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THE CANADIAN JOURNAL.

NEW SERIES.

No. LXXXVII.—MARCH, 1875.

LEAVES THEY HAVE TOUCHED;

BEING A REVIEW OF SOME HISTORICAL AUTOGRAPHS.

BY HENRY SCADDING, D.D.

(Continued from page 124)

II.—BRITISH AND EUROPEAN GENERALLY.

Historical autographs may in some sort be considered to answer, in these days, the purpose of the religious relics of early ages. In former times, we know, the shrines and sacristies of churches and monasteries were the museums of the period. Science had not yet come into being; and human curiosity was obliged to satisfy itself with the examination of fragmentary portions of the bodies of departed heroes and a variety of miscellaneous objects having relation to the same persons. Some envoys from Spain, we are told, visited Constantinople about fifty years before it fell into the hands of the Turks. There were three thousand churches and monasteries in the place, not reckoning those in ruins. All of them were more or less rich in human remains, exhibited to visitors. The Spaniards in intervals of business took a rapid survey of the principal of them. They beheld, perhaps with a full faith, fragments of the bodies of many of those whose histories or mythologies had become the chief furniture of the popular mind. They saw the right arm of St. John the Evangelist; the right arm of St. Stephen; the right arm of St. Mary Magdalene, of St. Anne. The hand of St. John, they noted, wanted the thumb. St. Stephen's arm wanted the hand. St. Anne's hand wanted a finger. (It had been broken off and carried away by one of the Greek emperors

to enrich his own private collection.) They saw portions of the skeletons of St. Andrew, St. Nicholas, St. Catharine, St. Louis of France, St. Li of Genoa, of the Innocents slain by the edict of Herod, and of three of the eleven hundred Virgins who were martyred in former days in the vicinity of Cologne. At one place, Don Clavijo and his companions were shown a stone of many colours, bearing upon it tears, dropped from the eyes of St John and the three Maries, still as fresh as if newly fallen. In the possession of such treasures, Constantinople, as we know, was not peculiar. Throughout the length and breadth of Europe, in innumerable localities, deposits of human remains, and other objects similar to those displayed before the eyes of the Spanish envoys, were preserved. The practice was probably derived from Asia, and doubtless began early among the primitive races of man. It was an easy way of keeping up the memory of departed heroes and heroines. It afforded ocular proof of their former existence, and so supplemented tradition conveniently. Among simple populations going on generation after generation, without acquaintance with written records, without the power, taken in the mass, of deciphering written records, when there were any, such a practice would be greatly applauded. (As to the abuses which would be likely to attend the practice, we need not stop to remark upon them: they are obvious enough.) Now, what I say is this: that there is in historic autograph relics a degree of that virtue which was felt originally to reside in the corporal relics of eminent men and women. They satisfy, in some degree, a certain human craving. We have not indeed the same needs in regard to the past that our forefathers had. The moral proofs of the allegations of history are among us so accessible and so strong, that the supplementary evidence of tangible, visible relics is not essential. Nevertheless, such relics are always acceptable. When it is beyond the bounds of possibility to behold the doer himself of great actions, it is ever pleasant, nay, it is oftentimes strengthening and refreshing, to see a particle of his handiwork on paper or otherwise. It is well, therefore, to have among us, here and there, depositories of such things, however limited. Remains of this kind, fragmentary and mutilated as we shall often find them, may be compared to those imperfect limbs—arms without hands, hands without the full tale of fingers—of which we were told just now. The study of a part will help to an idea of the whole. The chance-words preserved in the written relics will set the dead before us in a

variety of aspects ; and should the tone of those words be at any time one of sorrow or perplexity, we shall perhaps be reminded by them of that stone of many colours bearing upon it tears still as fresh as if newly fallen. Moreover, by the contemplation of such objects, a taste for the noble study of history may here and there be awakened and fostered ; and by hints hence derived, where an enthusiasm in that direction has already been set up, an ambition may be roused to investigate the Past by the aid of original documents whenever the opportunity is afforded ; and so not to continue forever at the mercy of interested garblers who from time to time propose to supply us and our children with their one-sided compendiums.

I enter now upon my proposed review without further preliminary, save the remark that again in several instances I reckon as literary memorials of distinguished men, volumes from their libraries ; and that I reserve for separate consideration hereafter all my relics of eminent men more immediately connected with Oxford and Cambridge.

My first English historical autograph will be that of Cecil, Lord Burleigh, the famous secretary and trusty counsellor of Queen Elizabeth. It is attached to a parchment instrument authorizing the sale of some property in Warwickshire, in accordance with a private Act of Parliament which had lately been passed. He signs himself W. BURGHLEY, and not as the name usually now appears. As co-trustees probably, the following, each bearing a name more or less distinguished in the annals of England, also sign the document, thus : RO : CECYLL. ANTHO. COOKE. THO. MILDEMAY. WILL. WALDEGRAVE. The narrow strips of parchment from which the seals of the signers were once pendant are still to be seen inserted, but the seals themselves are gone. On the back of the document is a cloud of witness-signatures, and other official attestations. Amongst them I make out the autographs of Thomas Heigham, R. Coke, Will. Ffox, Th. Blythe, Lewys Hughes, Wm. Ludlow, John Thynne, Thomas Ridley. The instrument will explain itself. I have modernized the spelling of the English throughout. "This indenture tripartite made the twentieth day of September in the five and thirtieth year of the reign of our sovereign lady, Elizabeth, by the grace of God, Queen of England, France and Ireland, defender of the Faith, between the Right Honorable William Cecil, of the most noble order of the Garter, Knight, Lord Burleigh, Lord High Treasurer of England, Sir Robert Cecil, Knight, one of Her Majesty's Most Honorable Privy Council, Sir Thomas Mildmay,

and Sir William Waldegrave, Knights, of the one party, and Anthony Cooke of Romford in the County of Essex, Esquire, of the other party, witnesseth that to the intent that part of the manors, lands and hereditaments of the said Anthony Cooke may be limited and appointed out in certainty, to be by him the said Anthony Cooke disposed of at his will and pleasure for the payment of his debts, and preferment of his children in marriage or otherwise, according to the tenor and effect and true meaning of an Act of Parliament made in the present five-and-thirtieth year of her Majesty's reign, intituled an Act for giving power and liberty to repeal certain uses of a Deed tripartite therein mentioned of land in certain manors, lands and rents of Anthony Cooke of Romford in the County of Essex, Esquire; now, as well the said Anthony as the said Lord Burleigh, Sir Robert Cecil, Sir Thomas Mildmay, and Sir William Waldegrave, according to the authority and power given unto them by the aforesaid Act of Parliament and by virtue of the same, do hereby limit and appoint out in certainty the manor, lands and rents hereafter mentioned, being part of the lands and hereditaments mentioned in the said Act of Parliament, that is to say, the manor of Great Dasset with appurtenances in the County of Warwick, and all and singular other the lands, rents and hereditaments of the said Anthony Cooke, set, lying and being in the County of Warwick, to be by him the said Anthony at his will and pleasure disposed of for the payment of his debts and for the preferment of his children as aforesaid, according to the true intent and meaning of the said Act. In witness whereof, to each part of this deed indenture tripartite, all the said parties have 'putt' their seals upon the day and year first above written." The year 1593, which is the date of this deed, takes us back into the Shakspearean period. Great Dasset itself, of which the document speaks, is almost Shakspearean ground. It is situate not many miles to the south-east of Stratford. The year 1593 was the 30th of Shakspeare's life. It was in this year that he published what he calls "the first heir of his invention," the poem of Venus and Adonis, and dedicated it to the Earl of Southampton. The hand that subscribed the W. BURGHLEY which we see on the time-stained parchment whose contents I have just deciphered, had often grasped the hand of this Earl of Southampton, if it never grasped that of Shakspeare himself. Southampton, left fatherless in his infancy, had been the ward of Burleigh; and it was the expectation and intention of the prudent

Secretary that the young nobleman should marry a grand-daughter of his, the Lady Vere. But Southampton finally preferred the Lady Elizabeth Vernon, cousin of the Earl of Essex—a match which, for some reason, greatly offended Elizabeth, and brought trouble on Southampton. It is Shakspeare's familiarity with Southampton, and his perfect knowledge of the young Earl's likes and dislikes, and the entanglements into which these had brought him, that explain some of the otherwise enigmatical sonnets, as Geruld Massey has convincingly shown. The cue was probably taken from Southampton when Shakspeare ventured to bring Burleigh in some sort on the stage, in the person of Polonius. Burleigh probably was not wont to treat playwrights with much consideration. We know that his insensibility to poetry occasioned loss in the pocket to Spenser. A latent feeling against Burleigh would be very apt to spring up among men of literary tastes.

The Robert Cocil who signs above was afterwards Secretary of State to Queen Elizabeth, and it was he who carried post-haste the news of her death to James, her successor.

Sir Thomas Mildmay was the immediate blood-relation of the founder of Emmanuel College, in Cambridge. In the document above given, short as it is, the orthography of the proper names that recur therein is not constant. The name Burleigh reads Burghley and Burghleigh. The name Cecil is written Cecyll, Cicill, Ceycill. (Another form, and the earliest, as Lower informs us, was Seysell.) Mildmay is Mildemaye and Myldmaye and Mildmay. Waldegrave is Waldgrave as well. I am hence moved to observe: What folly it is, on the strength of a chance-variation which may be discovered, to meddle with the orthography of an historical name, when it has become fixed in the language and literature of a people! What folly it is, for example, to attempt the transformation of the noble word Shakspeare, or Shakespeare, into another which the eye scarcely recognizes! We see this done now and then, to this day, by virtue, as it is asserted, of a stray signature or two, by no means distinctly written. Several publications on the poet's life and writings, and several editions of his whole works, are considerably lowered in commercial value by the exhibition of this very useless caprice; on the further propagation of which, nevertheless, a new society lately instituted in London has set its mind. Is it expected that the new rendering of the name will really supersede the old one? I remember

the attempt of some whimsical persons, about forty years ago, to force *Dovor*, with an *o* in the second syllable, on the public as the name of the ancient, ever-memorable English town which confronts Calais, in France. A coach-proprietor of the day had the name, spelt in the new way, painted on all his coaches running on the great Kentish highway. But the familiar word *Dover*, imbedded in the English language and the English heart, retained its old form. So surely will it be with the name of the great national poet. It is difficult to conceive what the gratification can be in departing from the customary orthography, received not only within the British Islands, but in France and Germany, and, as I suppose, in all foreign nations, wherever the literature of England is discussed,—an orthography authorized by the poet himself on the title-page of every production of his printed in his lifetime, adopted by his “Fellows” when they published his collected plays, and by his executors when the tablets to his memory and to that of his wife were engraved and set up in the church at Stratford. Even the Messrs. Harper, of New York, with all their deformations of the English language, have not ventured on a new rendering of “Shakspeare.”

I pass on now to another historical autograph. To appreciate the interest which attaches to it, I must recall a painful scene—the execution of Charles the First. While the King was preparing himself on the scaffold, for the block, Bishop Juxon, of London, who was in attendance, sought to cheer him with these words: “There is, Sir, but one stage more, which, though turbulent and troublesome, is yet a very short one. Consider,” he continued, “it will carry you a great way;” and so on. The King placed in the hands of the bishop his “George,” so called; *i. e.* the badge attached to the collar of the Order of St. George; and the last word which he uttered as he stretched out his neck to the headsman, was addressed to the bishop. That last word was “Remember!” the particular meaning of which the republican generals insisted on knowing from the bishop. “Juxon told them”—I adopt Hume’s narrative of the incident—“that the King having frequently charged him to inculcate on his son the forgiveness of his murderers, had taken this opportunity, in the last moment of his life, when his commands, he supposed, would be regarded as sacred and inviolable, to reiterate that desire; and that his mild spirit thus terminated its present course by an act of benevolence towards his greatest enemies.” It is a document in the handwriting of this

Bishop Juxon which I now produce. This prelate had been the friend and chaplain of Archbishop Laud; he is described by Hume as "a person of great integrity, mildness, and humanity, and endued with a good understanding." Charles gave great offence by preferring Juxon, an ecclesiastic, to the office of Lord High Treasurer of England, on the death of the Earl of Portland. The paper of Juxon's which I present was written in his capacity as Lord High Treasurer, and so has no relation to spiritual matters. It reads as follows: "Sir Robert Page: Pray draw an order for payment of the Captain and Garrison of Plymouth the half year due on our Lady-day last; and for so doing this shall be your warrant. Your loving friend, GUIL. LONDON. London House, the 23rd of April, 1640." The paper is endorsed, "23rd April, 1640. Sir Jacob Astley, for a half year's pay for the Garrison at Plymouth." It was in this very year, 1640, that Juxon solicited and obtained leave to resign the Treasurership, which he had himself never desired to hold; and probably this order for the payment of the troops at Plymouth was among his last official acts. In the following year Strafford was put to death; and in the year after that Charles raised his Royal Standard at Worcester, and the great civil war began in earnest. The Sir Jacob Astley above-named, fought, I observe, on the side of the King. The signature GUIL. LONDON, attached to the document just given, has still adhering to it many bright scales of pulverized gold leaf, remains of the sanding which the writing received while yet wet, according to a practice prevalent before the invention of blotting paper. The hand which scattered these glistening particles which we here see, assisted, as we have learned, in summing up the revenues of all England. That hand also had often returned the pressure of Laud's hand, of Strafford's hand; and doubtless, too, of Charles' hand, repeatedly, before the tragical parting on the scaffold in front of the palace of Whitehall.

I produce now a manuscript document bearing the signature of a Prince of Orange. It is dated at Breda, but unhappily in the year 1737, so that it is not the autograph of our William III., who died in 1702, but of an immediate successor in Holland. It is written in German, and is a decree authorizing the appointment of a Professor Ran to an academic position. The name is subscribed in French, PRINCE D'ORANGE. For thus failing to produce the autograph of William III., I make what amends I can by showing a rare folio

from my shelves, published during the life-time of that King, at Amsterdam, crowded full of very curious copperplate representations of medals, inscriptions, triumphal arches and other monuments, all in his honour, collected and dedicated to the King by Nicolas Chevalier. As specimens of the innumerable medals figured in this book, I point out one of the year 1690, commemorative of William's expedition to Ireland. On the obverse is William's head to the right, laureated, with the legend *Guilielm. III. D. G. Brit. Rex. Araus. Pr. Belg. Gub.* [Arausionensium Princeps, Belgii Gubernator.] On the reverse is seen a large fleet approaching the shore of Ireland; in the sky above is an eagle flying, bearing in its beak an olive-branch, and a branch of the orange-tree, with fruit; in one of the talons is a sceptre. The legend is *Alis non Armis* [for protection, not for attack]. In the exergue is *Trajectus in Hibern.*—*Lond. 4 Jun. 1690.* Another medal shows William's head to the right, laureated as before, with the legend *Guil. III. M. Brit. R. De Jac. et Lud. triumph.* [Jacobus et Ludovico triumphat—victorious over James and Louis XIV.] On the reverse William is seen on horseback crossing the river Boyne at the head of an army. The legend is *Et vulnera et invia spernit* [He sets at nought wounds and impossibilities]. In the exergue is *Ejicit Jacobum : restituit Hiberniam, MDCXC.* Another medal shows William on horseback, an armed host in flight before him: over one fugitive is inscribed *Jacob.*; over another, *Lansun.* Over a figure among the pursuers is written *Walker*; and over a figure extended on the ground is written *Schomberg.* The legend is *Apparuit et dissipavit.* On the reverse, William is seen standing as a Roman general; before him Ireland kneels, resting on her shield, which bears the harp; over her head William holds a cap of liberty. In the distance is a routed host. The legend is *Focos servavit et Aras.* In the exergue, *Expuls. Gal. et Rebel. Dublin. triumphans intravit.*

My next relic is a book which was once the property of a great scholar in the reigns of George the First, George the Second, and George the Third—Jacob Bryant. But little is heard of Jacob Bryant at the present time. In this respect he shares the fate of the Scaligers and Casaubons, and other literary giants of a preceding age. Jacob Bryant had been private secretary to the second Duke of Marlborough, grandson of the great Duke, and was retained as librarian at Blenheim. He wrote many learned works on mythological and other subjects. He startled Homeric students by main-

taining the purely fabulous character of Troy and its siege. My copy of Verstegan's "Restitution of Decayed Intelligence" was once owned by Jacob Bryant. It was presented by him at Eton, in 1802, to G. H. Noehden, who has recorded the fact on a fly-leaf. Mr. Noehden was the author of a German Grammar, which was keeping its ground in a ninth edition in 1843, seventeen years after the death of its author; also of an English and German Dictionary, papers in the Transactions of the Horticultural Society, and other works. Mr. Noehden was chief superintendent of the department of Numismatics in the British Museum; as also, after him, was Edward Hawkins, who likewise once possessed Bryant's volume, and made a note of the circumstance in 1827.—Verstegan's book would be one quite after the heart of Jacob Bryant, especially as seen in the type and small quarto form of 1628. The title-page reads thus: "A Restitution of Decayed Intelligence in Antiquities concerning the most noble and renowned English Nation. By the studie and travell of R. V. Dedicated unto the King's Most Excellent Majestic, 1628." (This would be James I., a kindred spirit.) Inserted in the title-page is a curious copperplate engraving of the Tower of Babel, with numerous groups of people starting off from it in divers directions. Below this is printed *Nationum Origo*. Another temporary possessor, bearing the name of "Francis Drake," has inscribed his name in black-letter, half on one side of these words and half on the other. The date, 1628, forbids the notion that this is an autograph of the famous Sir Francis Drake. Sir Francis died in 1596.—Let the brief records of successive owners to be seen often on the fly-leaves and title-pages of old volumes be regarded with tenderness. Let them not be indiscriminately erased. We may occasionally here meet angels unawares. We may stumble unexpectedly on memorials of great and good men. The moral effect, too, of these casual records is to be considered. They produce in us something of the feeling expressed by the poor monk in presence of Leonardi da Vinci's fresco. We are the shadows; we are the fleeting entities; not the perishable leaflets before us.

I now come to a volume which recalls the memory of Horace Walpole, the dilettanté lord of Strawberry Hill, and youngest son of the Sir Robert Walpole, the statesman who held that every man had his price. The copy of the *Hesperides* of Ferrarius which I possess is from the library of Strawberry Hill. This is a folio work, printed at Rome, in 1646, by Hermann Scheus. The following is its title:

“J. Bapt. Ferrarii Hesperides, sive de Malorum Aureorum culturâ et usú Libri IV.” In this age of decadence in classical knowledge it may be necessary to say that the Hesperides were certain mythic nymphs, daughters of Hesperus or the West, placed in charge of gardens or islands productive of delicious fruits, but whose site was kept secret. We have first, in Ferrarius’ book, the story of the visit of Hercules to the garden of the Hesperides in quest of the precious fruits (*Aurea Mala*); then comes an account of the introduction of these fruits, which are stated to be citrons, lemons, and oranges of various sorts, into Italy, with mythological legends relating to that introduction; and finally we have a discussion of the several varieties of the fruits just named, their properties and their proper treatment. Interspersed are splendidly executed copperplates of Hercules, from the antique; engravings of coins on which Hercules figures; also, emblematic groups representing the introduction of the *Aurea Mala* into Italy; and then spirited representations of the different fruits themselves, some in each species assuming very curious and even grotesque forms. The sketches or designs of the emblematic groups were contributed by artists of great eminence: one is by Andreas Sacchi; another by Pietro Beretini di Cortona; another by Francis Albani; another by Philippus Galiardus; another by Guido Reni; and another by Nicholas Poussin. The Hercules Farnese is by Perier. The engraver in the majority of cases is Bloemhart. It appears that Guido Reni had just died. A eulogy on his skill and genius is given. In Guido’s plate, a Syren or Nereid is seen performing on the violin. In the mind of an Italian there is nothing of the ludicrous about the idea of a violin. Angels in heaven are often represented in sacred Art as playing on that instrument.

Ferrarius dedicates his work to the city of Siena, his native place. Hercules, he says, presented to King Eurysthenes only three of the apples of the Hesperides. He, Ferrarius, offers to the acceptance of his fellow-Sienese an orchard full of them. The language throughout his great folio is remarkably easy and good; nevertheless, at the end he rhetorically professes to have lowly thoughts of his literary powers, indulging at the same time in a play on his own name. These are his closing words: *Hæc habui quæ æ malis aureis conscriberem, nec elegantius potui ferreo stylo, FERRARIUS.*”

Often must Horace Walpole have lifted down this curious volume from its place; often must his hands and those of his friends have

turned over the splendid engravings therein. Strawberry Hill was generally full of visitors. In 1760 the Duke of York unceremoniously appeared at the door. "I showed him all my castle," Horace Walpole says to G. Montague, "and he would have the sanctum sanctorum of the library opened." Facing the title and occupying much of the page is a huge shield of arms of some former possessor, apparently a Netherlandish Count. The crest is a black duck minus its bill and feet. On the first and fourth quartering the same object is seen. The motto seems to allude to this creature—*Enatent aut evolent*. Below, in small letters, is engraved—"R. Collin, Chalcogr. Reg. fecit. Bruxellæ, 1680." Some friend of Horace Walpole's has, as I presume, interpreted for him the spirit of the sentence, *Enatent aut evolent*, and has written down for him over the great shield, in a fair hand, the following passage, it may be, of Cicero or Seneca: "Hujusmodi comparandæ sunt opes quæ simul cum naufrago ENATENT"—suggesting that the aspiration of the motto is after mental riches. Such be mine, or none! it says. The handwriting is not Walpole's, neither is it Gray's; but Gray may have furnished the illustration, which is ingenious and apt. On the same page with the great foreign shield appears Horace Walpole's own bookplate, the evidence of his former ownership. It shows the Walpole arms with the proper heraldic mark of cadency—a star—Horace being the third son of the first Earl of Orford, who was the famous Sir Robert Walpole, Prime Minister temp. George I. and George II. The motto, *Fari quæ sentiat*, is on a riband over the crest, and underneath the shield is engraved, in italic script, *Mr. Horatio Walpole*. The *Fari quæ sentiat* is an excerpt from Horace's Epistle to Alb. Tibullus and his companions (Ep. Lib. i. Ep. 4)—a piece which, from the character of its contents, may have been a favourite with Sir Robert—and his son likewise. Its spirit certainly was in harmony with their tastes. I give a few lines. It will be seen that the *Fari quæ sentiat* has reference to ease of expression and eloquence, and not to what we call freedom of speech:

Di tibi formam,
 Di tibi divitias dederunt, artemque fruendi.
 Quid voveat dulci nutricula majus alumno
 Qui sapere et *fari* possit *quæ sentiat*, et cui
 Gratia, fama, valetudo contingat abundè
 Et mundus victus, non deficiente crumenâ?

To thee the gods a form complete,
 To thee the gods a fair estate,
 With bounty gave, with art to know
 How to enjoy what they bestow.
 Can a fond nurse one blessing more

E'er for her favourite boy implore,
 With sense and clear expression blest,
 Of friendship, honour, health possess,
 A table elegantly plain,
 And a poetic, easy vein?

The fulfilment of the *non deficiente crumena* part of the prayer was secured to Horace Walpole by his father. He held for life, we are told, through the favour of Sir Robert, the following sinecure offices: the Ushership of the Receipt of the Exchequer, the Comptrollership of the Great Roll, and the Keepership of the Foreign Receipts. A third shield of arms appears in my Ferrarius. It has been fastened to the printed title-page of the volume. The possessor who did this seems to have been offended at the sight of a staring wood-cut in the middle of the title page: a coarse rendering of the common badge of the Jesuit Society, displaying huge iron nails, &c., very much out of place on the title-page of such a work as this. He accordingly inserted, with neatness, his own shield of arms in such a way as to conceal from view the obnoxious ornament. The motto on this plate is *Lucent et ornant*—the allusion being to the stars on the shield, and to the name, possibly, of the family represented.

It may be added that Brunet, the great bibliographer, in his notice of the *Hesperides* of Ferrarius, speaks of a copy of the work which in 1861, at the sale of the Marquis of Pins-Montbrun, at Toulouse, fetched two hundred francs—but this was perhaps in some degree on account of the binding. The binding, he says, was lemon-coloured morocco divided into compartments, showing the branches of an orange tree in gold of several colours, with the family arms of the Marquis of Pins-Montbrun. Some of the plates were also coloured.

I show a second relic of Horace Walpole in a copy of his "Fugitive Pieces in Verse and Prose," printed at his own press at Strawberry Hill, in 1758, bound up with his "Castle of Otranto," from the same press. The Fugitive Pieces have, on the title-page, the motto, *Pereunt et imputantur*, words aptly seen sometimes on the face of ancient dials. Below is a copperplate etching of Strawberry Hill; in the foreground a laurel tree supporting on one of its branches the Walpole shield; on a riband underneath is the "*Fari que sentiat*" already intepreted.

Again I produce as a literary relic a volume from the library of a man of letters eminent in the last and present century. It may have been observed that Isaac Disraeli dedicates his *Curiosities of*

Literature to Francis Douce. "To Francis Douce, Esq.," the inscription reads, "these volumes of some Literary Researches are inscribed as a slight memorial of Friendship, and a grateful acknowledgment to a Lover of Literature." In the preface to the collected works of Isaac Disraeli, issued by his son, the present Benjamin Disraeli, we are informed that at the close of the last century the number of readers in the Library of the British Museum seldom ever exceeded six at a time, and that one of these was very constantly Francis Douce. He became the author of a highly-prized series of Illustrations of Shakespeare and Ancient Manners, and other cognate productions; he gathered likewise a private library—of which Dibdin, in his *Bibliomania*, says: "The library of Prospero (*i.e.* Douce) is acknowledged to be without a rival in its way. How pleasant it is," he exclaims, "only to contemplate such a goodly prospect of elegantly-bound volumes of old English and French literature! and to think of the matchless stores which they contain, relating to our ancient popular tales and romantic legends!" The volume from Douce's library which I possess is Francis Grose's "Provincial Glossary, with a Collection of Local Proverbs and Popular Superstitions." It has Douce's bookplate and a MS. note in his handwriting. Grose, in his preface, tells us of his having gathered his accounts of popular superstitions from the mouths of village historians as they were related to a closing circle of attentive hearers, assembled on a winter's evening round the capacious chimney of an old hall or manor-house; "for formerly," he goes on to say, rather amusingly to us in these later days of steam and electricity—"formerly, in countries remote from the metropolis, or which had no immediate intercourse with it, before newspapers and stagecoaches had imported skepticism and made every ploughman and thresher a politician and freethinker, ghosts, fairies and witches, with bloody murders committed by tinkers, formed a principal part of rural conversation in all large assemblies, and particularly those in Christmas holidays, during the burning of the yule-block." Then speaking of the habiliments in which ghosts were reported to have appeared, Grose happens to say: "One instance of an English ghost dressed in black is found in the celebrated ballad of William and Margaret, in the following lines: 'And clay-cold was her lily hand, That held her sable shroud.'" It is upon this point that Douce makes his manuscript remark in the margin. He desires us to note that "Mr. Bourne, the elegant translator of this song, thought this licence,

even in poetry, inadmissible. In his translation of this passage it is most judiciously avoided: 'Quâque sepulchralem pedibus collegit amictum, Frigidior nivibus, candidiorque manus.'—The Mr. Bourne here named is of course the well-known Vincent, or Vinny, Bourne.

By a relic of Douce's we are brought, as we have seen, in relation with Isaac Disraeli; and Isaac Disraeli puts us in relation with Dr. Samuel Johnson, slightly, in this way: When Isaac Disraeli was yet a very youthful and quite nameless writer, as his son Benjamin informs us, he ventured one day tremblingly to present at Dr. Johnson's house an original manuscript, to be examined and pronounced upon by him. It happened to be the period of Dr. Johnson's last illness; and the reply returned by the Doctor's black servant, Richard, at the door, was, that his master was not well, and could not attend to anything of the kind. The timid young author, not aware of the seriousness of the Doctor's condition, took this to be a mere put-off. But in a few days Johnson's death was announced. We shall presently be again brought near to Dr. Johnson.—Douce's library, it may be of interest to know, has been added to the stores of the Bodleian at Oxford. The motto on his bookplate, in my copy of Grose, is *Celer et vigilans*—an allusion to the three fleet greyhounds which are seen racing across his escutcheon.

