healthful sympathies the quiet glow of the sunset was grander than the lurid blaze of the lightning, and the rosy gleam of the dawn or the broad beauty of the noon more impressive than the tempest's gloom. His antique fancies blended harmoniously with his pure poetic taste, and made him delight in reanimating the living landscape with a life of the past as real and vital as its own. Should the influences of this centenary celebration revive the study of Scott as a poet, it will not lead to any exaggerated estimate of his worth, for as such he can claim no place alongside of the few great poets of all time; but it will recall us to the familiar study of one who had a true poet's eye for the beauty and the poetry of simple nature; the beauty and the poetry that lie about us all, here and everywhere, had we but, like him, "the vision and the faculty divine." And if such be the case it will supply an antidote not wholly unneeded in the age which rejoices in the genius of Browning and Tennyson.

Such, however inadequately presented to you, are some of the enduring influences which we owe to the genius of Scott: and therefore it is fitting that here, in the capital of this young Canadian province, as throughout the world-wide empire won to itself by the Anglo-Saxon race; and beyond it in other lands and among other tongues; we gather to commemorate the birth, one hundred years ago, of one who, by his writings, has added to the world's true wealth, an El Dorado more precious than that of Ophir or Peru; by the

enkindling power of his genius has revealed to younger generations realities more marvelous than all the wonders of romance; and lighted the way to substantial triumphs grander than the brightest dreams of Faerie Minstrelsy.

THE LAMPS OF FICTION.

(An Address delivered by PROF. GOLDWIN SMITH, at the Toronto Celebration of the Scott Centenary, 1871.)

Ruskin has lighted seven lamps of Architecture, to guide the steps of the architect in the worthy practice of his art. It seems time that some lamps should be lighted to guide the steps of the writer of Fiction. Think what the influence of novelists now is, and how some of them use it. Think of the multitudes who read nothing but novels; and then look into the novels which they read. I have seen a young man's whole library consisting of thirty or forty of those paper-bound volumes, which are the bad tobacco of the mind. In England I looked over three railway book-stalls in one day. There was hardly a novel by an author of any repute on one of them. They were heaps of nameless garbage, commended by tasteless, flaunting woodcuts, the promise of which was no doubt well kept within. Fed upon such food daily, what will the mind of a nation be? I say that there is no flame at which we can light the Lamp of Fiction purer or brighter than the genius of him in honour to whose memory we are assembled here to-day. Scott does not moralize. Heaven be praised that he does not. He does not set a moral object before him, nor lay down moral rules. But his heart, brave, pure and true, is a law to itself; and by studying what he does we may find the law for all who follow his calling. If seven lamps have been lighted for architecture, Scott will light as many for fiction.

THE LAMP OF REALITY.—The novelist must ground his work in a faithful study of human nature. There was a popular writer of romances, who, it was said, used to go round to the fashionable watering places to pick up characters. That was better than nothing. There is another popular writer who, it seems, makes voluminous indices of men and things, and draws on them for his material. This also is better than nothing. For some writers, and writers dear to the circulating libraries too, might, for all that appears in their works, lie in bed all day and write by night under the excitement of green tea. Creative art, I suppose, they call this, and it is creative art with a vengeance. Not so Scott. The human nature which he paints, he had seen in all its phases, gentle and simple; in burgher and shepherd, Highlander, Lowlander, Borderer and Islesman; he had come into close contact with it; he had opened it to himself by the talisman of his joyous and winning presence; he had studied it thoroughly with a clear eye and an all-embracing heart. And when his scenes are laid in the past, he has honestly studied the history. The history of his novels is, perhaps, not critically accurate, not up to the mark of our present knowledge, but in the main it is sound and true. Sounder and more true than that of many professed historians, and even than that of his own historical

works, in which he sometimes yields to prejudice, while in his novels he is lifted above it by his loyalty to his art.

THE LAMP OF IDEALITY.—The materials of the novelist must be real; they must be gathered from the field of humanity by his actual observation. But they must pass through the crucible of the imagination; they must be idealized. The artist is not a photographer, but a painter. He must depict not persons but humanity, otherwise he forfeits the artist's name, and the power of doing the artist's work in our hearts. When we see a novelist bring out a novel with one or two good characters, and then, at the fatal bidding of the booksellers, go on manufacturing his yearly volume, and giving us the same character or the same few characters over and over again, we may be sure that he is without the power of idealization. He has merely photographed what he has seen, and his stock is exhausted. It is wonderful what a quantity of the mere lees of such writers, more and more watered down, the circulating libraries go on complacently circulating, and the reviews complacently reviewing. Of course, this power of idealization is the great gift of genius. It is that which distinguishes Homer, Shakespeare, and Walter Scott from ordinary men. But there is also a moral effort in rising above the easy work of mere description to the height of heart. Need it be said that Scott is thoroughly ideal as well as thoroughly real? There are vague traditions that this man and the other was the original of some character in Scott. But who can point out the man of whom a character in Scott is a mere portrait? No more than you can point out a case of servile delineation in Shakespeare. Scott's characters are never monsters or caricatures. They are full of nature; but it is universal nature. Therefore they have their place in the universal heart, and will keep that place for ever. And mark that even in his historical novels he is still ideal. Historical romance is a perilous thing. The fiction is apt to spoil the fact, and the fact the fiction; the history to be perverted and the romance to be shackled; daylight to kill dreamlight, and dreamlight to kill daylight. But Scott takes few liberties with historical facts and characters; he treats them with the costume and the manners of the period, as the background of the picture. The personages with whom he deals freely are the Peverils and the Nigels; and these are his own lawful property, the offspring of his own imagination, and belong to the ideal.

THE LAMP OF IMPARTIALITY.—The novelist must look on humanity without partiality or prejudice. His sympathy, like that of the historian, must be unbounded, and untainted by sect or party. He must see everywhere the good that is mixed with evil, the evil that is mixed with good. And this he will not do unless his own heart is right. It is in Scott's historical novels that his impartiality is most severely tried and is most apparent; though it is apparent in all his works. Shakespeare was a pure dramatist; nothing but art found a home in that lofty, smooth idealistic brow. He stands apart not only from the political and religious passions but from the interests of his time, hardly seeming to have any historical surroundings, but to shine like a planet suspended by itself in the sky. So it is with that female Shakespeare in miniature, Miss Austen. But Scott took the most intense interest in the political

struggles of his time. He was a fiery partisan; a Tory in arms against the French Revolution. In his account of the coronation of George IV. a passionate worship of monarchy breaks forth, which, if we did not know his noble nature, we might call slavish. He sacrificed ease, and at last life, to his feudalistic aspirations. On one occasion he was even carried beyond the bounds of propriety by his opposition to the Whig chief. The Cavalier was his political ancestor, the Covenanter the ancestor of his political enemy. The idols which the Covenanting iconoclast broke were his. He would have fought against the first revolution under Montrose, and against the second under Dundee. Yet he is perfectly, serenely just to the opposite party. Not only is he just, he is sympathetic. He brings out their work, their valour, such grandeur of character as they have, with all the power of his art, making no distinction in this respect between friend and foe. If they have a ridiculous side he uses it for the purposes of his art, but *genially*, playfully, without malice. If there was a laugh left in the Covenanters, they would have laughed at their own portraits as painted by Scott. He shows no hatred of anything but wickedness itself. Such a novelist is a most effective preacher of liberality and charity: he brings our hearts nearer to the Impartial Father of us all.

THE LAMP OF IMPERSONALITY.—Personality is lower than partiality. Dante himself is open to the suspicion of partiality: it is said, not without apparent ground, that he puts into hell the enemies of the political cause which, in his eyes, was that of Italy and God. A legend tells that Leonardo da Vinci was warned that his divine picture of the Last Supper should fade, because he had introduced his personal enemy as Judas, and thus desecrated art by making it serve personal hatred. The legend must be false. Leonardo had too grand a soul. A wretched woman in England, at the beginning of the last century, Mrs. Manley, systematically employed fiction as a cover for personal libel; but such an abuse of art as this could be practised or countenanced only by the vile. Novelists, however, often debase fiction by obtruding their personal vanities, favouritisms, fanaticisms and antipathies. I saw, the other day, a novel, the author of which brings himself in almost by name as a heroic character, with a description of his own personal appearance, residence, and habits, as fond fancy paints them to himself. There is a novelist, who is a man of fashion, and who makes the age of the heroes in his successive novels advance with his own, so that at last we shall have irresistible fascination at four score years and ten. But the commonest and the most mischievous way in which personality breaks out is pamphleteering under the guise of fiction. One novel is a pamphlet against lunatic asylums, another against model prisons, a third against the poor law, a fourth against the government offices, a fifth against trades' unions. In these pretended works of imagination, facts are coined in support of a crotchet or antipathy with all the license of fiction; calumny revels without restraint, and no cause is served but that of falsehood and injustice. A writer takes offence at the excessive popularity of athletic sports; instead of bringing out an accurate and conscientious treatise to advocate moderation, he lets fly a novel, painting the typical boating man as a seducer of confiding women, the betrayer of his friend, and the murderer of his

wife. Religious zealots are very apt to take this method of enlisting imagination, as they think, on the side of truth. I remember a high Anglican novel in which the Papist was eaten alive by rats, and the Rationalist and Republican were slowly scathed in molten lead, the fate of each being, of course, a just judgment of heaven on those who presumed to differ from the author. Thus the voice of morality is confounded with that of tyrannical petulance and self-love. Not only is Scott not personal, but we cannot conceive his being so. We cannot think it possible that he should degrade his art by the indulgence of egotism, or crotchets, or petty piques. Least of all can we think it possible that his high and gallant nature should use art as a cover for striking a foul blow.

THE LAMP OF PURITY.—I heard Thackeray thank Heaven for the purity of Dickens. I thanked Heaven for the purity of a greater than Dickens, Thackeray himself. We may all thank Heaven for the purity of one still greater than either, Sir Walter Scott. I say still greater morally, as well as in power as an artist, because in Thackeray there is cynicism, and cynicism, which is not good in the great writer, becomes very bad in the little reader. We know what most of the novels were before Scott. We know the impurity half-redeemed of Fielding, the unredeemed impurity of Smollett, the lecherous leer of Sterne, the coarseness even of Defoe. Parts of Richardson himself could not be read by a woman without a blush. As to French novels, Carlyle says of one of the most famous of the last century that after reading it you ought to wash seven times in Jordan; but after reading the French novels of the present day, in which lewdness is sprinkled with sentimental rosewater, and deodorized but by no means disinfected, your washings had better be seventy times seven. There is no justification for this; it is mere pandering, under whatever pretences to evil propensities; it makes the divine art of Fiction procuress to the Lords of Hell. If our established morality is in any way narrow and unjust, appeal to Philosophy, not to Comus; and remember that the mass of readers are not philosophers. Coleridge pledges himself to find the deepest sermons under the filth of Rabelais; but Coleridge alone finds the sermons while everybody finds the filth. Impure novels have brought and are bringing much misery on the world. Scott's purity is not that of cloistered innocence and inexperience. It is the manly purity of one who had seen the world, mingled with men of the world, known evil as well as good; but who being a true gentleman abhorred filth, and teaches us to abhor it too.

THE LAMP OF HUMANITY.—One day I see our walls placarded with the advertising woodcut of a sensation novel, representing a girl tied to a table and a man cutting off her feet into a tub. Another day we are allured by a picture of a woman sitting at a sewing-machine and a man seizing her behind by the hair, and lifting a club to knock her brains out. A French novelist stimulates your jaded palate by introducing a duel fought with butchers' knives by the light of lanterns. One genius subsists by murder, as another does by bigamy and adultery. Scott would have recoiled from the blood as well as from the ordure; he would have allowed neither to defile his noble page. He knew that there was no pretence for bringing before a reader what is merely horrible;

that by doing so you only stimulate passions as low as licentiousness itself; the passions which were stimulated by the gladiatorial shows in degraded Rome, which are stimulated by the bull-fights in degraded Spain; which are stimulated among ourselves by exhibitions the attraction of which really consists in their imperilling human life. He knew that a novelist had no right even to introduce the terrible except for the purpose of exhibiting human heroism, developing character, awakening emotions, which when awakened dignify and save from harm. It is want of genius and of knowledge of their craft that drives novelists to outrage humanity with horrors. Miss Austen can interest and even excite you as much with the little domestic adventures of Emma as some of her rivals can with a whole Newgate calendar of guilt and gore.

THE LAMP OF CHIVALRY.—Of this briefly. Let the writer of fiction give us humanity in all its phases, the comic as well as the tragic, the ridiculous as well as the sublime; but let him not lower the standard of character or the aim of life. Shakespeare does not. We delight in his Falstaffs and in his clowns as well as in his Hamlets and Othellos; but he never familiarizes us with what is base and mean. The noble and chivalrous always holds its place as the aim of true humanity in his ideal world. I am not sure that Dickens is free from blame in this respect; that Pickwickianism has not in some degree familiarized the generation of Englishmen, who have been fed upon it with what is mean,—not chivalrous, to say the least—in conduct, as well as with slang in conversation. But Scott, like Shakespeare, wherever the thread of his fiction may lead him, always keeps before himself and us the highest ideal which he knew—the ideal of a gentleman. If anyone says these are narrow bounds wherein to confine fiction, I answer there has been room enough within them for the highest tragedy, the deepest pathos, the broadest humour, the widest range of character, the most moving incidents that the world has ever enjoyed. There has been room within them for all the kings of pure and healthy fiction,—for Homer, Shakespeare, Cervantes, Molière, Scott. “Farewell, Sir Walter,” says Carlyle at the end of his essay, “farewell, Sir Walter, pride of all Scotchmen.” Scotland has said farewell to her mortal son. But all humanity welcomes him as Scotland’s noblest gift to her, and crowns him, as on this day, one of the heirs of immortality.

THE LATE REV. CHARLES DADE.

The late Rev. Charles Dade, of Georgetown, Esquesing, was a man of unusual attainments in science and general learning. At the University of Cambridge he obtained a high wrangler's degree in the Mathematical Tripos, distinguishing himself also, at the same time, in a marked manner, in the examination for Classical Honours. This was in 1825, "Challis's Year;" the year when Challis, the still surviving Plumian Professor of Astronomy in the University of Cambridge, was senior wrangler. Immediately after obtaining his degree, Mr. Dade was elected a fellow of Gonville and Caius College, where, as the lists show, several of his own name had preceded him in that honourable position. In 1826 he gained the "Members' Prize," a distinction greatly desired at Cambridge, and attained only by first-rate scholars. It is one of four annual prizes, given by the Representatives in Parliament of the University, for Dissertations in Latin Prose, which are read publicly by the prizemen in the Senate-house on a day appointed near to the Commencement. In the catalogue of Members' Prizemen are, in recent years, the names of Hugh James Rose, Scholesfield, George Long, Howson, A. J. B. Hope, Ellicott, &c. Mr. Dade's Essay was afterwards printed in full, in the *Classical Journal* for March and June, 1827, published by A. J. Valpy, London. Prior to his appointment in 1829, as Mathematical Master in Upper Canada College, Mr. Dade had been connected with Elizabeth College, Guernsey, where he attracted the notice of Sir John Colborne, who was, at the time, Lieutenant Governor of Guernsey.

The early alumni of Upper Canada College will have observed, not without emotion, the decease of their old instructor. His memory will continue to be to them in the future, what in every review of the past it has already been, one of their valued recollections. Again and again have they discovered by experience that the foundations of science laid in their minds by their first master in mathematics, were solid and trustworthy. Again and again, in their intercourse with men, have they felt the abiding effect for good on themselves, of the sterling honesty and blunt straightforwardness which so conspicuously characterized their former guide and friend. Perhaps, in the severe temperature of the "Mathematical Master's room," in the olden time, kept in winter, as will be remembered, as little above freezing as possible, some of our eminent engineers and explorers of new districts had tested for the first time that power of endurance, and that capacity for solving problems under difficulties, which have contributed to their success; a power and a capacity brought prominently out, perhaps also for the first time, in some one or other of the memorable tramps laboriously undertaken on the ice of Toronto bay, or elsewhere, in company with their iron-sinewed teacher, whilst being shown by him practically how to run base-lines and take angles, and measure the altitude of the sun and other objects. Besides being a vigorous and accurate thinker, Mr. Dade was, to the close of his career, an indefatigable and very literal manual worker. On his farm near Oakville, to which he withdrew when he resigned his mastership in Upper Canada College

about the year 1837, some very remarkable trenches and dykes for drainage purposes, excavated by the might of his own arm, will be recalled.