I cherish with care a pamphlet containing a few words in the handwriting of the author of the *Curiosities of Literature*—Isaac Disraeli himself. This relic has a further value with me, because it was once the property of another distinguished literary man, Samuel Rogers, the poet and banker. The pamphlet in question is an answer, by Isaac Disraeli, to some strictures of Lord Nugent on his "Commentaries on the Life and Reign of Charles the First;" and this particular copy was the one presented by its author to Rogers, as is shown by the autograph inscription on its outer title-page. The following are the few words on account of which I treasure this tract: SAMUEL ROGERS, WITH THE AUTHOR'S REGARDS. The matter of the little book is also full of interest, treating of the characters of Sir John Eliot, Hampden and Pym, in the same strain of minute research which characterizes the *Curiosities of Literature* and other works of the elder Disraeli.

Another of the class on whom Dibdin has fastened the designation of Bibliomaniacs must now engage our attention. We have all, doubtless, heard of the insatiable book collector, Richard Heber,

brother of Reginald Heber, bishop of Calcutta. Possessed of wealth, he set no bounds to a passion, awakened in him in early youth, for curious and rare volumes and books in general. His aim was to amass a perfect library; and he thought nothing of starting at a moment's notice on a journey of hundreds of miles, to attend a sale where there was a chance of securing a book which he did not already possess. At Hodnet, the family home in Shropshire, usually associated with the memory of Reginald Heber, he had a collection for which he built a special receptacle. A house where he resided in Pimlico was filled from top to bottom with books. In York Street, Westminster, he had another house similarly furnished. In rooms on the High Street, Oxford, he had a library. In like manner, even in cities abroad—in Paris, at Antwerp, at Brussels, at Ghent—he possessed large collections. The titles of his books, when sold after his death in his 59th year, in 1834, filled five thick octavo volumes. In his English libraries there were 85,000 volumes; in his foreign, 42,000. They have been calculated to have cost him £100,000. In Dibdin's Decameron, or Ten Days' Pleasant Discourse on Books, the interlocutor named Atticus is understood to be Mr. Richard Heber. Atticus's apology for desiring three copies of the same book is as follows—it reveals a willingness to oblige friends: "Why, you see, sir," he says, "no man can comfortably do without three copies of a book. One he must have for a show copy, and he will probably keep it at his country-house; another he will require for his own use and reference; and unless he is inclined to part with this, which is very inconvenient, or risk the injury of his best copy, he must needs have a third at the service of his friends." Heber was the intimate friend of Sir Walter Scott and other distinguished literary contemporaries. In 1821 he was returned a member of Parliament for the University of Oxford. My first relic of Heber is a volume from one of his libraries. It is stamped inside, as were all his books, with the words *Bibliotheca Heberiana*. I value the work for this, of course; but also for its contents. It is a folio, printed at Utrecht (Trajecti ad Rhenum) by Gilbertus à Zyll, in 1671, and is entitled, *Monumenta Illustrium Virorum et Elogia*. It is stated on the engraved title-page to be *Editio nova, aucta Antiquis Monumentis in Agro Trajectini repertis*. The original work, we are informed in the preface, was by Sigifridus Rybischius, for which the plates were engraved by Tobias Fendtius. It contains numerous epitaphs of the classic and

medieval periods, with etchings of the ancient monuments, tombs and tablets on which they are carved. These are from Rome and other cities of Italy. In this book of Richard Heber's I can lay my hand on some inscriptions which on occasion one might search for in vain in many quarters: for example, the epitaphs of Angelus Politianus, Marcilius Ficinus, Leonardus Aretinus, Laurentius Valla, Musurus, Heron. Alexander, Bessarion, Sadoletus, Joh. Picus Mirandula, Paulus Jovius, Raphael Maffæus, Joh. Jovianus Pontanus, Poggius Brandolinus, Bartholomæus de Saliceto, Gratianus Clusinus, Accursius, to say nothing of those of Dante, Ariosto, Petrarch.

A second relic of Richard Heber which I possess is a bound Catalogue of the library of James West, President of the Royal Society, who died July 2, 1772. This book bears the usual stamp, *Bibliotheca Heberiana*; but besides, its value is very greatly enhanced by two or three sentences, very characteristic of a connoisseur of books, written on a fly-leaf by the hand of Mr. Heber himself. A quondam owner of the Catalogue, Mr. F. C. West, probably a relative of the late president's, just below his own signature, writes, "Vide MS. note in Mr. Heber's handwriting, on the opposite leaf." On this leaf accordingly we have the following remarks on the Catalogue of books before us: "This is the original auction Catalogue," Mr. Heber records, "by which it was intended to sell the 'large and noble library' of James West, Esq., President of the Royal Society. The friends of the deceased, however," Mr. Heber goes on to inform us, "judging it, very properly, deplorably insufficient, directed it to be cancelled; and employed Samuel Paterson at a short notice to compose the whole afresh. It is curious to compare the two Catalogues," Mr. Heber says, "if it were only to show how little can be known of the value of the most curious library when ignorantly and unskillfully described." He then subjoins, "Paterson used to quote exultingly the testimony of Topham Beauclerk, who declared to him with an oath, that on looking over his Catalogue he could not believe it to be the same collection."—This mention of Topham Beauclerk again brings us near Dr. Johnson. He was a youthful club-associate of the Doctor's, and when he died, Dr. Johnson said that "Topham Beauclerk's talents were those which he had felt himself more disposed to envy than those of any whom he had known." He was a son of Lord Sidney Beauclerk's, and a grandson of the Duke of St. Albans.—My copy of *Hornius de Originibus Americanis, Hagæ*

Comitis, 1652, bears on a fly-leaf the autograph, "R. Heber," which is held to be that of Reginald, and not Richard, Heber; as it appears not to have been the habit of the latter to inscribe his name in his books. This volume is additionally of interest for having likewise the autograph of "H. Grove," who was one of the *collaborateurs* of Addison in the production of *The Spectator*. He was the writer of Numbers 588, 601, 626 and 635, in that series of papers. From some contemporary verses on the death of Mr. Grove, who was a Presbyterian minister, I quote the following:

"If every grace that e'er the good adorn'd,
If every science that the wisest learn'd,
Could merit thy regard and ask thy love,
Behold them join'd, and weep them lost, in Grove."

I now produce some autographic manuscript which brings us nearer still to Dr. Samuel Johnson than we were brought above. Though not penned by the Doctor, it was written by a hand that had grasped his, viz., by the hand of Dr. Samuel Parr. We know that intellectual encounters took place between Parr and Johnson. Thus Boswell records, in the year 1780, that "having spent an evening at Mr. Langton's with the Rev. Dr. Parr, he (Dr. Johnson) was much pleased with the conversation of that learned gentleman; and after he was gone, said to Mr. Langton: "Sir, I am obliged to you for having asked me this evening. Parr is a fair man. I do not know when I have had an occasion of such free controversy. It is remarkable how much of a man's life may pass without meeting with any instance of this kind of open discussion." During a discussion between these two formidable personages, one of them, Dr. Johnson, stamped his foot. Immediately, the other, Dr. Parr, stamped *his* foot. "Why do you stamp your foot, Dr. Parr?" "Because, Dr. Johnson," replied the other, "I would not have you think that you have the advantage of me by even a single stamp of the foot." Society was in a curious state when such phenomena as Drs. Johnson and Parr were possible. The general range of thought and experience was narrow; and culture was one-sided. Men of unusual capacity and vigour and keenness of view were thus tempted to be dogmatical; and the deference of inferiors readily transformed them into despots. English communities cannot evolve such characters now, nor would they endure them. There are in these days scores of persons scattered about quite the equal of Johnson and Parr in strong sense, and power and decision

of mind ; but they are drilled into good manners by their surroundings ; they are made to know and keep their place by the respectable talents and culture of a multitude of other people. Parr's learning, and Johnson's too, so far as it was formal and scholastic, was of a type which in the present age has ceased to be honoured, consisting of a familiarity with the letter of two dead languages, acquired unphilosophically, and used of necessity in a petty, contracted way. These two men, with a large group of contemporaries whom they conspicuously represented, were for the most part outside the noble sphere in which scholars of the present day find their pastime. Comparative philology, universal history, science in the modern sense, theoretical and applied, were to them sealed mysteries.—Parr, by some chance, was led to adopt the principles of the Whigs ; hence he is patronized by Macaulay, who goes out of his way to introduce his name in his narrative of the trial of Warren Hastings, and to style him at the same time the greatest scholar of the age. "There," he says, *i.e.* in Westminster Hall, while Burke was arraigning the great proconsul of India, "there were to be seen side by side the greatest painter and the greatest scholar of the age. The spectacle had allured Reynolds from that easel which has preserved to us the thoughtful foreheads of so many writers and statesmen, and the sweet smiles of so many noble matrons. It had induced Parr to suspend his labours in that dark and profound mine from which he had extracted a vast treasure of erudition—a treasure too often buried in the earth, too often paraded with injudicious and inelegant ostentation, but still precious, massive and splendid." On the other hand, Sydney Smith, also a Whig, ventures to say of Parr that he was rude and violent, as most Greek scholars are, unless they happen to be bishops (a little like this, at the expense of Bishop Blomfield). "He has left nothing behind him," Sydney Smith goes on to say, "worth leaving ; he was rather fitted for the Law than the Church, and would have been a more considerable man, if he had been more knocked about among his equals. He lived with country gentlemen and clergymen, who flattered and feared him." The diocese of Gloucester had a narrow escape. It came within an ace of having Parr as its bishop.

The tobacco pipe was an inseparable adjunct of Parr, and contributed not a little to the coarseness of his character. In a small Hogarthian sketch of him given in the National Illustrated Library edition of Boswell's Johnson, he is represented with it in his hand.

When appointed to preach before the University of Cambridge, he was puffing his pipe in the vestry-room of the church up to the moment of his entering the pulpit. An early pupil of his recalls, rather graphically, a domestic scene in which again the pipe figures: "I was frequently sent by him," he says, "to obtain the *Courier* newspaper, and, upon my return, he made me read to him the Parliamentary debates, which were at that period full of interest. I sometimes took a malicious pleasure in giving the utmost possible effect to the brilliant passages in Pitt's speeches, upon which the Doctor would exclaim, 'Why, you noodle, do you dwell with such energy upon Pitt's empty declamation?' At other moments he would say, 'That is powerful, but Fox will answer it.' When I pronounced the words 'Mr. Fox rose,' Parr would roar out 'Stop!' and after shaking the ashes out of his pipe, and filling it afresh, he would add, with a marked emphasis, 'Now, you dog, do your best!' In the course of the speech in question, he would often interrupt me in a tone of triumphant exultation with exclamations such as the following: 'To be sure!'—'Capital!'—'Answer that if you can, Master Pitt!'—and at the conclusion: 'That is the speech of the orator and statesman: Pitt is a mere rhetorician;' adding, after a pause, 'a very able one, I admit.' Sometimes after hearing the first three or four sentences of a speech of Mr. Pitt, he would say, 'Now the dog is thinking what he will say: Fox rushes into the subject at once.' Here let me remark," adds the reporter of this scene, "that when Parr called any of his pupils *noodle* or *dog*, or even, in some instances, *blockhead*, it was a proof that they were in high favour, and on these occasions his good-natured smile showed that he spoke in perfect good humour; but the word *dunce* he always used contemptuously." Parr was unfortunate in his wife, who delighted in worrying him. Porson used to say "Parr would have been a great man but for three things—his trade, his wife, and his politics."

Edward Henry Barker, of Thetford, in Norfolk, published two volumes of "Parriana, or Notices of the Rev. Samuel Parr, LL.D., collected from various sources, printed and manuscript." Mr. Barker had lived for several years in Parr's house at Halton, revelling in the curious, out-of-the-way contents of his library. The *Quarterly Review* uses this irreverent language of the death of Dr. Parr: "The demise," it says, "of the awful Chimæra of Halton, which had so long buzzed in vacuo, was something of an event in 1825."

Parr was famous for his Latin epitaphs and sepulchral inscriptions. Those inscribed on the monuments of Gibbon, Johnson, Burke, Fox and Sir John Moore are by him. At table once, Dr. Parr, in ecstasies at the conversational powers of Lord Erskine, called out to him (though his junior): "My Lord, I mean to write your epitaph!" "Dr. Parr," replied the clever Chancellor, "it is a temptation to commit suicide."

The relic which I preserve of Dr. Parr is a thin volume consisting of three tracts on classical subjects, bound together. The Doctor has written their respective titles on the first fly-leaf. "*Spohn de Agro Trojano*. Lipsiæ, 1814. *Curia Criticæ in Comiorum Fragment ab Athenæo servata*. Auctore Meneke. Berol. 1814. Gottlieb. Ernesti *Epistola ad Schleusnerum de Suidæ Jonicographi usu ad Crisin et Interpretationem Librorum Sacrorum*. Lipsiæ, 1875." To show, as I suppose, that he had minutely looked through these tracts, the Doctor adds the characteristic observation: "Spohn's Latinity is perplexed. In the note page 35, line 10th, I think *Automedon et Alcimus* should be in the accusative, as followed by *dilectos*." Parr's handwriting is very bad: it is slovenly and indefinite. "You always wrote hieroglyphically," says Charles Lamb to George Dyer, "yet not to come up to the mystical notations and conjuring characters of Dr. Parr." (Quoted in Forster's Life of W. S. Landor, page 93.)

We have seen the friendly relations subsisting between Dr. Parr and Dr. Johnson. I suppose they were not brought much together. When negatives and positives, so decided, approached each other, there must always have been considerable risk of explosion. Disparity of age may have helped to keep the peace. Dr. Parr maintained also a life-long friendship with Walter Savage Landor, a character with whom it required tact to keep on terms. Here again difference of age was probably advantageous. Landor was Parr's junior by many years. "I think," writes Landor's brother, in Forster's Life, "they were kept from quarrels by mutual respect, by something like awe of each other's temper, and a knowledge that, if war began at all, it must be to the knife."

I have nothing to show of Landor's, but I give a sentence from a note of the late Col. Walter O'Hara's, of Toronto, who at one time was intimately associated with Landor, and is named in Forster's Life at pp. 136, 199. Col. O'Hara says: "With respect to the

eminent person whose biography has occasioned your kind reference to me, I beg to say that my acquaintance with him commenced 1808, and that I have always regarded him as one of my most valued friends. We visited Spain together in that year; and I retain always the strongest admiration of his noble qualities."

I should be proud if I could exhibit a letter in Johnson's handwriting. Such documents are occasionally to be met with in London, but considerable sums must be paid for them. I have some fragments, however, in Mrs. Thrale's handwriting, the lady to whom Dr. Johnson was for sixteen years and more indebted for much care and kindness, and for whom he entertained a high esteem. We are told that he said of her, that if not the wisest of women in the world, she was undoubtedly one of the wisest. Mrs. Thrale's maiden name was Salusbury; Mr. Thrale, her first husband, was owner of the great Brewery in Southwark, since known as that of Barclay and Perkins. The marriage seems to have been one of convenience rather than *deep affection*. *Thrale sat for Southwark in Parliament, and was very wealthy.* At his town house in Southwark and his country villa at Streatham, a room was set apart for the especial accommodation of Dr. Johnson. When Mr. Thrale died, his widow, as we all know, married an Italian musical composer and vocalist, named Piozzi. She afterwards published a volume of anecdotes of Dr. Johnson, and other works. It was her habit to make on the margin of books that she read, numerous manuscript notes; and after annotating one copy, she would sometimes take up another of the same work and enter the same observations. Mr. Bohn, the eminent bookseller of London, had a copy of Boswell's "Life of Johnson," annotated by Mrs. Piozzi, in which the remarks were identical with those in Dr. Wellesley's copy of the same book. In a letter written by her at Bath, in 1818, to Sir James Fellowes, of Adbury House, Hants, she speaks of one Dr. Hales, who "on last Sunday fortnight said confidently in the pulpit that the world would end that day sixty-two years." She then adds: "You will find innumerable reflections on that event in King's "Morsels of Criticism," which I have loaded, if not deformed, by numberless notes—manuscript, but legible enough, for I looked them over since Hales' sermon, as I thought they would amuse you. 'Tis almost a pity," she then observes, "you should suffer them to be sold after my death." She had bequeathed to him all her annotated books. The handwriting in her marginal

notes is often minute, but always very neat and clear, with a careful punctuation. She was, I should suppose, an admirer of a fine hand. Her appreciation of this accomplishment suggested to her a lesson in regard to self-management, in a letter to the Sir J. Fellowes already named. "Our longest life," she says, "is but a little parenthesis in the broad page of time, which is itself a mere preface or prologue to Eternity. Let us, however," she exhorts, "write the brief period neatly, and leave our visiting ticket to the world such as may not disgrace us." Sir J. Fellowes' library has been dispersed under the hammer, and Mrs. Piozzi's annotated volumes have got abroad. Occasionally, on a book-stall, one of them may be picked up. The one which has chanced to come into my possession is a volume consisting of two works bound up together: Galloway's "Brief Commentaries on the Book of Revelation," and Witherby's "Observations on the Restoration of the Jews." From the margins of each of these I select a characteristic note or two.—Galloway in a certain place shows that LUDOVICUS, the name in Latin of sixteen of the French kings, could be made to represent the mystic number 666; and this, he says, he had shown seven years before, in another work. Galloway then refers to a writer who "within the last three years has asserted the same thing, without assigning any reason for his opinion. If he has unfairly ploughed with either of my heifers," Galloway then remarks, "all that I have to say to him is, what Virgil said on a similar occasion—'Hoc ego versiculos feci, tulit alter honores,'" &c. On this Mrs. Piozzi notes in the margin: "No need to plough with *his* heifer, surely. Comenius, author of our Babies' "Orbis Pictus," made this very calculation, and showed it to Louis Quatorze, who thence imbibed his notion of founding a Universal Monarchy." In another place Galloway says of a certain interpretation which he advances, that it is "a demonstration irresistible, because as evident to human perception as that of there being a sun in the firmament or an earth in which we live." Mrs. Piozzi is inclined to be more cautious, and writes: "I am not so confident; but the conjecture is a good one, and very likely indeed to be true." Again: at the beginning of Witherby's "Observations"—where that writer solemnly counsels the Jews of England not to be influenced by a late pamphlet addressed to them by one Bicheno—Mrs. Piozzi remarks: "This writer is a *little* wilder and foolisher than the man he censures, writing to the Jews to beg of them not to set out for the Holy Land at the call of *Mr.*

Bicheno! Very comical! As if Mr. Bicheno's call was to suffice. No! no!" she then adds, with an outburst of orthodoxy worthy of Dr. Johnson himself: "when the Jews march, it will be at God's immediate and apparent command; and their Leader will not be a Dissenting Teacher, I trow. What nonsense!"—And again: when the observation is made by Witherby that "the Christian and Jewish religions are more united and combined than is in general imagined, and when the gracious promises are fulfilled to the Jews, it will be a great blessing to the Gentile Churches also—it will be to both as a restoration to life, and the Gentile Churches will then assume a much more Jewish appearance than they ever have done in times past—Mrs. Piozzi remarks: "This man is the first to lay hold upon the skirts of a *Jew*, unless Mr. Cumberland has been beforehand with him." (Richard Cumberland, author of a play entitled "The Jew," and other comedies, is meant. Goldsmith called him the Terence of England: he died in 1811.)—The Comenius above spoken of was Joh. Amos Comenius, of Amsterdam. An English translation of his "Orbis Pictus," by Ch. Hoole, appeared in 1659. It was evidently a nursery-book in Mrs. Piozzi's childhood.—The emphatic "No! no!" which we had in the margin above, I observe in a letter addressed by Mrs. Piozzi to her young friend, Wm. Aug. Conway, consoling him under a severe disappointment received at the hands of a lady: "Do not, however," she says, "fancy that she will ever be punished in the way you mention. No! no! she'll wither on the thorny stem," &c. The reverse exclamation appears in a letter to Sir J. Fellowes: "Yes! yes!" she says, "when people will talk of what they know nothing about, see what nonsense follows!"

In connection with Dr. Parr it was stated that memoirs of him, in two volumes, had been compiled by E. H. Barker, of Thetford. The memory of this Mr. Barker deserves to be perpetuated as that of one who was among the first to favour a reform in the mediæval system of mastering Latin and Greek which prevailed in English schools at the beginning of the present century. He began to translate grammars and lexicons from the Latin into the English tongue, and to deviate from the general custom of annotating school books in a language "not understood of the people." He published for the use of English students portions of the classics with copious English notes, replete with illustrative matter of great interest. He edited, in English, Stephens' Thesaurus of the Greek Language, a ponderous work consisting of 11,752 double-column folio pages, and an English

translation of Bultmann's Greek Grammar. Conjointly with Prof. Dunbar, of Edinburgh, he published what was nominally a translation of the time-honoured Schrevelius, but virtually a new and greatly improved work. I revert with all the more pleasure to the name of E. H. Barker, as it chanced to be a part of my early experience to derive a good deal of light and help from his editions of portions of Cicero and Tacitus that fell accidentally, as it were, into my hands. In the absence, in those days, of useful books of reference, the varied and curious information with which his annotations abounded was, as I remember, keenly relished. In like manner his additions to the English reprint of Professor Anthon's *Leupriere*, and the miscellaneous matter, especially the botanical articles, embodied in the English Schrevelius, furnished delightful reading. By the worshippers of the old routine in schools, Barker was anathematized as one who betrayed the arcana of a craft, and vulgarized one of the learned professions. He was to be frowned down as a dangerous innovator. If he facilitated the studies of the young, who ought to be made to surmount difficulties, it was impossible that he could be himself a scholar. C. J. Blomfield, afterwards Bishop of London, came down very heavily on Barker in an article in the *Quarterly Review*. Barker replied in a pamphlet entitled *Aristarchus Anti-Blomfieldianus*. Unhappily the old style of learned controversy, fashionable in the days of Bentley, had not yet died out. There were two classical periodicals of the hour: one, the *Classical Journal*, with which Barker was connected as editor, I think; the other, the *Museum Criticum*, in which Blomfield wrote. Barker, in his pamphlet, attributed to Blomfield's pen everything hostile to himself in the *Museum Criticum*: but mistakenly, as it appeared afterwards. And the *Museum* took occasion to say of Barker's philippic, that "it carried personal invective to such a frightful extent as never before disgraced literature." That the *Museum* itself could be very satirical, we have evidence in the same paper. Barker whimsically attached to his name sometimes, the letters O. T. N., which he intended to be understood as signifying of Thetford, Norfolk. The *Museum* affects not to understand these letters. "What is the import," it says, "of the *tenebrosæ literæ* O. T. N., which Mr Barker affixes to his name, we cannot undertake to decide. We are not aware that they denote any academical distinction. We conclude therefore that they imply some personal attribute, like the S. S. (sinner saved) of another renowned character." [Huntington.] Again, referring to the con-

ductors of the *Classical Journal* above named, the *Museum Criticum* says: "When we speak of their incessant attacks upon us, it is right to mention, that for the last few years we have had but small acquaintance with the *Classical Journal*, having found that the information to be derived from its pages by no means compensated for the disgust excited by the vanity, dullness, and execrable taste of the leading writers, and still more by their unwearied spirit of detraction." And once more: here is a specimen of haughty style and rampant prejudice, from the same learned periodical. In "Peter's Letters to his Kinsfolk," Sir Walter Scott, speaking of the literature of Edinburgh, had chanced to say: "Mr. Dunbar, the Professor of Greek, has published several little things in the *Cambridge Classical Researches*, and is certainly very much above the run of Scholars." "*The Cambridge Classical Researches*," being the second title or heading of the *Museum Criticum*, that sensitive journal deemed it necessary thus to take notice of Scott's remarks: "What the common run of scholars at Edinburgh may be, we know not; but what Mr. Dunbar is, the world has had some opportunity of learning from a work which he calls a continuation of Dalziel's *Collectanea Græca*. Our only wish is to contradict most positively the assertion that he has ever been a contributor, small or great, to this publication. How such a strange misstatement originated, we cannot form the least conjecture." The date of these amenities of literature is A.D. 1832.

Barker's attempt to popularize classical studies was strongly supported by Prof. Anthon, of New York, whose editions of classical writings were always at once reprinted in England and largely used, showing that there was a want in this direction unsupplied. Barker and Anthon were both well abused, but imitated. Major translated Porson's Euripides: and later, Dr. Arnold issued a Thucydides with English elucidations; and now all English Scholars annotate copiously in English. Prof. Anthon, in 1845, in the preface of his own Classical Dictionary, recalls the surprise which was excited in 1825, when, on having been employed to prepare a new edition of Lempriere in 1825, he hinted the propriety of making some alterations in the text. The answer received by him from one quarter was, that one might as well think of making alterations in the Scriptures as in the pages of Dr. Lempriere!

Here is E. H. Barker's autograph. It is contained in a volume printed at Padua in 1729, and bound in Italian vellum. It contains

twelve Academic Orations, in splendid Latin, by Facciolati, the author of the celebrated *Totius Latinitatis Lexicon*. Over a book-plate, bearing the arms of Joseph Smith, appears the following memorandum in manuscript. "Dec. 6, 1815. Priestley. Collated and Perfect. Large Paper. EDMUND HENRY BARKER, Thetford, Norfolk." The handwriting is particularly good and clear; a great contrast to Purr's slovenly script. It is implied, I suppose, that Priestley, a learned bibliopole of the day, had described as above, the volume before us. The spirit of Facciolati's Orations is precisely that which actuated Barker and his school. He condemns, for one thing, the too long detention of the young amidst the preliminaries of mere Grammar, which appears to have been a custom in Italy as well as in England; and he prays the young student carefully to consider that "*Non Latinum sermonem ex Grammaticâ, sed Grammaticam ex Latino sermone natam esse*:"—a leading principle in the so-called Ollendorf system of teaching.—The Joseph Smith whose book-plate is noticed above, was British Consul at Venice in 1755. While resident there, he indulged largely in book-collecting; and there most likely our Facciolati was picked up.

Dr. Blomfield, in breaking a lance with whom we have seen Barker somewhat injudiciously engaged, was a gigantic Latin and Greek scholar. Everything about such an Hercules of learning, we should expect perhaps to be of proportionate magnitude. Even the tractates constituting his light reading, we might imagine to be somewhat ponderous. I have a volume, once the property of Dr. Blomfield, quite in keeping with such an idea. It is a collection of conjectural readings in a number of Greek and Latin authors by a Netherlandish or Hanoverian scholar. It is a thinnish quarto. A hundred years ago, when an author wished his work to make a very respectable show, he issued it as a quarto. Ephemeral controversial pamphlets were often of this shape. The work which I have bears this title, printed in red ink: "*Io. Schraderi Liber Emendationum. Leovardiæ, 1776.*"—In the middle of the title-page is a vignette group from a copper-plate: Minerva standing on a number of modern-looking volumes; to her right and left are the Muses of Tragedy and Comedy. Leovardia is Leenwarden, the capital of Friesland. The work contains a large number of emendations proposed by Schrader in Catullus, Propertius, Martial, Virgil, Ovid &c., with some proposed by others in Homer and Hesiod. To make the quarto more important still, it is strongly

and heavily bound in durable calf, and properly gilt. The covers are lined inside with marbled paper, and in the usual situation is Dr. Blomfield's book-plate, showing his own arms, impaled with those of the see of London. Below is engraved, in plain round hand, *Charles James Blomfield, D.D.* We can readily picture to ourselves, the learned bishop turning the pages of this little brochure of Schrader with a dignified indifference, and yawning in a moment of ennui over its miscellaneous contents.

Dr. Samuel Butler, who lived 1774–1840, is another sample of the heavily-weighted *homo eruditus* of sixty years ago. I have a quarto relic of him likewise, but not quite so bulky a one as that which represented Bishop Blomfield. Dr. Samuel Butler was a celebrated head master of Shrewsbury school. His name is associated especially with a Classical Atlas, and works on Ancient Geography. He published also an edition of "Æschylus," in four volumes quarto, and another in six volumes octavo. (Observe that of this dramatist only seven plays are extant.) Being, unlike Parr, a producible man, and not given to much humour like Sydney Smith, he was raised in 1836 to the Episcopal Bench as Bishop of Lichfield.—This thin quarto, bound in good vellum, has within its cover the following autographic inscription: *S. Butler: ex dono socer. sui: Viri Reverendi E. Apthorp, S.T.P., 1799.* The volume itself consists of a very curious astrological poem in Greek by the Egyptian priest Manetho, Gronovius' *editio princeps* of that piece. The whole title is as follows: *Μανέθωνος Ἀποτελεσματικῶν Βιβλία ἕξ.* Manethonis Apotelesmaticorum Libri sex: Nunc primum ex Bibliothecâ Medicæ editi: curâ Jacobi Gronovii, qui etiam Latinè vertit ac notis adjecit. Lugduni Batavorum, apud Fredericum Haaring. 1698.—On the title-page is the publisher's impresa or device. A sturdy husbandman is seen industriously delving; a landscape with mountains, a city and a village in the background: on the sky is the legend, *Fac et Spera.* The volume is inscribed by Gronovius to Magliabecchi, the celebrated librarian of the Grand Duke of Tuscany; also to Conrad Ruysch, chief magistrate of Leyden. The former had given Gronovius, when in Florence, willing access to the only copy of the Apotelesmatica known to exist, and had allowed him to take a copy of it with his own hand. The latter had travelled in Italy; and whenever he and Gronovius met, their talk always turned on happy hours spent there. Gronovius styles Magliabecchi, *Vir clarissimus et præcipuus Eruditorum hujus temporis.*—The E. Apthorp above named by Dr. Butler as his father-in-law was a

theological writer of considerable note.—In the Prefatio of Gronovius I caught sight of an unexpected and rather odd reference to an Otchib-way word, familiar enough to ourselves. Manetho, or Manethos, he says, was a name common in Egypt, whence it may have passed over to America, where, travellers inform us, “Manetoe” means an evil spirit. (Patet id nomen crebrum illic fuisse, unde promanarit ‘Manetoe’ dici malum genium docent itineraria.) I have seen elsewhere grave speculations on a connection between Manitou and Menes, Menu, Minos, Mannus, Manes, &c.

A contemporary of these learned divines just named—and himself a learned divine—was Dr. Chalmers, who lived from 1780 to 1847. I introduce here a sentence or two from a letter of his now lying before me, addressed to the late Bishop of Toronto, Dr. Strachan. He says: “We were all much pleased with your son; he seems cast in the very mould of his profession, having all the chivalry and gallant spirit of a thorough soldier. * * But what pleased me most was the evident affection and feeling wherewith he spoke of yourself, and of his purpose to visit St. Andrews and Professor Duncan, because of your connection with them.” Dr. Chalmers’ handwriting is execrable. I possess also a brief note of Edward Irving, addressed to Dr. Strachan.

I produce a volume which was once the property of Bishop Wilson, of Calcutta. It was presented by him to the Rev. C. Winstanley, who was for some years a resident of Toronto. It shows the following Latin inscription in the Bishop’s handwriting: “Carolo Winstanley, in amicitie gratique animi pignus, D.D. Danielus Wilson, 1812.” The work itself is Luther’s Commentary on the Second Psalm, in Latin, edited by Johannes Jacobus Rambachius, and printed at Halle in 1728. I observe that Rambach, in his Preface, contends for the scholarship of Luther: “Teste Philippo Melancthone,” he says, “Ciceronem, Virgilium, Livium aliosque latinitatis antistites, legendo sibi familiarissimos reddiderat. Quod verò historicos insuper Græcos et Latinos, quod Platonem, Aristotelem, aliosque præsei avi philosophos exploratos habuerit; id verò frequentiores sententiæ, quas ex illis decerpitas scriptis suis passim inspergit, abundè testantur.” Luther especially liked the ancient poets, Rambach says, and Virgil was selected to be his one companion when he retired into the monastery of Erfdfort. “Imprimis poëtas, stili politioris magistros, in deliciis habuit, interque eos maximè Virgilium, quem, quum relictis libris omnibus in monasterium Erfordiæ se abderet, solum secum retinuit, ac postea sæpius non laudavit solum aliisque commendavit,

sed ipse etiam in operibus suis passim allegavit."—Mr. Winstanley, to whom Bishop Wilson presented this book, used humorously to speak of himself as one of the *spare* clergy of Toronto, alluding to his own great corpulency. He was a good, acceptable preacher. Prior to engaging to deliver a sermon anywhere, he used to ascertain the capacity of the pulpit and the width of its door, for which purpose he had a notch marked on his cane. I remember him, after preaching a charity-sermon, handing to the churchwarden what he called "a note to his discourse;" it was a bank-bill; and this, I think, was a customary pleasantry with him.

I have now to show a brief note from the hand of the famous Sydney Smith, canon of St. Paul's. Its contents are quite of a grave character, relating to matters of business connected with his parish of Combe Florey, in Somersetshire. I have quoted already from Sydney Smith's article in the *Edinburgh*, on Dr. Parr—a memorable paper, which, while rendering all honour and justice to the profoundly learned scholar of Hatton, contrived to make of his wig a joke, if not a joy, for ever, to the English public. "With a boundless rotundity of frizz, like Dr. Parr's wig," has become one of the established phrases of the language. The note in my possession is addressed to Mr. Jacobs, at Taunton, the post-town of Combe Florey, who appears to have been Sydney Smith's business agent. "Sir," the Canon says, "I have before written to you on the subject of Tithes. I have only to add that you will be so good as to ask them individually for the money, and to give a *gentle hint*, if necessary, that after so much indulgence, those not paying will be immediately proceeded against. I will not have any Tithe Dinner or Luncheon. Yours truly, SYDNEY SMITH.—56 Green Street, Grosvenor Square, March 20, 1835." The value of Combe Florey is set down in the books as £263 per annum. But the nominal value of livings in England is greatly above their real value to the incumbents. Numerous expenses which with us are borne, naturally enough, by the congregation, are in England expected to be met by the clergyman. Sydney Smith's £263 was, as we can see from the note, likely by no means to come up to the mark, by reason of the appeals *ad misericordiam*; then, after that, the agent must be paid for collecting; the curate must be paid, and the parish schoolmaster, and a number of other claimants. Thus the net income from Combe Florey would not be large.—The seal on Sydney Smith's note shows a dog watching; above is the sun; but a cloud floats between it and the faithful creature below: inscribed is the motto,

"Present or absent."—Some remarks of Lord Houghton, in one of his recently published "Monographs, Personal and Social," will help to an understanding of Sydney Smith, and remove some prejudices in relation to him. At the beginning of the present century, a man of humorous temperament in the pulpit or desk, was by no means held to be out of place. "It needs no argument," Lord Houghton says, "to prove that susceptibilities on the score of irreverence increase in proportion to the prevalence of doubt and scepticism. When essential facts cease to be incontrovertible, they are no longer safe from the humour of contrasts and analogies. It is thus that the secular use of Scripture allusion was more frequent in the days of simple belief in inspiration, than in our times of linguistic and historical criticism. Phrases and figures were then taken as freely out of sacred as out of classical literature; and even characters as gross and ludicrous as some of Fielding's clergy were not looked upon as satire against the Church." The question may fairly be asked, Lord Houghton thinks, "Why should Sydney Smith not have made quite as good a bishop as he was a parish priest and canon of St. Paul's. The temperament which, in his own words, made him always live in the Present and the Future, and look at the Past as so much dirty linen, was eminently favourable to his fit understanding and full accomplishment of whatever work he had to do. There has been no word of adverse criticism," Lord Houghton says, "on his parochial administration, and he has left the best recollections of the diligence and scrupulous care with which he fulfilled the duties in connection with the Cathedral of St. Paul's."

I have myself a personal recollection of Sydney Smith, associated with St. Paul's. I there once heard him deliver a most touching and useful discourse on the Fifth Commandment, and I was pleased some years afterwards, to find it printed in a volume of his published sermons. I am thus able to give some of the words of great truth and soberness which it fell to my lot to hear Sydney Smith utter. "There are little sacrifices" he said, "of daily occurrence, which in a series of years, contribute as materially to the happiness of a parent, and which, because they are obscure, and have no swelling sentiments to support them, are more difficult for a continuation than more splendid actions. Every man has little infirmities of temper and disposition which require forgiveness; peculiarities which should be managed; prejudices which should be avoided; innocent habits which should be indulged; fixed opinions which should be treated with respect;

particular feelings and delicacies which should be consulted : all this may be done without the slightest violation of truth, or the most trifling infringement of religion ; these are the sacrifices which repay a man in the decline of life, for all that he has sacrificed in the commencement of yours ; this makes a parent delight in his children, and repose on them, when his mind and his body are perishing away, and he is hastening on to the end of all things." "Consider," he continued, "that he has been used to govern you ; that (however you may have forgotten it) the remembrance is fresh to him, of that hour when you stood before him as a child, and he was to you as a God. Bear with him in his old age ; pain and sickness have made him what you see : he has been galled by the injustice perhaps, and stung by the ingratitude of men ; let him not see that old age is coming upon him, that his temper is impaired, or that his wisdom is diminished ; but, as the infirmities of life double upon him, double you your kindness ; make him respectable to himself, soothe him, comfort him, honour your father and your mother, that your days may be long, that you may be justified by your own heart, and honoured by the children which God giveth to you." Again, afterwards, he said : "It should be a great incitement to the performance of this duty, that when the time comes for repenting that we have neglected it, when the little personal feuds and jealousies which blind our understanding, are at an end, and it becomes plain to the judge within the breast, that we have often neglected the authors of our being, often given them unnecessary pain ;—when these feelings rush upon us, it too often happens that all reparation is impossible : they are gone ; the grave hides them ; and all that remains of father and mother are the dust and ashes of their tombs. In all other injuries, the chances of repairing them may endure as long as life itself, but it is the ordinary course of nature, that the parent should perish before the child ; and it is the ordinary course of nature also, that repentance should be most bitter when it is the most ineffectual."

A visit to St. Paul's Cathedral in London, was rendered additionally interesting down to so late a period as 1868, by yielding an opportunity of seeing, and perhaps hearing the voice of, the distinguished Henry Hart Milman, the variously accomplished dean of that Cathedral, author of the *History of Latin Christianity*, a narrative almost as absorbing and as well sustained as Gibbon's. Dean Milman was always ready to be courteously obliging to Canadians and Americans generally, in their visits to London and St. Paul's. My MS. relic of

this excellent man, whom life extended from 1791 to 1868 is a brief note, in keeping with his clerical character, but unimportant except as an autograph. It is as follows: "Cloisters, Saturday. Dear Lady Williams.—The Confirmation is at half-past eleven; the Candidates are to be in the Church by eleven. Ever truly yours, H. H. MILMAN. Did you see the note in my last enclosure?" I add here a sentence or two from the hand of another dean, the late Dean Ramsay of Edinburgh, author of "Reminiscences of Scottish Life and Character." "Illness and being in my own room must be my apology," he says, "for delay in the reply to your favor of Jan. 23. 1. Garscadden was the name of the laird who sate a "corpse twa hours" at the festive board. (see. Rem. p. 66. ed. 13.) I had the story from the late Prof. Aytoun, who was very correct in all such matters. I found afterwards it was referred to in Dr. Strong's history of Glasgow Clubs. 2. There is another place (in Fife, I believe,) Garnstadden Colquhoun. Garscadden is six miles from Glasgow, at New or East Kilpatrick. The old drinking laird's probably passed away. 3. All places beginning with 'Gar,' are, I believe, from the Celtic 'caer,' which means fortress. The addition represents some quality of the fortress: for example, Gargunnoch, *i.e.* Celtic Caer-guineach, a pointed fortress. But I am not a Celtic nor Antiquarian scholar. I hope you will excuse this imperfect answer, and accept the consideration of yours sincerely, E. B. RAMSAY."

I value very highly the autograph manuscript which I produce now. It is a note in the handwriting of the first Duke of Wellington. Very often the notes of the great Duke which collectors show, are somewhat grotesque in character: "F. M. the Duke of Wellington is one of the few persons in this country who don't meddle with things with which they have no concern." "F. M. the Duke of Wellington can give no opinion upon that of which he knows nothing." "F. M. the Duke of Wellington presents his compliments to Mr. —, and would advise him to ask the local papers themselves on what authority they make such a statement as that to which Mr. — alludes." "F. M. the Duke of Wellington presents his compliments to Mr. H. He has also received Mr. H.'s letter, and begs leave to inform him he is not the historian of the wars of the French Republic in Syria." The query was put to him in the letter referred to—"Did Napoleon poison the prisoners at Jaffa?" "F. M. the Duke of Wellington presents his compliments to Mr. —. His letter of the 28th instant has been received by the duke, but not the petition

therein referred to. If it should ever reach the duke he will return it to Mr. ——. The duke has no relation with Bridgewater; he has no knowledge upon the subject to which he understands the petition relates, either as affecting the local interests of Bridgewater or the interests of the public in general. He begs leave to decline to constitute himself, or to be made by others, the presenter-general to the House of Lords of all petitions which no other lord will present." The request had been to present a petition from Bridgewater.

The note which I possess is not in the strain of either of these. It is addressed in a frank and cordial tone to Sir Robert Peel, and it relates to public business: it is dated too from Walmer Castle, the place which became invested, some twenty years later, with increased interest as being the scene of the duke's death. "Walmer Castle, August 20th, 1829. My Dear Peel.—Upon Lord Ellenborough's suggestion, I obtained the King's consent at Windsor, on Monday last, to Lt. Colonel John MacDonal'd, of the East India Company's Service, of the establishment of Fort St. George, Envoy Extraordinary from the Supreme Government of India to his Majesty the Shah of Persia, to be Knight of the Bath; to Commander John Hayes, of the E. I. Company's Marine; to Lt. Colonel Commandant Robert Henry Cunliffe, of the E. I. Company's Service, of the establishment of Fort William, in Bengal; to Lt. Colonel Jeremiah Bryant, of the E. I. Company's Service, of the establishment of Fort William, in Bengal, to be created Knights by Patent. Ever, my dear Peel, yours most sincerely. WELLINGTON. The Cross of the Bath intended is the small Cross." Here was a concise yet full and minute memorandum for Sir Robert Peel's information. In what momentous affairs was the hand once engaged which traced the lines we have transcribed. With what a variety of sensations was that hand grasped, and by what a multitude of personages—in India, in Spain, in Portugal, in France, in England, in Ireland! Well has Tennyson spoken of the Duke of Wellington as one—

"Whose life was work, whose language, rife
With rugged maxims hewn from life;
Who never spoke against a foe;
Whose eighty winters freeze in one rebuke
All great self-seekers trampling on the right:
Truth-teller was our English Alfred named;
Truth-lover was our English duke;
Whatever record leap to light,
He never shall be shamed."

ON A REMARKABLE FRAGMENT OF SILICIFIED WOOD FROM THE ROCKY MOUNTAINS.

BY H ALLEYNE NICHOLSON, M D, D Sc, F R S E,

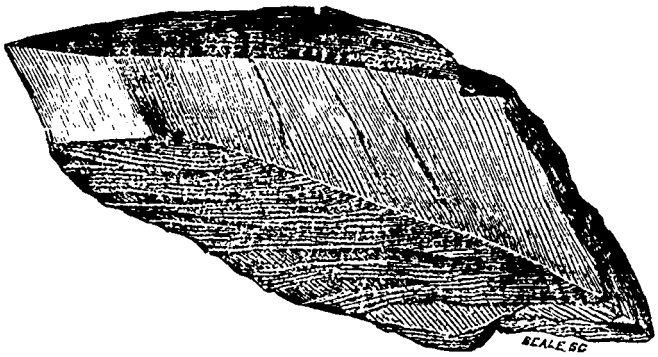
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The specimen which forms the subject of the present communication was brought by the late Mr. John Worthington, of Toronto, from the well-known "petrified forest" of Colorado. As to the locality from which the specimen was derived, we can, of course, merely speak at second-hand; but the petrified forest in question is a place familiar to, and much visited by, tourists; and there is both external and internal evidence to prove that the specimen was truly brought from there. The "petrified forest" of Colorado is situated not very far from Colorado City, at a supposed height of about seven thousand feet above the level of the sea, in the immediate neighbourhood of the lofty mountain known as Pike's Peak, and near to the celebrated Ute Pass. The forest occupies the bottom of a broad depression which covers an area of from one to two thousand acres. All round the edge of this area are placed numerous erect stumps of silicified trees, most of which are three or four feet in height, and from ten to twenty feet in diameter. The stumps are apparently placed at some little elevation above the bottom of this depression, and are said for the most part to be placed at about the same level. These phenomena would strongly support the belief that these ancient trees grew upon the margin of a lake which has now disappeared. Various considerations render it probable that these silicified trees are the remains of conifers belonging to the genus *Sequoia*, and nearly allied to, if not identical with, the "giant-trees," *Sequoia gigantea*, of California. The great size of the stumps would render this conclusion almost a certainty, and it is further supported by the fact that a very similar silicified forest has been described by Professor Marsh as occurring near Mount St. Helena, in California (*American Journal of Science and Arts*, Vol. I., April, 1871). From the occurrence of a bed of vesicular lava in direct connection with the forest, we may surmise that the forest was overthrown and buried

by a volcanic eruption, having been previously silicified by means of heated alkaline waters containing silica in solution. This point, however, could only be settled by actual observation on the spot by a competent geologist. As to the age of the silicified forest of Colorado, we are in possession of no data whereby a positive opinion might be arrived at. At the present day the great Sequoias are not found east of the Rocky Mountains, though there is ample evidence of their having at a former period enjoyed a much wider extension in space. We may conclude, therefore, with much probability, that the forest is of Post-Tertiary age, probably Post-Pliocene.



The specimen which forms the immediate object of the present communication is alleged by its discoverer to be one of many similar specimens which were found upon the surface of the ground surrounding the stump of one of these silicified trees; and it demands consideration from three points of view: 1. as regards its microscopic structure; 2, as regards its chemical constitution; and 3, as regards its form.

1. As regards the intimate structure of the specimen, we have carefully examined thin sections, ground down on a hone, and soaked either in water or Canada Balsam. These sections show in the clearest and most unmistakable manner the structure of fossil wood, exhibiting woody fibres and medullary rays, and closely resembling some of the specimens figured in Goeppert's "Monograph of the Fossil Coniferae." We were for some time unable to determine the existence of discs upon any of the ligneous vessels. The examination, however, of a section which had been soaked for a long time in Canada Balsam, revealed the presence of these discs on some of the vessels.

The structure of the sections is precisely similar to that of similar sections of the fragment of wood broken directly from one of the silicified stumps.

2. As regards its chemical constitution, the wood has been completely fossilized, and the specimen consists essentially of silica. It may be noticed in this connection that the specimen, in spite of its complete mineralization, is remarkably light. A portion yielded to chemical analysis as follows :

Loss on ignition (Water and Organic Matter)	6.24
Silica	85.26
Alumina	5.35
Lime.	6.79
Magnesia. }	Traces.
Iron }	
	<hr/> 103.64

3. The microscopical and chemical examination of the specimen place beyond a doubt its being truly of the nature of silicified wood, and it only remains to consider its very remarkable form.

The specimen has the form of an irregular rhombohedron, about six inches in greatest length by three inches in greatest width ; and we may successively consider its internal, external, superior and inferior surfaces, holding it in such a position that the fibres of the wood have a vertical direction. The internal and external faces of the fragment present little of importance. Both, of course, are parallel with the fibres of the wood, and the only means of determining with certainty which is internal and which external, is to be found in the very slight, indeed hardly noticeable, curvature of the woody layers. Judging from these, the side towards which the convexity of the layers is turned, and which is therefore external, is much the smaller, owing to the fact that the superior and inferior faces of the fragment are directed away from one another. There are no signs of the existence of the bark upon this face. The internal face is much more extensive than the external (for the reason noticed above), and is considerably discoloured and blackened, probably because the fragment must have rested with this side in contact with the ground.

The upper and lower surfaces of the fragment are both directed *across* the fibres of the wood, and, as before intimated, are directed away from one another. The upper surface is upon the whole of a curved form, with the concavity of the curve directed upwards ; but the regularity of the curve is interrupted by a step or ledge, which runs in the long axis of this face, parallel with the concentric rings

of the wood. The lower surface of the fragment offers an almost clean face, directed obliquely downwards across the fibres of the wood. This face, though approximately plane, presents a succession of inequalities, in the form of slight steps or ledges, which run parallel with the successive concentric rings of the wood. These ledges cross the lower face from side to side, and are slightly deeper on that margin of this surface, which appears to have been directed towards the interior of the tree.

When we look at this fragment of wood as a whole, and endeavour to assign a probable cause for its very remarkable shape, it is difficult to avoid the conclusion that we have to deal here with a veritable fossil chip, cut from one of these ancient trees before silicification took place, and probably whilst the tree was in an erect position. At first sight this may appear a very bold conclusion to arrive at, but it will be shown that this hypothesis will explain all the peculiar appearances presented by the fragment, whilst these appearances cannot be accounted for by any other conjecture which would have any likelihood in its favour. In the first place, the upper and lower surfaces of the fragment are directed across the fibres of the wood, and have, both of them, the character of clean-cut surfaces—the one curved, the other approximately flat. It is easy, of course, to find specimens of various fibrous minerals, or even of certain rocks, which assume a somewhat similar shape owing to the action of jointing. Jointing, however, so far as we are aware, could not possibly be induced in the erect trunks of silicified trees, which have not been buried beneath the surface of the earth, nor have been exposed to any of those agencies by which joints are usually believed to be produced. In the absence of jointing as a possible agency, we are compelled to conclude that the upper and lower surfaces of the fragment have been produced artificially, by some external force; and we are obliged to believe that the force producing them must have acted upon the wood at a time prior to its silicification. We know of no agent capable of producing similar surfaces in wood save man with the aid of tools; for animals, such as the beaver, which gnaw wood, produce appearances of a totally different description.

In the second place, the general appearance of the fragment is precisely that of an ordinary chip cut with an axe from any soft-wood tree. It might be exactly paralleled by dozens of examples which might be picked up in any locality where trees are being felled on an extensive scale. Indeed, it so closely resembles an ordinary chip that

it would almost infallibly be picked up as such if found lying in a forest; and it was at once recognised as such both by its original discoverer and the various skilled backwoodsmen and lumberers to whom we have shown it.

In the third place, some of the appearances presented by the fragment, which at first sight appeared to us to militate against its being an artificial chip, turn out, upon closer examination, to constitute additional proofs that this is its real nature. Thus, the upper surface of the fragment, though directed, as a whole, almost at right angles to the fibres of the wood, is not plane, but is curved, with the concavity of the curve directed upwards. This appearance would seem difficult to reconcile with the hypothesis that the surface had been produced by one or more blows with a sharp instrument. In point of fact, however, this is an appearance which is quite commonly produced in chips, owing to the axe being blunt or not held with a very firm grasp. When this is the case, the edge of the axe is exceedingly apt to turn, and thus a curved instead of a plane surface is produced. Again, the lower surface forms a plane directed obliquely to the fibres of the wood, and interrupted by numerous ledges or steps corresponding with and parallel to the successive concentric layers. These layers we were at first disposed to consider as due to changes taking place after the fragment had actually been produced; for in the ordinary way a freshly-cut chip does not exhibit similar ledges crossing the cut surfaces. An examination of several hundred recent chips, in all stages of desiccation, showed us, however, that no inequalities of surface at all comparable to this are produced by contraction or expansion of the fibres of the wood on drying. The only similar appearance produced by changes taking place after the chip has been cut is what is sometimes seen in old pine-chips where minute parallel ridges are sometimes formed by a kind of weathering, owing to the inside of each annual layer of growth being slightly softer than the outside. We found, however, that a surface precisely similar to that seen in the specimen, with precisely similar ledges and inequalities, is produced when the chip is cut *with a blunt axe*—owing to the fact that the successive concentric layers of the wood differ in hardness, and the axe makes a succession of slips in cutting through them. Similar, though not such pronounced, inequalities are occasionally produced when the chip has been cut by a succession of blows. This action is further assisted by the wedge-like form of the axe-head, which both promotes the slipping of the edge of the axe, and necessarily exercises

a bruising and crushing action upon the fibres of the wood, this action being obviously most intense near the periphery of the trunk.

From a consideration, therefore, of all the facts of the case, we have arrived at the conclusion that the specimen in question is a chip artificially cut by man from the tree prior to silicification. The grounds which justify this conclusion may be summed up as follows: 1. The specimen is a fragment of silicified wood, exhibiting definite and clean surfaces cutting across the fibres of the wood. If these surfaces were not artificially produced by some edge-tool, the agency by which they were formed has yet to be pointed out. 2. The general form of the fragment is precisely that of a chip cut by an axe. 3. The upper of the two supposed cut surfaces is curved in the same way as is often seen in modern chips when the axe has been blunt or has been loosely held in the hand. 4. The lower surface (and less conspicuously the upper surface also) exhibits numerous successive ledges or steps, such as can commonly be observed in modern chips when the axe used has been blunt, and which are due to the fact that the edge of the axe has made a succession of slips in passing through the different concentric layers of the wood.

The chief objection which may be urged against this view of the nature of this singular specimen is, that the surfaces of incision which it exhibits are too clean and regular to have been made by anything except a metal axe. It is to be remembered, however, that the wood is obviously soft; and that, in the second place, the pre historic races of North America were in possession of copper axes made from the native copper of the Lake Superior region at a very early period.

As to the age of the specimen, we can offer no positive opinion. It is possible that the specimen is much more modern than the silicified forest in which it was found; but we have been led to reject this idea on the ground of its complete identity in microscopic structure and chemical composition with the silicified trunks amongst which it is found, and also on account of its very high degree of mineralization. No hot springs occur at the present day in the neighbourhood of the silicified forest where the specimen was discovered, and similar petrified forests have been found in California partially imbedded in stratified deposits of late Tertiary age. If our conclusions, therefore, are correct, the specimen would lead us back to a time when the giant Sequoias of the Sierra Nevada extended far to the east of the Rocky Mountains; but we have no data for fixing even approximately the antiquity thus indicated.

NOTES ON MECHANICS.

BY JAMES LOUDON, M.A.,

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1. To find the resultant of two parallel forces:

Let AB, CD be the given forces acting in the same direction. Produce BA to E , making AE equal to AB . Join AC, ED meeting in F ; on CA take CG equal to AF ; and complete the figure by drawing GHK parallel to AB or CD , and AH, BK parallel to ED . Then on introducing the two equal and opposite forces AF, CG , the forces AB, CD will be equivalent to AB, AF, CD, CG . Of these the former two are evidently equivalent to HK, HD ; and the latter to GH, DH . Hence the resultant is GK or $AB + CD$; and its line of action a line through G parallel to AB or CD .

A point in the line of action of the resultant can also be found by drawing the lines $ALND, BLMC$; then if $CM = BL, DN = AL$, either M or N is the point in question.

By reversing BAE we have the case where the forces act in opposite directions. In this case ($AB < CD$), CA, DE meet in F ; CG is taken, in FAC produced, equal to AF ; GKH is drawn parallel to CD , and BK, AH parallel to FED . Then the resultant is $GK = CD - AB$.

2. In the figure of (1) since the parallelogram $HC = DA = HE$, it follows that $AB.p = CD.q$, where p and q are the respective distances between the resultant and AB, CD .

From this relation it easily follows that the moment of the resultant about any point O in the plane of the forces is equal to the sum of the moments of AB, CD .

3. To prove that the moment of the resultant of forces acting at a point is equal to the sum of the moments of its components around any line.

Let OO_1 be any line, AD_1 one of the component forces, AOO_1 being the plane of the paper and AO perpendicular to OO_1 . Through A draw AB_1 parallel to OO_1 and let B_1 and O_1 be the points where a plane through D_1 meets AB_1, OO_1 , respectively. Drop a perpendicular, $O_1F_1 (= p_1)$ on D_1B_1 , and let $d = O_1B_1 = O_2B_2 = \dots$

Resolve AD_1 into AB_1, B_1C_1 in the plane of the paper, and C_1D_1 perpendicular to the plane of the paper. Resolve the other

components AD_2 , &c., of the resultant AD and the resultant in like manner. Then, taking the components perpendicular to the plane of the paper, we have

$$\begin{aligned} CD &= C_1D_1 + C_2D_2 + \dots \\ \therefore CD \cdot d &= C_1D_1 \cdot d + C_2D_2 \cdot d + \dots \\ \text{But } C_1D_1 \cdot d &= B_1D_1 \cdot p_1, \text{ \&c.} = \&c. \\ \therefore BD \cdot p &= B_1D_1 \cdot p_1 + B_2D_2 \cdot p_2 + \dots \end{aligned}$$

But $BD \cdot p$ is the moment of AD around OO_1 . Therefore, &c.