Papers of permanent value, by Mr. Dade, on the Law of Storms, and on the Cholera Seasons of 1832 and 1834, are preserved in Volumes five and seven, respectively, of the second series of the *Canadian Journal*. A note by him on some Indian remains in the township of Beverley, in Volume one of the first series of the same journal, is characteristic for its brevity and directness; suggestive, in its style, of letters from scientific country clergymen to Sylvanus Urban, in the palmy days of that early promoter of useful knowledge. A valuable contribution on the Meteorology of Toronto and its vicinity, by the same hand, was also very recently communicated to the Canadian Institute. Mr. Dade's Tables of Observations on our local physical phenomena, carefully made from 1831 downwards, are held by the authorities at the Toronto Observatory to be of special importance, as appertaining to a period of which no other records of the kind are extant. Mr. Dade died on the morning of the 2nd instant (May, 1872), at his residence in Georgetown, Esquesing, in his 70th year, having been born June 20th, 1802,—at Yarmouth, in Norfolk. Soon after his retirement from Upper Canada College, he married a daughter of the Rev. Dr. Phillips, formerly Vice-Principal of that institution. At Oakville, Stewartown and Georgetown, he undertook, without emolument, occasional clerical duty, and devoted a portion of his time to the preparation of young men for the Universities, &c.

The prize dissertation above referred to fills sixteen closely-printed octavo pages in the *Classical Journal*. It is an admirably-sustained discussion, in pure, easy-flowing Latin, of the most striking points in which modern men have the advantage of their predecessors in the by-gone ages. (Quibusnam præcipue artibus recentiores antiquos exsuperant?) It is thrown into the form of a conversation between the author and a friend; in the manner of Cicero. The friend is a Q. Cæpio. (The name Cæpio occurs in the *De Finibus*.) His character is thus drawn: "Erat autem is Cæpio, qui naturalem suam ingenii bonitatem, assidua exercitatione et probatissimorum scriptorum tractatione ita perpolierat, ut difficile pronunciatu esset, doctrinæ ubertate magis an iudicii subtilitate præstaret. Neque ille, uti multorum mos est, nihil nisi quod sacrarat antiquitas admirari, neque se recentiorum terminis circumscribere solebat sed nova cum veteribus comparando, quid in quoque genere optimum esset studiose anquirere." The first portion of the conversation is supposed to be carried on between the friends while walking up and down together on the sea-shore, after supper. The scene is thus described: "In marinum littus concessimus (distat enim non longe a Cæpionis villa), et lentis ibi passibus progredientes, Lunæ in placido æquoris sinu dormientis mite et tremulum jubar, cælumque stellis undique ardentibus illuminatum, taciti per aliquod tempus contemplati sumus, dum fluctuum littoribus alludentium strepitus grato murmure mulcebat aures." For the second portion of the conversation the friends adjourn to the house: "Sed visne," Cæpio says, "quoniam satis quidem, ut opinor, ambulatum est, et vespertina hæc frigora, ut ait poeta, parum cautos lædere solent, locum mutemus, quodque reliquum est hujus quæstionis intra domesticos parietes conficiamus? Quæ cum dixisset, domum revertimus et posteaquam nos in cænaculum contulissemus,

ibique consedissemus, tum Cæpio; Jam gravioribus," &c. After a masterly comparison of the condition in early ages of Philosophy, Natural and Moral, of Science, Inventions, Arts, Historical Composition, Criticism, Oratory, Poetry, Painting Sculpture, Architecture and Music, with the same things in later times, conclusions are arrived at in these words: "Ex rationibus igitur nostris hoc liquido constare arbitror, antiquitas palmam tribuendam esse in iis disciplinis, quæ ingenio et humaniorum studiorum facultate continentur; contra recentiori ætati in iis, quæ observandi diuturnitate, et investigandi diligentia, ex abditis Naturæ fontibus hauriuntur." The modern application of steam, especially in navigation, is thus classically described: "Quanta vero rerum miracula ex aquæ vaporis usu nostra patrumque ætas machinata vidit! quæ perfecto mecum ipso reputans, vix admiratione satiari possum. Nam ut alia omittam omnia, quid hoc magnificentius excogitari queat, homines rem istam, qua nihil levius aut inanium est, ita arte sua ingenioque moderare potuisse, ut quas res Natura violentissimas genuit, earum dominatum tenentes, nullis non modo ventorum ac remigio præsidiiis adjuti, verum etiam adversus omnem maris ventorumque rabiem quem sibi proposuero portum, tuto eundem et facile consequi valerent. Quid enim hoc aliud est, nisi Naturæ ipsi vim inferre, aut novam quasi Naturam in rebus efficere?" In a passage which treats of the poets, we observe "Shakspeare" ingeniously metonymised into "Enchespalus,"—the Homeric *Εγχείσπαλος*, Spear-brandishing.

EDITOR.

[The Proceedings of the Canadian Institute will be concluded in the next number of the *Journal*.]

CANADIAN LOCAL HISTORY.

TORONTO OF OLD:

A SERIES OF COLLECTIONS AND RECOLLECTIONS.

BY THE REV. DR. SCADDING.

XLVI.—YONGE STREET—FROM CARLETON STREET TO YORKVILLE—(Continued).

The residue of the Sandhill-rise that is still to be discerned westward of Yonge Street has its winsome name, Clover Hill, from the designation borne by the home of Captain Elmsley, son of the Chief Justice, situate here. The house still stands, over-shadowed by some fine oaks, relics of the natural woods. The rustic cottage-lodge, with diamond lattice windows, at the gate leading in to the original Clover Hill, was on the street a little further on. At the time of his decease, Captain Elmsley had taken up his abode in a building apart from the principal residence of the Clover Hill estate; a building to which he had pleasantly given the name of Barnstable, as being in fact a portion of the outbuildings of the homestead turned into a modest dwelling.—Barnstable was subsequently occupied by Mr. Maurice Scollard, a veteran attaché of the Bank of Upper Canada, of Irish birth, remembered by all frequenters of that institution, and by others for numerous estimable traits of character, but especially for a gift of genuine quiet humour and wit, which at a touch was ever unfailingly ready to manifest itself in word or act, in some unexpected, amusing, genial way. Persons transacting business at the India House in London, when Charles Lamb was a book-keeper there, must have had the solemn routine of the place now and then curiously varied by a dry "aside" from the direction of his desk. Just so the habitués of the old Bank, when absorbed in a knotty question of finance, affecting themselves individually, or the institution, would oftentimes find themselves startled from their propriety by a droll view of the case, gravely suggested by a venerable personage sure to be somewhere near at hand busily engaged over a huge ledger.

They who in the mere fraction of a lifetime have seen in so many places the desert blossom as the rose, can with a degree of certainty, realize in their imagination what the whole country will one day be, even portions of it which to the new comer seem at the first glance very unpromising. Our Sandhill here, which but as yesterday we beheld in its primeval condition, with no trace of human labour upon it except a few square yards cleared round a solitary Indian grave, to-day we see crowned along its crest for many a rood eastward and westward with comfortable villas and graceful pleasure-grounds. The history of this spot may serve to encourage all who at any time or anywhere are called in the way of duty to be the first to attack and rough-hew a forest-wild for the benefit of another generation. If need were to stay the mind of a newly-arrived immigrant friend wavering as to whether or not he should venture permanently to cast in his lot with us, we should be inclined to direct his regards, for one thing, to the gardens of an amateur, on the southern slope of the rise, at which we are pausing, where choicest fruits and flowers are year after year produced equal to those grown in Kent and Devon; we should be inclined to direct his regards, perhaps likewise, to the amateur cultivator himself of those fruits and flowers, Mr. Phipps—a typical Englishman after a residentship in York and Toronto of half a century.

On p. 267, the substance of the last ten lines of the upper paragraph relating to Mr. Durand, sen., should be modified as follows:—Nearly the whole of the eastern moiety of the present city of Hamilton was originally his. He represented the united counties of Wentworth and Halton in several Parliaments up to 1822. A political journal, entitled *The Bee*, moderate and reasonable in tone, was, up to 1812, edited and published by him in the Niagara District. Mr. Durand,

senior, died in 1833, at Hamilton, where he filled the post of County Registrar. His eldest son Mr. James Durand, when, in 1817, member for Halton, enjoyed the distinction of being expelled from the House of Assembly. A Parliament had just expired. He offered some strictures on its proceedings, in an address to his late constituents. The new House, which embraced many persons who had been members of the previous Parliament, was persuaded to vote the Address to the electors of Halton a libel, to exclude its author from the House, and to commit him to prison. His instant re-election by the county of Halton was of course secured. We observe from the evidence of Mr. James Durand before the celebrated Grievance Committee of 1835, that he was an early advocate of a number of the changes which have since been carried into effect. This Mr. Durand died in 1872 at Kingston, where he was Registrar for the County of Frontenac. We have been enabled to make the corrections now given through the kindness of Mr. Charles Durand, who, in a valuable communication, further informs us that besides being among the earliest to engage in mercantile enterprise in Upper Canada, his father had also in 1805 a large interest in the extensive flour mills in Chippewa, known as the Bridgewater Mills: mills burnt by the retreating American army in 1812, at which period Mr. Durand, senior, was in the command of one of the flank companies of Militia, composed of the first settlers in the neighbourhood of the modern Hamilton: moreover he was the first who ever imported fox-hounds into Upper Canada, a pack of which animals he caused to be sent out to him from England, being fond of the hunter's sport. With these he hunted near Long Point, on Lake Erie, in 1805, over a region teeming at the time with deer, bears, wolves and wild turkeys. Mr. Peter Des Jardins, from whom the Dundas Canal has its name, was in 1805, a clerk in the employment of Mr. Durand.

But to push now on our way. To the north of our Sandhill, a short distance, on the east side, was a sylvan halting place for weary teams, known as the Gardeners' Arms. It was an unpretending rural wayside inn, furnished with troughs and pump. The house lay a little way back from the road. Its sign exhibited an heraldic arrangement of horticultural implements. Another rural inn, with homely name, might have been noted, while we were nearer Lot Street: the Green Bush Tavern. But this was a name transferred from another spot, far to the north on Yonge Street, when the landlord, Mr. Abrahams, moved into town. In the original locality, the sign was a painted pine-tree or spruce of formal shape—not the ivy-bush, the sign referred to by the ancient proverb when it said, "Wine needeth it not"—"*Vino vendibili non opus est suspensa hedera.*"

On the right, beyond the Gardeners' Arms, appeared in this region at an early date, at a considerable distance from each other, two or perhaps three flat, single-storey square cottages, clapboarded and painted white, with flat four-sided roofs, door in the centre and one window on either side: little wooden boxes set down on the surface of the soil apparently, and capable, as it might seem, of being readily lifted up and transported to any other locality. They were the first of such structures in the outskirts of York, and were speedily copied and repeated in various directions, being thought models of neatness and convenience. Opposite the quarter where these little square hutches were to be seen, there are to be found at the present day, the vineyards of Mr. Bevan; to be found, we say, for they are concealed from the view of the transient passenger by intervening buildings. Here again we have a scene presenting a telling contrast to the same spot and its surroundings within the memory of living men: a considerable area covered with a labyrinth of trellis work, all overspread with hardy grapes in great variety and steadily productive. To this sight likewise we should introduce our timid, hesitating new comer, as also to the originator of the spectacle—Mr. Bevan, who after a forty-years' sojourn in the vicinity of York and Toronto, continues as genuinely English in spirit and tone now, as when he first left the quay of his native Bristol for his venture westward. While engaged largely in the manufacture of various articles of wooden ware, Mr. Bevan adopted as a recreation the cultivation of the grape, and the making of a good and wholesome wine. It is known in commerce and to physicians, who recommend it to invalids for its real purity, as Chintona.

Just before reaching the first concession-road, where Yorkville now begins, a family residence of an ornamental suburban character, put up on the left by Mr. Lardner Bostwick, was the first of that class of building in the neighbourhood. His descendants still occupy it. Mr. Bostwick was an early property owner in York. The now important square acre at the south-east angle of the intersection of King Street and Yonge Street, regarded probably when selected, as a

mere site for a house and garden in the outskirts of the town, was his. The price paid for it was £100. Its value in 1872 may be £100,000.

The house of comparatively modern date, seen next after Mr. Bostwick, is associated with the memory of Mr. de Blaquiére, who occupied it before building for himself the tasteful residence, not far off, where he died; now the abode of Mr. John Heward. Mr. de Blaquiére was the youngest son of the first Lord de Blaquiére, of Ardkill, in Ireland. He emigrated in 1837, and was subsequently appointed to a seat in the Legislative Council of Upper Canada. In his youth he had seen active service as a midshipman. He was present at the battle of Camperdown in the *Bounty*, commanded by Captain Bligh. He was also in the Fleet at the *Noro* during the mutiny. He died suddenly here in his new house in 1860, aged 76. His fine character and prepossessing outward physique are freshly remembered. Thus again and again have we to content ourselves with the interest that attaches not to the birth-places of men of note, as would be the case in older towns, but to their death-places. Who of those that have been born in the numerous domiciles that we pass are finally to be ranked as men of note, and as creators consequently of a sentimental interest in their respective birth-places, remains to be seen. In our portion of Canada there has been time for the application of the requisite test in only a very few instances.

XLVII.—YONGE STREET FROM YORKVILLE TO THE SECOND CONCESSION ROAD (DEER PARK).

The First Concession Road-line derived its modern name of Bloor Street from a former resident on its southern side, eastward of Yonge Street. Mr. Bloor, as we have previously narrated, was for many years the landlord of the Farmers' Arms, near the market place of York, an inn conveniently situated for the accommodation of the agricultural public. On retiring from this occupation with a good competency, he established a Brewery on an extensive scale in the ravine north of the first concession road. In conjunction with Mr. Sheriff Jarvis, he entered successfully into a speculation on land, projecting and laying out the village of Yorkville, which narrowly escaped being Bloorville. That name was proposed: as also was Rosedale, after the Sheriff's homestead; and likewise "Cumberland," from the county of some of the surrounding inhabitants. The monosyllable "Blore" would have sufficed, without having recourse to a hackneyed suffix. That is the name of a spot in Staffordshire, famous for a great engagement in the wars between the Houses of Lancaster and York. But Yorkville was at last decided on: an appellation preservative in part of the name just discarded in 1834 by Toronto. Mr. Bloor was an Englishman, respected by every one. That his name should have become permanently attached to the Northern Boulevard of the City of Toronto, a favourite thoroughfare, several miles in extent, is a curious fact which may be compared with the case of Pimlico, the famous west-end quarter of London. Pimlico has its name, it is said, from Mr. Benjamin Pimlico, for many years the popular landlord of a hotel in the neighbourhood. Bloor Street was for a time known as St. Paul's road: also as the Sydenham road.