4. The sum of the moments of two parallel forces is equal to the moment of their resultant around any line.

Let OX be the given line, and $OACB$ its projection on the plane of the forces; let the given forces P and Q and their resultant R act at A, B, C , respectively.

Resolve the forces P, \dots into P_1, P_2, \dots parallel and perpendicular, respectively, to OX in the plane AOX , and P_3, \dots perpendicular to AOX . Then, if P_4, \dots denote the resultant of P_2, P_3, \dots ; a, b, c, p, q, r , the distances of A, B, C, P_4, Q_4, R_4 , respectively, from OX , we have

$$\begin{aligned} P \cdot OA + Q \cdot OB &= R \cdot OC. \\ P_3 \cdot OA + Q_3 \cdot OB &= R_3 \cdot OC. \\ P_3 \cdot a + Q_3 \cdot b &= R_3 \cdot c. \\ P_4 \cdot p + Q_4 \cdot q &= R_4 \cdot r. \end{aligned}$$

But $P_4 \cdot p$ is the moment of P around OX . Therefore, &c.

5. The centre of parallel forces.

Let OF be any line, and A_1B_1, A_2B_2, \dots the forces whose resultant AB is their sum; and let A_1F_1, A_2F_2, \dots be the distances of the points where the forces act from OF . Drop FE perpendicular to AD .

Resolve AB into AD, DB along and perpendicular to OF , respectively. Then, taking moments around OF ,

$$\begin{aligned} AD \cdot FE &= A_1D_1 \cdot F_1E_1 + \dots \\ \text{But } AD : A_1D_1 : A_2D_2 \dots &= AB : A_1B_1 : A_2B_2 \dots \\ \text{and } FE : F_1E_1 : F_2E_2 \dots &= AF : A_1F_1 : A_2F_2 \dots \\ \therefore AB \cdot AF &= A_1B_1 \cdot A_1F_1 + \dots \\ \therefore AF &= \frac{A_1B_1 \cdot A_1F_1 + \dots}{AB} \end{aligned}$$

which is independent of the direction of the forces. Therefore, &c.

NITRO-GLYCERINE :

ITS HISTORY, MANUFACTURE, AND INDUSTRIAL APPLICATION.

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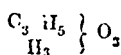
The discovery of nitro-glycerine dates from the year 1847. On the 15th of February of that year, a letter was read before the French Academy from M. Ascagne Sobrero,* in which he stated that he had obtained from glycerine a substitution product analogous to gun cotton. By adding glycerine to a mixture of two volumes of sulphuric acid with one volume of nitric acid, kept carefully cool, and pouring the resulting mixture into water, he obtained a pale yellow heavy oily body, insoluble in water, but soluble in alcohol and ether, of a pungent and aromatic taste, but without smell. Although Sobrero must have been acquainted with the explosive properties of the new compound, no allusion is made to them in this communication, but he states that as much as can be taken up by dipping lightly in it the point of the little finger will, if placed on the tongue, produce severe headache for several hours.

M. Sobrero announced his intention of making an analysis of the compound, but he does not appear to have done so, and it was not till 1854 that its composition was accurately determined. In that year Mr. Railton† succeeded in effecting the combustion of nitro-glycerine with copper oxide and metallic copper. He found that caustic potash absorbed two-thirds of the volume of the gas that was evolved, and hence he concluded that the ratio of carbonic acid to nitrogen in the products of combustion was 2 volumes to 1 volume, which would correspond to one molecule of $C O_2$ and one atom of N , and since a molecule of $C O_2$ contains one atom of C , it follows that nitro-glycerine contains an equal number of atoms of C and N , and since a molecule of nitro-glycerine contains 3 atoms of C , a molecule of nitro-glycerine

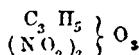
* Comptes Rend., 15th February, 1847.

† Q J. Chem. Soc., 30th March, 1854.

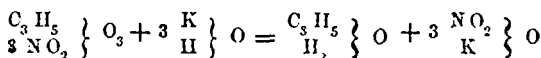
must contain 3 atoms of N, or, if glycerine be represented by the formula :



nitro-glycerine would be :



He also shewed that nitro-glycerine, when boiled with potassium hydrate, was decomposed into potassium nitrate and glycerine :



Nitro-glycerine is a substitution product from glycerine, obtained by the action of a mixture of nitric and sulphuric acids on that substance. It may be described as glycerine in which three of the atoms of hydrogen have been replaced by three molecules of nitric peroxide. It is a colourless oily fluid of a specific gravity of 1.6, and hence more than half as heavy again as water, in which it is quite insoluble. It is made by dissolving glycerine in the mixed acids, and pouring the resulting mixture into water, when the nitro-glycerine separates and collects at the bottom of the vessel. It is necessary to keep the acid mixture cool and to add the glycerine in small portions, cooling after each addition. The product should be well washed with water so as to get rid of the last trace of acid. Nitro-glycerine which has been incompletely freed from acid has a tendency to decompose, giving off red fumes of nitric peroxide, and depositing crystals of oxalic acid (Bloxam). On the application of an ignited substance it burns quietly away without noise, and with a greenish flame. If a drop of it is laid on an anvil and struck smartly with a hammer, it explodes violently with a report like that of a pistol. The conditions under which this explosion takes place are of great importance, and have been carefully studied. All observers agree that contact with an ignited body will not explode nitro-glycerine—under these conditions it merely burns away quietly. Abel* conducted a series of investigations on the action of a succession of electric sparks on nitro-glycerine, and he found that in no case was he able to explode it by such means, until, after the discharge had been continued for a considerable period, the liquid became dark-coloured from incipient decomposition. Shortly after this point was reached, explosion took place. When a

* Philosophical Trans., 15th April, 1869

platinum wire heated by electricity was substituted for the spark discharge, the same results were observed. From these experiments he concluded that it is impossible to explode nitro-glycerine by contact with a source of heat until the intensity or duration of the heat brings about decomposition of some portion of the nitro-glycerine, which in its turn, determines the explosion of the rest. For this effect, it is necessary that the heat should not only be intense, but also long continued. I have never succeeded in exploding nitro-glycerine by contact with a red hot wire—under these circumstances, indeed, it usually refuses even to take fire, and the wire cools before the nitro-glycerine has attained the temperature required for ignition. When the temperature of the wire is maintained at a high point by electricity, as in Abel's experiments, time is allowed for the nitro-glycerine to reach its point of ignition, and hence the result which he observed. When heated to 100° C, or a little less, it slowly evaporates. Abel kept it for four days at this temperature, confined in a sealed glass tube, without its exploding.

Leygue and Champion have shewn that nitro-glycerine is ignited when its temperature is raised to 257° C. They conducted their investigation by means of a bar of copper, to one end of which heat was applied, and upon the other end of which the nitro-glycerine was placed. The bar was grooved, and in the groove fusible metallic alloys were placed, by means of which the exact temperature of the bar, at any particular point, could be ascertained.

When nitro-glycerine is heated in a dish of copper or platinum over a lamp, it gives off dense white fumes, and is soon completely dissipated, but gradually, and without noise or violence. Under certain circumstances, however, it may, when treated in this way, explode with great violence. A student in the laboratory of M. Gorup Besanez* was heating ten drops of nitro-glycerine in an iron saucepan over a Bunsen burner, when it exploded. Every pane of glass in the laboratory (46) was smashed; the saucepan was hurled through a brick wall; the iron retort stand that supported the saucepan was split and twisted, and the Bunsen burner was split and flattened in a remarkable manner. Most fortunately there was nobody hurt.

Nitro-glycerine is, as we have seen, easily exploded if laid on an iron anvil and struck with a hammer. If a drop be placed on a

* *Am. des Chem. & Pharm.*, March, 1871.

piece of filter paper, and the paper struck with a hammer on an anvil, it will be shattered to pieces, the explosion being accompanied by a bright flash and a loud report. If the nitro-glycerine is laid on a stone and struck with a hammer, it is only exploded with great difficulty. I have never succeeded in exploding nitro-glycerine by contact between iron and wood, either when the nitro-glycerine is laid directly on the wood, or when it is placed on a piece of paper. The experiments of MM. Girard, Millot and Vogt* show that nitro-glycerine is exploded by a weight of 4 kils., 700 falling upon a space of 2 square centimetres on an anvil, from a height of 0.25 metre, which is very nearly equivalent to a weight of 10 lbs. falling from a height of 10 inches.

It is observed by Berthel† that the impact of such a weight falling through such a distance, would only raise the temperature of a mass of nitro-glycerine a fraction of a degree, if equally distributed, but the conversion of motion into heat being too rapid to allow this distribution to take place before a small portion is heated to its exploding point, a large quantity of gas is suddenly produced, and a second and more violent shock is dealt to the adjacent particles. The force so developed is also converted into heat, and, in this way, a continuous succession of changes is established through the whole mass.

If a small tube of thin metal charged with a few grains of fulminate of mercury be fired by electricity or by a fuse while in contact with a portion of nitro-glycerine, the latter is exploded with great violence. A small confined charge of gunpowder may be substituted for the fulminate. This most important discovery we owe to a Swedish Engineer, Mr. A. Nobel. Mr. E. O. Brown subsequently discovered that gun cotton might be exploded in the same way, and Abel‡ shewed that it might be applied successfully to many other explosives. Nobel attributed this remarkable result simply to the heat evolved by the explosion of the fulminate, but Abel§ shewed that this could not be the case, since the power that different bodies possess of inducing this sympathetic explosion is in no way proportional to the heat evolved in their combustion. He found that different substances differed greatly in their power of inducing the

* *Moniteur Scientifique*, xiii, 58-60; *Q. J. Chem. Soc.*, ix, 770.

† *Comptes Rend.*, lxxii, 759; *Q. J. Chem. Soc.*, ix, 644.

‡ *Phil. Trans.*, 15th April, 1869.

§ *Loc. Cit.*

explosion of a particular body by their detonation, and he suggests in explanation that "as a particular musical vibration will establish synchronous vibrations in particular bodies while it will not effect others, and as a chemical change may be wrought in a body by its interception of only particular waves of light, so, certain explosions may exert a disturbing influence over the chemical equilibrium of certain bodies, resulting in their sudden disintegration, which other kinds of explosions, though developing greater mechanical force, are powerless to exercise."

Quite recently, M. L. L'Hôte * investigated the gaseous products of the explosion of nitro-glycerine. For this purpose he introduced into Guy Lussac's eudiometer ten cubic centimetres of detonating gas from the voltameter, and about six centigrammes of nitro-glycerine. He anticipated that on firing the gaseous mixture, its detonation would explode the nitro-glycerine. His expectations proved to be well founded. On passing an electric spark through the gases, the nitro-glycerine did explode, and reduced the eudiometer to powder. M. L'Hôte then repeated his experiment in one of Mitscherlich's eudiometers, with ten cubic centimetres of detonating gas, and from five to six milligrammes of nitro-glycerine enclosed in little beads of glass. With these quantities the eudiometer was able to stand the shock of the explosion, and M. L'Hôte was able to examine the resulting gases. A number of experiments gave the following as the composition of the gaseous products of the explosion of nitro-glycerine, calculated for one gramme and reduced to 0° C and 760^{mm} barometer.

One gramme of nitro-glycerine yields 284^{cc} gas, consisting of

CO ₂	45.72 %
NO	20.36
N	33.92
	100.00

The force with which nitro-glycerine explodes is very great. The explosive force of any compound depends upon two things, the volume of gas produced and the quantity of heat disengaged. The product of these two factors may be taken as a measure of the explosive force. M. Berthelot† has compared a number of explosives with regard to these two points, and has shewn that the explosive

* Comptes Rend., lxxiii, 1013.

† *Moniteur Scientifique*, xliii, 40.

force of nitro-glycerine is much greater than that of any of the others. The following is his table :

	Quantity of heat evolved by one kilo in units	Volume of Gas found in M. C	Product of these two Numbers
Sporting powder	641000	0 216	139000
Military "	622500	0 225	140000
Blasting "	380000	0 355	135000
Powder with excess of C	429000	0 516	219000
" " sodium nitrate	769000	0.252	191000
" " potassium chlorate	972000	0 318	309000
Chloride of nitrogen	316000	0 370	117000
Nitro-glycerine	1282000	0.710	910000
Gun Cotton	700000	0.801	560000
" " with nitre	1018000	0 484	492000
" " $K Cl O_3$	1446000	0.484	700000
Potassium picrate	872000	0 585	510000
Picrate with nitre	957000	0.357	323000
" " $K Cl O_3$	1405000	0.837	474000

From this table it appears that the explosive force of nitro-glycerine is 910,000, while that of blasting powder is 135,000, and that of gun cotton 560,000. Hence we may say that nitro-glycerine explodes with rather more than six times the force of ordinary blasting powder, and not quite twice the force of an equal weight of gun cotton. This great explosive force suggested its value as an agent for blasting rocks, &c., but great practical difficulties stood in the way of its adoption. In addition to the great danger attendant on its manufacture and transport, the fact that it would neither explode by contact with flame nor by the electric spark, for a long time prevented its employment in the arts. At last, in 1864, these difficulties were overcome by Mr. A. Nobel. In his first experiments he used gunpowder soaked in nitro-glycerine, but his discovery before alluded to, that nitro-glycerine may be exploded by the detonation of a small quantity of some other explosive, such as fulminate of mercury, was the means of converting this powerful explosive into an industrial agent of the highest value. It came to be extensively used on the continent of Europe in mining and other blasting operations, and it has also been largely and successfully used in the United States.

As examples of its employment, the boring of the Hoosac Tunnel and the removal of the obstructions at Hell Gate may be mentioned. At one blast in the Hoosac Tunnel the rock was blown out in the centre to a depth of eight feet ten inches. For blasting purposes the

nitro-glycerine was enclosed in tin cases from eight to fifteen inches long and about an inch in diameter, and holding from four to eight ounces of nitro-glycerine. The nitro-glycerine was generally exploded by a small confined charge of gunpowder.

The use of nitro-glycerine is attended with great danger, and a number of melancholy accidents followed its introduction into the arts. Some of these accidents will be alluded to subsequently. In consequence of this danger, and of the inconvenience of the liquid form of the compound, owing to which it could not be used in any but downward bore holes, various attempts were made to obtain a compound of which nitro-glycerine should be the base, but which should have a solid form. These attempts resulted in the introduction by Mr. Nobel of dynamite, which consists of a siliceous earth called *Kieselguhr*, impregnated with nitro-glycerine. This *Kieselguhr* is a siliceous earth found in large quantities only in one place—near Luneburg in North Germany. It consists chiefly of silica, although there are traces of alumina, ferric oxide and lime. It is a deposit consisting of the remains of the shells of by-gone generations of infusoria. It is of a light red colour, and is very absorbent, so that the dynamite may be made up in paper cartridges and kept without appreciable loss; although Girard, Millot and Vogt* have shewn that it loses strength on exposure to the air, and Guyot † has pointed out that paper will absorb nitro-glycerine, and that its absorption by the paper of the cartridges in which it is enclosed, is a possible source of accident. The paper is sometimes soaked in paraffin, which will obviate the danger from this cause.

M. Champion‡ concludes that dynamite is not exploded by a blow; but Girard, Millot and Vogt§ found, by experiments conducted with the apparatus already described, that a mixture of equal parts of nitro-glycerine and silica is exploded easily by a weight of 4 kilos 700, falling through 1.65 metres. Indeed it is easy to explode a small fragment of dynamite by laying it on an anvil, and striking it smartly with a hammer. The contact, however, must be between iron and iron, or rarely, between iron and stone.

There is ample testimony to the value of dynamite in blasting.

* Comptes Rend., quoted in Am. Chem., 1, 79.

† Dingler's Pol. Journ. in Am. Chem., 11, 234.

‡ Monit. Scient., xiii, 91; Q. J. Chem. Soc., ix, 771.

§ Monit. Scient., xiii, 53; Q. J. Chem. Soc., ix, 760.

In vol. 21 of the Scientific American, the results of some experiments in Switzerland by M. Von Arx, are given as follows :

He enclosed $2\frac{1}{2}$ cartridges in a bore 1.11 metres deep and three centimetres diameter. This charge, when exploded, detached $6\frac{1}{2}$ cubic metres of rock. In another experiment, $3\frac{1}{2}$ cartridges, in a bore 1.32 metres deep, loosened 71 cubic metres of rock. M. Champion* has published some experiments on the action of dynamite in breaking up a mass of cast iron weighing 5000 kilos or about five tons. On one side three holes were bored 25^m in diameter and 45 centimetres deep. The central hole received a charge of about 150 grammes of dynamite containing 75 % of nitro-glycerine in two cartridges. Its explosion divided the block into two parts. The explosion of the charges in the two other holes broke these up into many large fragments, and these again by smaller borings were reduced to small pieces. In tamping charges of dynamite a wooden rammer is used, and sand, damp clay, or even water is employed as a tamping.

Dynamite may be used for breaking up boulders by simply laying it on the top of the boulder, covering it with a little moist clay or sand, and firing. In Sweden large boulders are broken up in this manner, and at Rammelsberg in the Hartz Mountains it is used in the same way for breaking up great masses of iron pyrites.

Mr. Berkely, of Newcastle-upon-Tyne, in a paper "On the Practical employment of Dynamite," † read before the Chemical Society of that town, gives a most remarkable account of some experiments with a large mass of cast iron, which he had tried in vain to break with gunpowder, and the breaking up of which he easily effected with dynamite. He placed 9 oz. of dynamite on a block of iron 2 feet 6 inches across and 18 inches thick, without any hole being bored. The explosion cracked the block in two. The "stythe" from nitro-glycerine is very suffocating, producing fearful headaches. That from dynamite is said not to be so bad.

Dynamite assumes a crystalline condition when exposed to cold, in which it is not so active. The use of dynamite is attended with a considerable saving over that of gunpowder. In the lead mines of Goslar the saving is said by M. Hamel to amount to 17 % money and half the time. In the iron mines at Zeerf, near Saarbürg, to 25 % money and half the time; and at the Richlieu mine, near Freiberg, to 30 % money and half the time.

* Comptes Rend., lxxii, 770; Q. J. Chem. Soc., ix, 772.

† Chem. News xxix, 32.

There have been a great number of substances proposed as a substitute for the kieselguhr, but none seem to answer all purposes quite so well. Dualin consists of saw dust or lignine soaked with nitro-glycerine. It is the invention of Lieut. Ditmar, who brought over 100 lbs. of it to the United States in a carpet bag. It is said, by the way, that the first nitro-glycerine brought to America was carried by a passenger in one of the large ocean steamers, who kept it under his pillow. Some of it was used successfully in the Hoosac Tunnel.

The industrial manufacture of nitro-glycerine is attended with considerable danger, and requires great precautions. The operations are carried on under open circular sheds, covered with roofs of bituminized paper. The floors slope from the centre towards the circumference, and a constant flow of water is kept up to carry away any nitro-glycerine that might otherwise accumulate on them. The mixed acids are placed in cylinders of glass, stoneware or cast iron, immersed in water cooled to 10° C. The nitro-glycerine is introduced by means of a tap, drop by drop, and a constant rotary motion is kept up by means of a current of air. A large tube is connected with the cylinders to carry off vapours and prevent the headaches to which the workmen would otherwise be subject. The proportions recommended by Girard, Millot and Vogt* are one part, by weight, of glycerine, at 30° Baumé, two parts of nitric acid at 48° , and four parts of sulphuric acid at 66° . When all the nitro-glycerine has been added, the mixture is poured into six times its weight of water, and the nitro-glycerine which falls to the bottom is washed twice with water, then with an alkaline solution, and then with water.

In the manufacture of dynamite the dry kieselguhr is put into stoneware vessels, and moistened with nitro-glycerine in the proportion of 25 % of the earth to 75 % of the nitro-glycerine.

The analysis of dynamite may be effected by treating it with ether or with warm alcohol, which dissolves the nitro-glycerine, and the insoluble residue may be thrown on a filter, washed, dried, and weighed. The filtrate is evaporated on a water bath till it ceases to lose weight. The dynamite sold in Toronto gave by this process: Insoluble residue 25.41, nitro-glycerine 74.59. Under the microscope the insoluble residue is seen to consist chiefly of the silicious envø-

* *Moniteur Scientifique*, xiii, 58.

lopes of diatoms, of sponge spicules, and similar organic remains, but these are mixed with a small proportion of rounded grains of sand.

A great number of terrible accidents have resulted from the explosion of nitro-glycerine. One of the manufactories of dynamite in Europe was twice entirely destroyed. On the last occasion everybody present was blown to atoms. In the United States there have been a great number of accidents. On one occasion, one of the employés of the Wyoming Hotel, N. Y., noticed a small box in the baggage rooms in flames. He picked it up and carried it out into the street, where it exploded, greatly injuring the neighbouring buildings, killing one man and wounding twenty. On the 3rd of April, 1865, an explosion of nitro-glycerine took place in the hold of the steamer *European*, lying at Aspinwall. The steamer, an iron vessel, was blown to pieces, the dock was completely destroyed, and sixty people were killed. This explosion was quickly followed by another at San Francisco, and by another at Sydney, equally horrible. At Morrisiana, U.S., a portion of a nitro-glycerine charge was left unexploded. Subsequent drilling touched it off. Two men were killed and nine severely injured. The dynamite mill at California blew up. The Hackensack nitro-glycerine manufactory, N.Y., exploded, killing four men. There were stored in and around the mill 4,000 lbs. of oil of vitriol, 8,000 or 10,000 lbs. of nitric acid, and 7,000 lbs. of nitro-glycerine. At Englewood, N. Y., a blast failed to explode. The workmen poured water into the hole, and then drilled another close by. An explosion took place and killed four men. Shaffner's factory, at Ridgeville, N. Y., exploded. Two men were killed by a subsequent explosion while removing the débris. On the 13th April, 1870, at the marble quarries at Sing Sing Prison, 4 lbs. of nitro-glycerine were placed in a bore, and over this the powder. The powder exploded without firing the nitro-glycerine, but after the workmen had returned, this also exploded, killing one, mortally wounding another, and injuring two more.

With regard to these accidents, Mr. Nobel, in a letter to the *Times*, shewed that in the great majority of cases the accidents occurred either from a wanton disregard of his printed instructions, or, as in the case of the explosions at Aspinwall and at San Francisco, where nitro-glycerine was transported under a wrong declaration. He gave a list of accidents, the inspection of which shews, in a remarkable manner, the gross carelessness that frequently results from the contempt bred by familiarity with danger.

“In five cases, congealed nitro-glycerine was melted purposely over a fire.

“In three cases, a red hot poker has been inserted into the oil in order to melt it.

“In one case, a man kept a cartridge, with a percussion cap and fuse affixed and lighted, in his hand till it blew off.”

A case very similar to the last was reported in the newspapers as having occurred at St. John's, New Brunswick, during the recent eclipse of the moon. A gentleman stood at the window of a hotel, holding in his hand a dynamite cartridge, which he intended to fire as a signal when the eclipse commenced. The fuse burnt out sooner than he expected, his arm was blown to pieces, and two other gentlemen who were in the room at the time were severely injured.

“In one case, two leaky canisters, full of nitro-glycerine, were soldered under continual reports produced by the heating of drops leaking out, but no accident ensued.

“In one case, a man took to greasing the weels of his waggon with nitro-glycerine, not knowing what it was, and it went all right until it struck hard against something, and the wheels went to pieces.

“In one case it was burnt in a lamp, as an improvement on petroleum.”

At Newcastle, a number of cans of nitro-glycerine were broken open by blows of a spade, and then flung into a hole. A melancholy explosion was the result, by which several persons lost their lives.

There is no doubt that nitro-glycerine is a dangerous substance, even in the form of dynamite. But so is gunpowder, and so is steam; and this fact, though it should lead to the greatest care being taken in the use of the explosive, is of itself no reason for abandoning it, for power and danger are inseparable.



CANADIAN LOCAL HISTORY.

THE FIRST GAZETTEER OF UPPER CANADA.

WITH ANNOTATIONS,

BY THE REV. HENRY SCADDING, D. D.

(Continued from page 308.)

B.

Bachouanan River empties itself into the easterly part of Lake Superior, about half-way between the Falls of St. Mary and Red River. [Batchawaung, in late maps.]

Barbue Point, on the River St. Lawrence, about a mile and a half above the lower end of the fourth township. [Barbue=Catfish.]

Barbue River: now called the Orwell. [Better known as "Big Otter Creek."]

Baril, Isles du, in the River St. Lawrence, lie in front of the township of Elizabeth Town.

Baril, Pointe au, on the River St. Lawrence, above Osweigatchie, and higher than the ship-yards.

Barque, Isle de la, is a small island in Lake Ontario, lying rather farther out, and pretty near to the Isle de Quinté.

Barrier Point, the west point, where the River Petite Nation empties itself into the Ottawa. [Petite Nation: The complete expression was "Petite Nation des Algonquins."]

Barton Township, in the County of Lincoln, lies west of Saltfleet, and fronts Burlington Bay. [From Barton in Lincolnshire, which, to distinguish it from many other Bartons (Barntowns) in England, is known as "Barton on the Humber."]

Bass Cove, in Adolphustown, Bay of Quinté, lies northward of Perch Cove.

Bass Islands: a group of islands at the west end of Lake Erie, situated between the Western Sister and Cunningham's Island. [The Otchipway word for Bass is ashigan.]

Bass Island, in the Bay of Quinté, lies off near to the townplot in Adolphustown.

Bastard Township lies in the rear and to the northward of Lansdown and Leeds. [From the name of a well-known ancient Devonshire family, seated in modern times at Kitley, near Plymouth.]

Batteau Island, in the River St. Lawrence, above Bearded Island.

Batture Grand, on the Ottawa river, below the Portage du Chêne. [Batture=Gold-lacquer.]

[*Bayham Township*, in the County of Middlesex, lies between Malahide and Houghton. 2nd Edition. From one of the titles of Lord Camden, who was Viscount Bayham as well as Earl Camden.]

Bearded Island, in the River St. Lawrence, above Lake St. Francis.

Bauharnois Isle, in the north-easterly part of Lake Superior, not a great way from the shore, and eastward of Isle Hocquart.

Beaver Creek rises in the township of Caistor, and running through part of Gainsborough, empties itself into the Welland, to which river it runs close and nearly parallel for almost four miles, before it discharges itself into the river.

Beaver Creek, in the township of Humberstone, runs into Lake Erie, west of Row's Point.

Beaver Creek runs into Lake Superior, on the north side, between River Aupie and River Rouge.

Beaver River empties itself into the Narrows a little below the Falls of St. Mary, running from north to south.

[*Belford Township*, in the County of Frontenac, to the north of Loughborough and Pittsburg and east of Hinchinbroke. 2nd Edition.]

Belle River runs into Lake St. Clair, to the eastward of River aux Prices, and is navigable for boats some way up.

Bertie Township is on the west side of Niagara river, in the County of Lincoln; it lies south of Willoughby, and open to Lake Erie. [From the family name of the Earls of Lindsey.]

Beverly Township, in the West Riding of the County of York, lies west of Flamborough, and opposite to Dundas Street. [From Beverley, a borough and market-town in the East Riding of York, in England, famous for its Minster, founded by King Athelstan.]

Biche, Marais à la, empties itself into Lake Ontario at the north-east part of the township of Grantham. [Biche=Hind.]

Binbrook Township, in the County of Lincoln, is situated between Saltfleet, Glandford and Caistor. [From Binbrook, an ancient market-town of Lincolnshire, England.]

Black Bay, on the north shore of Lake Superior, lies a little east of Isle de Minette and west of Shanguenac. [Elsewhere in this Gazetteer, Isle de *Minatte*.]

Black Creek, in the County of Lincoln, discharges itself into the River Niagara, in the township of Willoughby, some miles above Chippewa.

Blandford Township, in the West Riding of the County of York, lies to the northward of Dundas Street, opposite to Oxford, and is washed by the Thames. [From Blandford, an ancient town in Dorsetshire, which gave the title of Marquis to John Churchill, the great Duke of Marlborough.]

Blenheim Township, in the West Riding of the County of York, lies to the northward of Dundas Street, opposite Burford. [Blenheim is the name of the palace at Woodstock, presented by the nation to the first Duke of Marlborough.]

Block Township: See Binbrook.

Bodét, Pointe au, on the north shore of Lake St. Francis, is in Monsieur de Longueuil's seigniory, and a little to the east of the cove, in which is the boundary between the provinces of Upper and Lower Canada. [In Bouchette's books, this is *Pointe au Beaudet*. Trestle-point!]

Bodét, River au, runs through part of the township of Lancaster, and empties itself into Lake St. Francis, east of Pointe au Bodét.

Bois Blanc Island.—This island lies east of Rocky Island (in the strait between Lake Erie and Lake St. Clair), but a little lower down and close in with the east shore: it contains from 150 to 200 acres of good land, but little or no marsh: it is covered with wood, chiefly white wood, and is not as yet improved. The common ship channel is between it and the east shore, which is narrow, and forms the best harbour in this country. From the situation of this island, it entirely commands the Detroit river from Lake Erie; at its upper end appear to be good situations for water-mills. A wider ship channel is on the west side of the island, but not so much frequented. The garrison of Amherstburgh being on the east shore, in Malden, furnishes a small detachment to Bois Blanc.

Bonne Chere, Rivière de la, runs into the Ottawa river, above the River Matavaaschie, west of the Rideau.

Bowen's Creek runs into the Bay of Quinté just below the Mohawk settlement, and near to John's Island.

Brant's Village, or the Mohawk Village, Grand river. [Now Brantford.]

Bristol, now called the township of Darlington.

Burford Township, in the Western District, lies between Dindham and Dundas Street. [From Burford, a market-town in Oxfordshire.]

Burgess Township lies to the northward of the township of Bastard. [From a Devonshire family so named.]

C.

Cabot's Head is a very large promontory running into Lake Huron, west of Gloucester or Matchedash Bay, and embays a large part of that lake at its easternmost extremity, stretching itself towards the Manitou Islands. [From Sebastian Cabot, discoverer of Newfoundland, 1497.]

Caistor Township, in the County of Lincoln, lies between Binbrook and Gainsborough, and is watered by the River Welland. [Caister is an ancient market-town in the English County of Lincoln: a Roman camp or *Castra*.]

[*Caledonia Township*, in the County of Prescott, is on the south, and in the rear of Longueuil's seigniory, ascending the Ottawa or Grand river. 2nd Edition.]

[*Calumet, Grand*, on the Ottawa river, on the south side, above the Portage de Montagne.]

Calumet, Pointe au, on Lake Superior, on the north shore, the first point west of River du Chêne, between which places the coast, consisting of perpendicular rocks, is dangerous.

Cambridge Township, in the County of Stormont, lies to the south, and in the rear of Clarence. [So named in honour of the Duke of Cambridge.]

Camden East, the township of, in the Midland District, lies northerly of Ernest-town.

Camden Township, in the County of Kent, called also Camden West, lies on the north side of the River Thames, opposite to Howard. [From Lord Camden, successively Chief Justice of the Common Pleas and Lord High Chancellor of England, temp. George III.]

Canada, or the Province of Quebec. By the Royal Proclamation of the seventh of October, 1763, this province was bounded on the

east by the River St. John, and from thence, by a line drawn from the head of that river, through Lake St. John, to the south end of Lake Nipissing; from whence the line, crossing the River St. Lawrence and Lake Champlain in the 45th parallel of North latitude, passes along the high lands which divide the rivers that empty themselves into the River St. Lawrence, from those which fall into the sea; and also along the north coast of the Baye de Chaleurs, and the coast of the Gulf of St. Lawrence to Cape Rosiers; and from thence, crossing the mouth of the River St. Lawrence, by the west end of the island of Anticosti, terminates at the River St. John.

An Act of Parliament, passed in 1774, has removed the northern and western limits of the province of Quebec, adding to its jurisdiction all the lands comprised between the northern bounds of New York, the western line of Pennsylvania, the Ohio, the Mississippi, and the southern boundaries of Hudson's Bay Company. [The name CANADA originated in a mistake of the first French navigators of the St. Lawrence. The natives along the river, on visiting the newly-arrived strangers, would point to their encampment or village on the shore, using often the word *Kanata*, i.e. huts or village. The French, with their European notions, took the word to be a territorial designation. Jacques Cartier imagined that the name was applied to the district extending from the Isle des Coudres to a point some distance above the site of Quebec; while he gathered, probably in a like fallacious manner, that the country below was called by the natives *Saguenay*; and also that they called the country above, *Hochelaga*. It is, however, certain that the early natives of the country were not in the habit of thus generalizing geographically. The expressions which they used to designate particular localities were for the most part rough descriptions, simply for convenience of discrimination and recollection in their hunting or warlike excursions. Like other primitive people, they were accustomed to give collective names to groups of men, but not to extensive areas.—The application of the name *Canada* by degrees to wider and wider spaces, until now it covers half the North American Continent, is curious; but it is simply a repetition of what has happened in the case of the geographical terms ITALY, GREECE, HELLAS, AFRICA and ASIA, each of which denoted, at the outset, a local region of narrow limits.]

Canada, Upper, commences at a stone boundary on the north bank of the Lake St. Francis, at the cove west of Pointe au Bodét, in the

limit between the township of Lancaster and the seigniory of New Longueil, running along the said limit in the direction of North 34 degrees West, to the westernmost angle of the seigniory of New Longueil. [The error of *Longueil* for *Longueuil* occurs elsewhere in this Gazetteer. A like want of precision is observable in the orthography of other names.] Thence along the north-western boundary of the seigniory of Vaudreuil, running north 25 degrees east, until it strikes the Ottawa river, and ascends by it into Lake Tomisaming; and from the head of that lake by a line drawn due north, until it strikes the boundary line of Hudson's Bay, including all the territory to the westward and southward of the said line, to the utmost extent of the country known by the name of Canada.

This province was divided into nineteen counties by proclamation, the 16th of July, 1792, viz: "Addington, Dundas, Durham, Essex, Frontenac, Glengary, Grenville, Hastings, Kent, Leeds, Lenox, Lincoln, Norfolk, Northumberland, Ontario, Prince Edward, Stormont, Suffolk, York." They send sixteen representatives to the provincial parliament. [In the edition of 1813, the last paragraph reads thus: "This province is divided into districts, counties and townships. The counties send 25 representatives to the provincial parliament."]

Canard's River empties itself into the Detroit river, at the Huron cornfields, somewhat below Fighting Island. About four miles up this river are excellent mill-seats, to which loaded boats can go. There is a fine limestone quarry in the rear of the cornfields, nearly in the centre of the Huron reserve. [Now Canard river.]

Cardinal, Pointe au, on the River St. Lawrence, lower down than Point Gallo, in Edwardsburgh. [Point Gallo means Pointe au Gallop, as given subsequently.]

Canise Island, in the north-east part of Lake Simcoe. [This island retains its name. Perhaps it is from the Irish St. Canice.]

Carleton Island lies near to Grand Island, opposite to Kingston, and nearest the south shore, where Lake Ontario descends into the St. Lawrence. Kingston garrison furnishes a detachment to this place. [From Gen. Carleton, afterwards Lord Dorchester.]

Carribou Island, in Muddy Lake, between Rocky Point and Frying Pan Island. [This Muddy Lake is stated below to be situated between Lake Huron and Lake George.]

Castle Point, in Traverse Bay, Lake Ontario, lies between Tower Point and Point Traverse. [This Traverse Bay is in Marysburgh, Prince Edward County.]

Cat Island, or *Isle au Chat*, in the River St. Lawrence.

Catarauqui, now called Kingston. [Catarauqui=Rocks above water.]

Catarauqui, Petit, nearly in the centre of the township of Kingston, opposite to *Isle la Forêts*.

Catarauqui, Isle de Petite, off the north part of *Isle la Forêt*, opposite to the township of Kingston.

Catfish Creek, or *River à la Chaudière*, or *Kettle Creek*. [Augustus Jones gives the Indian name as *Maunemack-sippi*—Large Catfish river.]

Catfish Island lies at the west end of Long Reach in the Bay of Quinté.

Cauchois Isle, now called *Howe Island*, by proclamation, the 16th July, 1792.

Cedar Creek runs into Lake Erie, near the east end of the two connected townships, and is sometimes called *Cedar river*.

Cedar Island, a little below Kingston, lies off the mouth of *Hamilton Cove*, is rocky and not fit for cultivation.

Cedres, Petite Isle aux: See *Cedar Island*.

Celeron Isle lies at the entrance of *Detroit river*, a little south of *Grosse Isle*. Is small and unimproved. [From M. de Céléron, a French military officer in Canada in 1752.]

Charlottenburgh, the township of, is on the River St. Lawrence, and in the County of Glengary, being the second township in ascending. [A compliment to Queen Charlotte; so also the following.]

Charlottetown Township, in the County of Norfolk, lies west of *Woodhouse*, and fronts *Long Point bay*.

Charron River empties itself into Lake Superior, on the north-east shore, to the northward of *River de Montreal*.

Chasse, Rivière de la Belle, runs into the River St. Lawrence, about two miles below *Isle Rapid Plat*.

Chat Lake is part of the *Ottawa river*, above *Lake Chaudière*, and rather less.

Chat, Isle au, in the River St. Lawrence, opposite to the township of *Osnabruck*, contains from 100 to 150 acres. The soil is good.

Chatham Township, in the County of Kent, lies to the northward of the *Thames*, opposite *Harwich*.

Chaudière Falls, on the Ottawa River, 36 feet high. They are a little above the mouth of the River Rideau, and below Lake Chaudière. [Chaudière=Caldron.]

Chaudière Lake is formed by the widening of the Ottawa river, above the mouth of the River Rideau, and below Lake Chat.

Chaudière, Rivière à la, or Catfish Creek, runs into Lake Erie, west of Long Point.

Cheboutequion is one of the lakes on the communication between Lake Simcoe and the Rice Lake. [This is the Shebaughtickwyong of Owen's Map. In Baraga, Tchibaiatig is a Cross: literally wood of the dead; *i. e.*, wood to be placed on a grave. But the word given by later Otchipway authority is Shebahtahgwayong=Full of Channels. The present name is Buckhorn Lake.]

Chenal Ecarté, Isle de, in the River St. Lawrence, opposite the township of Cornwall, contains from seven to eight hundred acres: the soil is good.

Chenal Ecarté River runs nearly parallel to the River Thames, and empties itself at the entrance of River St. Clair into Lake St. Clair. [Chenal Ecarté=Disused, discarded channel.]

Chêne, Isle du, in Lake Ontario, lies off the easterly shore of Marysburgh, and close to the land. [Chêne=Oak.]

Chêne, Pointe au, on the River St. Lawrence, lies east of River de la Traverse, and nearly opposite to St. Regis.

Chêne, Portage du, on the Ottawa River, immediately below Lake Chaudière.

Chêne, Rivière du, runs into the Bay of Michipicoten, Lake Superior, west of River Michipicoten.

Cheveaux, Pointe au, on the north shore of Lake Ontario, and to the eastward of River Ganaraskee. [Cheveaux, perhaps for chevaux=Horses. Ganaraskee=Smith's Creek at Port Hope.]

Chippewa Creek, (or Chipeweigh river,) called the Welland, by proclamation, the 16th of July, 1792, discharges itself into the River Niagara, a little above the great falls: it is a fine canal, without falls, of forty miles in length. [The original pronunciation of the final *a* was *ay*: as is shewn by Baraga's Otchipwè. A. Jones gives the name of Chippewa Creek as Chonotauch; but he omits the interpretation.]

Claies, Lake aux, now Lake Simcoe, is situated between York and Gloucester bay, on Lake Huron: it has a few small islands and

several good harbours: a vessel is now building for the purpose of facilitating the communication by that route. [Claies=Hurdles or Wattle-work, perhaps used in the capture of fish.]

Clarence Township, in the County of Stormont, is the fifth township as you ascend the Ottawa river. [Clarence, from the Duke of Clarence, afterwards William IV.]

Clarke Township, in the County of Durham, lies to the west of Hope, and fronts Lake Ontario. [Clarke, from Gen. Sir Alured Clarke: See Art. *Alured*.]

Clinton Township, in the County of Lincoln, lies west of Louth, and fronts Lake Ontario. [From Gen. Sir Henry Clinton.]

Cochela, an island in Lake Huron, lying between the south-easterly end of the Manitou Islands, and the north main. [Probably in the manuscript from which the Gazetteer was printed, this was *Cloche la*, that is Isle la Cloche. In several other instances it is evident that errors have arisen in these pages from misreading the "copy."]

Cochon, Isle au, a small island between Kingston, Gage Island, and Wolfe Island; nearest to the latter.

Colchester Township, in the County of Essex, is situated upon Lake Erie, and lies between Malden and Gosfield.

Cooke's Bay, on the south side of Lake Simcoe. Holland's river discharges itself into the head of this bay. [From Capt. Cook, the circumnavigator.]

Coote's Paradise, is a large marsh lying within Burlington bay, and abounding in game. [From Capt. Coote of the 8th regiment, a keen sportsman. Among the letters of Mr. Stegman, the early surveyor, preserved in the Crown Lands Department, is the following report of the survey of the village of Coote's Paradise, addressed to the Hon. D. W. Smith, Esq., Acting Surveyor-General in 1801: "Sir,—I have the honour to report that in obedience to your instructions bearing date May 1st, 1801, for the survey of the village near Coote's Paradise, I have executed the same agreeable to the sketch received from the Surveyor-General's office: that Dundas street has been my principal guide, in conformity to which the survey is performed: the river and north branch have been carefully scaled, and particular notice taken of all other small creeks and their courses, together with the real situation within the limits of the survey, &c." The village here projected is the present Dundas.]

Coppermine Point, in the east end of Lake Superior, in the vicinity of which, some years ago, an attempt was made to dig for copper ore, but soon after abandoned. This place is nearly north-east and by north from Point Mamonce, and between it and the mouth of the River Montreal.

Cornwall, the Township of, in the County of Stormont, is situated upon the River St. Lawrence, and the third township in ascending the river. [Not from the county, but from an English family name. In Westminster Abbey is a monument to the memory of Capt. James Cornwall, R. N., of Bradwardine Castle, County of Hereford, slain in an engagement with the French and Spanish Fleets off Toulon, February 12th, 1743.]

Cramahe Township, in the County of Northumberland, lies west of Murray, and fronts Lake Ontario. [From the Hon. H. T. Cramahe, Administrator of Canada, 1770-1774.]

Credai River, or River Credit, discharges itself into Lake Ontario, between the head of that lake and York, in the Mississaga territory. It is a great resort for these and other Indian tribes, and abounds in fish. [The Indian term was Messenebe=River where credit for purchases is given. In Baraga a debtor is mesinaiged; a debt, mesinaigewin; literally, a marking or scoring down. A little book or bill is mesinaigans.]

Creuse River. Part of the Ottawa river is so called above les Alumets. [Creuse=Hollow, deep.]

Cris, Big and Little. Two points on the north shore on Lake Superior, east of Isle Grange, and surrounded by islands: between these points is a noted and safe harbour. [:'ris, short for Cristinaux.]

Crosby Township, lies to the northward of Leeds, and to the westward of Bastard. [Two hamlets in Lancashire, 5½ miles from Liverpool, are called respectively Great and Little Crosby.]

Crowland Township, lies to the northward of Lincoln, lies west of Willoughby, and is watered by the Welland. [Crowland is an old town in Lincolnshire possessing the remains of a magnificent abbey, and a curious stone bridge bearing a statue of King Ethelbald.]

Cumberland Township, lies partly in the County of Stormont, and partly in Dundas, and is the sixth township in ascending the Ottawa river. [A compliment, probably, to the Duke of Cumberland.]

Cunningham's Island, is situated at the western end of Lake Erie, south-westerly of the Bass Islands, and southerly of Ship Island.

D.

Darling Island, the larger of two islands in the entrance of Lake Simcoe. [Known at the present time as Snake Island, from Chief John Snake, who lived there.]

Darlington Township, in the County of Durham, lies to the west of Clarke, and fronts upon Lake Ontario. [From Darlington in the English County of Durham.]

Delaware Township, in the County of Suffolk, lies on the east side of the River Thames, on the plains above the Delaware village of Indians. [From the Indian tribe of Delawares who migrated to Canada with the Five Nations or Iroquois in 1783. The native name of the Delaware Indians was Lennilenapee=Original People.]

Dereham Township, in the County of Norfolk, lies to the west of and adjoining to, Norwich. [From Market Dereham in Norfolk, in the ancient church of which place the poet Cowper was buried in 1800.]

Detour, the entrance into Lake Huron from Muddy Lake, to the south and west of St. Joseph's Island.

Detour, on the north shore of Lake Huron, lies a little to the east of the Isles au Serpent.

Detour, Point, is on the west main, in the strait made by St. Joseph's Island, leading from Muddy Lake to Lake Huron.

Detroit is in about 42 degrees 38 minutes of north latitude, and 81 degrees 40 minutes of west longitude. The French call it Fort Fontchartrain. It has accommodation for a regiment, and it consists of three parts; the town, the citadel, and Fort Lanoult. [The use of Detroit, Strait, as the name of a town is an instance of the conversion of a common into a proper noun. Thus Stamboul, for Constantinople, conveys the idea simply of "the City," from a corrupt modern Greek expression. The situation of Detroit somewhat resembles that of Constantinople. The Otchipway for this locality is Wawcatunong=Turned Channel.]

Detroit, Turn of Little, is the easternmost thereof, on the north shore of Lake Superior.

Detroit, Little, on the north coast of Lake Superior, west of Isle Grange.

Detroit, Petit, in the Upper St. Lawrence. See the narrows of Escott.

Detroit, le Petit, on the Ottawa river, is below the upper main forks of the Ottawa river.

Diablo, Isles au, in the River St. Lawrence, lie between the Isle au Long Sault and the township of Osnabruk.

Don River, in the East Riding of the County of York, discharges itself into York harbour. [Surveyor Jones notes that the native designation of the Don was Wonscotiteouach=Back Burnt Grounds, *i. e.*, the Poplar Plains to the north, occasionally overrun with fire.]

Dorchester Mount, is that ridge of mountain running through the County of Lincoln, parallel to Lake Ontario, and is supposed to be a spur of the Allaghany. [At the present day, Queenston Heights and the "Mountain" generally, to Hamilton.]

Dorchester Township, in the County of Norfolk, lies west of, and adjoining to, Dereham, fronting the River Thames. [A compliment to Lord Dorchester, *i. e.* Sir Guy Carleton. There is a Dorchester in Dorsetshire and another in Oxfordshire—both, as indicated by "chester," ancient Roman fortified stations; the former named Durnovaria; the latter Civitas Dorcinia.]

Dover Township, in the County of Kent, lies on the north side of the Thames, opposite to Raleigh.

Dublin, now called the township of York: which see. [It is difficult to conceive what the genius loci of Toronto would have been, had the name *Dublin* continued to be attached to the locality.]

Dubois, Lac, lies between 98 and 100 degrees west longitude from Greenwich, and between the 48th and 50th parallels of north latitude: it lies to the westward of Lake la Pluie, and receives the waters of that lake by River la Pluie, which are carried off again by the River Winipique into the great Lake Winitapa or Winipique, and from thence into Hudson's Bay. This lake contains some islands: it has also a back communication with Lake la Pluie, to the northward, by inferior streams. [Lake of the Woods.]

Duck Cove, on Lake Ontario, in Marysburgh, on the east shore, between Isle du Chêne and Tower Point.

Duck Islands, called the Real Ducks, in Lake Ontario, lie between Wolfe Island and Point Traverse.

Duck Islands, in Lake Ontario, lie off Point Traverse, and northerly of it, not far from the Point. There are called the False Ducks.

Duck Islands, are situated between Muddy Lake and Lake Huron southerly and easterly of St. Joseph's Island.

Duck Point, on Lake Ontario, in the township of Murray, is the first point west of the portage that leads from the head of the Bay of Quinté to the lake.

Duffin's Creek runs into Lake Ontario, in the township of Pickering (east of the river of Easy Entrance), and is remarkable for the quantity of salmon which resort to it. [From the name of an early trader or settler. A. Jones says this stream was designated by the natives, Sinquatiekdequioch=Pinewood running alongside.]

Dundas County is bounded on the east by the County of Stormont, on the south by the River St. Lawrence, and on the west by the easternmost boundary line of the late township of Edwardsburgh, running north 24 degrees west, until it intersects the Ottawa or Grand river; thence descending that river until it meets the north-westernmost boundary of the County of Stormont. The County of Dundas comprehends all the islands near it in the River St. Lawrence. The boundaries of this county were established by proclamation the 16th July, 1792. It sends one representative to the provincial parliament. [From the Right Hon. Henry Dundas, Secretary of State for the Colonies in 1794.]

Dunwich Township, in the County of Suffolk, lies to the west of Southwold, having the River Thames for its north, and Lake Erie for its south boundary. [Viscount Dunwich is one of the titles of the Earl of Stradbroke, whose family name is Rous.]

Durham County is bounded on the east by the County of Northumberland; on the south by Lake Ontario, until it meets the westernmost point of Long Beach; thence by a line running north 16 degrees west, until it intersects the southern boundary of a tract of land belonging to the Mississaga Indians, and thence along the said tract, parallel to Lake Ontario, until it meets the north-westernmost boundary of the County of Northumberland. The boundaries of this county were established by proclamation the 16th July, 1792. It sends, in conjunction with the County of York, and the first riding of the County of Lincoln, one representative to the provincial parliament.

Dyer's Island, in the head of the Bay of Quinté, lies to the eastward of Mississaga Island. [Now Grape Island.]

E.

East Bay, in Adolphustown, Bay of Quinté, is where the forks of the north channel open, descending south-westerly from Hay Bay.

East Lake lies between the townships of Marysburgh and Sophiasburgh, immediately to the north-east of little Sunday Bay, on Lake Ontario.

Eastern District, The, was originally constituted and erected into a district by the name of the District of Lunenburg, in the province of Quebec, by His Excellency Lord Dorchester's proclamation of the 24th July, 1788, and was taken principally off the west end of the District of Montreal. It received its present name by an Act of the provincial legislature; it is bounded easterly by the province of Lower Canada; southerly by the River St. Lawrence; northerly by the Ottawa river; and westerly by a meridian passing through the mouth of the Gananoque river, in the township of Leeds.

Ecors, Grand, the high lands to the eastward of York. [Ecors=Cliffs in escarpments, in Old French. At the present day Scarborough Heights.]

Ecors, Petit, on the north shore of Lake Ontario, east of Salmon river, and between it and River Ganaraska. [Salmon river is probably the Highland Creek for which, according to A. Jones, the expression was, Y-at-qui-i-bi-no-nick=A Creek comes out under the Highlands.]

Edinburgh, now called the township of Pickering: which see.

Edwardsburg Township, in the County of Grenville, is the seventh township in ascending the River St. Lawrence. [A compliment to Prince Edward, Duke of Kent.]

Elbow Island, in the north-westerly part of Lake Superior, lies to the north-east of the Grand Portage, and westerly of Isle Maurepas.

Elizabeth Town, the township of, in the County of Leeds, is the ninth township in ascending the River St. Lawrence. [Compliment to the Princess Elizabeth.]

Elmsley Township, in the Eastern District, lies to the south, and in the rear of Cumberland. [From Elmsley, Chief Justice of Lower Canada in 1802.]

Epingles, les, on the south-west branch of the Ottawa River, about the main or Upper Forks, between Portage à la Rose and Portage Paresseux, but nearer to the latter; it is nearly halfway from the fork to the Lake Nipissing Portage. [Epingles=pins. Comp. The Needles, off the Isle of Wight.]

Erie, Fort, in the township of Bertie, is in about 42 degrees, 53 minutes, and 17 seconds of north latitude. It has a barrack for

troops and a blockhouse. Lake Erie narrows here into the strait which carries the waters over the great Falls of Niagara: there is a good harbour here for vessels of any size.

Ernest Town, the township of, in the Midland District, is the first township above Kingston, sheltered from Lake Ontario by Amherst Island, which lies in its front. [Compliment to Prince Ernest Augustus, Duke of Cumberland.]

Essex County is bounded on the east by the County of Suffolk; on the south by Lake Erie; on the west by the River Detroit to Maisonville's Mill; from thence by a line running parallel to the River Detroit and Lake St. Clair, at the distance of four miles, until it meets the River La Tranche or Thames, and thence up the said river to the north-west boundary of the County of Suffolk. The boundaries of this county were established by proclamation, the 16th July, 1792. It sends, in conjunction with the County of Suffolk, one representative to the provincial parliament.

Etobicoke Township, in the East Riding of the County of York, lies to the westward of the township of York, and has been selected for the settlement of the corps of Queen's Rangers, after they shall be discharged. [A. Jones gives the word as Atobicoake=Black Alder Creek.]

Eturgeon Lac: see Sturgeon Lake.

F.

Falls of Niagara. A stupendous cataract in the River Niagara, a little below where the River Welland or Chippewa joins the waters of the lakes. [Oncawgara is Mohawk for Neck. It denotes the whole of the channel from Lake Erie to Lake Ontario. The nasal *o* has been lost from the beginning of the word, as in Chippewa for Otchipway and other words. A. Jones gives the Otchipway expression for the Niagara as Y-on-noake-sippi=Whirlpool-river.]

Falls, Great, on the River Petite Nation.

Falls, Long: see the Long Sault.

Fighting Island, called by the French *Grose Isle aux Dindes*, lies about four miles below Detroit; it is valuable for pasture, but has very little wood: the Indians in the summer make it a place of encampment, and some of them plant a little corn: there is no other improvement on it. On the uppermost end of the island are vestiges of intrenchments, from behind the breastwork of which the Indians

annoyed the British shipping as they passed, shortly after the reduction of Detroit. [See Parkman's Conspiracy of Pontiac, p. 252.]

Finch Township, in the County of Stormont, lies in the rear, and to the westward of Osnabruck. [Probably from Heneage Finch, fourth Earl of Aylesford, Lord Steward of the Household, temp. Geo. III.]

Flat Islands, lie towards the west end of the Manitou Islands, and open to the Straits of Michilimackinac upon Lake Huron.

Flamborough Township, distinguished by East and West Flamborough, in the West Riding of the County of York, lies west of the Mississaga lands, and fronts Dundas street. [Flamborough Head in Yorkshire, England, forms the northerly side of Bridlington or Burlington Bay.]

Foin, Point au, in the River St. Lawrence, the first above River à la vieille Galette, in Edwardsburgh. [Foin=Hay.]

Force, Isle de la, a very small island off the south-west point of Isle Touu.

Foreland, North, (formerly called Long Point,) on Lake Erie: which see.

Foreland, South, (formerly called Point Pelé,) on the north shore of Lake Erie, west of Landguard. There is good anchorage for vessels on either side of the point, which runs out a considerable distance, but the best is on the east side, in clay bottom. Near the extremity of the point, and on the east side, is a pond, where boats in general may enter, and be secure from most winds. A long reef runs out from the point. [The French name has prevailed.]

Forêt, Isle au, now called Gage Island by proclamation, 16th July, 1792. See Gage Island.

Forêt, Isle la. See Isle la Force.

Forks of the Bay of Quinté, where the East Bay unites with the North Channel, a little to the northward of Grand Bay.

Fort Amherst. See Amherstburgh.

Fort George: the military post and garrison now building on the heights above Navy Hall, at the entrance of Niagara river, in the township of Newark, in the County of Lincoln. [In the edition of 1813 the words "now building" are omitted. This fort took the place of the French fort on the opposite side of the river, relinquished to the United States in 1796.]

Francis Island is in the north part of Lake Simcoe.

Francis, Lake St., is that part of the River St. Lawrence, which, widening above the Coteau de Lac, loses its current and becomes a long and narrow lake.

François River runs south-west from Lake Nipissing into Lake Huron; it has several portages: that nearest to Lake Nipissing is called Portage de Trois Chaudiers, in length about half a mile. [French river. François, old French for Français.]

Frederick Point is on the east side of Kingston harbour, and on the west side of Haldimand Cove, which is made by it and Point Henry. [From the name of the Duke of York.]

Fredericksburgh Township, in the County of Lenox, lies to the west of Ernest Town, in the Bay of Quinté.

French River. See River François.

Frenchman's Creek, in the County of Lincoln, discharges itself into the River Niagara, in the township of Bertie, a few miles below Fort Erie.

Frenchman's River, or French river, or River François.

Frontenac County, is bounded on the east by the County of Leeds; on the south by Lake Ontario; on the west by the township of Ernest Town, running north 24 degrees west, until it intersects the Ottawa or Grand River; and thence descending that river until it meets the north-westernmost boundary of the County of Leeds. The boundaries of this county were established by Proclamation the 16th July, 1792. It sends, in conjunction with the County of Leeds, one representative to the provincial parliament. [From Louis de Buade, Count of Frontenac, Governor-General of Canada, 1672-1682, and again 1689-1698.]