While crossing the First Concession Line, now in our northward journey, the moment comes back to us when on glancing along the vista to the eastward, formed by the road in that direction, we first noticed a church-spire on the right-hand or southern side. We had passed that way a day or two previous, and we were sure no such object was to be seen there then; and yet, unmistakably now, there rose up before the eye a rather graceful tower and spire, of considerable altitude, complete from base to apex, and coloured white. The fact was: Mr. J. G. Howard, a well-known local architect, had ingeniously constructed a tower of wood in a horizontal, or nearly horizontal, position in the ground close by, somewhat as a shipbuilder puts together "the mast of some vast admiral," and then, after attending to the external finish of, at least, the higher portion of it, even to a coating of lime-wash, had, in the space of a few hours, by means of convenient machinery raised it on end, and secured it, permanently in a vertical position. We gather some further particulars of the achievement from a contemporary account. The Yorkville spire was raised on the 4th of August, 1841. It was 85 feet high, composed of four entire trees or pieces of timber, each of that length, bound together pyramidically, tapering from ten feet base to one foot at top, and made to receive a turned ball and weather-cock. The base was sunk in the ground until the apex was raised ten feet from the ground; and about thirty feet of the upper part of the spire was completed, coloured and

Painted before the raising. The operation of raising commenced about 2 o'clock p.m., and about 8 in the evening, the spire and vane were seen erect, and appeared to those unacquainted with what was going on, to have risen amongst the trees, as if by magic. The work was performed by Mr. John Birney; the framing by Mr. Wetherell, and the raising was superintended by Mr. Joseph Hill. The plan adopted was this: three gin-poles, as they are called, were erected in the form of a triangle: each of them was well braced, and tackles were rove at their tops: the tackles were hooked to strong straps about fifty feet up the spire, with nine men to each tackle, and four men to steady the end with following poles. It was raised in about four hours from the commencement of the straining of the tackles, and had a very beautiful appearance while rising. The whole operation, we have been told, was conducted as nearly as possible in silence, the architect himself regulating by signs the action of the groups at the gin-poles, being himself governed by the plumb-line suspended in a high frame before him.

"No workman steel, no ponderous axes rung;

Like some tall palm, the noiseless fabric sprung."

Perhaps Fontana's exploit of setting on end the obelisk in front of St. Peter's, in Rome, suggested the possibility of causing a tower and spire, complete to be suddenly seen rising above the roof of the Yorkville St. Paul's. On an humble scale we have Fontana's arrangements reproduced. While in the men at the gin-poles worked in obedience to signs, we have the old Egyptians over again—a very small detachment of them indeed,—as seen in the old sculptures on the banks of the Nile.

The original St. Paul's, before it acquired in this singular manner the dignified appurtenance of a steeple, was a long, low, barn-like, wooden building. Mr. Howard otherwise improved it, enlarging it by the addition of an aisle on the west side. When some twenty years later, viz., in 1861, the new stone church was erected, the old wooden structure was removed bodily to the west side of Yonge Street, together with the tower, curtailed, however, of its spire. We have been informed that the four flue stems, each eighty-five feet long, which formed the interior frame of the tower and spire of 1811, were a present from Mr. Allan, of Moss Park; and that the Rev. Charles Mathews, occasionally officiating in St. Paul's, gave one hundred pounds in cash towards the expense of the ornamental addition now made to the edifice. The history of another of Mr. Howard's erections on Yonge Street, which we are perambulating, illustrates the rapid advance and expansion of architectural ideas amongst us. In the case now referred to it was no shell of timber and deal-boards that was taken down, but a very handsome solid edifice of cut-stone, which might have endured for centuries. The Bank of British North America, built by Mr. Howard, at the corner of Yonge Street and Wellington Street in 1843, was deliberately taken down, block by block, in 1871, and made to give place to a structure which should be on a par in magnificence and altitude with the buildings put up by the other Banks. Mr. Howard's building, at the time of its erection, was justly regarded as a credit to the town. Its design was preferred by the directors in London to those sent in by several architects there. Over the principal entrance were the Royal Arms, exceedingly well carved in stone on a grand scale, and wholly disengaged from the wall; and conspicuous over the parapet above was the great scallop-shell, emblem of the gold-digger's occupation, introduced by Sir John Soane, in the architecture of the Bank of England.

The Cemetery, the gates and keeper's lodge of which, after crossing the concession road and advancing on our way northward, we used to see on the left, was popularly known as "The Potter's Field"—"a place to bury strangers in." Its official style was "The York General or Strangers' Burying Ground." In practice it was the Bunhill Fields of York—the receptacle of the remains of those whose friends declined the use of the St. James's churchyard and other early burial-plots. Walton's Directory for 1833, gives the following information, which we transfer hither, as well for the slight degree of quaintness which the narrative has acquired, as also on account of the familiar names which it contains. "This institution," Walton says, "owes its origin to Mr. Carfrae, junior. It comprises six acres of ground, and has a neat sexton's house built close by the gate. The name of the sexton is John Wolstencroft, who keeps a registry of every person buried therein. Persons of all creeds and persons of no creed, are allowed burial in this cemetery: fees to the sexton, 5s. It was instituted in the fall of 1825, and incorporated by Act of Parliament, 30th January, 1826. It is managed by five trustees, who are chosen for life; and in case of the death of any of them, a public meeting of the inhabitants

is called, when they elect a successor or successors in their place. The present trustees (1833) are Thomas Carfrae, jun., Thomas D. Morrison, Peter Paterson, John Ewart, Thomas Helliwell. Mr. Carfrae was for some years the Collector of Customs of the Port of York. The others were respectively the medical man, iron-merchant, builder, and brewer, so well known in the neighborhood.—A remote requested piece of ground in 1825, the Potter's Field in 1845 was more or less surrounded by buildings, and regarded as an impediment in the way of public improvement. Interments were accordingly prohibited. To some extent it has been cleared of human remains, and in due time will be built over. Its successor and representative is the Toronto Necropolis, the trustees of which are empowered, after the lapse of twenty-one years, to sell the old burying-ground.

Proceeding on, we were immediately opposite the Red Lion Tavern, anciently Tiers', subsequently Price's, on the east side; a large and very notable halting-place for loaded teams after the tremendous struggle involved in the traverse of the Blue Hill ravine, of which presently. In old European lands, in times by-gone, the cell of a hermit, a monastery, a castle, became often the nucleus of a village or town. With us on the American continent, a convenient watering or baiting place in the forest for the wearied horses of a farmer's waggon or a stage-coach is the less romantic *punctum saliens* for a similar issue. Thus Tiers's, at which we have paused, may be regarded as the germ of the flourishing incorporation of Yorkville. Many a now solitary way-station on our railroads will probably in like manner hereafter prove a centre round which will be seen a cluster of human habitations. We discover from a contemporary *Gazette* that so early as 1808, previous, perhaps, to the establishment of the Red Lion on Yonge Street, Mr. Tiers had conducted a public house in the town of York. In the *Gazette* of June 13, 1808, we have the following announcement. It has an English ring: "Beefsteak and Beer House.—The subscriber informs his friends and the public that he has opened a house of entertainment next door to Mr. Hunt's, where his friends will be served with victualing in good order, on the shortest notice, and at a cheap rate. He will furnish the best strong beer at 8d. New York currency per quart, if drank in his house, and 2s. 6d. New York currency per gallon if taken out. As he intends to keep a constant supply of racked beer, with a view not to injure the health of his customers, and for which he will have to pay cash, the very small profits at which he offers to sell, will put it out of his power to give credit, and he hopes none will be asked. N.B. He will immediately have entertainment for man and horse. Daniel Tiers. York, 12th January, 1808."

The singular *Hotel de Ville* which in modern times distinguishes Yorkville has a Flemish look. It might have strayed hither from Ghent. Nevertheless, as seen from numerous points of view, it cannot be characterized as picturesque, or in harmony with its surroundings. The shield of arms sculptured in stone and set in the wall above the circular window in the front gable, presents the following charges arranged quarterly: a Deer-barrel, with an S below; a Brick-mould, with an A below; an Anvil, with a W below; and a Jackplane, with a D below. In the centre, in a shield of pretence, is a Sheep's head, with an H below. These symbols commemorate the first five Councillors or Aldermen of Yorkville at the time of its incorporation in 1853, and their trades or callings; the initials being those respectively of the surnames of Mr. John Severn, Mr. Thomas Atkinson, Mr. James Wallis, Mr. James Dobson, and Mr. Peter Hutt. Over the whole, as a crest, is the Canadian Beaver.

The road which enters from the west, a little way on, calls up memories of Russell-hill, Davenport and Spadina, each of them locally historic. We have already spoken of them in our journey along Front Street and Queen Street, when, in crossing Brock Street, Spadina-house in the distance caught the eye. It is a peculiarity of this old bye-road that, instead of going straight, as most of our highways monotonously do, it meanders a little, unfolding a number of pretty suburban scenes. The public school, on the land given to Yorkville by Mr. Ketchum, is visible up this road. In this direction were the earliest public ice-houses established in our region, in rude buildings of slab, thickly thatched over with pine branches. Spring-water ice, gathered from the neighbouring mill-ponds, began to be stored here in quantiles by an enterprising man of African descent, Mr. Richards, five-and-thirty years ago.

On the east side of Yonge Street, near the northern toll-gate, stood Dr. R. C. Horne's house, the lurid flames arising from which somewhat alarmed the town in 1837, when the malcontents of the north were reported to be approaching with hostile intent. Of Dr. Horne we have already spoken, in connexion with the early press of York.

Were the tall and very beautiful spire which in the present day is to be seen where the Davenport Road enters Yonge Street, the appendage of an ecclesiastical edifice of the mediæval period—as the architecture implies—it would indicate, in all probability, the presence of a Church of St. Giles. St. Ægidius or Giles presided, it was imagined, over the entrances to cities and towns. Consequently, fancy will always have it, whenever we pass the very interesting pile standing so conspicuously by a public gate, or where for a long while there was a public gate, leading into the town, that here we behold the St. Giles' of Toronto.

Of long standing is the group of buildings on the right after passing the northern gate, or the site of the northern gate. It is the Brewery and malting-house of Mr. Severn, settled here since 1835. The main building overlooks a ravine which, as seen by the passer-by on Yonge Street, retains to this day in its eastern recess a great deal of natural beauty, although the stream below attracted manufacturers at an early period to its borders at numerous points. There is a picturesque irregularity about the outlines of Mr. Severn's brewery. The projecting galleries round the domestic portion of the building pleasantly indicate that the adjacent scenery is not unappreciated; nay, possibly enjoyed on many a tranquil autumn evening.

Further on, a block-house of two storeys, both of them rectangular, but the upper turned half round on the lower, built in consequence of the troubles of 1837, and supposed to command the great highway from the north, overhung a high bank on the right (Another of the like build was placed at the eastern extremity of the First Concession Road. It was curious to observe how rapidly these two relics acquired the character and even the look, gray and dilapidated, of age. With many, they dated at least from the war of 1812.)

A considerable stretch of striking landscape here skirts our route on the right. Rosedale-house, the old extra-mural home, still existent and conspicuous, of Mr. Stephen Jarvis, Registrar of the Province in the olden time, afterwards of his son the Sheriff, of both of whom we have had occasion to speak repeatedly, was always noticeable for the romantic character of its situation; on the crest of a precipitous bank overlooking deep winding ravines. Set down here while yet the forest was but little encroached on, access to it was of course for a long time, difficult and laborious.—The memorable fancy ball given here at a comparatively late period, but during the Sheriff's lifetime, recurs as we go by. On that occasion, in the dusk of evening, and again probably in the gray dawn of morning, an irregular procession thronged the highway of Yonge Street and toiled up and down the steep approaches of Rosedale-house—a procession consisting of the simulated shapes and forms that usually revisit the glimpses of the moon at masquerades,—knights, crusaders, Plantagenet, Tudor and Stuart princes, queens and heroines; all mixed up with an incongruous ancient and modern canaille, a Tom of Bedlam, a Bottom "with amiable cheeks and fair large ears," an Ariel, a Paul Pry, a Pickwick, &c., &c., not pacing on with some veri-similitude on foot or respectably mounted on horse, ass, or mule, but borne along most prosaically on wheels or in sleighs. This pageant, though only a momentary social relaxation, a transient but still not unutilitarian freak of fashion, accomplished well and cleverly in the midst of a scene literally a savage wild only a few years previously, may be noted as one of the many outcomes of precocity characterizing society in the colonies of England. In a burlesque drama to be seen in the columns of a contemporary paper (the *Colonist*, of 1839) we have an allusion to this memorable entertainment. The news is supposed to have just arrived of the union of the Canadas, to the dismay, as it is pretended, of the official party, among whom there will henceforth be no more cakes and ale. A messenger, Thomas, speaks :

List, oh, list—the Queen hath sent
A message to her Lords and trusty Commons—
ALL.—What message sent she?
THOMAS.—Oh the dreadful news!
That both the Canadas in one be joined.—(*saints.*)

Sheriff William then speaks :

Farewell ye masquerades, ye sparkling routs :
Now routed out, no more shall routs be ours ;
No gilded chariots now shall roll along ;
No sleighs that sweep across our icy path,—
Sleighs ! no : this news that slays our warmest hopes,
Ends pageantry, and pride and masquerades.

The characters in the dramatic *jeu d'esprit*, from which these lines are taken, are the principal personages of the defeated party, under thinly disguised names, Mr. Justice Clearhead, Mr. John Scott, William Welland, Judge Brock, Christopher, Samuel, Sheriff William, as above, and Thomas, &c.—Rosedale is a name of pleasant sound. We are reminded thereby of another of the same genus, but of more recent application in these parts—Hazeldean—the pretty title given by Chief Justice Draper to his rural cottage, which overhangs and looks down upon the same ravine as Rosedale, but on the opposite side.

The perils and horrors encountered every spring and autumn by travellers and others in their ascent and descent of the precipitous sides of the Rosedale ravine, at the point where the primitive Yonge Street crossed it, were a local proverb and by-word: perils and horrors ranking for enormity with those associated with the passage of the Rouge, the Credit, the Sixteen, and a long list of other deeply ploughed watercourses intersected of necessity by the two great highways of Upper Canada. The ascent and descent of the gorge here were spoken of collectively as the "Blue Hill." Certain strata of a bluish clay had been remarked at the summit on both sides. The waggon-track passed down and up by two long wearisome and difficult slopes cut in the soil of the steep sides of the lofty banks. After the autumnal rains and during the thaws at the close of winter, the condition of the route here was indescribably bad. At the period referred to, however, the same thing, for many a year, was to be said of every road of Yonge Street throughout its thirty miles of length. Nor was Yonge Street singular in this respect. All our roads were equally bad at certain seasons every year. We fear we conveyed an impression unfavorable to emigration many years ago, when walking with two or three young English friends across some flat clayey fields between Cambridge and the Gogmagogs. It chanced that the driftways for the farmers' carts—the holls as they are locally called, if we remember rightly—at the sides of the ploughed land were mire from end to end. Under the impulse of the moment, pleased in fact with a reminder of home far-distant, we exclaimed, "Here are Canadian roads!" The comparison was altogether too graphic; and our companions could never afterwards be got to entertain satisfactory notions of Canadian civilization. But English roads were not much better a century ago. We made a note once of John Moody's account of Lady Townley's journey with her coach and four and large household to London, from the veritable old-country York, in Sir John Vanbrugh's comedy of the Provoked Husband, so perfect a parallel did it furnish to the traveller's experience here on Yonge Street on his way from the Canadian York to the Landing in stage-coach or farmer's waggon in the olden time. "Some impish trick or other," said John Moody, "plagued us all the day long. Crack goes one thing: bounce goes another: Woa, says Roger—then sowse! we are all set fast in a slough. Whaw, cries Miss: scream go the maids: and bawl just as thof they were stuck: and so, mercy on us! this was the trade from morning to night." The mode of extricating a vehicle from a slough or mudhole when once in, may be gathered from a passage in McTaggart's "Three Years in Canada," ii., 205. The time referred to is 1829: "There are few roads," McTaggart says, "and these are generally excessively bad, and full of mudholes in which if a carriage fall, there is great trouble to get it out again. The mail-coaches or waggons are often in this predicament, when the passengers instantly jump off, and having stripped rails off the fence, they lift it up by sheer force. Coming up brows they sometimes get in; the horses are then taken out, and yoked to the stern instead of the front; and it is drawn out backwards."

The country between York and Lake Huron was, as we have already seen, first explored by Governor Simcoe in person, in 1793. It was also immediately surveyed, and in some measure occupied; and so early as 1794, we read in a *Gazette* the following notice: "Surveyor-General's Office, Upper Canada, 15th July, 1794. Notice is hereby given that all persons, who have obtained assignments for land on Dundas Street, leading from the head of Burlington Bay to the upper forks of the River Thames, and on Yonge Street leading from York to Lake Simcoe, that unless a dwelling-house shall be built on every lot under certificate of location, and the same occupied within one year from the date of their respective assignments, such lots will be forfeited on the said Roads. D. W. Smith, Acting Surveyor General." All the conditions required to be fulfilled by the first settlers were these: "They must within the term of two years, clear fit for cultivation and fence, ten acres of the lot obtained; build a house 16 by 20 feet of logs or frame, with a shingle roof; also cut down all the timber in front of and the whole width of, the lot (which is 20 chains, 133 feet wide), 33 feet of which must be cleared

smooth and left for half of the public road." To issue injunctions for the performance of such work was easy. To do such work, or to get such work effectually done, was, under the circumstances of the times, difficult. Hence Yonge Street continued for some years after 1794 to be little more than a rambling forest wheel track through the woods.