Frontenac Fort, now comprehended within the Town of Kingston, is just to be discovered from its remains, and an old fosse near the present barracks.

Frying-Pan Island, in Muddy Lake, to the northward of Point de Tour.

G.

Gage Island, lies off Kingston, in Lake Ontario, between Amherst Island and Wolfe Island. [From General Gage, successor of Amherst, as Commander-in-chief of the British Forces in North America, in 1763. Its French name was Isle au Forêt.]

Gainsborough Township, in the County of Lincoln, lies between Pelham and Caistor, and fronts the Welland. [From Gainsborough in Lincolnshire.]

Galette, on the River St. Lawrence, in Edwardsburgh.

Galette, Rivière à la vielle, runs into the River St. Lawrence above Isle Fort Levi. [*Galette*=Broad thin cake.]

Gallop, Point au, on the north shore of the River St. Lawrence, just below Hospital Island, in Edwardsburgh.

Galloos, les, or *Gallops*, on the River St. Lawrence, are the Rapids off *Pointe Galloppe* in Edwardsburgh.

Gananoqui River discharges itself into the River St. Lawrence, in the Township of Leeds. As high as the first rapid the shore is bold, and the water deep; there is an excellent harbour in the mouth of the river; the water is from 12 to 15 feet deep in the channel, and the current is very slow. This river was called the *Thames* before the division of the Province of Quebec. [*Gananoqui*=Place of residence.]

Ganaraska River, by some called *Pemetescoutiang*, runs into Lake Ontario on the north shore, eastward of the *Petit Ecors*, and west of *Pointe aux Cheveaux*. From the mouth of this river is a carrying place of about eleven miles to the *Rice Lake*, through an excellent country for making a road. [*Pametescoutiang*=High burnt plains.]

Geneter, Isle au, in the River St. Lawrence, lies a little above *Isle au Chat*. [*Geneter*=An implement used in grooming a horse.]

Geneva Lake, called *Burlington Bay* by Proclamation, 16th July, 1792.

George Lake is situated below the Falls of St. Mary, and to the northward of *Muddy Lake*: it is about 25 miles long, and has very shallow water.

Gibraltar Point is the western extremity of a sand bank which forms the harbour of York, and upon which block houses are erected for its defence. [There is a *Gibraltar Point* near *Wainfleet* in the English County of Lincoln.]

Glanford Township, in the County of Lincoln, is situated between *Ancaster*, *Barton*, *Binbrook*, and the *Six Nations of Indians*; sometimes called the *Grand River lands*. [From *Glanford* in Norfolk.]

Glasgow; now called the township of *Scarborough*.

Glenjary County is bounded on the east by the line that divides Upper from Lower Canada, on the south by the River St. Lawrence, and on the west by the Township of *Cornwall*; running north 24 degrees west, until it intersects the *Ottawa* or *Grand River*, thence descending the said river until it meets the divisional line aforesaid.

Glengary County comprehends all the islands nearest to it in the River St. Lawrence. The boundaries of this County were established by Proclamation the 16th July, 1792; it consists of two Ridings, each of which sends one representative to the Provincial Parliament. [From the name of a Highland Regiment, afterwards disbanded and principally settled here under the auspices of Bishop Alex. McDonell.]

Gloucester, on Lake Huron, (formerly called Matchedash).

Gloucester Fort, or *Pointe aux Pins*, the first point on the north shore in the narrows leading from Lake Superior towards the Falls of St. Mary. [Probably in honour of the Duke of Gloucester, brother of George III.]

Gloucester Township, in the County of Dundas, is the seventh township in ascending the Ottawa River: it lies eastward also of, and adjoining, the River Rideau.

Gorgontua, a remarkable high rock on the north shore of Lake Superior, lying at a small distance, and southerly of the point which forms Michipicoten Bay; to the southward and eastward the rock is hollow with an opening into it. [Given by Capt. Bayfield as *Gargantua*. In a late map, it is *Cargantua*.]

Gosfield Township, in the County of Essex, is situated upon Lake Erie, and lies west of Mersea. [From Gosfield Hall, a seat of the Duke of Buckingham's, near Halsted, in Essex.]

Gower Township lies on the west side of the River Rideau, and is the second township in ascending that river. [Baron Gower is one of the titles of the Marquis of Sutherland.]

Grand Bay in the Bay of Quinté, lies immediately below the main forks.

Grand Isle, now called Wolfe Island, by Proclamation, 16th July, 1792, is situated between Cataraqui and Carleton Island, where Lake Ontario falls into the St. Lawrence.

Grand Marsh, in the western district, lies in the rear of the parishes of l'Assomption and Petite Côte, on the Detroit, and communicates with Lake St. Clair opposite to Peach Island, and with the Strait opposite to Fighting Island.

Grand River (Lake Erie), called the Ouse, by Proclamation, the 16th July, 1792, rises in the Mississaga country and running through the West Riding of the County of York, divides Lincoln from Norfolk, and discharges itself into Lake Erie between Wainfleet and Rainham. [The Otchipway name was O-es-shin-ne-gun-ing=It

washes the timber down and carries away the grass and weeds. A. Jones.]

Grand, or Ottawa River, is that channel which carries the waters of Lake Tamiscaming till they make a junction with those of the St. Lawrence, a little above Montreal. This river is the northern boundary of Upper Canada, and the route which is taken by the Lower Canada traders to the north-west: there are a great many rapids on this communication.

Grange Isle, near the north shore of Lake Superior, west of the Cris Points, and in front of Grange Bay.

Grange River empties itself into a river of that name on the north shore of Lake Superior west of the Cris. This river leads to Nepigon, a place which was formerly remarkable for furnishing the best beaver and martin, and was the farthest advanced post of the French traders at the time that Great Britain conquered Canada.

Grantham Township, in the County of Lincoln, lies west of Newark, and fronting Lake Ontario. [From Grantham, in Lincolnshire.]

Grasse Bayede on the north shore of Lake Ontario, lies to the eastward of Point aux Cheveaux.

Gravel Point, on Lake Ontario, in Marysburgh, lies between St. Peter's Bay and Point Traverse.

Graves Island, in the south-east part of Lake Simcoe. [From Admiral Graves.]

Gravois, Pointe au, is the west point of the Little Detroit, on the north-coast of Lake Superior. [Gravois=Rubbish. Probably the stream by Oakville—16-mile creek—the Otchipway name of which is given by A. Jones as Ne-sau-ge-y-onk, without its interpretation. It is the same as Nassagawaya, the name borne by the Township in which the west branch of the 16-mile creek rises. Its Otchipway meaning is "Two Outlets."]

Gravois, Rivière au, in the Mississaga land, in the north shore of Lake Ontario, runs into that lake between Burlington Bay and River au Credai.

Grand Island, or Grand Isle, in the River Niagara, is situated in front of the Township of Willoughby and is of considerable size: below it is Navy Island.

Great Cape, on the north side, where Lake Superior descends into the narrows of the Fall St. Mary. [It is now better known by its French name, Gros Cap.]

Green Point, in the Bay of Quinté, is the north point in Sophiasburgh, and lies opposite to John's Island.

Grenville County is bounded on the east by the County of Dundas, on the south by the River St. Lawrence, and on the west by the Township of Elizabethtown, running north 24 degrees west, until it intersects the Ottawa or Grand River; thence it descends that river until it meets the north-westernmost boundary of the County of Dundas. The County of Grenville comprehends all the islands near to it in the River St. Lawrence. The boundaries of this county were established by Proclamation, 16th July, 1792. It sends one representative to the Provincial Parliament. [From George Grenville, Secretary of State, 1762.]

Grey's River empties itself into Lake Simcoe, on the east side.

Grimsby Township, in the County of Lincoln, lies west of Clinton, and fronts Lake Ontario. [From Grimsby, in Lincolnshire.]

Grosse Isle. This island is situated in the River Detroit, and lies a little way lower down than Grosse Isle aux Dindes, but close to the west shore; it contains several thousand acres of excellent land, and plenty of good wood, and is in a high state of improvement; a number of farmers are settled there who possess large quantities of cleared land.

Grosse Isle aux Dindes, called Fighting Island.

Grosse, Isle la (so called by the Canadians) is the same as Michilimackinac.

Gull Island lies among the Duck Islands, off Point Traverse, in Lake Ontario, and is one of the southernmost of the group.

Gwillimbury Township, in the Home district, lies on Lake Simcoe, where Yonge Street meets Holland's River. [From the distinguished Welsh family name Gwillim.]

(To be Continued.)



CANADIAN INSTITUTE.

ANNUAL REPORT OF THE COUNCIL FOR THE YEAR 1873-'74.

The Council of the Canadian Institute beg leave to submit their Report of the proceedings of the Institute for the past year, and to express their gratification at the many valuable papers and communications read to the Institute. The Council, in common with the members of the Institute, are very sensible of the drawbacks attendant upon the occupation of their premises, and hope that a successful effort will shortly be made to erect a new building for their use, as the funds of the Institute have accumulated to such an amount as in their opinion to justify such an undertaking.

It has been proposed to establish a Numismatic Section in connection with the Institute. The proposal the Council have favourably entertained, and they trust that it will go into operation at an early day, and that it may add much to the interest and usefulness of the Institute.

The following is the statement of the proceedings of the Society for the past year, from 1st December, 1873, to 30th November, 1874:—

MEMBERSHIP.

The present state of Membership:

Members at commencement of Session, Dec. 1, 1873.....	334
Members elected during the Session, 1873-'74..	12
	<u>346</u>

Deduct:

Deaths during the year, 1873-'74.....	1
Withdrawn.....	6
	<u>7</u>
Total, 30th November, 1874	339

Composed of:

Honorary Members.....	5
Life Members.....	18
Corresponding Members.....	4
Ordinary Members	312
Total	<u>339</u>

COMMUNICATIONS.

The following valuable and instructive papers and communications were read and received from time to time at the ordinary meetings held during the Session:

December 6, 1873—Prof. Wilson, LL.D., on "A new Map of the Gold Coast and Ashantee Territory."

December 13, 1873.—Prof. H. A. Nicholson, D. Sc., etc., on "Recent Researches on the Fossils of the Province of Ontario."

- December 20, 1873.*—Annual Report of the Council of the Institute. Prof. Wilson, LL D., on "Ancient Mining in America, and especially in the Province of Quimbo, Chili."
- January 10, 1874.*—The President, Rev. H. Scadding, D.D., on "Leaves they have Touched: Autographs, Canadian and American, generally."
- January 17, 1874.*—Prof. H. A. Nicholson, D. Sc., etc., and G. J. Hinde, Esq., on "The Fossils of the Upper Silurian Rocks of Ontario."
- January 24, 1874.*—W. H. Ellis, M.A., M.B., on "The Vegetation of the North Shore of Lake Superior."
- January 31, 1874.*—P. McKellar, Esq., on "Mining in the Lake Superior Region."
- February 7, 1874.*—Prof. E. J. Chapman, LL D., on "An Original Theory of the Tides; the Reason of the Saltness of the Sea; the Theory of the Hot Winds; and a New Process for the Extraction of Gold from its Ore."
- February 14, 1874.*—W. H. Ellis, M.A., M.B., on "A Collection of Botanical Specimens made by Rev. Prof. Campbell, M.A., W. Tyler, B.A., and himself." The President, Rev. H. Scadding, D.D., on "A Bronze Medal lately presented to the Institute by the University of Norway."
- February 21, 1874.*—P. McKellar, Esq., on "The Gold Mines of Lake Superior."
- February 28, 1874.*—Rev. J. McCaul, LL D., on "Greek Autonomous Coins, Illustrated by Originals"
- March 7, 1874.*—J. M. Buchan, M.A., on "The Flora of the Neighbourhood of Hamilton." The President, Rev. H. Scadding, D.D., on "A Hebrew Manuscript of the Book of Esther."
- March 13, 1874.*—G. Wright, M.D., on "The Use of Plaster of Paris Bandages in Cases of Fracture."
- March 14, 1874.*—J. Loudon, M.A., on "Willis's Mechanical Apparatus" W. Oldright, M.A., M.D., on "Hygiene, with special reference to the Ventilation of Buildings."
- March 21, 1874.*—The President, Rev. H. Scadding, D.D., on "Leaves they have Touched: Autographs, British and European generally."
- March 28, 1874.*—Prof. D. Wilson, LL D., on "Reminiscences of one of the Border Minstrels."
- April 4, 1874.*—Prof. G. Buckland, on "The Exhaustion of Soils and its Remedies."

FINANCIAL STATEMENT

S SPREULL, TREASURER, IN ACCOUNT WITH THE CANADIAN INSTITUTE,
DECEMBER 1, 1873, TO NOVEMBER 30, 1874

1873.		<i>Debtor.</i>		
Dec.	1.	To Balance		£562 11
1874.				
March	21.	" Cash Subscriptions		16 00
April	24.	" Government Allowance		750 00
June	2	" Dividend on Stock, Building Society, half year	£120 00	
Nov.	30.	" " " " " "	120 00	
			<hr/>	240 00
June	30.	" Interest, Deposit in Royal Canadian Bank	£38 78	
		" " " Building Society	21 71	
			<hr/>	60 49

To Cash Received per Librarian—

Subscriptions	\$204 00	
Rent.....	120 00	
Journals Sold.....	46 50	
		370 50
		<u>\$1,999 10</u>

1873.

Creditor.

Dec. 8.	By Paid Western Insurance on \$5,000		\$100 00
1874.			
Jan. 26.	" Copp, Clark & Co., to Account	\$150 00	
July 25.	" " " Balance	49 75	
			199 75
Aug. 26.	" " "		281 84
Sept. 18.	" Royal Insurance on \$1,800		22 50
May 30.	" Instalment on Six Shares, Provincial Building Society		100 00

Per Librarian—

Nov. 30.	By Paid Librarian's Salary	\$236 00	
	" Wood and Coal.....	68 60	
	" Advertising.....	31 00	
	" Stationery, Stamps, P. O. Box.....	24 75	
	" Periodicals	15 00	
	" Express Charges	10 40	
	" Coal Oil, etc.....	4 65	
	" Waggon Hire	1 10	
			491 50
	By Balance.....		803 51
			<u>\$1,999 10</u>

1874.

Dec. 1.	Balance Deposited in Provincial Building Society.....	\$803 51	
Building Fund—			
	30 Shares in Provincial Permanent Building Society ..	3,330 00	
	6 ' Accumulating Stock	390 00	
			<u>\$4,523 51</u>

Toronto, 1st December, 1874.

SAMUEL SPREULL, *Treasurer.*

The undersigned Auditors have compared the vouchers for the above items of these accounts with the Cash Book, and find them to agree. The balance in the hands of the Treasurer is \$803 51.

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

TORONTO, December 19, 1874.

APPENDIX.

BOOKS AND PAMPHLETS RECEIVED IN EXCHANGE FOR THE
CANADIAN JOURNAL.

1. Transactions Royal Society of Edinburgh, vol. xxvii, pt. 1, 1872-73.
2. Journal Anthropological Institute of Great Britain and Ireland, vol. iii, No. 2.
3. Journal Linnæan Society; Botany, Nos. 73, 74, 75, 76; Zoology, No. 57.
4. List of Linnæan Society, 1873, and additions to Library, 1872-73.
5. Proceedings Royal Colonial Institute, 1873-74.
6. Report Belfast Naturalists' Field Club, 1872-73.
7. Weekly Journal Society of Arts, (London) July, 1873—September, 1874.
(Duplicate).
8. European Mail, January, 1874, and September, 1874.
9. British Trade Journal, January, April and July, 1874.
10. Proceedings Royal Society of Edinburgh, 1872-73.
11. Memoirs Literary and Philosophical Society of Manchester, vol. iv, 1871.
12. Proceedings Literary and Philosophical Society of Manchester, vols 8, 9,
10, 11, 12.
13. Leeds Philosophical and Literary Society, Annual Reports, 1872-73; 1873-74.
14. Journal Iron and Steel Institute, London, Nos. 1, 2, 3.
15. Memoirs of Geological Survey of India, vol. x, pt. 1.
16. Records " " vol. vi, pts. 2, 3, 4.
17. Palæontologia Indica, vol. iv, pts. 3, 4, (Cretaceous Fauna Southern India):
vol. i, pt. 1, (Jurassic Fauna of Kutch).
18. Annales des Mines, 7^e Série, Tome iv, pt. 4; Tome v, pts. 1, 2, 3.
19. Bulletin de la Société Géologique, Paris, Tomes xxvi, xxvii, xxviii.
20. Mémoires de la Société Nationale des Sciences Naturelles de Cherbourg,
Tome xvii, 1873.
21. Catalogue de la Société Nationale des Sciences Naturelles de Cherbourg, 1873;
22. Bulletin de L'Athénée Oriental, Paris, No. 13.
23. Cosmos, di Guido Cora, Torino, vol. i, Nos. 5, 6; vol. ii, Nos. 1, 2, 3.
24. Nederlandsch Meteorologisch Saarbock, 1868, 1872, 1873, Utrecht.
25. Suggestions on a Uniform System of Meteorological Observations, Utrecht.
26. Beretninger om Amternes Œconomiske Tilstand, 1866-70, Christiania.
27. De Offentlige Jernbaner, 1871, Christiania.
28. Tabeller vedkommende Norges Handel og Skibsfart, 1870, Christiania.
29. " " Folkemængdens Bevægelse, 1869, "
30. " " Skiftevæsenet i Norge, 1870, "
31. Beretninger om Norges Fiskerier, 1870, Christiania.
32. " " Skolevæsenets Tilstand, 1870, Christiania.
33. Oversigt over Indtægter og Udgifter, 1870, 1871-72, 1872-73, Christiania.
34. Kommunale Forholde i Norges Land og Bykommener, 1867 og 1868, "
35. Den Norske Statstelegrafs Statistik, 1870, Christiania.
36. " Brevposts " 1868, "
37. Fattigstatistik for 1869, Christiania.
38. Carcinologiske Bidrag til Norges Fauna, G. O. Sars, Christiania

39. Die Pflanzenwelt Norwegens, with Map, Dr. F. C. Schübeler, (Duplicate) Christiania.
40. Forekomster af Kise i Visse Skifere i Norge, A. Helland, Christiania.
41. Anden Beretning om Ladegaardsøens Hovedgaard, Første Heft, "
42. Remarkable Forms of Animal Life from Great Depths off Norwegian Coast, Christiania.
43. Generalberetning fra Gaustad Sindssygeasyl for 1870, Christiania.
44. " " " 1871, "
45. On the Rise of Land in Scandinavia, S. A. Sexe, "
46. Lov om Postvæsenet, Christiania.
47. Budget for Marine-Afdelingen, 1872-73, Christiania.
48. Obituary Notice of Christophorus Hansteen, "
49. Cantate ved Universitets Mindefest for Hans Majestæt Kong Carl, Christiania
50. Tale " " " " "
51. Program " " " " "
52. Om Throndhjems Domkirke, af N. Nicolaysen, Christiania.
53. Die Fisch-Cultur Norwegens, von M. G. Hetting, "
54. Om Kurvmager-Arbeide og Straaffetning, "
55. Beretning om Bodsfængslets Virksomhed, 1870, 1871, Christiania.
56. Foreningen til Norske Fortidsmindesmerkens Bevaring, 1870, 1871, Christiania.
57. Nordens ældete Historie, af P. A. Munch, Christiania.
58. De Romanske Sprog og Folk, Joh. Storm, "
59. En Sommer i Fjorden, Russisk Lapland og Nordkarelen, J. A. Frus, Christiania.
60. Forhandlinger i Videnskabs-Selskabet i Christiania, 1871, Christiania.
61. Nyt Magazin for Naturvidenskaberne, 1872, Christiania.
62. Beretning om den almindelige Udstilling for Tromsø Stift, Christiania.
63. Bidrag til Kundskaben om Vegetationen i den lidt rydte af Norge, Christiania.
64. Twenty-first, Twenty-second, and Twenty-third Annual Reports of the New York State Cabinet of Natural History, 1869, (Duplicate).
65. Twenty-fourth, Twenty-fifth, and Twenty-sixth Reports of the New York State Museum of Natural History, 1870, 1871, 1872.
66. Fifty-sixth Annual Report of the Trustees of the New York State Library, 1873.
67. American Journal of Science and Arts, December, 1873—November, 1874.
68. Journal of the Franklin Institute, 3 Nos.
69. Memoirs of the Boston Society of Natural History, vol. ii, pt. 2, No. 4; pt. 3, Nos. 1, 2, 3.
70. Proceedings of the Boston Society of Natural History, vol. xv, pts. 3, 4 vol. xvi, pts. 1, 2, 3, 4.
71. Sixth Annual Report of the Trustees of the Peabody Academy of Science, 1873.
72. Seventh Annual Report of the Trustees of the Peabody Institute.
73. Proceedings of the Academy of Natural Sciences, Philadelphia, 1873, October—December; 1874, January—September.

74. *Annals of the Lyceum of Natural History*, New York, 1873, January—June.
75. *Historical Collections of the Essex Institute*, vol. xii, pt. 1.
76. *Bulletin* “ “ “ “ vol. v, 1-12.
77. *Proceedings of the American Antiquarian Society*, No. 61, 1873; No. 62, 1874.
78. *Transactions of the Academy of Science*, St. Louis, vol. iii, No. 1.
79. *Bulletin of the Minnesota Academy of Natural Sciences*, 1874.
80. *Report of a Geological Reconnaissance of the State of Louisiana*.
81. *Report of Progress on the Explorations and Surveys of the Canadian Pacific Railway*.
82. *Maps and Charts on the Explorations and Surveys of the Canadian Pacific Railway*.
83. *Wicksteed's Table of Statutes of the Dominion of Canada*, 1874.
84. *Report of Progress of the Geological Survey of Canada*, 1872-73.
85. *Dawson's Report on the Tertiary Lignite Formation on the Forty-ninth Parallel*.
86. *The Canadian Naturalist*, vol. vii, Nos. 4, 5, 6, Montreal.
87. *Transactions Literary and Historical Society of Quebec*, 1872-73.
88. “ “ *Nova Scotian Institute of Natural Science*, Halifax, 1872-73.
89. *The Canadian Entomologist*, vol. vi, Nos. 1-10.
90. *Report of the Entomological Society of the Province of Ontario*, 1873.
91. *The Pharmaceutical Journal*, 1874, January—December.
92. *The Journal of Education*, 1874, January—November.
93. *Wilson's Pamphlet on the Dominion of Canada and the Canadian Pacific Railway*.

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

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

MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETICAL OBSERVATORY, TORONTO, ONTARIO—AUGUST, 1874.

Latitude—43° 39' 4" North. Longitude—81° 17m. 33s. West. Elevation above Lake Ontario, 108 feet.

METEOROLOGICAL REGISTER.

CCXVII

Day	Barom. at temp. of 32°.			Temp. of the Air.				Excess of Mean above average		Tension of Vapour.			Humidity of Air.			Direction of Wind.			Resultant.	Velocity of Wind.				Rain in inches.	Snow in inches.	
	0 A.M.	2 P.M.	10 P.M.	Mean.	0 A.M.	2 P.M.	10 P.M.	MEAN.	0 A.M.	2 P.M.	10 P.M.	0 A.M.	2 P.M.	10 P.M.	0 A.M.	2 P.M.	10 P.M.	0 A.M.		2 P.M.	10 P.M.	MEAN.				
1	29.244	29.256	29.345	29.2870	78.0	77.3	65.2	0.0	30	409	413	432	82	44	71	64	W	N	N	N	0	9.0	9.6	11.0	8.95	10.11
2	705	680	750	7195	64.2	67.6	67.8	60.30	7.62	270	246	298	275	66	30	64	N	N	N	N	N	10.5	22.0	3.6	13.13	13.19
3	810	818	837	8268	60.4	70.1	59.0	61.73	6.13	305	384	344	356	67	67	60	N	N	N	N	N	10.5	22.0	3.6	13.13	13.19
4	888	778	781	7812	60.8	73.3	59.6	65.63	2.16	300	320	401	361	70	40	60	N	N	N	N	N	10.5	22.0	3.6	13.13	13.19
5	722	685	697	6403	68.6	71.2	65.8	65.50	2.18	347	368	462	402	69	48	71	N	N	N	N	N	10.5	22.0	3.6	13.13	13.19
6	761	475	501	4882	62.6	77.3	65.0	69.00	1.43	433	568	619	528	77	61	54	N	N	N	N	N	10.5	22.0	3.6	13.13	13.19
7	840	418	457	4668	62.2	76.5	69.0	69.53	2.12	464	562	386	467	83	64	55	N	N	N	N	N	10.5	22.0	3.6	13.13	13.19
8	457	451	510	4768	64.0	74.4	65.4	68.77	1.60	519	636	561	569	81	76	92	N	N	N	N	N	10.5	22.0	3.6	13.13	13.19
9	663	671	636	6492	63.2	78.0	70.8	70.68	3.92	657	617	649	634	95	64	85	N	N	N	N	N	10.5	22.0	3.6	13.13	13.19
10	464	432	619	6072	72.3	91.4	67.9	77.50	10.81	726	738	467	616	91	60	68	N	N	N	N	N	10.5	22.0	3.6	13.13	13.19
11	697	711	743	7187	63.2	72.6	63.3	66.72	0.03	438	457	563	412	71	67	61	N	N	N	N	N	10.5	22.0	3.6	13.13	13.19
12	709	721	723	7290	67.5	73.3	63.2	65.78	1.20	309	448	320	368	64	54	54	N	N	N	N	N	10.5	22.0	3.6	13.13	13.19
13	761	721	730	7270	65.7	77.1	65.8	67.17	1.73	369	472	285	377	83	60	46	N	N	N	N	N	10.5	22.0	3.6	13.13	13.19
14	705	705	730	7270	65.7	77.1	65.8	67.17	1.73	369	472	285	377	83	60	46	N	N	N	N	N	10.5	22.0	3.6	13.13	13.19
15	607	607	692	6467	68.2	83.8	71.6	72.80	6.73	468	466	641	491	60	40	70	N	N	N	N	N	10.5	22.0	3.6	13.13	13.19
16	727	745	811	7685	64.6	77.3	60.0	67.48	1.52	383	365	591	330	63	37	60	N	N	N	N	N	10.5	22.0	3.6	13.13	13.19
17	870	766	866	7862	63.9	74.8	67.0	65.82	0.12	308	485	607	428	74	53	74	N	N	N	N	N	10.5	22.0	3.6	13.13	13.19
18	688	680	632	6653	69.0	82.4	70.1	74.43	8.03	578	637	604	382	81	59	69	N	N	N	N	N	10.5	22.0	3.6	13.13	13.19
19	641	650	652	6772	65.4	66.1	61.1	64.63	0.65	639	630	470	522	80	83	89	N	N	N	N	N	10.5	22.0	3.6	13.13	13.19
20	610	705	709	6787	69.3	68.7	68.2	69.20	3.02	465	316	360	373	62	46	69	N	N	N	N	N	10.5	22.0	3.6	13.13	13.19
21	680	691	724	6910	64.2	70.1	68.2	61.43	3.17	535	334	269	312	70	46	66	N	N	N	N	N	10.5	22.0	3.6	13.13	13.19
22	786	708	814	7995	65.3	73.0	62.2	63.65	0.64	374	321	426	370	87	39	77	N	N	N	N	N	10.5	22.0	3.6	13.13	13.19
23	840	814	703	8182	66.4	73.0	61.8	60.04	0.06	408	321	451	403	89	40	82	N	N	N	N	N	10.5	22.0	3.6	13.13	13.19
24	829	785	772	7915	67.8	74.8	62.0	66.03	2.22	420	376	497	449	89	43	87	N	N	N	N	N	10.5	22.0	3.6	13.13	13.19
25	758	713	713	7633	66.7	73.3	64.3	66.10	2.63	414	382	411	405	60	46	68	N	N	N	N	N	10.5	22.0	3.6	13.13	13.19
26	698	698	536	6967	68.6	76.2	63.2	67.4	4.10	391	312	475	467	70	36	62	N	N	N	N	N	10.5	22.0	3.6	13.13	13.19
27	602	602	787	7062	63.6	70.5	63.2	69.50	6.70	420	330	415	385	71	34	71	N	N	N	N	N	10.5	22.0	3.6	13.13	13.19
28	694	646	623	6823	69.2	63.7	63.7	67.68	1.12	429	438	427	433	80	50	71	N	N	N	N	N	10.5	22.0	3.6	13.13	13.19
29	694	646	623	6823	69.2	63.7	63.7	67.68	1.12	429	438	427	433	80	50	71	N	N	N	N	N	10.5	22.0	3.6	13.13	13.19
30	694	646	623	6823	69.2	63.7	63.7	67.68	1.12	429	438	427	433	80	50	71	N	N	N	N	N	10.5	22.0	3.6	13.13	13.19
31	694	646	623	6823	69.2	63.7	63.7	67.68	1.12	429	438	427	433	80	50	71	N	N	N	N	N	10.5	22.0	3.6	13.13	13.19
32	694	646	623	6823	69.2	63.7	63.7	67.68	1.12	429	438	427	433	80	50	71	N	N	N	N	N	10.5	22.0	3.6	13.13	13.19
33	694	646	623	6823	69.2	63.7	63.7	67.68	1.12	429	438	427	433	80	50	71	N	N	N	N	N	10.5	22.0	3.6	13.13	13.19

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR AUGUST, 1874. COMPARATIVE TABLE FOR AUGUST.

YEAR.	TEMPERATURE.				RAIK.		SNOW.		WIND.		
	Mean.	Excess above average.	Maxi- mum.	Mini- mum.	No. of days.	Inches.	No. of days.	Inches.	Direction.	Mean Velocity.	
1846	68.4	+ 2.2	86.4	49.6	0	1.770	0	1.770	0	0.17 lbs	
1847	65.1	+ 1.1	82.3	44.6	10	2.140	10	2.140	...	0.19	
1848	66.2	+ 3.0	87.0	48.7	8	0.856	8	0.856	S 21 E	0.98	
1849	69.3	+ 0.1	79.0	49.0	10	4.070	10	4.070	N 1 E	0.60	
1850	66.8	+ 0.6	85.0	41.0	13	1.355	13	1.355	N 1 E	0.38	
1851	63.0	+ 2.6	79.8	32.0	10	1.360	10	1.360	N 63 W	0.46	
1852	65.9	+ 0.3	81.2	45.8	9	2.095	9	2.095	N 70 E	0.56	
1853	68.5	+ 2.4	94.9	42.5	11	2.575	11	2.575	S 26 E	0.30	
1854	68.0	+ 1.8	89.2	45.6	6	0.465	6	0.465	N 64 W	1.76	
1855	64.1	+ 2.1	83.5	40.0	7	1.455	7	1.455	N 63 W	1.04	
1856	63.6	+ 2.6	82.7	41.6	12	1.680	12	1.680	N 63 W	2.86	
1857	65.3	+ 0.9	85.2	42.2	13	6.265	13	6.265	N 77 W	1.51	
1858	67.5	+ 1.4	84.0	44.0	11	3.850	11	3.850	N 69 W	1.57	
1859	64.6	+ 0.4	82.2	45.8	36.4	11	3.960	11	3.960	N 36 W	1.62
1860	64.5	+ 0.7	84.2	46.8	14	3.466	14	3.466	N 70 W	1.85	
1861	64.5	+ 0.7	84.2	47.0	15	2.953	15	2.953	N 8 E	0.46	
1862	67.6	+ 1.4	89.5	42.8	16	3.483	16	3.483	N 78 W	1.67	
1863	66.6	+ 0.4	88.0	42.4	12	2.208	12	2.208	S 61 W	1.80	
1864	68.6	+ 2.4	94.9	47.0	16	0.060	16	0.060	N 70 W	1.38	
1865	66.2	+ 1.0	87.8	44.4	8	1.990	8	1.990	N 60 W	1.55	
1866	66.8	+ 6.4	77.0	32.4	14	4.457	14	4.457	N 69 W	2.58	
1867	68.1	+ 1.9	95.2	42.2	10	2.440	10	2.440	N 70 W	1.25	
1868	67.2	+ 1.0	84.4	46.8	13	1.662	13	1.662	S 68 W	1.01	
1869	63.6	+ 2.6	89.0	43.5	47.6	11	4.273	11	4.273	N 32 W	1.98
1870	67.1	+ 0.9	84.0	40.0	14	3.422	14	3.422	N 75 W	1.80	
1871	67.4	+ 1.2	89.6	46.0	8	2.806	8	2.806	N 62 W	1.09	
1872	69.6	+ 3.3	91.8	51.0	19	2.465	19	2.465	N 61 W	1.43	
1873	66.6	+ 0.4	85.0	46.4	12	1.913	12	1.913	N 84 E	1.36	
1874	67.1	+ 0.9	85.0	49.0	4	0.350	4	0.350	N 23 E	0.70	
Rec'ds to 1873	66.20	...	80.54	44.53	11.06	2.969	...	2.969	N 64 W	1.02	
Excess for 74	+ 0.88	...	+ 8.46	+ 3.19	7.00	2.560	...	2.560	...	...

NOTE.—The monthly means do not include Sunday observations. The daily means, excepting those of 7 a.m., 10 p.m., and midnight, are derived from six observations daily, namely, at 5 a.m., 8 a.m., 2 p.m., 5 p.m., 10 p.m., and midnight. The means and resultants of the wind are from hourly observations.

Highest Barometer 29.892 at 8 a.m. on 10th. } Monthly range
 Lowest Barometer 29.244 at 6 a.m. on 1st. } 0.648.
 { Maximum temperature 86.90 on 12th. } Monthly range
 { Minimum temperature 46.00 on 3rd. } 40.90.
 { Mean maximum temperature 77.40. } Mean daily range
 { Mean minimum temperature 46.907. } 21.43.
 { Greatest daily range 39.93 from 2 p.m. to midn. of 12th.
 { Least daily range 13.80 from a.m. to p.m. on 21st.
 Warmest day 12th; mean temperature 77.70 } Difference = 16.57
 Coldest day 24th; mean temperature 61.43 }
 Maximum Solar 143.50 on 12th. } Monthly range
 Radiation { Terrestrial 349.8 on 3rd. }

Aurora observed on 2 nights, viz., 12th and 14th.
 Possible to see Aurora on 24 nights; impossible on 7 nights.
 Itaining on 4 days; depth 0.350 inches; duration of fall 7.2 hours.
 Mean of cloudiness, 0.30.
 WIND.
 Prevailing direction N. 25° E.; resultant velocity 0.70 miles.
 Mean velocity 0.19 miles per hour.
 Maximum velocity 27.0 miles, from 3.30 to 4.30 p.m. of 12th.
 Most windy day 2nd; mean velocity 13.19 miles per hour.
 Least windy day 7th; mean velocity 2.46 miles per hour.
 Most windy hour 2 p.m.; mean velocity 10.69 miles per hour.
 Least windy hour 7 p.m.; mean velocity 4.02 miles per hour.

Lightning on 6th, 7th, and 10th.
 Thunder on 7th, 10th and 21st.
 Dew on 6 mornings.
 Fog on 11th and 17th.
 Solar halo on 6th; Lunar on 20th.
 Swallows left neighbourhood about 25th.
 It will be seen from the comparative table that only about one eighth part of the usual rainfall fell during August, 1874. Most crops and grass suffering severely from the drought.

MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETICAL OBSERVATORY, TORONTO, ONTARIO, SEPTEMBER, 1874.
 Latitude—43° 30' 4" North. Longitude—6h. 17m. 33s. West. Elevation above Lake Ontario, 108 feet.

Day	Barom. at temp of 32°.			Temp. of the Air.			Excess of Mean above Average.			Tension of Vapor.			Humidity of Air.			Direction of Wind.			Velocity of the Wind.			Rain in Inches.	Snow in Inches.
	U.A.M.	10 P.M.	Mean	U.A.M.	10 P.M.	MEAN	U.	W.	P.M.	U.	W.	P.M.	U.A.M.	P.M.	M.N.	0 A.M.	2 P.M.	10 P.M.	0 A.M.	2 P.M.	10 P.M.		
1	29.863	29.847	29.799	57.1	55.9	56.5	0.26	2.70	2.06	244	316	318	63	27	63	N	W	Cal.	3.0	10.5	0.0	1.10	3.58
2	29.710	29.659	29.582	58.2	57.3	57.8	0.37	7.32	3.59	437	542	441	74	41	78	N	W	S	1.0	13.4	2.0	4.49	6.13
3	29.542	29.503	29.452	59.6	58.6	59.1	0.88	3.10	5.45	425	393	311	85	84	77	N	W	S	2.2	8.0	4.1	4.60	6.30
4	29.580	29.588	29.607	60.2	60.2	60.2	0.00	0.00	2.64	323	353	329	82	60	60	N	E	N	6.8	9.0	4.1	5.12	6.67
5	29.743	29.680	29.673	61.6	60.6	61.1	0.40	4.02	4.45	585	593	534	94	70	91	N	E	S	2.2	4.5	9.2	2.71	6.45
6	29.691	29.620	29.618	61.3	62.0	61.7	0.70	3.52	3.17	375	472	410	85	46	83	N	W	N	7.2	11.7	4.4	7.96	8.14
7	29.602	29.632	29.680	60.7	61.4	61.5	0.73	5.07	4.59	414	433	453	86	61	75	N	W	K	8.72	4.8	3.8	1.95	3.93
8	29.735	29.725	29.705	60.8	60.8	60.8	0.00	9.15	4.22	573	530	504	55	58	83	N	W	Cal.	8.73	2.0	7.2	2.37	3.48
9	29.701	29.640	29.618	61.4	60.4	60.9	1.00	14.71	4.72	539	530	573	87	46	88	N	W	S	8.23	1.2	8.0	2.74	2.82
10	29.623	29.586	29.582	61.9	61.9	61.9	0.00	16.46	5.66	586	534	518	87	40	60	N	W	S	8.81	2.0	6.6	2.21	4.66
11	29.613	29.583	29.600	61.7	62.3	62.0	0.63	8.83	4.98	531	512	500	81	57	70	N	E	E	8.72	5.0	7.0	3.8	4.16
12	29.757	29.671	29.601	61.8	61.8	61.8	0.00	16.52	4.88	692	563	573	87	62	66	N	W	S	8.13	0.0	12.0	4.4	6.73
13	29.580	29.604	29.622	62.0	62.0	62.0	0.00	7.00	6.26	546	422	522	83	89	80	N	W	N	8.7	13.6	12.6	3.72	10.59
14	29.789	29.817	29.829	61.6	61.3	61.5	0.03	1.82	3.65	390	302	376	85	66	77	N	W	N	8.28	9.0	11.0	7.45	8.48
15	29.703	29.712	29.703	62.7	64.7	63.7	1.00	6.31	5.92	498	450	450	75	90	81	N	W	N	8.60	3.6	6.0	6.17	5.68
16	29.707	29.700	29.722	62.5	61.3	61.9	1.20	6.32	5.26	577	542	520	93	70	90	N	W	S	8.42	0.1	10.6	19.0	7.80
17	29.671	29.493	29.427	61.3	61.0	61.2	0.30	12.88	5.82	622	610	606	90	70	95	N	W	S	8.27	4.0	15.2	4.0	8.16
18	29.840	29.812	29.812	61.8	61.8	61.8	0.00	3.00	3.71	335	273	286	91	60	80	N	W	N	8.50	3.6	1.5	8.0	3.75
19	29.753	29.752	29.753	61.4	61.4	61.4	0.00	2.47	3.67	322	321	321	89	67	78	N	W	N	8.38	1.5	13.6	4.3	4.28
20	29.800	29.777	29.777	61.7	61.7	61.7	0.00	3.63	3.14	373	436	388	94	66	94	N	W	Cal.	8.41	0.6	8.6	0.0	2.13
21	29.788	29.782	29.780	61.3	61.3	61.3	0.00	8.67	3.17	622	424	424	84	66	76	N	W	S	8.18	2.4	6.2	1.8	1.35
22	29.700	29.700	29.700	62.4	62.4	62.4	0.00	11.47	3.68	515	402	415	91	68	72	N	W	S	8.38	2.9	9.3	5.2	2.88
23	29.503	29.503	29.503	61.5	61.5	61.5	0.00	13.38	4.13	458	610	683	80	60	72	N	W	S	8.57	4.8	8.0	11.4	3.02
24	29.401	29.426	29.426	61.4	61.4	61.4	0.00	9.95	4.83	450	376	424	95	83	79	N	W	N	8.25	5.2	4.2	1.0	3.02
25	29.412	29.346	29.346	61.6	61.6	61.6	0.00	3.43	3.12	325	278	302	82	61	81	N	W	N	8.57	4.0	3.0	13.2	5.17
26	29.368	29.368	29.368	61.3	61.3	61.3	0.00	5.75	2.47	262	206	208	70	63	74	N	W	S	8.20	11.0	7.6	3.5	7.92
27	29.606	29.606	29.606	61.7	61.7	61.7	0.00	6.08	4.05	410	439	436	85	62	79	N	W	S	8.30	22.5	19.1	6.5	17.19
28	29.606	29.606	29.606	61.7	61.7	61.7	0.00	6.08	4.05	410	439	436	85	62	79	N	W	S	8.30	22.5	19.1	6.5	17.19
29	29.606	29.606	29.606	61.7	61.7	61.7	0.00	6.08	4.05	410	439	436	85	62	79	N	W	S	8.30	22.5	19.1	6.5	17.19
30	29.606	29.606	29.606	61.7	61.7	61.7	0.00	6.08	4.05	410	439	436	85	62	79	N	W	S	8.30	22.5	19.1	6.5	17.19

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR SEPTEMBER, 1874.

Notes.—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..... 29.921 at 8 a.m. on 4th } Monthly range
 Lowest Barometer..... 29.274 at midnight on 29th } 0.647.
 { Maximum temperature..... 88° on 10th } Monthly range
 { Minimum temperature..... 39° on 30th } 49°
 { Mean maximum temperature..... 79°22' } Mean daily range
 { Mean minimum temperature..... 51°53' } 18° 59'
 { Greatest daily range..... 28° from a.m. to p.m. of 10th.
 { Least daily range..... 7° from noon to midnight of 28th.
 Warmest day..... 11th; mean temperature..... 75°55' } Difference=30°20'.
 Coldest day..... 30th; mean temperature..... 45°53' }
 Maximum { Solar..... 135°55' on 10th } Monthly range
 Radiation { Terrestrial..... 81°0' on 21st & 22nd } 104°5'.
 Aurora observed on 2 nights, viz, 6th and 12th.
 Possible to see Aurora on 25 nights; impossible on 5 nights.
 Raining on 11 days; depth, 1.554 inches; duration of fall, 32.4 hours.
 Mean c° cloudiness, 0.49.

WIND.
 Resultant direction, S. 14° E.; resultant velocity, 0.09 miles.
 Mean velocity, 6.30 miles per hour.
 Maximum velocity, 26.0 miles, from 8 to 9 a.m. of 30th.
 Most windy day, 30th; mean velocity, 17.70 miles per hour.
 Least windy day, 24th; mean velocity, 2.23 miles per hour.
 Most windy hour, 11 a.m.; mean velocity, 0.23 miles per hour.
 Least windy hour, 2 a.m.; mean velocity, 4.15 miles per hour.

Dew 6 times during the month.
 Frost on the night of 30th.
 Lunar haloes on 25th, '6th, 28th.

COMPARATIVE TABLE FOR SEPTEMBER.

YEAR.	TEMPERATURE.			RAIN.		SNOW.		WIND.	
	Mean	Excess above Average	Range.	No. of days	Inches	No. of days	Inches	Resultant direction.	Mean Velocity.
1846	63.6	+ 8.6	47.0	11	4.595	...	...	0	0.33 lbs.
1847	55.6	- 2.4	37.3	15	6.665	...	...	...	0.33
1848	54.2	- 3.8	80.1	11	3.115	...	...	N 75 W 2.38	5.81 mls.
1849	58.2	+ 0.2	80.1	9	1.480	...	...	N 75 W 0.69	4.23
1850	60.5	+ 1.5	78.0	11	1.733	...	...	S 65 W 1.02	4.78
1851	60.0	+ 2.0	86.3	9	2.665	...	...	N 14 E 1.03	5.45
1852	67.5	+ 0.6	81.8	10	3.625	...	...	N 77 W 0.53	4.60
1853	58.8	+ 0.8	85.5	12	5.140	...	...	North 1.08	4.33
1854	61.0	+ 3.0	93.5	14	5.375	...	...	N 22 W 1.35	4.04
1855	59.6	+ 1.5	82.6	12	5.585	...	...	N 20 E 1.20	7.61
1856	57.1	- 0.9	78.4	13	4.105	...	...	S 79 W 1.98	6.53
1867	68.6	+ 0.6	82.0	11	2.640	...	...	N 68 W 1.01	6.55
1868	59.1	+ 1.1	81.4	8	0.735	...	...	S 74 W 1.53	5.69
1869	55.2	- 2.8	75.4	15	3.625	...	...	N 44 W 1.60	6.36
1870	56.3	- 2.7	75.8	14	1.965	...	...	N 71 W 2.63	5.79
1861	59.1	+ 1.1	78.8	17	3.607	...	...	N 71 W 1.39	4.81
1862	59.0	+ 1.0	79.4	9	2.344	...	...	N 59 W 1.07	5.11
1863	65.9	- 2.1	80.0	8	1.235	...	...	N 16 W 1.92	6.40
1864	63.1	- 1.6	73.0	11	2.508	...	...	N 38 W 1.80	7.06
1865	64.5	+ 0.5	90.5	12	4.560	...	...	S 56 E 0.47	4.12
1866	55.2	- 2.8	80.0	15	5.457	...	...	N 33 W 1.45	4.63
1867	57.9	- 0.1	87.0	9	1.226	...	...	S 37 W 1.48	5.43
1868	56.6	- 1.4	75.5	16	4.239	...	...	N 74 W 0.88	4.68
1869	60.7	+ 2.7	81.0	8	4.027	...	...	N 40 W 1.16	4.89
1870	61.8	+ 3.8	78.0	11	6.794	...	...	N 29 W 2.26	5.04
1871	64.8	+ 3.2	81.8	8	1.200	...	...	N 74 W 1.75	5.50
1872	59.1	+ 1.1	84.4	16	2.320	...	...	N 79 W 1.47	5.24
1873	57.3	+ 0.7	79.0	14	3.020	...	...	S 81 W 2.92	7.39
1874	63.3	+ 6.3	88.5	11	1.554	...	...	S 14 E 0.09	6.30
Results to 1873	65.05	...	80.35	11.29	3.659	...	...	N 55 W 1.13	5.50
Excess for 1874	+ 5.28	...	+ 7.61	- 0.29	2.105	...	...	...	+ 0.80

METEOROLOGICAL REGISTER.

MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETICAL OBSERVATORY, TORONTO, ONTARIO,—OCTOBER, 1874.
 Latitude—43° 39' 4" North. Longitude—8h. 17m. 33s. West. Elevation above Lake Ontario, 108 feet.

Day	Barom. at temp. of 32°.			Temp. of the Air.				Excess of Mean above 47° F.			Tension of Vapour.			Humidity of Air.			Direction of Wind.			Refractant.	Velocity of Wind.					Rain in inches.	Snow in inches.
	6 A.M.	2 P.M.	10 P.M.	Mean.	6 A.M.		2 P.M.		10 P.M.		6 A.M.	2 P.M.	10 P.M.	6 A.M.	2 P.M.	10 P.M.	6 A.M.	2 P.M.	10 P.M.		6 A.M.	P.M.	10 P.M.	Mean.			
					6 A.M.	2 P.M.	10 P.M.	6 A.M.	2 P.M.	10 P.M.																	
1	29.476	29.421	29.167	29.352	41.6	52.8	55.0	50.5	0.23	216	267	414	300	83	68	95	70	W	8 W	8 W	8 W	6.4	5.2	14.2	8.19	0.93	486
2	29.137	29.094	29.008	29.078	50.6	52.8	53.9	51.9	1.80	265	240	245	245	82	68	82	71	W	N W	N W	N W	12.4	16.8	1.6	13.47	14.84	0.10
3	29.094	29.070	29.008	29.054	42.3	51.0	50.9	46.0	6.20	230	211	211	211	88	56	76	71	N	N	N	N	7	4	5.8	6.12	6.24	0.020
4	29.003	29.003	29.003	29.003	35.1	54.2	51.0	47.75	1.73	174	270	312	261	85	60	53	77	N	S E	S E	S E	4	4	4.5	4.45	4.03	0.020
5	29.009	29.009	29.009	29.009	50.6	51.0	50.3	50.6	0.62	346	341	341	341	91	95	91	92	E	S E	S E	S E	4	4	4.5	4.45	4.03	0.020
6	29.009	29.009	29.009	29.009	47.0	53.9	53.1	52.68	1.8	311	303	303	303	87	80	97	90	N	N E	N E	N E	4	4	4.5	4.45	4.03	0.020
7	29.009	29.009	29.009	29.009	52.4	58.6	55.3	55.55	7.15	394	403	403	403	89	82	93	92	N	N E	N E	N E	4	4	4.5	4.45	4.03	0.020
8	29.009	29.009	29.009	29.009	51.7	56.0	52.4	54.40	6.27	357	396	358	348	87	78	91	82	W	S	S	S	4	4	4.5	4.45	4.03	0.020
9	29.009	29.009	29.009	29.009	53.6	56.0	50.3	52.97	5.15	396	399	399	355	97	59	82	88	S	S	S	S	4	4	4.5	4.45	4.03	0.020
10	29.009	29.009	29.009	29.009	42.0	52.3	36.2	39.87	7.32	224	292	193	198	82	75	90	81	N	W	W	W	4	4	4.5	4.45	4.03	0.020
11	29.009	29.009	29.009	29.009	34.8	38.4	36.6	36.70	10.20	156	139	179	160	92	60	83	78	N	N W	N W	N W	4	4	4.5	4.45	4.03	0.020
12	29.009	29.009	29.009	29.009	36.2	46.3	30.9	35.32	7.28	176	150	166	170	82	47	76	72	N	W	W	W	4	4	4.5	4.45	4.03	0.020
13	29.009	29.009	29.009	29.009	30.8	53.0	40.9	42.63	4.32	155	233	228	220	80	68	89	81	Cal.	S	S	S	4	4	4.5	4.45	4.03	0.020
14	29.009	29.009	29.009	29.009	35.5	68.0	40.2	48.47	2.40	185	298	354	351	80	63	75	74	Cal.	W	W	W	4	4	4.5	4.45	4.03	0.020
15	29.009	29.009	29.009	29.009	40.5	60.7	47.7	50.18	4.40	228	292	225	231	80	56	67	70	Cal.	W	W	W	4	4	4.5	4.45	4.03	0.020
16	29.009	29.009	29.009	29.009	46.4	62.1	40.9	40.63	5.22	125	146	211	198	91	57	82	71	W	N	N	N	4	4	4.5	4.45	4.03	0.020
17	29.009	29.009	29.009	29.009	44.5	60.0	53.9	52.60	7.55	228	251	339	231	77	53	82	71	W	N	N	N	4	4	4.5	4.45	4.03	0.020
18	29.009	29.009	29.009	29.009	44.8	47.7	36.5	42.63	1.97	261	255	163	225	88	77	76	80	W	W	W	W	4	4	4.5	4.45	4.03	0.020
19	29.009	29.009	29.009	29.009	44.0	44.0	40.2	39.14	5.45	154	241	237	213	90	84	95	88	Cal.	N	N	N	4	4	4.5	4.45	4.03	0.020
20	29.009	29.009	29.009	29.009	42.9	53.0	49.7	48.75	4.43	256	293	264	269	90	84	75	79	Cal.	S	S	S	4	4	4.5	4.45	4.03	0.020
21	29.009	29.009	29.009	29.009	46.3	56.3	52.8	51.93	7.88	291	339	332	314	93	68	83	82	N	E	E	E	4	4	4.5	4.45	4.03	0.020
22	29.009	29.009	29.009	29.009	45.6	64.3	54.2	54.56	11.37	391	423	401	375	95	70	95	87	N	E	E	E	4	4	4.5	4.45	4.03	0.020
23	29.009	29.009	29.009	29.009	51.7	58.9	50.3	53.08	9.78	358	398	290	312	94	62	74	78	Cal.	S	S	S	4	4	4.5	4.45	4.03	0.020
24	29.009	29.009	29.009	29.009	46.0	50.3	48.8	48.80	5.76	298	268	276	283	90	73	81	83	W	W	W	W	4	4	4.5	4.45	4.03	0.020
25	29.009	29.009	29.009	29.009	48.2	61.9	47.7	54.32	11.45	427	294	294	269	88	49	61	65	N	E	E	E	4	4	4.5	4.45	4.03	0.020
26	29.009	29.009	29.009	29.009	46.2	44.9	39.4	42.30	0.94	248	224	193	204	72	75	80	75	Cal.	W	W	W	4	4	4.5	4.45	4.03	0.020
27	29.009	29.009	29.009	29.009	44.4	44.1	35.1	37.39	4.62	174	195	182	190	87	68	89	84	Cal.	W	W	W	4	4	4.5	4.45	4.03	0.020
28	29.009	29.009	29.009	29.009	42.0	50.6	30.6	33.13	11.11	253	278	286	266	88	67	83	79	Cal.	W	W	W	4	4	4.5	4.45	4.03	0.020
29	29.009	29.009	29.009	29.009	48.0	52.2	35.0	35.00	11.11	253	278	286	266	88	67	83	79	Cal.	W	W	W	4	4	4.5	4.45	4.03	0.020
30	29.009	29.009	29.009	29.009	48.0	52.2	35.0	35.00	11.11	253	278	286	266	88	67	83	79	Cal.	W	W	W	4	4	4.5	4.45	4.03	0.020
31	29.009	29.009	29.009	29.009	48.0	52.2	35.0	35.00	11.11	253	278	286	266	88	67	83	79	Cal.	W	W	W	4	4	4.5	4.45	4.03	0.020

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR OCTOBER, 1874.
COMPARATIVE TABLE FOR OCTOBER.

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 r.s. heights of the wind are from hourly observations.

Highest Barometer.....23.040 at 2 p.m. on 21st. } Monthly range
Lowest Barometer.....23.041 at 2 p.m. on 19th. } 0.999.
Mean temperature.....67.0 on 29th. } Monthly range
Minimum temperature.....3.8 on 19th. } 42.2
Maximum temperature.....69.92 } Mean daily range
Mean maximum temperature.....59.92 } 16.05
Mean minimum temperature.....59.97 }
Greatest daily range.....30.6 from a.m. to p.m. of 19th.
Least daily range.....5.2 from a.m. to p.m. of 13th.
Warmest day.....8th; mean temperature 69.58 } Difference=18.85
Coldest day.....18th; mean temperature 39.70 }
Maximum { Solar.....11.2° on 4th, 11th, 14th } Monthly range
Radiation { Terrestrial.....1.2° on 10th. } 10.6°
Aurora observed on 6 nights, viz: 3rd, 4th, 12th, 15th and 16th.
Possible to see Aurora on 13 nights; impossible on 18 nights.
Raining on 11 days; depth, 1.418 inches; duration of fall, 23.2 hours.
Snowing on 2 days; depth, inappreciable.
Mean of cloudiness, 0.76.

WIND.

Resultant direction, N. 70° W.; resultant velocity, 2.75 miles.
Mean velocity, 6.40 miles per hour.
Maximum velocity, 30.0 miles per hour from noon to 1 p.m. of 2nd.
Most windy day, 2nd; mean velocity, 14.84 miles per hour.
Least windy day, 22nd; mean velocity, 1.24 miles per hour.
Most windy hour, 1 p.m.; mean velocity, 10.72 miles per hour.
Least windy hour, 3 a.m.; mean velocity, 3.98 miles per hour.

Fog on 6th, 22nd, 28th, 27th and 29th.
Dew on 3 mornings.
Lunar halo on 23rd.
Thunder storm on 10th.