In 1794, as we have before heard, Mr. William Berczy, brought over from the Pulteney Settlement, on the south side of Lake Ontario, sixty German families, and conducted them to the township of Markham, north-east of York, where lands had been assigned them. In effecting this first lodgement of a considerable body of colonists in a region entirely new, Mr. Berczy necessarily cut out by the aid of his party, and such other help as he could obtain, some kind of track through the forest, along the line of Yonge Street. He had already once before successfully accomplished a similar work. He had, we are told, hewn out a waggon road for emigrants through trackless woods all the way from Philadelphia to the Genesee country, where the Pulteney Settlement was.

In 1795, Mr. Augustus Jones, a Deputy Provincial Surveyor, who figures largely in the earliest annals of Upper Canada, was directed by the Lieutenant Governor to survey and open in a more effective manner the route which Mr. Berczy and his emigrants had travelled. A detachment of the Queen's Rangers was at the same time ordered to assist. On the 24th December, 1795, Mr. Jones, writes to D. W. Smith, Acting Surveyor General:—"His Excellency was pleased to direct me, previous to my surveying the township of York, to proceed on Yonge Street, to survey and open a cart-road from the harbour at York to Lake Simcoe, which I am now busy at; (i. e., I am busily engaged in the preparations for this work.) Mr. Pearce is to be with me in a few days' time with a detachment of about thirty of the Queen's Rangers, who are to assist in opening the said road." Then in his Note-book and Journal for the new year 1796, he records the commencement of the survey, thus:—"Monday, 4th (January, 1796). Survey of Yonge Street. Begun at a Post near the Lake, York Harbour, on Bank, between No. 20 and 21, the course being, Mile No. 1, N. Sixteen degrees W., eighty chains, from Black Oak Tree to Maple Tree on the right side, along the said Yonge Street: at eighteen chains, fifty links, small creek; at twenty-eight chains, small creek; course the same at thirty-two eighty: here First Concession. At thirty-eight, N. 35 W. to 40-50: at 39-50, swamp and creek, 10 links across, runs to the right: then N. 2 E., to 43 chains in the line. At 60-25, small creek runs to right; swampy to 73; N. 29 W. to 77, swamp on right. Then N. to 80 on line Timber chiefly white and black oak to 60, and in many places windfalls thereon: maple, elm, beech, and a few oaks, black ash; loose soil. Mile No. 2, do 80 chains; rising Pine Ridge to 9 on top," &c., and so on day by day, until Tuesday, Feb. 16th, when the party reaches the Landing. For Mile No. 33 we have the entry. "Course do. (N. 9 W.) 80 chains; descended; at 10 chains, small creek; cross aforesaid small creek; at 30, several cedars to 35-50; at 33 creek about 30 links across, runs to left; at 80 chains, hemlock tree on the right bank, small creek; timber, hemlock, pine, a few oak; broken soil. At Mile 34, do., 53 chains to Pine tree marked at Landing; timber, yellow and white Pines; sandy soil; slight winds from the north; cloudy, cold weather." The survey and opening of the Street from York bay to the Landing thus occupied forty-three days (January 4, to February 16). Three days sufficed for the return of the party to the place of beginning. The memoranda of these three days, and the following one, when Mr. Jones presented himself before the Governor, in the Garrison at York, run thus: "Wednesday, 17th, returned back to a small Lake at the twenty-first mile tree; pleasant weather, light winds from the west. Thursday, 18th, came down to five mile tree from York; pleasant weather. Friday, 19th, came to the town of York; busy entering some of my field notes; weather as before. Saturday, 20th, went to Garrison, York, and waited on His Excellency the Governor, and informed him that Yonge Street is opened from York to the Pine Fort Landing, Lake Simcoe. As there is no provision to be had at the place," Mr. Jones proceeds, "His Excellency was pleased to say that I must return to Newark, and report to the Surveyor General, and return with him in April next, when the Executive will sit, and that my attendance would be wanted. Pleasant weather, light winds from the west." The entry on the following Monday is this: "The hands busy at repairing (caulking) the boat to return to Burlington Bay, and thence to Newark; light winds from south, a few clouds. Tuesday, 23rd, high winds from the south-west hinder going on the Lake. Wednesday, 24th, high winds from the south drove a great quantity of ice into the harbour; obliged me to leave the boat, and set out by land; went to the Etobicoke. Thursday, 25th, came along the Lake to the 16 mile creek; winds left from south, thaw.

Friday, 26th, came down to my house, Long Beach; calm, thaw," &c. Then on Tuesday, the 1st of March, 1796, the entry is: "Came down to 12-mile creek; lame in my feet; high winds from N. W., frosty night. Wednesday, 2nd, came down to Newark; some snow, calm, frosty weather. Thursday, 3rd, busy entering some field notes; some snow, calm weather. Friday, 4th, busy protracting Yonge Street; cold weather, high winds from N.W." Finally on Monday, 7th March (1796), we have the entry: "Busy copying of Yonge Street; high winds from the north, cold, snow fell last night about six inches."

Some romance attaches to the history of Mr. Augustus Jones. We have his marriage mentioned in a *Gazette* of 1798, in the following terms: "May 21. Married, at the Grand River, about three weeks since, A. Jones, Esq., Deputy Surveyor, to a young lady of that place, daughter of the noted Mohawk warrior, Terrihogah." The famous Indian Wesleyan missionary, Peter Jones, called in the Indian tongue Kah-ke-wa-quo-na-by, Sacred Waving Feathers, was of the issue of this marriage. Peter Jones, in his published autobiography, thus speaks: "I was born at the Heights of Burlington Bay, Canada West, on the first day of January, 1802. My father, Augustus Jones," he continues, "was of Welsh extraction. His grandfather emigrated to America previous to the American Revolution, and settled on the Hudson River, State of New York. My father, having finished his studies as a land surveyor in the city of New York, came with a recommendation from Mr. Colden, son of the Governor of that State, to General Simcoe, Governor of Upper Canada, and was immediately employed by him as the King's Deputy Provincial Surveyor, in laying out town-plots, townships and roads in different parts of the Province. This necessarily brought him in contact with the Indian tribes, and he learned their language, and employed many of them in his service. He became much interested in the Indian character—so much so that he resolved to take a wife from amongst them. Accordingly, he married my mother, Tuh-ben-ah-nee-quay, daughter of Wahbanosay, a chief of the Mississauga tribe of the Ojibway nation. I had one brother, older than myself, whose name was Tyentenege (given to him by the famous Captain Joseph Brant), but better known by the name of John Jones. I had also three younger brothers and five sisters. My father being fully engaged in his work, my elder brother and myself were left entirely to the care and management of our mother, who, preferring the customs and habits of her nation, taught us the superstitions of her fathers—how to gain the approbation of the Munedooos (or gods), and how to become successful hunters. I used to blacken my face with charcoal, and fast, in order to obtain the aid of personal gods or familiar spirits, and likewise attended their pagan feasts and dances. For more than fourteen years I lived and wandered about with the Indians in the woods, during which time I witnessed the woful effects of the firewater which had been introduced amongst us by the white people." There is a discrepancy, it will be observed, between the *Gazette* and the Autobiography, in regard to the name and tribe of the father of Mr Jones' Indian bride. The error, no doubt, is on the side of the *Gazette*. It is pleasant to find, in 1826, the now aged surveyor writing in the following strain to his missionary son, in a letter accompanying the gift of a horse, dated Coldsprings, Grand River: "Please to give our true love to John and Christina," he says, "and all the rest of our friends at the Credit. We expect to meet you and them at the camp meeting. I think a good many of our Indians will come down at that time. I send you Jack, and hope the Lord will preserve both you and your beast. He is quiet and hardy: the only fault I know he stumbles sometimes; and if you find he does not suit you as a riding horse, you can change him for some other; but always tell your reasons. May the Lord bless you! Pray for your unworthy father, Augustus Jones."

Augustus Jones was, as has been already seen, concerned in the very earliest survey of York and the township attached. As we have at hand the instructions issued for this survey, we give them. It will be noticed that the Humber is therein spoken of as the Toronto River, and that the early settler or trader St. John is named, from whom the Humber was sometimes called St. John's River. The document likewise throws light on the mode of laying out townships by concessions. On general grounds, therefore, it will not be inappropriate in an account of the early settlement of Yonge Street:

"Surveyor-General's Office, Province of Upper Canada, 26th January, 1792.—Description of the Township of York (formerly Toronto), to be surveyed by Messrs. Aitken and Jones.—The front line of the front concession commences adjoining the township of Scarborough, (on No. 10), at a point known and marked by Mr. Jones, running S. 74° W. from said front one chain, for a road; then five lots of twenty chains each, and one chain for a road; then five lots more of

twenty chains each, and one chain for a road; and so on, till the said line strikes the River Toronto, whereon St. John is settled. The concessions are one hundred chains deep, and one chain between each concession, to the extent of twelve miles."

We subjoin a further early notice of Mr. Augustus Jones, which we observe in a letter addressed to him by John Collins, Deputy Surveyor-General, dated "Quebec, Surveyor-General's Office, January 23rd, 1792." Mr. Collins mentions that he has recommended Mr. Jones to the notice of Governor Simcoe, who was at the time in Quebec, en route for his new Province in the west. "Colonel Simcoe, the Governor of your Province," Mr. Collins says, "is now with us. I have taken the liberty to recommend you to him in the manner I think you merit, and I cannot doubt but that you will be continued in your salary."

Another early surveyor of note, connected with the primitive history of Yonge Street, was John Stegmann, a German, who had been an officer in a Hessian regiment. He was directed in 1801, by the Surveyor General, D. W. Smith, to examine and report upon the condition of Yonge Street. The result was a document occupying many sheets. We will give some extracts from it. They will furnish a view of the great thoroughfare which we are beginning to perambulate, as it appeared a few years after Jones's expedition. Though somewhat dryly imparted, the information will be of interest to "pioneers." (The No. 1 referred to is the first lot after crossing the Third Concession Road from the Lake Shore.) "Aagreeable to your instructions," Mr. Stegmann says to Mr. Smith, "bearing date June the 10th, [1801], for the examination of Yonge Street, I have the honor to report thereon as follows: That from the town of York to the three mile post on the Poplar Plains the road is cut, and that as yet the greater part of the said distance is not passable for any carriage whatever, on account of logs which lie in the street. From thence to Lot No. 1 on Yonge Street the road is very difficult to pass, at any time, agreeable to the present situation in which the said part of the street is. The situation of the street from No. 1 to Lot 95 on Yonge Street will appear as per margin." We have then a detail of his notes of the condition of the road opposite every lot all the way to the northern limit of the townships of King and Whitechurch. Of No. 1 in the township of York, on the west side of Yonge Street, it is reported that the "requisition of Government" is "complied with, except a few logs in the street not burnt." Of lot 1 on the east side also, that it is complied with, except a "few logs not burnt." No. 2, west side, complied with; the street cut but not burnt. East side, complied with; some logs in the street not burnt; and in some places narrow. No. 3, west side, complied with, except a few logs not burnt; east side, complied with; the clearing not fenced; no house; some logs in the street not burnt. No. 5, west side, complied with; east side, non-compliance. No. 8, west side, complied with; the street cut, but not burnt. East side, complied with; the street cut, but logs not burnt; here the street, it is noted, goes to the eastward of the line on account of the hilly ground. No. 9, west side, complied with in the clearing; the street bad and narrow. East side, non-compliance; street bad and narrow, and to the east of the road. No. 16, west side, nothing done to the road; about five acres cut; not fenced and no house thereon. East side, complied with. No. 17, west side, complied with; the underbrush in the street cut but not burnt. East side, complied with, except logs in the street not burnt. No. 18, west side, well complied with. East side, well complied with. No. 25, west side, complied with. East side, complied with; nothing done to the street, and a school-house erected in the centre of the street. This is the end of the township of York. Then on No. 33, west side, Vaughan, clearing is complied with; no house; and nothing done to the street. East side, Markham, clearing is complied with; south part of the street cut but not burnt; and north part of the street nothing done. No. 37, Vaughan, clearing complied with, but some large trees and some logs left in the street. Markham, some trees and logs left in the streets; some acres cut, but not burnt; no fence, and a small log house. No. 55, Vaughan, clearing complied with; the street cut and logs not burnt. Markham, clearing complied with; the street cut and logs not burnt; a very bad place for the road and may be laid out better. No. 63, west side, King, non-compliance. East side, Whitechurch, non-compliance; and similarly, on to No. 89, on which, in King, the clearing is complied with; not fenced; the street good; in Whitechurch, clearing is complied with, and nothing done to the street. No. 93, King, four acres cut, and nothing done to the street. Whitechurch, six acres clear land, and nothing done to the street. Here King and Whitechurch, and the Report end. Mr. Stegmann then perorates thus: "Sir,—This was the real situation of Yonge Street when examined by me; and I am sorry to be under the necessity to add at the

conclusion of this report, that the most ancient inhabitants of Yonge Street have been the most neglectful in clearing the street; and I have reason to believe that some trifle with the requisition of government in respect of clearing the street." Mr. Berzy brought over his sixty-four families in 1794. The most ancient inhabitants were thus of about seven years' standing. If we men of the second generation regarded Yonge Street as a route difficult to travel, what must the first immigrants from the Genesee country and Pennsylvania have found it to be? They brought with them vehicles and horses and families and some household stuff. "The body of their waggons," we are told in an account of such new-comers in the *Gazetteer* of 1799, "is made of close boards, and the most clever have the ingenuity to caulk the seams, and so by shifting off the body from the carriage, it serves to transport the wheels and the family." Old settlers round New Market used to narrate how in their first journey from York to the Landing they lowered their waggons down the steep by ropes passed round the stems of saplings, and then hauled them up the ascent on the opposite side in a similar way.

We meet with Mr. Stegmann, the author of the above-quoted report in numerous documents relating to surveys and other professional business done for the Surveyor General. His clear, bold handwriting is always recognizable. His mode of expressing himself is vigorous and to the point, but slightly affected by his imperfect mastery of the English language. He gives the following account of himself in his first application to the Surveyor General, asking for employment. "My name is John Stegmann," he says, "late lieutenant in the Hessian Regiment of Lossberg, commanded by Major General de Looz, and served during the whole war in America till the reduction took place in the month of August, 1783, and by the favour and indulgence of His Excellency, Lord Dorchester, I obtained land in this new settlement and township of Osnabruck, and an appointment as Surveyor in the Province; he has a wife and small family to provide for." Descendants of his are still to be found in the neighbourhood of Pine Grove in Vaughan. Their name is now Anglicised by the omission of one of the final *n*'s.

The names of other early surveyors may be learned from the following notice, taken from a *Gazette*: "Surveyor General's Office, York, 25th April, 1805. That it may be known who are authorized to survey lands on the part of the Crown, within this Province, the following list is communicated to the public of such persons as are duly licensed for that purpose, to be surveyors therein, viz., William Chewett, York; Thomas Smith, Sandwich; Abraham Iredell, Thomas Welch, Augustus Jones, William Fortune, Lewis Grant, Richard Cockrell, Henry Smith, John Rider, Aaron Greeley, Thomas Fraser, Reuben Sherwood, Joseph Fortune, Solomon Stevens, Samuel S. Wilmot, Samuel Ryckman, Mahlon Burwell, Adrian Marlet, Samuel Ridout, George Lawe. (Signed,) C. B. Wyatt, Surveyor General."

Of Mr. Berzy, above spoken of, we shall soon have to give further particulars. We must now push on.

Just beyond the Blue Hill ravine, on the west side stood for a long while a lonely unfinished frame building, with gable toward the street, and windows boarded up. The inquiring stage-passenger would be told, good-humouredly, by the driver, that it was Rowland Burr's Folly. It was, we believe, to have been a Carding or Pulling Mill, worked by peculiar machinery driven by the stream in the valley below; but either the impracticability of this from the position of the building, or the as yet insignificant quantity of wool produced in the country made the enterprise abortive. Mr. Burr was an emigrant to these parts from Pennsylvania in 1803, and from early manhood was strongly marked by many of the traits which are held to be characteristic of the speculative and energetic American. Unfortunately in some respects for himself, he was in advance of his neighbours in a clear perception of the capabilities of things as seen in the rough, and in a strong desire to initiate works of public utility, broaching schemes occasionally, beyond the natural powers of a community in its veriest infancy. A canal to connect Lake Ontario with the Georgian Bay of Lake Huron, via Lake Simcoe and the valley of the Humber was pressed by him as an immediate necessity, years ago; and at his own expense he minutely examined the route and published thereon a report which has furnished to later theorizers on the same subject much valuable information. Mr. Burr was a born engineer and mechanic and at a more auspicious time, with proper opportunities for training and culture, he would probably have become famed as a local George Stephenson. He built on his own account, or for others, a number of mills and factories, providing and getting into working order the complicated mechanism required for each; and this at a time when such undertakings were not

easy to accomplish, from the unimproved condition of the country and the few facilities that existed for importing and transporting inland heavy machinery. The mills and factories at Burwick in Vaughan originated with him, and from him that place takes its name. The early tramway on Yonge Street of which we have already spoken was suggested by Mr. Burr; and when the cutting down of the Blue Hill was decided on, he undertook and effected the work.

It is now some forty years since the peculiar clay of the Blue Hill began to be turned to useful account. In or near the brick-fields, which at the present time are still to be seen on the left, Messrs. James and William Townsley burnt kilns of white brick, a manufacture afterwards carried on here by Mr. Nightingale, a family connexion of the Messrs. Townsley. Mr. Worthington also for a time engaged on the same spot in the manufacture of pressed brick and drain tiles. The Rossin House Hotel, in Toronto, and the Yorkville Town Hall were built of pressed brick made here.

Chestnut Park, which we pass on the right, the residence now of Mr. McPherson, is a comparatively modern erection, put up by Mr. Mathers, an early merchant of York, who, before building here, lived on Queen Street, near the Meadows, the residence of Mr. J. Hillyard Cameron. Oakland, Mr. John McDonald's residence, of which a short distance back we obtained a passing glimpse far to the west, and Rathnally, Mr. McMaster's palatial abode, beyond, are both modern structures, put up by their respective occupants. Woodlawn, still on the left, the present residence of Mr. Justice Morrison, was previously the home of Mr. Chancellor Blake, and was built by him.

Summer Hill, seen on the high land far to the right, and commanding a noble view of the wide plain below, including Toronto with its spires and the lake view along the horizon, was originally built by Mr. Charles Thompson, whose name is associated with the former travel and postal service of the whole length of Yonge Street and the Upper Lakes. In Mr. Thompson's time, however, Summer Hill was by no means the extensive and handsome place into which it has developed since becoming the property and the abode of Mr. Larratt Smith.

The primitive waggon track of Yonge Street ascended the hill at which we now arrive, a little to the west of the present line of road. It passed up through a narrow excavated notch. Across this depression or trench a forest tree fell without being broken, and there long remained. Teams, in their way to and from town, had to pass underneath it like captured armies of old under the yoke. To some among the country-folk it suggested the beam of the gallows-tree. Hence sprang an ill-omened name long attached to this particular spot. Near here, at the top of the hill, were formerly to be seen, as we have understood, the remains of a rude windlass or capstan, used in the hauling up of the North-West Company's boats at this point of the long portage from Lake Ontario to Lake Huron. So early as 1799 we have it announced that the North-West Company intended to make use of this route. In the *Niagara Constellation*, of August 23, 1899, we read:—"We are informed from good authority that the North-West Company have it seriously in contemplation to establish a communication with the Upper Lakes by way of York, through Yonge Street to Lake Simcoe, a distance of about 53 miles only." The *Constellation* embraces the occasion to say also, "that the government has actually begun to open that street for several miles, which example will undoubtedly be no small inducement to persons who possess property on that street and its vicinity to exert themselves in opening and completing what may be justly considered one of the primary objects of attention in a new country, a good road." The *Gazette* of March 9, in this year (1799) had contained an announcement that "the North-West Company has given twelve thousand pounds towards making Yonge Street a good road, and that the North-West commerce will be communicated through this place (York): an event which must inevitably benefit this country materially, as it will not only tend to augment the population, but will also enhance the present value of landed property."

Bouchette, writing in 1815, speaks of improvements on Yonge Street, "of late effected by the North-West Company." "This route," he says in his *Topographical Description*, "being of much more importance, has of late been greatly improved by the North-West Company for the double purpose of shortening the distance to the Upper Lakes, and avoiding any contact with the American frontiers."

As stated already in another connection, we have conversed with those who had seen the cavalcade of the North-West Company's boats, mounted on wheels, on their way up Yonge Street. It used to be supposed by some that the tree across the notch through which the road

passed had been purposely felled in that position as a part of the apparatus for helping the boats up the hill.

The table-land now attained was long known as the Poplar Plains. Stegmann uses the expression in his Report. A pretty rural by-road that ascends this same rise near Rathnally, Mr. McMaster's house, is still known as the Poplar Plains road. A house, rather noticeable, to the left, but lying slightly back and somewhat obscured by fine ornamental trees that overshadow it, was the home for many years of Mr. J. S. Howard, sometime Postmaster of York, and afterwards Treasurer of the counties of York and Peel; an estimable man, and an active promoter of all local works of beneficence. He died in Toronto in 1866, aged 68. This house used to be known as Olive Grove; and was originally built by Mr. Campbell, proprietor and manager of the Ontario House Hotel, in York, once before referred to; eminent in the Masonic body, and father of Mr. Stedman Campbell, a local barrister of note, who died early. Mashquoteh to the left, situated a short distance in, on the north side of the road which enters Yonge Street here, is a colony transplanted from the neighbouring Spadina, being the home of Mr. W. Warren Baldwin, son of Dr. W. W. Baldwin, the builder of Spadina. "Mashquoteh" is the Ojibway for "meadow." We hear the same sounds in Longfellow's "Mushkoda-sa," which is, by interpretation, "prairie-fowl."

XLVIII.—YONGE STREET—FROM THE SECOND CONCESSION (DEER PARK) TO THE THIRD CONCESSION ROAD.

Deer Park, to the north of the road that enters here, but skirting Yonge Street as well, had that name given it when the property of the Heath family, allied by marriage to the Boultons of the Grange. On a part of this property was the house built by Colonel Carthew, once before referred to, and now the abode of Mr. Fiske. Colonel Carthew, a half pay officer of Cornish origin, also made large improvements on property in the vicinity of Newmarket.

While referring before to Colonel Carthew's house on this spot, in Section XIII., we erroneously said that Deer Park was now the R. C. Cemetery. That Cemetery lies to the south of the Concession Road, and was never a part of Deer Park.

Just after Deer Park, to avoid a long ravine which lay in the line of the direct route northward, the road swerved to the left and then descended, passing over an embankment, which was the dam of an adjacent sawmill, a fine view of the interior of which with the saw usually in active motion, was obtained by the traveller as he fared on. This was Michael Whitmore's sawmill. Of late years the apex of the long triangle of Noman's land that for a great while lay desolate between the original and subsequent lines of Yonge Street, has been happily utilized by the erection thereon of a Church, Christ Church, an object well seen in the ascent and descent of the street. Anciently, very near the site of Christ Church, a solitary longish wooden building, fronting southward, was conspicuous; the abode of Mr. Hudson, a provincial land surveyor of mark. Looking back southward from near the front of this house, a fine distant glimpse of the waters of Lake Ontario used to be obtained, closing the vista made in the forest by Yonge Street.

Before reaching Whitmore's sawmill, while passing along the brow of the bill overlooking the ravine which was avoided by the street as it ran in the first instance, there was to be seen at a little distance to the right, on some rough undulating ground, a house which always attracted the eye by its affectation of "Gothic" in the out-line of its windows. On the side towards the public road it showed several obtuse-headed lancet lights. This peculiarity gave the building, otherwise ordinary enough, a slightly romantic air: it had the effect, in fact, at a later period, of creating for this habitation, when standing for a considerable while tenantless, the reputation of being haunted. This house and the surrounding grounds constituted Springfield Park, the original Upper Canadian home of Mr. John Mills Jackson, an English gentleman, formerly of Downton in Wiltshire, who emigrated hither prior to 1806; but finding public affairs managed in a way which he deemed not satisfactory, he returned to England, where he published a pamphlet addressed to the King, Lords and Commons of the United Kingdom of Great Britain and Ireland, entitled, "A View of the Political Situation of the Province," a brochure that made a stir in Upper Canada, if not in England, the local House of Assembly voting it a libel. Our Upper Canadian Parliament partially acquired the habit of decreeing reflection on the local government to be libels. Society in its infancy is apt to resent criticism, even when

legitimate. Witness the United States and Mrs. Trollope. At the same time critics of infant society should be themselves sufficiently wide-minded not to expect in infant society the perfection of society well-developed, and to word their strictures accordingly. In the preface to his pamphlet, which is a well-written production, Mr. Jackson gives the following account of his first connection with Canada and his early experience there: "Having by right of inheritance," he says, "a claim to a large and very valuable tract of land in the Province of Quebec, I was induced to visit Lower Canada for the purpose of investigating my title; and being desirous to view the immense lakes and falls in Upper Canada, where I had purchased some lands previous to my leaving England, I extended my travels to that country, with which I was so much pleased, that I resolved to settle on one of my estates, and expended a considerable sum on its improvement [the allusion is probably to Springfield Park]; but considering neither my person nor property secure, under the system pursued there, I have been obliged to relinquish the hope of its enjoyment." The concluding sentences of his Appeal will give an idea of the burden of his complaint. To his mind the colony was being governed exactly in the way that leads finally to revolt in colonies. The principles of the constitution guaranteed by the mother country were violated. One of his grievances was—not that a seventh of the public land had been set apart for an established Church, but—that "in seventeen years not one acre had been turned to any beneficial account; not a clergyman, except such as England pays or the Missionary Society sends (only five in number), without glebe, parsonage or parsonage house; and still fewer churches than ministers of the established religion." He concludes thus: "I call upon you to examine the Journals of the House of Assembly and Legislative Council; to look at the distribution and use made of the Crown Lands; the despatches from the Lieutenant-Governor [Gore]; the memorials from the Provincial Secretary, Receiver-General and Surveyor-General; the remonstrances of the Six Nations of Indians; and the letters from Mr. Thorpe [Judge Thorpe], myself and others, on the state of the Colony, either to the Lords of the Treasury or to the Secretary of State. Summon and examine all the evidence that can be procured here [England], and, more should appear necessary, send a commission to ascertain the real state of the Province. Then you will be confirmed in the truth of every representation I have made, and much more, which, for the safety of individuals, I am constrained to withhold. Then you will be enabled to relieve England from a great burden, render the Colony truly valuable to the mother country, and save one of the most luxuriant ramifications of the Empire. You will perform the promise of the Crown; you will establish the law and liberty directed by the [British] Parliament; and diffuse the Gospel of Christ to the utmost extremity of the West. You will do that which is honourable to the nation, beneficial to the most deserving subjects, and lovely in the sight of God." This pamphlet is of interest as an early link (its date is 1809) in the catena of protests on the subject of Canadian affairs, from Whiggish and other quarters, culminating at last in Lord Durham's Report. Nevertheless, what the old French trader said of Africa—"Toujours en maudissant ce vilain pays, on y reviens toujours"—proved true in respect to Canada in the case of Mr. Jackson, as in the case likewise of several other severe critics of Canadian public affairs in later times. He returned and dwelt in the land after all, settling with his family on Lake Simcoe, where Jackson's Point and Jackson's Landing retain his name, and where descendants of his still remain. Mr. Jackson had possessions likewise in the West Indies, and made frequent visits thither, as also to England, where at length he died in 1836. Up to about that date, we observe his name in the Commission of the Peace. In the *Loyalist* of May 24, 1828, a Biblical work by Mr. Jackson is advertised for sale at York. Thus runs the notice:—"Just received from England, and for sale at the book stores of Messrs. Meighan and Lesslie & Sons, York, a few volumes of 'The History from the Creation of the World to the death of Joshua, authenticated from the best authorities, with Notes, Critical, Philosophical, Moral and Explanatory; by John Mills Jackson, Esq., formerly Gentleman Commoner of Ball. Coll. in the University of Oxford.'" (Then follow laudatory notices of the work from private sources.)

(To be continued.)

METEOROLOGICAL REGISTER.

MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETICAL OBSERVATORY, TORONTO, ONTARIO—JANUARY, 1872.
 Latitude—43° 39' 4" North. Longitude—81° 17m. 33s. West. Elevation above Lake Ontario, 108 feet.

Day.	Barom. at temp. of 32°.			Temp. of the Air.			Excess of Mean above average.			Fusion of Vapour.			Humidity of Air.			Direction of Wind.			Velocity of Wind.			Rain in inches.	Snow in inches.					
	6 A.M.	10 P.M.	M.F.A.M.	6 A.M.	10 P.M.	M.F.A.M.	U.	2.	10.	U.	2.	10.	5 A.M.	2 P.M.	10 P.M.	6 A.M.	10 P.M.	M.F.A.M.	6 A.M.	10 P.M.	M.F.A.M.							
																								inches.	inches.	inches.	inches.	inches.
1	30.003	30.113	30.183	27.3	29.2	19.3	25.2	+1.8	125.084	0.92	0.9	0.9	N	N	N	85	58	61	70	N	N	N	17.5	7.4	11.87	12.05	...	...
2	30.151	30.059	29.937	27.3	25.6	27.3	26.7	+5.4	101.097	1.32	1.2	1.2	N	N	N	72	71	89	83	N	N	N	16.4	11.0	12.87	13.45	...	...
3	29.657	29.659	29.639	33.1	34.5	34.6	34.5	+13.2	162.192	2.00	1.8	1.8	E	E	E	81	95	100	91	E	E	E	2.0	0.0	2.69	3.23	...	...
4	65.1	743	738	31.1	34.2	34.4	33.1	+11.87	175.169	1.68	1.7	1.7	N	N	N	82	85	92	90	N	N	N	2.8	0.0	4.64	5.56	...	...
5	770	607	628	31.5	33.0	33.1	33.5	+12.12	145.100	1.6	1.6	1.6	N	N	N	82	71	85	81	N	N	N	8.5	3.6	7.03	7.21	...	...
6	580	742	791	32.4	22.6	38.1	45.3	+1.64	161.063	0.48	0.8	0.8	N	N	N	83	83	70	68	N	N	N	13.5	13.5	15.40	16.71	...	0.2
7	80.045	910	933	9.3	20.5	16.4	14.7	-0.41	050.094	0.71	0.7	0.7	N	N	N	85	85	88	85	N	N	N	6.1	8.6	6.08	7.06	...	0.1
8	30.861	742	779	28.1	32.3	28.2	26.1	+4.9	098.125	1.32	1.1	1.1	N	N	N	91	67	92	82	N	N	N	9.3	8.0	8.44	8.78	...	...
9	740	696	697	28.1	29.0	28.4	28.7	+7.4	133.141	1.59	1.6	1.6	N	N	N	89	88	86	87	N	N	N	10.5	7.6	6.62	6.68	...	...
10	628	213	232	30.6	40.3	38.1	39.9	+4.3	143.131	1.95	1.8	1.8	N	N	N	84	83	86	87	N	N	N	5.0	0.8	3.39	3.46	...	...
11	416	398	393	30.6	36.3	37.0	35.7	+14.3	158.129	1.49	1.3	1.3	N	N	N	81	81	81	81	N	N	N	4.2	20.0	7.66	8.84	...	...
12	346	454	512	31.9	24.9	11.6	22.5	+1.1	161.100	0.68	0.9	0.9	N	N	N	74	71	78	74	N	N	N	9.0	4.0	12.71	13.34	...	...
13	773	628	452	6.0	22.6	23.0	17.9	-3.68	031.105	1.00	0.8	0.8	N	N	N	89	80	81	82	N	N	N	7.0	9.6	3.22	3.93	...	...
14	496	625	791	16.1	20.1	17.6	17.1	-4.4	073.085	0.73	0.7	0.7	N	N	N	78	78	70	81	N	N	N	10.6	5.5	4.08	4.72	...	0.2
15	892	889	854	8.9	21.9	11.4	14.8	-6.8	049.071	0.68	0.6	0.6	N	N	N	76	61	90	75	N	N	N	8.0	5.4	6.59	7.53	...	0.4
16	682	663	625	24.1	29.1	29.1	27.5	+5.8	109.126	1.34	1.2	1.2	N	N	N	82	78	83	81	N	N	N	5.0	4.4	3.38	3.59	...	...
17	600	380	380	28.5	32.4	32.7	31.3	+9.6	143.170	1.80	1.6	1.6	N	N	N	91	91	91	92	N	N	N	6.0	0.0	4.61	4.64	...	...
18	172	323	343	31.9	32.0	37.0	29.8	+7.6	168.124	1.22	1.3	1.3	N	N	N	92	72	83	82	N	N	N	7.0	9.8	6.73	7.03	...	...
19	305	172	016	16.1	21.4	28.8	27.3	+6.4	111.129	1.43	1.2	1.2	N	N	N	85	78	91	85	N	N	N	14.2	18.4	7.52	8.02	...	...
20	260	373	453	38.2	6.0	12.0	11.4	-8.8	048.060	0.57	0.6	0.6	N	N	N	90	97	79	78	N	N	N	22.2	7.0	12.73	12.96	...	0.3
21	420	604	661	12.9	16.1	14.4	15.0	-7.0	061.090	0.61	0.6	0.6	N	N	N	79	78	79	78	N	N	N	9.4	1.2	7.79	8.32	...	0.4
22	486	365	345	15.1	15.4	11.3	13.7	-6.1	069.071	0.65	0.6	0.6	N	N	N	80	70	79	78	N	N	N	6.0	0.0	9.25	10.13	...	0.1
23	325	249	213	20.7	20.5	10.9	15.7	-8.4	052.068	0.71	0.6	0.6	N	N	N	77	72	72	72	N	N	N	23.6	15.5	17.51	17.61	...	0.1
24	244	261	268	17.9	23.0	20.1	20.2	-1.96	071.092	0.78	0.8	0.8	N	N	N	80	70	73	70	N	N	N	14.4	9.0	11.61	11.8	...	...
25	362	465	719	6.3	13.2	6.4	6.5	-15.8	039.064	0.50	0.4	0.4	N	N	N	86	86	86	82	N	N	N	3.0	0.0	4.97	4.98	...	...
26	781	827	835	7.6	13.2	11.1	10.6	-11.8	053.054	0.59	0.5	0.5	N	N	N	84	84	84	82	N	N	N	20.0	6.6	4.19	4.31	...	...
27	753	707	851	11.1	16.6	13.2	13.7	-8.72	059.071	0.65	0.6	0.6	N	N	N	81	77	83	82	N	N	N	6.0	0.0	11.38	11.60	...	0.1
28	6047	29.672	29.691	0.70	25.16	21.70	21.36	+0.71	192.104	1.06	1.1	1.1	N	N	N	81	74	83	80	N	N	N	11.3	0.0	7.08	7.16	...	...
29	691	29.681	29.691	0.70	25.16	21.70	21.36	+0.71	192.104	1.06	1.1	1.1	N	N	N	81	74	83	80	N	N	N	10.97	7.21	8.87	8.87	...	3.9

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR JANUARY, 1872.] COMPARATIVE TABLE FOR JANUARY.

YEAR.	TEMPERATURE.			RAIN.		SNOW.		WIND.		
	Mean	Max. above average	Min. num.	No. of days.	Inches.	No. of days.	Inches.	Direction.	Resultant.	Mean Velocity.
1844	20.2	-2.0	-9.2	7	3.005	11	24.9	0	...	0.70 lbs
1845	26.6	+3.4	45.7	5	Imp.	9	22.7	0	...	0.70
1846	26.7	+3.6	45.7	5	2.365	10	19.0	0	...	0.65
1847	23.2	+0.2	42.4	7	2.165	6	7.6	...	...	1.09
1848	28.7	+4.6	51.1	7	2.245	8	7.1	...	...	2.03
1849	18.5	-4.6	39.5	4	1.176	10	9.2	N 52 W	...	6.82 mls
1850	29.7	+6.0	40.4	4	1.256	8	6.2	N 37 W	...	3.06
1851	25.6	+2.4	43.4	6	4.275	10	7.8	E 77 W	...	0.69
1852	18.4	-4.7	37.3	0	0.060	19	30.9	N 58 W	...	6.80
1853	23.0	+0.1	40.9	1	0.290	0	0.000	N 48 W	...	3.14
1854	23.0	+0.6	40.4	7	1.270	11	7.5	N 27 W	...	2.52
1855	25.9	+2.8	49.0	6	0.526	13	23.3	N 77 W	...	6.34
1856	16.0	-7.1	34.4	0	0.600	14	13.6	N 73 W	...	1.91
1857	12.8	-10.3	37.2	3	Imp.	16	21.8	N 75 W	...	6.24
1858	30.0	+6.9	47.4	0	Imp.	16	21.8	N 70 W	...	10.69
1859	20.4	+3.3	43.2	0	1.152	11	4.0	N 71 W	...	7.40
1860	23.4	+3.2	46.4	0	1.439	19	16.4	E 81 W	...	3.17
1861	19.9	-3.2	37.0	4	0.740	10	8.7	N 89 W	...	6.09
1862	21.7	-1.4	44.6	6	0.885	23	20.6	N 80 W	...	2.92
1863	28.1	+6.0	47.0	10	1.116	19	27.4	N 26 W	...	2.69
1864	22.8	+0.3	44.2	0	1.122	17	20.6	N 26 W	...	8.23
1865	20.7	-0.4	37.2	1	1.105	14	26.3	E 73 W	...	6.00
1866	20.7	-0.4	37.2	1	0.449	18	14.8	N 85 W	...	4.80
1867	17.0	-6.6	43.8	2	0.622	19	10.3	N 76 W	...	2.98
1868	19.0	-4.1	39.0	1	Imp.	21	42.0	N 65 W	...	3.27
1869	27.7	+4.6	45.0	4	0.855	12	9.8	E 83 W	...	3.97
1870	24.4	+1.3	45.0	8	0.412	18	21.3	N 72 W	...	3.40
1871	21.3	-1.8	46.4	8	0.864	23	43.6	E 89 W	...	2.63
1872	22.4	-0.7	41.8	5	0.228	16	31.9	N 87 W	...	8.49
Result to 1871.	23.09	...	43.32	4.69	1.228	13.07	17.49	N 79 W	...	3.12
Excess for 18	0.70	...	1.62	0.41	1.008	1.03	13.69	...	...	0.68

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

Highest Barometer..... 30.103 at 10 p.m. on 1st. } Monthly range= }
 Lowest Barometer..... 23.980 at 12 p.m. on 27rd. } 1.207.
 { Maximum Temperature..... 41° 08 on 11th. } Monthly range= }
 { Minimum Temperature..... -2° 56 on 7th. } 44.3. }
 { Mean Maximum Temperature..... 27° 72 } Mean daily range= }
 { Mean Minimum Temperature..... 13° 02 } 13° 50. }
 { Greatest daily range..... 30° 97 from a.m. of 6th to a.m. of 7th. }
 { Least daily range..... 4° 00 from noon to 10 p.m. of 4th. }
 Warmest day..... 11th... Mean Temperature..... 35° 90 } Difference= 29° 33. }
 Coldest day..... 29th... Mean Temperature..... 6° 37 }
 Maximum { Solar 61° 00 on 11th. } Difference= 61° 00. }
 Radiation. { Terrestrial - 10° 50 on 16th. }
 Aurora observed on 2 nights, viz.: 12th and 31st.
 Possible to see Aurora on 11 nights; impossible on 21 nights.
 Snowing on 15 days; depth 3.9 inches; duration of fall 57.2 hours.
 Hailing on 5 days; depth 0.220 inches; duration of fall 18.1 hours.
 Mean of Cloudiness, 0.82.

WIND.

Resultant Direction S. 57° W.; Resultant Velocity 4.73 miles.
 Mean Velocity 8.87 miles per hour.
 Maximum Velocity 30.0 miles, from midnight to 1 a.m. on 12th.
 Most Windy day 25th; Mean Velocity 17.61 miles per hour.
 Least Windy day 3rd; Mean Velocity 0.65 miles per hour.
 Most Windy hour noon; Mean Velocity 11.37 miles per hour.
 Least Windy hour 8 p.m.; Mean Velocity 7.25 miles per hour.
 Solar haloes on 12th, 25th and 26th.
 Lunar haloes on 26th and 29th.

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR FEBRUARY, 1872

NOTE.—The monthly means do not include Sunday observations. The daily means, excepting those that relate to the wind, are derived from six observations daily, namely at 5 A.M., 8 A.M., 11 A.M., 2 P.M., 4 P.M., 7 P.M., and midnight. The means and resultants of the wind are from hourly observations.

Highest barometer..... 30.231 at 2 p.m. on 7th. } Monthly range—
 Lowest barometer..... 28.997 at 12 p.m. on 24th. } 1.234
 { Maximum temperature..... 48°2 on 24th. } Monthly range—
 { Minimum temperature..... 3.0 on 2nd. } 46°8
 Mean maximum temperature..... 29°50 }
 Mean minimum temperature..... 12°51 } Mean daily range—
 Greatest daily range..... 34°6 from a.m. to p.m. of 20th. } 16°28
 Least daily range..... 9°3 from a.m. to p.m. of 3rd. }
 Warmest day..... 24th; mean temperature 39°30 } Difference—28°58
 Coldest day..... 29th; mean temperature 10°72 }
 Maximum { Solar..... 68°0 on 12th and 14th. } Monthly range—
 Radiation { Terrestrial..... 12°0 on 2nd. } 70°0
 Aurora observed on 2 nights, viz.: 18th and 26th.
 Possible to see aurora on 18 nights; impossible on 11 nights.
 Snowing on 9 days; depth 7.3 inches; duration of fall 49.8 hours.
 Raining on 6 days; depth, 0.350 inches; duration of fall, 17.8 hours.
 Mo of cloudiness, 0.62.

WIND.

Resultant direction, N. 61° W.; Resultant velocity, 3.32 miles.
 Mean velocity, 8.03 miles per hour.
 Maximum velocity, 33.2 miles, from 2 to 3 p.m. of 25th.
 Most windy day, 25th; mean velocity, 18.60 miles per hour.
 Most windy day, 10th; mean velocity, 1.93 miles per hour.
 Most windy hour, 2 p.m.; mean velocity, 13.57 miles per hour.
 Least windy hour, 6 a.m.; mean velocity, 7.03 miles per hour.

Fog on 13th, 19th, and 20th.

Solar haloes on 1st, 6th, 6th, 10th, 20th, 24th, and 29th.

Lunar haloes on 22nd, 23rd, and 26th.

28th, Crows seen.

COMPARATIVE TABLE FOR FEBRUARY.

YEAR.	TEMPERATURE.				RAIN.		SNOW.		WIND.		
	Mean	Excess above Average	Maxi. mum.	Mini. mum.	Range	No. of days.	Inches.	No. of days.	Inches.	Re-sultant Direc-tion.	Mean Velocity.
1844	26.0	+ 3.0	47.0	0.6	37.3	4	0.430	7	10.0	0	0.43 lbs
1845	26.0	+ 3.0	49.1	-4.2	51.3	5	Imp	9	19.0	...	0.99
1846	20.4	+ 2.0	41.9	-10.7	51.3	6	0.000	13	46.1	...	0.63
1847	21.6	+ 1.6	40.9	0.0	40.9	2	0.650	13	27.3	...	0.69
1848	20.6	+ 3.6	46.0	0.0	46.0	4	0.176	8	10.8	N 65 W	2.53
1849	10.6	+ 3.6	40.6	0.8	60.4	2	0.240	13	19.2	N 41 W	1.48
1850	26.0	+ 3.0	49.6	2.2	47.4	2	1.230	9	23.1	N 81 W	1.48
1851	27.0	+ 4.0	50.2	2.0	45.2	7	2.600	4	2.4	N 80 W	3.48
1852	23.4	+ 0.4	41.2	0.2	47.4	3	0.660	11	13.0	N 64 W	1.99
1853	24.1	+ 1.1	43.4	1.4	44.8	4	1.030	16	12.0	N 49 W	3.34
1854	21.1	+ 1.0	42.8	-10.8	53.0	6	1.460	15	18.0	N 7 E	1.73
1855	16.4	+ 7.6	39.0	-25.4	64.4	2	1.770	14	21.8	N 40 W	1.34
1856	15.7	+ 7.3	37.8	-18.7	50.5	0	0.000	8	9.7	N 81 W	1.70
1857	18.0	+ 6.6	52.4	6.9	68.3	11	3.050	11	11.7	N 78 W	3.08
1858	17.0	+ 6.0	42.4	7.3	49.7	1	Imp	16	26.7	N 72 W	3.22
1859	20.0	+ 3.0	46.2	2.1	44.1	6	0.455	14	8.3	N 54 W	2.72
1860	22.8	+ 0.2	40.2	-8.5	58.7	7	1.330	13	18.8	N 61 W	3.25
1861	26.1	+ 3.1	46.0	-20.5	68.8	4	0.816	17	29.7	N 77 W	3.56
1862	22.6	+ 0.6	37.8	-6.2	43.0	3	0.180	17	23.1	N 55 W	3.93
1863	22.4	+ 0.6	41.6	-10.8	61.3	7	1.450	12	22.0	N 23 W	2.21
1864	24.3	+ 1.3	45.0	-16.0	60.0	2	0.397	14	9.6	N 84 W	6.48
1865	22.4	+ 0.6	42.2	-10.0	62.2	6	0.81	11	16.8	N 23 W	3.95
1866	22.6	+ 5.9	46.0	-8.0	63.0	8	0.830	12	16.9	N 56 W	6.14
1867	28.9	+ 5.9	44.0	0.2	43.8	3	1.328	10	13.4	N 67 W	1.54
1868	17.2	+ 6.8	45.0	-11.6	66.5	1	0.040	13	32.8	N 68 W	3.23
1869	25.0	+ 2.0	46.0	-1.0	47.0	2	0.165	19	39.7	N 34 W	4.15
1870	20.6	+ 1.6	40.6	-0.6	47.2	2	0.620	18	49.1	N 20 W	2.84
1871	24.3	+ 1.3	48.0	-16.8	63.8	3	0.040	16	23.0	N 70 W	4.26
1872	20.7	+ 2.3	45.2	-3.0	48.8	6	0.350	9	7.1	N 61 W	3.32
Results on 18th.	23.02	.....	44.40	-7.91	62.31	4.0	0.891	12.6	19.31	N 66 W	3.14
Excess for 7½	2.33	.....	+ 0.80	+ 4.81	-3.61	1.0	0.641	3.6	12.01	...	+ 0.30

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR MARCH, 1872.

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

Highest Barometer..... 29.965 at 11 p.m. on 24th } Monthly range=
 Lowest Barometer..... 28.789 at 2 p.m. on 31st } 1.176.
 { Maximum Temperature 46°4 on 27th } Monthly range=
 { Minimum Temperature 10°8 on 6th } 35°6
 { Mean Maximum Temperature 29°80 } Mean daily range=
 { Mean Minimum Temperature 12°41 } 17°39
 { Greatest daily range..... 36°50 from a.m. to p.m. of 4th.
 { Least daily range..... 8°1 from a.m. to p.m. of 10th.
 Warmest Day..... 27th .. Mean Temperature..... 33°50 } Difference=36°48
 Coldest Day..... 6th .. Mean Temperature..... 17°1 on 5th } 83°4
 Maximum { Solar 66°50 on 27th } Monthly range=
 Radiation. { Terrestrial..... 17°1 on 5th } 83°4
 Aurora observed on 4 nights, viz., 1st, 6th, 12th, and 15th.
 Possible to see Aurora on 17 nights; impossible on 14 nights.
 Snowing on 14 days; depth 16.3 inches; duration of fall 68.3 hours.
 Raining on 2 days; depth 0.700 inches; duration of fall 24.0 hours.
 Mean of Cloudiness=0.54.

WIND.

Resultant Direction N. 66° W.; Resultant Velocity 6.36 miles.
 Mean Velocity 10.48 miles per hour.
 Maximum Velocity 37.0 miles, from 1.30 to 2.30 p.m. of 6th.
 Most Windy day 6th; Mean Velocity 23.25 miles per hour.
 Least Windy day 23th; Mean Velocity 1.16 miles per hour.
 Most Windy hour 2 p.m.; Mean Velocity 15.03 miles per hour.
 Least Windy hour 2 a.m.; Mean Velocity 7.85 miles per hour.

Fog on 9th.
 Solar haloes 2nd, 3rd, 18th, and 22nd.
 Lunar haloes 22nd and 24th.
 March 30th.—Robins seen.

It will be seen by the Comparative Table that this is the coldest March ever recorded at this Observatory.

COMPARATIVE TABLE FOR MARCH.

YEAR.	TEMPERATURE.				RAIN.		SNOW.		WIND.		
	Mean	Excess above average	Max. num.	Min. num.	Range.	No. of days.	Inches.	No. of days.	Inches.	Resultant.	Mean Velocity
										Direction.	Velocity
1844	31.3	+ 1.0	50.8	9.6	41.2	8	2.470	8	14.0	0	0.67 Ms
1845	31.4	+ 6.7	62.7	6.6	66.1	6	1.141	8	2.8	...	0.66
1846	33.1	+ 3.4	48.6	8.3	41.3	6	1.865	6	2.3	...	0.30
1847	28.6	+ 3.5	43.9	5.6	68.4	6	0.850	6	4.2	...	0.71
1848	28.0	+ 1.1	38.0	0.0	68.6	5	1.220	6	9.7	N 66 W	2.03
1849	23.6	+ 3.8	53.0	15.1	37.9	7	1.625	7	2.3	N 3 W	1.48
1850	23.5	+ 0.1	40.5	7.2	39.3	2	0.745	7	11.2	N 63 W	2.62
1851	32.3	+ 2.7	59.3	12.0	47.3	0	0.770	0	8.8	N 21 W	1.93
1852	27.7	+ 2.0	41.8	-7.4	62.2	3	0.080	12	19.5	N 8 W	0.71
1853	30.6	+ 0.0	56.3	0.0	56.3	6	1.081	8	7.1	N 68 W	2.60
1854	30.7	+ 1.0	55.1	7.4	47.7	9	2.425	3	3.8	N 65 W	3.39
1855	28.6	+ 1.2	49.4	-2.0	62.5	5	1.485	11	18.1	N 88 W	4.76
1856	23.1	+ 6.6	41.4	-14.0	65.4	0	0.000	12	16.2	N 11 W	7.68
1857	27.8	+ 1.9	67.0	-5.6	63.1	4	0.335	15	11.3	N 63 W	6.43
1858	28.4	+ 1.3	55.4	-5.6	60.0	10	0.917	6	0.2	N 58 W	5.45
1859	30.3	+ 0.6	61.2	9.8	44.4	16	4.054	8	1.0	N 64 W	1.96
1860	31.5	+ 4.8	67.0	12.8	54.2	5	0.582	11	2.4	N 64 W	7.61
1861	29.3	+ 2.8	47.4	-8.2	52.6	8	2.123	14	7.1	N 54 W	4.33
1862	29.8	+ 0.9	43.2	8.0	35.2	8	2.566	11	18.5	N 22 W	2.50
1863	25.5	+ 3.0	42.2	-4.0	46.2	4	0.687	17	11.4	N 27 W	2.62
1864	29.1	+ 0.0	50.2	-3.0	47.2	0	1.020	12	3.7	N 27 W	2.29
1865	33.0	+ 3.9	65.6	-3.5	69.1	10	3.050	12	18.0	N 61 W	2.16
1866	27.6	+ 2.1	45.8	7.6	38.3	6	1.015	18	7.2	N 73 W	6.84
1867	26.0	+ 3.1	46.8	3.0	43.6	0	0.617	14	33.4	N 34 W	2.12
1868	31.3	+ 1.6	59.0	-16.6	74.6	7	2.664	5	4.2	N 21 W	2.12
1869	23.1	+ 6.0	46.8	-5.4	62.2	3	0.985	0	16.0	N 62 E	2.86
1870	26.3	+ 3.4	44.0	6.2	38.5	2	0.765	18	0.2	N 18 E	4.73
1871	31.7	+ 6.0	68.5	17.0	41.5	8	2.782	12	13.0	N 31 W	2.69
1872	19.9	+ 9.8	46.4	-10.8	67.2	2	0.700	14	16.3	N 66 W	5.36
Mean for 1871.	29.68	...	51.61	2.47	49.14	6.24	1.618	10.00	12.22	N 40 W	3.14
Excess for 72	9.76	...	5.21	13.27	8.06	-4.24	0.918	4.00	4.08	...	1.58

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR APRIL, 1872

COMPARATIVE TABLE FOR APRIL.

YEAR.	TEMPERATURE.				RAIN.				SNOW.				WIND.		
	Mean.	Excess above Average.	Maxi. num.	Mini. num.	Range.	No. of days.	Inches.	No. of days.	Inches.	No. of days.	Inches.	Direction.	Velocity.	Direction.	Velocity.
1844	47.6	+ 0.4	74.6	14.9	69.7	10	1.516	1	insp	0	0	0	0	0	0.24 lbs.
1845	42.1	+ 1.0	66.7	16.6	51.2	11	3.296	4	1.3	1	1.00	0	0	0	1.00
1846	41.0	+ 2.0	81.8	24.2	57.6	10	1.300	2	1.3	1	0.65	0	0	0	0.65
1847	39.2	+ 1.9	65.1	9.3	55.8	8	2.876	2	4.0	0	0.69	0	0	0	0.69
1848	41.3	+ 0.2	65.1	22.7	42.4	6	1.456	2	0.6	0	0.69	0	0	0	0.69
1849	39.0	+ 3.1	72.0	15.6	56.6	10	2.655	2	1.7	0	0.69	0	0	0	0.69
1850	37.9	+ 0.2	59.3	18.0	47.1	7	4.723	2	1.1	0	1.00	0	0	0	1.00
1851	41.3	+ 0.2	65.3	25.8	33.5	11	2.296	5	1.2	0	0.65	0	0	0	0.65
1852	38.2	+ 2.9	53.8	20.0	33.8	4	1.990	9	4.4	0	0.68	0	0	0	0.68
1853	41.9	+ 0.8	65.7	25.0	40.7	10	2.621	1	1.0	0	0.68	0	0	0	0.68
1854	41.0	+ 1.1	64.6	20.2	44.3	12	2.987	4	2.7	0	0.68	0	0	0	0.68
1855	42.4	+ 1.3	69.4	10.7	58.7	8	2.080	3	1.9	0	0.68	0	0	0	0.68
1856	42.3	+ 1.2	72.2	14.2	58.0	13	2.780	3	0.1	0	0.68	0	0	0	0.68
1857	35.4	+ 5.7	62.0	6.9	46.1	10	1.756	11	12.9	0	0.68	0	0	0	0.68
1858	41.5	+ 0.4	65.2	21.8	43.4	13	1.642	2	0.1	0	0.68	0	0	0	0.68
1859	3.5	+ 1.6	64.8	22.6	42.2	9	2.527	6	1.2	0	0.68	0	0	0	0.68
1860	39.6	+ 0.9	67.0	23.8	43.2	11	1.282	8	0.3	0	0.68	0	0	0	0.68
1861	42.0	+ 0.9	68.0	14.6	53.5	10	1.619	4	0.9	0	0.68	0	0	0	0.68
1862	39.6	+ 1.5	68.0	14.6	53.5	10	2.232	4	0.2	0	0.68	0	0	0	0.68
1863	42.0	+ 0.9	69.0	8.6	60.4	8	2.210	4	1.6	0	0.68	0	0	0	0.68
1864	40.9	+ 0.2	69.4	28.1	31.3	16	6.633	3	3.6	0	0.68	0	0	0	0.68
1865	43.1	+ 2.0	62.5	23.0	39.6	17	3.972	6	2.0	0	0.68	0	0	0	0.68
1866	33.0	+ 2.8	71.0	28.5	42.6	7	1.675	2	insp	0	0.68	0	0	0	0.68
1867	38.0	+ 1.8	65.5	25.4	40.1	12	2.147	5	7.2	0	0.68	0	0	0	0.68
1868	38.0	+ 3.1	64.0	19.2	54.8	10	0.990	10	6.3	0	0.68	0	0	0	0.68
1869	40.1	+ 1.0	72.2	16.6	55.6	9	2.968	6	0.6	0	0.68	0	0	0	0.68
1870	41.6	+ 3.5	67.0	29.6	37.4	9	2.145	2	0.1	0	0.68	0	0	0	0.68
1871	43.0	+ 1.9	72.8	26.4	46.4	17	3.318	2	1.3	0	0.68	0	0	0	0.68
1872	40.5	+ 0.6	70.0	22.7	47.3	9	0.916	5	0.7	0	0.68	0	0	0	0.68
Mean for 1871.	41.13	.....	66.36	19.27	47.09	10.00	2.434	3.63	2.39	18 W	2.04	8.13	0	0	0.99
Mean for 1872.	0.65	.....	+ 3.64	+ 3.43	+ 0.21	1.00	1.629	1.87	1.09	0	0	0	0	0	0.99

NOTE.—The monthly means do not include Sunday observations. The daily means, excepting those that relate to the wind, are derived from six observations daily, namely, at 6 A.M., 8 A.M., 11 A.M., 2 P.M., 4 P.M., 10 P.M., and midnight. The means and resultants for the wind are from hourly observations.

Lowest barometer.....29.970 at 8 a.m. on 4th. } Monthly range=0.670.
 Highest barometer.....29.091 at 8 a.m. on 9th. }
 Maximum temperature.....70.00 on 26th. } Monthly range=47.23
 Minimum temperature.....22.97 on 2nd. }
 Mean maximum temperature.....49.907 } Mean daily range=18.962
 Mean minimum temperature.....31.935 }
 Mean daily range.....37.98 from a.m. to p.m. of 25th.
 Greatest daily range.....5.2 from a.m. to p.m. of 15th.
 Warmest day.....20th; mean temperature.....68.925 }
 Coldest day.....22nd; mean temperature.....29.937 } Difference=28.988.
 Maximum of Solar.....8.90 on 24th. }
 Radiation { Terrestrial.....11.94 on 23rd. } Difference=7.90.
 Aurora observed on 8 nights, viz.—3rd, 10th, 11th, 14th, 16th, 17th, 25th, and 30th.
 Possible to see Aurora on 20 nights; impossible on 10 nights.
 Snowing on 5 days; depth, 0.7 inches; duration of fall, 5.4 hours.
 Raining on 9 days; depth, 0.910 inches; duration of fall, 40.9 hours.
 Mean of cloudiness=0.54.

WIND.
 Resultant direction, N. 68° W.; resultant velocity, 3.84 miles.
 Mean velocity, 9.12 miles per hour.
 Maximum velocity, 36.6 miles, from noon to 1 p.m. of 13th.
 Most windy day, 13th; mean velocity, 10.53 miles per hour.
 Least windy day, 24th; mean velocity, 0.58 miles per hour.
 Most windy hour, 10 p.m.; mean velocity, 12.96 miles per hour.
 Least windy hour, 3 p.m.; mean velocity, 6.76 miles per hour.
 Fog on 8th, 9th, 23rd and 24th.
 Solar haloes, 4th, 5th, 17th, and 27th.
 Lunar haloes, 16th and 16th.
 9th. First vessel entered harbour. 5th. Blue birds. 6th. Swallows. 10th. Pigeons in large numbers. 25th. Frogs heard. 26th. Butterflies.

MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETICAL OBSERVATORY, TORONTO, ONTARIO,—MAY, 1872.
 Latitude—48° 39' 4" North. Longitude—81° 17m. 33s. West. Elevation above Lake Ontario, 108 feet.

Day	Barom. at temp of 32°.			Temp. of the Air.			Excess of or above Normal.	Tension of Vapour.			Humidity of Air.			Direction of Wind.			Result.	Velocity of Wind.			Rain in Inches.	Snow in Inches.						
	6 A.M.	2 P.M.	10 P.M.	5 A.M.	2 P.M.	10 P.M.		6	2	10	6	2	10	6 A.M.	2 P.M.	10 P.M.		6	2	10								
1	29.433	29.400	29.458	62.4	63.9	65.0	+ 3.23	337	371	377	86	90	92	80	89	89	8	10	10	0.0	7.8	0.0	3.19	3.74	0.310	...	...
2	420	450	463	41.1	51.3	58.0	+ 7.12	273	207	221	84	94	73	74	74	74	8	10	10	2.0	17.8	1.2	7.60	8.32	0.25	...	...
3	653	230	433	40.6	43.3	40.6	- 2.10	225	253	151	207	89	84	82	82	82	8	10	10	0.0	21.4	0.0	7.21	11.31	1.30	...	...
4	697	848	855	30.2	47.0	37.0	- 7.38	167	168	175	168	75	40	77	68	68	8	10	10	21.4	28.0	7.4	18.61	18.61	Inap.	...	...
5	641	658	671	45.9	61.2	65.7	+ 7.12	228	249	230	226	73	40	61	64	64	8	10	10	0.0	8.0	0.0	2.56	6.12	...	...	...
6	667	630	695	45.6	61.1	62.2	+ 13.05	269	477	402	379	85	55	72	67	67	8	10	10	0.0	8.0	0.0	1.55	2.06	...	...	...
7	765	791	627	70.6	47.7	60.8	+ 1.60	333	298	264	259	81	70	80	78	78	8	10	10	0.0	0.0	0.0	0.83	1.06	...	...	...
8	491	341	606	45.0	55.7	67.1	+ 8.05	278	415	325	332	90	65	73	70	70	8	10	10	3.6	7.0	0.0	4.03	5.38	0.020	...	...
9	718	764	709	45.2	48.8	46.6	- 3.30	237	250	269	247	77	72	86	71	71	8	10	10	0.0	13.4	16.4	5.03	7.82	...	...	...
10	660	433	391	45.0	62.9	65.6	+ 6.23	254	330	347	316	72	67	86	71	71	8	10	10	0.0	9.8	0.0	3.10	4.98	...	...	...
11	640	691	742	38.0	51.3	44.8	- 5.12	186	237	166	226	81	70	65	72	72	8	10	10	18.6	7.2	2.8	7.91	10.34	Inap.	...	...
12	807	808	820	41.2	59.0	50.6	- 0.12	178	289	265	240	68	55	72	64	64	8	10	10	3.4	5.0	2.5	1.50	3.86	...	...	...
13	892	868	864	49.0	58.6	61.7	+ 1.67	261	299	229	252	73	60	57	61	61	8	10	10	2.4	7.0	4.0	1.86	5.02	...	...	...
14	914	844	728	48.8	60.0	44.8	- 1.35	250	246	221	225	72	55	76	69	69	8	10	10	6.6	4.5	0.0	1.39	5.00	...	...	...
15	686	651	485	45.0	57.1	47.9	- 1.47	91.67	137	179	137	164	65	38	40	40	8	10	10	6.2	6.8	3.0	3.41	3.48	...	...	...
16	420	293	268	48.5	63.2	53.6	- 1.63	215	270	344	278	62	47	81	67	67	8	10	10	0.0	6.8	0.0	3.41	3.48	...	...	...
17	195	343	2357	48.1	60.4	51.8	- 0.45	297	392	342	319	89	73	91	87	87	8	10	10	4.2	13.8	0.8	2.86	9.34	0.016	...	...
18	464	567	579	45.1	63.9	55.9	+ 1.22	309	433	312	317	91	73	61	72	72	8	10	10	0.0	6.8	0.0	2.21	2.51	0.060	...	...
19	663	401	287	49.0	50.3	53.6	- 1.67	249	312	310	325	68	60	93	83	83	8	10	10	0.0	3.5	0.8	1.36	2.23	...	...	...
20	425	479	493	55.0	65.8	61.3	+ 3.47	378	379	362	307	88	60	98	79	79	8	10	10	0.0	6.5	2.0	3.48	3.63	2.22	...	...
21	477	298	274	46.7	60.4	48.6	- 4.02	306	311	314	329	90	82	97	91	91	8	10	10	10.8	11.8	0.0	4.47	7.62	0.045	...	...
22	422	498	592	50.6	64.3	47.1	- 0.48	307	392	255	233	83	60	77	68	68	8	10	10	22.0	22.0	0.0	17.21	17.61	...	...	...
23	212	212	320	45.3	60.7	53.6	- 0.72	380	387	344	367	88	72	83	82	82	8	10	10	0.0	9.6	3.6	2.00	3.46	Inap.	...	...
24	490	684	684	45.0	61.2	48.7	- 0.42	248	243	246	251	80	60	82	73	73	8	10	10	2.2	4.4	4.4	1.95	3.41	0.32	...	...
25	625	677	712	47.0	63.6	47.7	- 3.18	244	238	240	266	70	48	80	67	67	8	10	10	21.2	20.0	0.0	14.62	14.53	...	...	...
26	667	726	682	48.1	66.3	62.1	- 1.51	268	332	257	298	80	75	73	73	73	8	10	10	13.2	13.0	0.0	6.34	6.77	...	...	...
27	780	749	706	51.0	62.9	61.0	- 0.83	260	298	220	270	64	62	59	60	60	8	10	10	3.0	8.0	13.0	0.72	3.84	0.002
28	674	620	570	48.0	61.0	66.3	+ 0.19	261	309	261	280	70	63	76	73	73	8	10	10	5.4	5.4	1.2	9.81	9.96	...	...	...
29	674	620	570	48.0	61.0	66.3	+ 0.19	261	309	261	280	70	63	76	73	73	8	10	10	5.70	9.32	4.03	6.49	1.934	...	...	...

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR MAY, 1872.

NOTE.—The monthly means do not include Sunday observations. The daily means, excepting those that relate to the wind, are derived from six observations daily, namely, at 6 A.M., 8 A.M., 3 P.M., 4 P.M., 10 P.M., and midnight. The means and resultants for the wind are from hourly observations.

Highest Barometer.....29.978 at 7 a.m. on 6th } Monthly range =
 Lowest Barometer.....29.941 at 7 a.m. on 19th } 1.036.
 Mean temperature.....78.98 on 7th. } Monthly range =
 Maximum temperature.....82.90 on 3rd. } 4.92
 Minimum temperature.....71.43 on 29th. } 11.47
 Mean maximum temperature.....81.97 } Mean daily range =
 Mean minimum temperature.....74.51 } 20.56.
 Greatest daily range.....11.92 from a.m. to p.m. of 29th.
 Warmest day.....7th; mean temperature.....62.93 } Difference = 21.98
 Coldest day.....3rd; mean temperature.....40.45 }
 Maximum { Solar.....9.04 on 7th } Difference = 71.4.
 Radiation { Terrestrial.....29.0 on 2nd and 3rd }
 Aurora observed on 0 nights, viz.—2nd, 9th, 13th, 24th, 27th and 29th
 Possible to see Aurora on 25 nights; impossible on 0 nights.
 Rainfall on 14 days; depth, 1.934 inches; duration of fall, 63.9 hours.
 Mean of cloudiness = 0.54.

WIND.

Resultant direction, N. 62° W.; resultant velocity, 2.25 miles.
 Mean velocity, 0.40 miles per hour.
 Maximum velocity, 92.0 miles, from 3.30 to 4.30 p.m. of 3rd.
 Most windy day, 4th; mean velocity, 18.66 miles per hour.
 Least windy day, 7th; mean velocity, 1.00 miles per hour.
 Most windy hour, 3 p.m.; mean velocity, 9.22 miles per hour.
 Least windy hour, 9 p.m.; mean velocity, 3.63 miles per hour.

Fog on the 22nd, 24th and 27th.
 Lightning on 9th and 11th.
 Thunder storms on 1st and 27th.
 Solar haloes, 11th and 16th,
 Lunar haloes, 16th and 24th.
 Ice on 4th. Hear frost 13th.

COMPARATIVE TABLE FOR MAY.

YEAR.	TEMPERATURE.				RAIN.		SNOW.		WIND.		
	Mean.	Excess above Average.	Maxi mum.	Mini mum.	Range.	No. of Days.	Inches.	No. of Days.	Inches.	Resultant Direc- tion.	Mean Velocity.
1844	53.6	+ 2.0	78.4	28.7	49.7	14	5.670	0	0.0	...	0.39 lbs.
1845	49.6	+ 3.9	77.9	27.8	60.0	8	2.800	0	0.0	...	0.55
1846	55.6	+ 2.3	79.7	33.1	46.6	9	4.375	0	0.0	...	0.46
1847	54.4	+ 2.6	72.1	26.7	46.4	12	2.040	0	0.0	...	0.29
1848	54.1	+ 2.5	78.0	31.3	46.7	13	2.920	0	0.0	N 40 W 1.31	4.93 mls.
1849	48.0	+ 3.6	72.2	27.9	44.3	16	5.115	0	0.0	N 51 W 1.97	5.43
1850	47.6	+ 4.0	77.6	27.5	60.3	7	0.545	1	Insp. 9.64	N 2.05	0.32
1851	51.3	+ 0.2	73.3	28.0	45.3	12	2.950	1	Insp. 9.82	N 0.99	4.04
1852	51.4	+ 0.7	73.3	32.2	46.2	11	1.125	1	Insp. 9.82	N 0.83	5.16
1853	50.9	+ 0.6	73.4	25.2	46.2	17	4.570	0	0.0	N 2.70	0.40
1854	52.2	+ 1.5	71.5	33.0	44.5	6	1.630	0	0.0	N 1.70	5.28
1855	53.1	+ 1.5	77.5	33.0	44.5	6	2.565	2	0.9	N 1.70	5.28
1856	60.5	+ 1.1	82.2	31.2	51.0	14	4.380	1	Insp. 4.2	N 3.99	9.81
1857	48.9	+ 2.7	74.9	26.0	48.8	16	4.145	1	Insp. 5.23	N 1.14	8.13
1858	48.9	+ 2.7	69.8	31.0	38.8	17	6.367	0	0.0	N 42.3	3.33
1859	55.2	+ 3.6	79.6	39.5	40.1	11	3.410	0	0.0	N 72.2	1.59
1860	55.5	+ 3.9	74.5	32.5	42.0	16	1.815	0	0.0	N 26.2	6.07
1861	47.6	+ 4.1	72.0	28.0	45.0	12	3.395	1	0.5	N 47.7	3.60
1862	52.2	+ 0.7	78.5	32.4	46.1	8	1.427	0	0.0	N 52.7	2.80
1863	54.3	+ 2.7	79.0	36.4	42.6	14	3.263	0	0.1	N 56.0	4.1
1864	54.8	+ 3.2	79.0	32.2	46.8	15	4.070	0	0.0	N 7.1	8.6
1865	52.3	+ 0.7	79.0	30.0	49.0	11	1.060	0	0.0	N 3.7	5.61
1866	48.3	+ 3.9	73.4	33.4	40.0	13	2.830	0	0.0	N 46.7	4.49
1867	46.6	+ 5.2	69.0	31.6	40.4	16	3.220	1	Insp. 8.81	N 3.58	8.40
1868	51.8	+ 0.6	73.0	35.2	39.8	16	6.670	0	0.0	N 38.2	3.16
1869	50.8	+ 0.8	74.2	31.4	42.8	10	2.805	1	Insp. 20.2	N 2.38	6.87
1870	56.3	+ 4.7	81.2	38.3	42.4	10	1.150	0	0.0	N 23.7	1.09
1871	54.2	+ 2.6	85.0	32.4	52.6	7	2.302	0	0.0	N 23.7	2.63
1872	51.9	+ 0.3	78.8	32.0	46.8	14	1.934	0	0.0	N 52.7	2.25
Resultant to 1871	61.03	.....	76.11	30.94	45.17	11.85	3.254	0.37	0.07	N 12.7	1.63
Excess for 1872	+ 0.27	.....	+ 2.69	+ 1.06	+ 1.63	2.16	1.320	0.37	0.07	...	0.25

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR JUNE, 1872. COMPARATIVE TABLE FOR JUNE.

NOTE.—The monthly means do not include Sunday observations. The daily means, excepting those that relate to the wind, are derived from six observations daily, namely, at 6 A.M., 9 A.M., 12 P.M., 4 P.M., 10 P.M., and midnight. The means and results of the wind are from hourly observations.

Highest Barometer.....29.871 at 6 a.m. on 18th. } Monthly range=
 Lowest Barometer.....29.164 at mid. on 7th. } 0.717.
 { Maximum temperature.....88.0 on 30th. } Monthly range=
 { Minimum temperature.....41.8 on 2nd. } 46.2
 { Mean maximum temperature.....78.338 } Mean daily range=
 { Mean minimum temperature.....61.901 } 21.947
 { Greatest daily range.....39.00 from a.m. to p.m. of 6th.
 { Least daily range.....11.00 from a.m. to p.m. of 4th.
 Warmest day.....20th; mean temperature 76° 78 } Difference=24° 51
 Coldest day.....3rd; mean temperature 61° 27 }
 Radiation { Solar.....144.64 on 30th. } Monthly range=110° 6
 { Terrestrial.....33.8 on 2nd. }
 Aurora observed on 8 nights, viz: 1st, 2nd, 10th, 13th, 15th, 22nd, 24th, and 25th.
 Possible to see aurora on 6 nights; impossible on 24 nights.
 Raining on 8 days; depth, 3.148 inches; duration of fall, 24.7 hours.
 Mean of cloudiness, 0.51.

WIND.

Recurrent direction, N. 69° W.; resultant velocity, 0.76 miles.
 Mean velocity, 3.80 miles per hour.
 Maximum velocity, 26.0 miles, from 2 to 3 p.m. of 12th.
 Most windy day, 4th; mean velocity, 10.16 miles per hour.
 Least windy day, 17th; mean velocity, 0.66 miles per hour.
 Most windy hour, 2 p.m.; mean velocity, 8.92 miles per hour.
 Least windy hour, 3 a.m.; mean velocity, 1.24 miles per hour.

Dew on 8th, 16th, 17th, 18th, 19th, 20th, 23-d, 28th, and 29th.
 Fog on 7th and 8th. Rainbows on 10th, 11th and 14th.
 Thunderstorms on 6th, 10th, 11th and 13th.
 Thunder or Lightning on 8th, 19th, 23th, and 30th.

YEAR.	TEMPERATURE.				RAIN.		SNOW.		WIND.		
	Mean	Excess above Average.	Maxim. num.	Minim. num.	Range.	No. of days.	Inches.	No. of days.	Inches.	Recurrent Direc- tion, city	Mean Velocity.
1844	59.9	1.7	83.3	33.2	50.1	9	3.535	...	...	...	0.19 lbs.
1845	61.0	0.6	84.6	38.5	46.1	11	3.715	...	...	...	0.27
1846	63.3	1.7	84.2	39.1	45.1	14	1.920	...	...	...	0.32
1847	58.4	3.2	77.8	36.7	41.1	14	2.625	...	...	...	0.30
1848	62.9	+ 1.3	92.0	37.4	54.6	8	1.810	...	...	...	0.30
1849	63.2	+ 1.6	84.4	35.2	49.2	7	2.020	...	...	...	0.32
1850	64.5	+ 2.7	85.6	34.2	51.4	10	3.345	...	...	...	0.32
1851	59.2	- 0.4	79.2	37.0	42.2	11	2.695	...	...	...	0.32
1852	60.8	- 0.8	86.1	37.2	48.9	10	3.160	...	...	...	0.32
1853	60.5	- 0.8	89.5	39.2	50.3	9	1.550	...	...	...	0.32
1854	64.1	+ 2.9	92.5	35.2	57.3	9	1.460	...	...	...	0.32
1855	59.9	+ 1.7	91.5	36.2	56.3	17	4.070	...	...	...	0.32
1856	62.1	+ 0.5	89.2	42.0	47.2	13	3.200	...	...	...	0.32
1857	56.9	- 4.7	76.0	35.0	41.0	21	5.060	...	...	...	0.32
1858	66.2	+ 4.6	90.2	42.5	47.7	12	2.943	...	...	...	0.32
1859	58.3	+ 3.3	86.4	32.2	64.2	10	4.085	...	...	...	0.32
1860	63.2	+ 1.6	81.6	49.2	32.4	14	2.320	...	...	...	0.32
1861	61.3	+ 0.3	87.8	41.6	46.0	13	2.320	...	...	...	0.32
1862	60.5	- 1.1	85.4	39.4	46.0	10	1.007	...	...	...	0.32
1863	60.1	- 1.5	84.8	37.4	47.4	13	1.692	...	...	...	0.32
1864	60.0	- 1.4	93.1	34.8	58.5	9	0.570	...	...	...	0.32
1865	64.5	+ 2.9	90.2	43.0	47.2	7	2.003	...	...	...	0.32
1866	60.2	- 1.4	80.5	40.0	50.5	15	2.720	...	...	...	0.32
1867	64.3	+ 2.7	83.5	44.0	44.5	8	0.885	...	...	...	0.32
1868	62.0	+ 0.4	84.2	38.0	46.2	11	2.217	...	...	...	0.32
1869	58.4	- 3.2	81.4	36.4	45.0	22	4.373	...	...	...	0.32
1870	61.3	+ 5.7	88.4	50.0	38.4	16	8.000	0.32
1871	61.4	+ 0.2	83.0	41.8	41.2	13	3.340	0.32
1872	63.7	+ 2.1	88.0	41.8	45.2	8	3.148	0.32
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N.B.—The publication of the July number of the JOURNAL has been delayed for a few days, in order that the Meteorological Tables for June might be included therein.

CONTENTS.

	PAGE.
I CONTEMPORANEITY OF STRATA AND THE DOCTRINE OF GEOLOGICAL CONTINUITY. By H. ALLEVNE NICHOLSON, M. D., D.Sc., M.A., F.R.S.E., F.G.S., &c., Professor of Natural History and Botany in University College, Toronto.....	269
II. THE COPTIC ELEMENT IN LINGUAGES OF THE INDO-EUROPEAN FAMILY. By the Rev. JOHN CAMPBELL, M.A., Toronto	282
III. LAHONTAN. By the Editor	301
IV NOTE ON A REMARKABLE BELT OF AURIFEROUS COUNTRY IN THE TOWNSHIP OF MARMORA, ONTARIO. By E. J. CHAPMAN, Ph. D., Professor of Mineralogy and Geology in University College, Toronto, and Consulting Mining Engineer	350
V. LUNAR INFLUENCES. By the Rev. C. DADE, M.A.	335
VI THE SCOTT CENTENARY. Addresses of DANIEL WILSON, LL.D., and Professor GOLDWIN SMITH	341
VII. THE LATE REV CHARLES DADE.....	352
VIII. CANADIAN LOCAL HISTORY By the Rev. Dr. SCADDIS.....	355
METEOROLOGY:	
January Meteorological Table for Toronto.....	cxlv
Remarks on " "	cxlvi
February Meteorological Table for Toronto	cxlvii
Remarks on " "	cxlviii
March Meteorological Table for Toronto	cxlix
Remarks on " "	cl
April Meteorological Table for Toronto	cli
Remarks on " "	clii
May Meteorological Table for Toronto	cliii
Remarks on " "	cliv
June Meteorological Table for Toronto.....	clv
Remarks on " " " "	clvi

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