YEAR.	TEMPERATURE.			RAIN.			SNOW.			WIND.		
	Max. num.	Min. num.	Range.	No. of days.	Inches.	No. of days.	Inches.	No. of days.	Inches.	Resultant Direc- tion.	Max. Velocity.	Mean Velocity.
1846	44.0	20.0	24.0	14	4.180	2	insp	0	0.0	0	...	0.44 lbs.
1847	44.0	20.4	23.6	13	4.359	2	insp	0	0.0	0	...	0.19
1848	49.3	24.5	24.8	13	1.550	1	insp	0	0.0	0	...	4.60mils.
1849	46.3	24.2	22.1	13	5.965	1	insp	0	0.0	0	...	7.76
1850	45.4	22.4	23.0	10	1.085	2	0.3	8	0.6	1.0	...	5.30
1851	47.4	22.4	25.0	10	1.680	0	0.0	3	7.2	1.0	...	4.39
1852	48.0	20.7	27.3	12	5.280	2	insp	0	0.0	0	...	4.47
1853	44.4	23.1	21.3	10	1.575	2	insp	0	0.0	0	...	4.77
1854	49.5	25.4	24.0	15	1.485	3	insp	0	0.0	0	...	4.57
1855	45.4	22.5	22.9	14	1.485	5	0.8	8	2.4	1.52	...	4.88
1856	45.3	21.4	23.9	10	0.870	2	0.2	8	7.6	2.15	...	6.07
1857	45.4	20.5	24.9	16	1.040	2	0.2	8	19	2.93	...	6.24
1858	48.0	20.3	27.7	17	1.747	1	insp	0	0.0	0	...	5.96
1859	43.0	22.3	20.7	11	0.940	4	insp	0	0.0	0	...	8.12
1860	47.3	28.4	18.9	15	1.618	1	insp	0	0.0	0	...	6.63
1861	48.7	22.0	26.7	15	1.956	2	0.5	7	8	1.06	...	6.56
1862	48.7	26.2	22.5	19	2.684	2	0.5	7	8	2.89	...	6.53
1863	45.9	23.0	22.9	16	2.522	0	0.0	8	71	4.0	...	8.16
1864	45.2	28.0	17.2	22	3.321	1	insp	0	0.0	0	...	6.66
1865	44.5	21.4	23.1	17	2.705	3	4.5	5	55	3.15	...	7.20
1866	49.1	31.8	17.3	11	2.470	1	insp	0	0.0	0	...	6.53
1867	49.1	21.0	28.1	11	1.076	0	0.0	8	45	1.51	...	5.13
1868	42.3	24.0	18.3	10	1.365	2	2.0	8	89	1.27	...	7.10
1869	42.3	28.7	13.6	8	0.962	7	2.3	8	89	3.72	...	6.73
1870	50.0	30.2	19.8	16	2.696	0	0.0	0	0	0	...	7.12
1871	48.3	28.5	19.8	13	1.185	0	0.0	0	0	0	...	7.84
1872	45.5	25.2	20.3	14	3.288	1	insp	0	0.0	0	...	4.59
1873	46.7	24.2	22.5	13	2.158	3	0.2	West.	1.77	7.81	...	7.81
1874	47.5	21.8	25.7	11	1.418	2	insp	0	0.0	0	...	6.40
Results for 1873	45.85	25.51	20.34	12.562	4.06	1.82	0.82	West	1.80	6.20	...	6.20
Results for 74	1.62	2.02	0.71	1.56	0.991	0.18	0.82	...	...	...	...	0.20

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR NOVEMBER, 1874. COMPARATIVE TABLE FOR NOVEMBER.

NOTE.—The monthly means do not include Sunday observations. The daily means, excepting those that relate to the wind, are derived from 24 observations daily, namely, at 6 A.M., 8 A.M., 2 P.M., 4 P.M., 10 P.M., and midnight. The means and resultants for the wind are from hourly observations.

Highest barometer 30.300 at 8 a.m. on 14th } Monthly range
 Lowest barometer 28.538 at 6 p.m. on 23rd } 1.762.
 { Minimum temperature 61.00 on 6th } Monthly range
 { Maximum temperature 59.00 on 30th } 59° 0.
 Mean maximum temperature 42.36 } Mean daily range
 Mean minimum temperature 27.47 } 14.89.
 Greatest daily range 20.2 from a.m. to p.m. of 26th.
 Least daily range 5.9 from a.m. to p.m. of 1st.
 Warmest day 5th; mean temperature 49.00 } Difference = 37.02.
 Coldest day 30th; mean temperature 11.72 }
 Maximum { Solar 11.250 on 29th } Monthly range
 Radiation { Terrestrial 11.200 on 30th } 12.500.

Aurora observed on 2 nights, viz., 6th and 13th; possible to see Aurora on 12 nights, impossible on 18 nights.
 Raining on 7 days; depth, 0.935 inches; duration of fall, 23.2 hours.
 Snowing on 11 days; depth, 11.7 inches; duration of fall, 69.2 hours.
 Mean of cloudiness, 0.72.

WIND.

Resultant direction, S 87° W; resultant velocity, 3.07 miles.
 Mean velocity, 7.70 miles per hour.
 Maximum velocity, 28.0 miles per hour, from noon to 1 p.m. of 11th.
 Most windy day, 24th; mean velocity, 17.14 miles per hour.
 Least windy day, 4th; mean velocity, 1.73 miles per hour.
 Most windy hour, 2 p.m.; mean velocity, 11.08 miles per hour.
 Least windy hour, midnight; mean velocity, 5.05 miles per hour.

Fog on 3rd, 4th, 5th, 10th and 17th.
 Solar haloes on 16th, 24th and 27th. Lunar halo on 19th.
 First measurable Snow of season on 20th.
 First Sleighing on 20th.
 Last trip of steamer to Niagara on 4th.

YEAR.	TEMPERATURE.				RAIN.			SNOW.			WIND.	
	Mean.	Excess above average.	Maxi- mum.	Mini- mum.	Range.	No. of days.	Inches.	No. of days.	Inches.	Direction.	Velocity.	Mean Velocity.
1846	47.3	6.1	65.6	18.0	37.6	12	5.805	2	0.4	0	...	0.64 lbs
1847	38.6	2.4	87.9	8.7	49.2	14	3.155	3	1.64	...	...	0.56
1848	34.3	1.7	49.0	15.0	33.1	9	2.023	3	1.4	N 31 W	1.81	4.81 mls
1849	42.6	6.4	66.4	26.5	29.9	10	2.815	2	1.0	N 39 W	1.65	4.78
1850	38.8	2.6	62.8	11.0	51.8	11	2.955	1	1.64	N 42 W	1.43	5.27
1851	32.9	3.3	60.2	13.8	36.4	6	4.844	6	6.7	N 50 W	1.25	4.70
1852	36.0	0.2	50.4	18.2	32.2	7	1.776	6	2.7	N 59 W	1.53	6.50
1853	38.7	2.5	55.6	12.8	42.8	15	2.425	6	2.7	N 9 W	0.55	5.52
1854	36.6	0.6	55.4	13.8	41.6	13	1.115	4	1.3	WEST.	3.44	7.54
1855	38.6	2.4	69.2	15.6	43.7	8	4.590	6	3.0	N 66 W	3.18	10.81
1856	37.4	1.2	56.4	18.8	37.6	10	1.375	9	0.5	8 85 W	2.95	8.75
1857	33.5	2.7	68.2	-3.5	61.7	14	3.253	9	0.9	8 61 W	5.45	9.25
1858	34.2	2.0	63.0	15.3	37.7	12	3.879	13	4.0	N 25 W	3.14	8.87
1859	38.9	2.7	72.6	21.8	40.8	12	5.193	9	0.6	N 81 W	3.39	9.65
1860	37.9	1.7	64.5	13.2	51.3	12	2.669	8	1.0	8 89 W	4.95	11.02
1861	37.1	0.9	62.4	23.0	39.4	14	4.294	8	3.2	N 46 W	1.94	7.44
1862	35.6	0.6	68.0	16.2	41.8	11	2.205	11	5.3	N 46 W	3.00	6.60
1863	39.1	2.9	67.6	17.8	49.2	13	3.556	6	0.1	N 88 W	3.50	7.86
1864	36.9	0.7	60.2	21.0	39.2	11	3.755	8	4.9	8 72 W	3.82	7.64
1865	38.6	2.4	63.2	23.6	39.6	5	0.875	5	0.7	N 79 W	2.98	7.90
1866	38.4	2.2	64.2	21.8	32.4	18	1.963	4	2.2	N 68 W	3.06	6.96
1867	36.9	0.7	60.4	9.6	50.8	-8	1.835	9	0.9	N 87 W	4.02	7.76
1868	36.2	0.0	59.0	20.1	30.4	14	5.150	10	4.5	N 35 W	2.10	8.16
1869	32.7	3.5	58.0	13.0	45.0	9	2.540	18	10.2	N 78 W	3.60	8.12
1870	36.6	0.4	67.2	19.4	37.8	6	0.564	5	3.1	N 89 W	4.36	8.74
1871	30.6	5.6	47.1	0.0	47.1	10	2.655	12	4.5	N 85 W	4.08	10.35
1872	32.0	3.3	52.0	8.2	43.8	7	0.420	9	1.3	8 45 W	5.02	7.45
1873	27.0	8.6	61.4	0.8	50.6	5	0.510	18	19.6	N 50 W	3.08	6.67
1874	34.0	1.6	61.0	3.5	57.5	7	0.935	11	11.7	8 87 W	3.07	7.70
Mean for 74.	36.16	...	56.39	14.80	41.59	9.79	2.855	7.26	3.77	N 77 W	2.77	7.76
Excess for 74.	1.52	...	4.61	11.30	15.91	2.70	1.920	3.74	7.93	...	...	0.04

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR DECEMBER, 1874.

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., 10 P.M., 1 P.M., 10 P.M. and midnight. The means and resultant of the wind are from hourly observations.

Highest Barometer..... 30.410 at 8 a.m. on 31st. } Monthly range
 Lowest Barometer..... 29.265 at 2 p.m. on 22nd. } 1.145.
 { Maximum temperature..... 44.0 on 3rd. } Monthly range
 { Minimum temperature..... -7.5 on 15th } 51.5
 { Mean maximum temperature..... 32.84 } Mean daily range
 { Mean minimum temperature..... 17.30 } 16.54
 { (Greatest daily range..... 33.56 from a.m. to p.m. of 16th.
 { Least daily range..... 4.00 from a.m. to p.m. of 6th.
 Warmest day..... 28th; mean temperature 36.97; Difference=36.98
 Coldest day..... 20th; mean temperature 6.93; Difference=30.98
 Maximum { Solar..... 105.90 on 3rd } Monthly range
 Radiation { Terrestrial..... 22.20 on 16th. } 136.70
 No Aurora observed.
 Possible to see Aurora on 12 nights; impossible on 10 nights.
 Raining on 5 days; depth, 0.050 inches; duration of fall, 10.5 hours.
 Snowing on 15 days; depth, 11.1; duration of fall, 45.4 hours.
 Mean of cloudiness, 0.78.

Resultant direction, S. 84° W.; resultant velocity, 6.40 miles.
 Mean velocity, 8.72 miles per hour.
 Maximum velocity, 31.2 miles from noon to 1 p.m. of 29th.
 Most windy day, 20th; mean velocity, 16.96 miles per hour.
 Least windy day, 6th; mean velocity, 2.19 miles per hour.
 Most windy hour, 1 p.m.; mean velocity, 11.67 miles per hour.
 Least windy hour, 4 a.m.; mean velocity, 6.06 miles per hour.

Solar haloes on 25th, 26th and 27th.
 Lunar haloes on 19th, 20th, 21st, 26th, and 29th.
 Fog on 21st, 27th and 28th.
 Bay frozen on 13th; broke up again. Closed again on 20th.

COMPARATIVE TABLE FOR DECEMBER

YEAR.	TEMPERATURE.			RAIN.		SNOW.		WIND.	
	Mean	Maxi. num.	Excess above Average.	No. of days.	Inches.	No. of days.	Inches.	Resultant Direc- tion.	Mean Velocity.
1846	27.6	49.2	+ 1.8	6	1.216	9	6.0	0	0.57 lbe.
1847	30.1	49.6	+ 4.4	7	1.185	8	6.8	0	0.55
1848	29.1	45.8	+ 3.4	7	2.760	7	16.5	583 W.	1.12 6.44mls.
1849	26.5	40.8	+ 0.8	6	0.473	5	0.840	8.82 W.	1.56 6.23
1850	21.6	44.0	+ 4.2	2	0.190	18	29.5	8.44 W.	2.93 7.40
1851	21.6	41.0	+ 0.2	7	3.665	10	20.1	5.69 W.	4.00 7.37
1852	31.9	40.4	+ 0.4	4	0.625	13	22.3	3.35 W.	2.39 6.54
1853	25.3	44.8	+ 3.8	5	0.690	12	17.2	3.35 W.	2.39 6.54
1854	21.9	42.2	+ 1.1	6	1.845	10	29.6	5.88 W.	5.20 11.38
1855	30.8	42.2	+ 2.8	6	1.798	20	16.3	6.87 W.	4.62 11.60
1856	22.9	46.0	+ 6.2	7	3.265	14	9.0	8.89 W.	2.60 6.84
1857	31.9	49.4	+ 1.7	11	1.057	18	10.4	8.78 W.	1.66 9.36
1858	27.4	49.4	+ 4.2	11	1.057	18	10.4	8.78 W.	1.66 9.36
1859	17.0	64.8	+ 7.6	3	1.035	23	37.4	5.53 W.	4.25 10.77
1860	24.0	55.2	+ 5.4	3	1.362	21	13.5	6.62 W.	4.66 10.14
1861	31.1	59.1	+ 3.1	6	0.660	8	6.8	8.73 W.	3.50 7.96
1862	28.8	53.4	+ 1.3	5	1.945	8	10.4	8.73 W.	3.50 7.96
1863	27.0	53.4	+ 1.0	10	2.020	17	7.1	4.41 W.	1.61 9.40
1864	24.7	64.2	+ 2.0	6	2.045	18	27.1	4.82 W.	1.94 9.08
1865	27.7	61.0	+ 0.6	7	1.727	11	6.2	8.81 W.	3.07 7.33
1866	25.1	49.0	+ 3.2	7	2.760	13	16.5	8.81 W.	4.08 9.01
1868	22.6	44.2	+ 3.2	7	1.408	21	13.6	6.81 W.	4.82 10.32
1869	23.7	46.0	+ 3.0	10	0.065	18	15.5	8.70 W.	3.05 9.80
370	20.6	46.2	+ 5.8	6	2.430	19	16.0	8.80 W.	5.06 11.46
1871	19.9	48.2	+ 7.0	4	6.940	20	14.2	8.70 W.	6.01 11.62
1872	20.8	40.0	+ 7.0	3	0.390	4	38.0	4.87 W.	5.51 9.06
1873	29.8	48.2	+ 4.1	10	0.965	12	19.2	8.08 W.	2.93 5.93
1874	25.7	44.0	+ 0.0	6	0.050	15	11.1	8.84 W.	5.93 8.72
Res't'ns to 1873	26.75	47.59	.....	6.77	1.696	13.86	16.08	8.81 W.	3.38 8.66
Excess for 74	0.03	3.59	+ 0.38	0.77	1.546	1.16	3.98	.....	0.06

GENERAL METEOROLOGICAL REGISTER

FOR THE YEAR 1874.

GENERAL METEOROLOGICAL

MAGNETICAL OBSERVATORY,

Latitude 43° 39' 4" North. Longitude 5h 17m. 33s West. Elevation above

	JAN.	FEB.	MAR.	APRIL	MAY.	JUNE.	JULY.
Mean Temperature	24.79	22.84	28.67	34.23	52.46	62.49	67.86
Difference from average (34 years) ..	+1.85	-0.06	-0.63	-6.81	+0.80	+0.75	+0.45
Thermic anomaly (Lat. 43° 40')	-8.01	-11.66	-11.43	-15.97	-5.64	-2.11	-0.84
Highest temperature	57.5	42.0	57.0	60.8	88.0	88.0	83.6
Lowest temperature	-4.0	0.4	5.5	9.5	25.3	24.2	44.4
Monthly and annual ranges	61.5	41.0	51.5	51.3	60.7	43.8	39.1
Mean maximum temperature	31.11	29.86	37.15	41.55	63.28	72.84	77.06
Mean minimum temperature	17.14	14.07	21.52	26.34	41.68	53.02	56.93
Mean daily range	13.97	15.79	15.63	16.21	21.60	19.32	20.13
Greatest daily range	36.0	34.7	30.7	25.3	46.5	35.0	31.8
Mean height of the barometer	29.679	29.7109	29.5767	29.6481	29.5676	29.5733	29.5858
Difference from average (33 years) ..	+0.0348	+0.0880	-0.0243	+0.0001	-0.0031	-0.0001	-0.0072
Highest barometer	30.295	30.308	30.077	30.227	29.907	29.905	29.787
Lowest barometer	29.073	29.116	29.013	29.135	26.356	29.176	29.244
Monthly and annual ranges	1.222	1.192	1.064	1.092	0.951	0.729	0.553
Mean humidity of the air	87	82	75	69	63	69	70
Mean elasticity of aqueous vapour	0.129	0.106	0.127	0.139	0.261	0.395	0.478
Mean of cloudiness	0.78	0.74	0.68	0.63	0.50	0.54	0.52
Difference from average (21 years) ..	+0.05	+0.03	+0.06	+0.03	-0.06	+0.02	+0.02
Resultant direction of the wind	N 61 W	N 24 W	N 65 W	N 33 W	N 49 W	N 44 W	N 68 W
velocity of the wind	3.42	2.46	7.47	4.09	2.64	1.68	1.26
Mean velocity (miles per hour)	6.58	8.12	13.24	9.64	8.45	6.52	6.55
Difference from average (26 years) ..	+0.20	-0.58	+4.27	+1.43	+1.64	+1.32	+1.58
Total amount of rain	2.820	1.150	1.390	1.240	1.492	1.795	3.350
Difference from average (34 years) ..	+1.626	+0.299	-0.204	-1.232	-1.092	-1.120	+0.169
Number of days' rain	13	6	10	4	8	13	11
Total amount of snow	12.2	19.1	2.6	11.0	...	...	...
Difference from average (31 years) ..	-4.98	+0.47	-10.17	+8.74	-0.06	...	...
Number of days' snow	15	15	10	7	...	...	...
Number of fair days	9	10	12	17	23	17	20
Number of auroras observed	2	2	0	3	3	3	4
Possible to see auroras (No. of nights)	8	14	17	14	19	21	18
Number of thunder storms	0	1	0	1	3	4	7

REGISTER FOR THE YEAR 1874.

TORONTO, ONTARIO

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

AUG.	SEPT.	OCT.	NOV.	DEC.	1874.	1873.	1872.	1871.	1870.	1869.	1868.
67.08 +0.88 -1.42	63.33 +5.28 +1.83	47.47 +1.02 -6.63	34.64 -1.52 -8.56	25.72 -0.93 -10.28	44.30 +0.22 -6.70	42.94 -1.14 -8.06	42.92 -1.16 -8.08	43.81 -0.27 -7.19	45.93 +1.85 -5.07	43.13 -0.95 -7.67	43.33 -0.75 -7.67
95.0 48.0 47.0	85.6 39.5 49.1	67.0 24.8 42.2	61.0 3.5 57.5	44.0 -7.5 61.5	95.0 -7.5 102.5	89.5 -18.4 10.9	96.0 -13.8 109.8	89.5 -21.0 110.5	88.4 -6.6 95.0	89.0 -5.4 94.4	93.4 -15.6 109.0
77.40 55.97 21.43 30.6	70.22 51.03 18.59 28.1	55.02 38.97 16.05 30.6	42.36 27.47 14.89 26.2	32.84 17.30 15.54 33.5	...	...	...	...	...	...	...
29.6587 +0.0357	29.6717 +0.0050	29.6690 +0.0228	29.6991 +0.0914	29.7034 +0.0527	29.6452 +0.0206	29.5964 -0.0192	29.6079 -0.0077	29.6066 -0.0099	29.5956 -0.0200	29.5970 -0.0186	29.6421 +0.0265
29.892 29.244 0.648	29.921 29.274 0.647	30.040 29.041 0.999	30.300 28.535 1.762	30.416 29.255 1.161	30.416 28.538 1.878	30.246 28.797 1.449	30.231 28.789 1.442	30.398 28.673 1.715	30.212 28.166 2.046	30.226 28.793 1.430	30.445 28.824 1.621
66	74	79	70	80	74	78	75	73	76	77	76
0.433	0.436	0.266	0.168	0.121	0.255	0.257	0.259	0.242	0.279	0.252	0.264
0.39 -0.10	0.49 -0.01	0.76 +0.15	0.72 -0.02	0.78 +0.03	0.63 +0.02	0.60 -0.01	0.59 -0.02	0.64 +0.03	0.62 +0.01	0.66 +0.04	0.64 +0.03
N 20 E 0.70 6.18 +0.93	S 14 E 0.09 6.30 +0.80	N 70 W 2.71 6.40 +0.20	S 87 W 3.07 7.70 +0.04	S 81 W 5.49 8.72 +0.06	N 61 W 2.67 8.03 +0.99	N 58 W 1.98 7.96 +0.92	N 72 W 2.91 6.78 -0.26	N 72 W 2.49 8.24 +1.20	N 45 W 1.61 7.33 +0.29	N 64 W 2.55 7.20 +0.16	N 57 W 1.47 7.69 +0.65
0.380 -2.589 4	1.554 -2.105 11	1.418 -0.991 11	0.935 -1.920 7	0.050 -1.546 5	17.574 -11.325 103	20.232 -8.667 110	18.588 -10.311 115	22.771 -6.128 110	33.898 +4.999 116	31.182 +2.283 115	29.408 +0.509 103
...	...	Inap. -0.82 2	11.7 +7.93 11	11.1 -3.98 15	67.7 -2.67 75	113.6 +43.23 79	67.5 -3.07 77	99.6 +29.03 84	122.9 +52.33 77	84.6 +14.03 81	78.7 +8.17 82
27	19	19	14	10	197	170	185	187	185	180	190
2	2	5	2	0	28	60	67	55	77	47	50
24	25	13	12	12	197	203	236	209	206	182	193
3	3	1	0	0	23	22	28	22	34	32	25

TEMPERATURE.

	1874.	Average of 34 years.	Extremes.	
Mean temperature of the year.....	44.30	44.08	46.36 in '49	42.16 in '56.
Warmest month.....	July.	July.	July, 1868.	Aug. 1860.
Mean temperature of the warmest month.....	67.66	67.41	75.50	64.48
Coldest month.....	February.	February.	Jan., 1857.	Feb. 1846.
Mean temperature of the coldest month.....	22.64	22.00	12.76	26.60
Difference between the temperature of the warmest and the coldest months.....	45.02	44.51	..	..
Mean of deviations of monthly means from their respective averages of 34 years, signs of deviation being disregarded.....	1.73	2.45	3.62 in 1843.	..
Month of greatest deviation without regard to sign.....	April.	January.	Jan., 1857.	..
Corresponding magnitude of deviation.....	8.81	3.64	10.1	..
Warmest day.....	June 23.	..	July 14, '68	July 31, '44.
Mean temperature of the warmest day.....	78.03	77.71	84.50	72.75
Coldest day.....	Jan. 30.	..	Feb. 6, 1855. Jan. 22, 1857.	Dec. 22, '42.
Mean temperature of the coldest day.....	1.13	-1.48	-14.38	9.57
Date of the highest temperature.....	Aug. 12.	..	Aug. 24, 1854	Aug. 19, '40.
Highest temperature.....	95.0	90.9	9.2	82.4
Date of the lowest temperature.....	Dec. 15.	..	Jan. 10, 1859.	Jan. 2, 1842.
Lowest temperature.....	-7.6	-12.8	-26.5	1.9
Range of the year.....	102.5	103.7	118.2	67.0

BAROMETER.

	1874.	Average of 33 years.	Extremes.	
Mean pressure of the year.....	29.6452	29.6156	{ 29.6770 in 1849.	29.5602 in 1864.
Month of the highest mean pressure.....	February.	Sept.	Jan., 1849.	June, 1864.
Highest mean monthly pressure.....	29.7109	29.6667	29.8046	29.6525
Month of lowest mean pressure.....	May.	May.	March, 1859.	Nov., 1849.
Lowest mean monthly pressure.....	29.5676	29.5707	29.4143	29.6856
Date of the highest pressure in the year.....	Dec. 31, 8 a m.	..	Jan. 8, 1866.	Jan. 14, 1870.
Highest pressure.....	30.416	30.367	30.940	30.212
Date of the lowest pressure in the year.....	Nov. 23, 1 p m	..	Jan. 2, 1870.	Mar. 17, '45.
Lowest pressure.....	29.538	29.687	29.166	29.939
Range of the year.....	1.878	1.680	{ 2.133 in 1866.	1.303 in 1845.

RELATIVE HUMIDITY.

	1874.	Average of 32 years.	Extremes.	
Mean humidity of the year.....	74	77	82 in 1851.	73 in 1858.
Month of greatest humidity.....	January.	January.	Jan., 1857.	Dec., 1858.
Greatest mean monthly humidity.....	87	83	89	81
Month of least humidity.....	May.	May.	Feb., 1843.	April, 1849.
Least mean monthly humidity.....	63	71	68	76

EXTENT OF SKY CLOUDED.

	1874.	Average of 21 years.	Extremes.	
Mean cloudiness of the year.....	0.63	0.61	0.66 in 1869.	0.57 in 1856
Most cloudy month.....	January & December.	December.	..	..
Greatest monthly mean of cloudiness.....	0.78	0.75	0.83	0.73
Least cloudy month.....	August.	August.		
Lowest monthly mean of cloudiness.....	0.39	0.49	0.29	0.50

WIND.

	1874.	Result of 26 years.	Extremes.	
Resultant direction.....	N 61° W	N 62° W	..	..
Resultant velocity in miles.....	2.67	1.95	..	..
Mean velocity without regard to direction.....	8.03	7.04	8.55 in '60	..
Month of greatest mean velocity.....	March.	March.	March, 1874.	Jan., 1848
Greatest monthly mean velocity.....	13.24	8.97	13.24	5.82
Month of least mean velocity.....	August.	July.	Aug., 1852.	Sept., 1860.
Least monthly mean velocity.....	6.16	4.97	3.30	5.79
Day of greatest mean velocity.....	March 23.	..	Nov. 15, '71.	Dec. 2, 1848.
Greatest daily mean velocity.....	26.54	23.80	32.16	15.30
Day of least mean velocity.....	Feb. 8.	..	..	..
Least daily mean velocity.....	0.04	..	..	..
Hour of greatest absolute velocity.....	March 11, 4 to 5 p.m.	..	Dec. 27, '61, 9 to 10 a.m.	Mar. 14, 1853, 11 a.m. to n.
Greatest velocity.....	37.0	40.14	40.0	25.6

RAIN.

	1874.	Average of 34 years.	Extremes.	
Total depth of rain in inches.....	17.574	28.899	43.555 in '43.	17.574 in '74.
Number of days in which rain fell.....	103	109	130 in '61	80 in 1841.
Month in which the greatest depth of rain fell.....	July.	September	Sept., 1843.	Sept., 1848.
Greatest depth of rain in one month.....	3.360.	3.659	9.760	3.115
Month in which the days of rain were most frequent.....	January and June.	October.	June, 1869, October, '64.	May, '41.
Greatest number of rainy days in one month.....	13	13	22	11
Days in which the greatest amount of rain fell.....	July 7.	..	Sept. 14, 1843	Sept. 14, '48
Greatest amount of rain in one day.....	1.370	2.023	3.455	1.000

SNOW.

	1874.	Average of 31 years.	Extremes.	
Total depth of snow in inches	67.7	70.6	122.9 in '70.	38.4 in 1851.
Number of days in which snow fell	75	64	87 in 1859	33 in 1848.
Month in which the greatest depth of snow fell	February.	February.	March. 1870.	Dec., 1851.
Greatest depth of snow in one month	19.1	18.6	62.4	10.7
Month in which the days of snow were most frequent	Jan, Feb., and Dec.	January.	Dec., 1872.	Feb., 1848.
Greatest number of days of snow in one month	16	14	24	8
Day in which the greatest amount of snow fell	Nov. 28.	..	{ Feb 5, '63 Mar. 27, '70	Jan. 10, 1857.
Greatest fall of snow in one day	6.5	10.0	16.0	5.5

DIFFERENCE OF CERTAIN METEOROLOGICAL ELEMENTS FROM THEIR NORMAL VALUES FOR EACH QUARTER AND FOR THE YEAR FROM DECEMBER, 1873, TO NOVEMBER, 1874, INCLUSIVE.

Quarters.	Baro- meter.	Tem- perature	Rain.	Days Rain.	Snow.	Days Snow.	Velocity of Wind.	Clouded Sky.
	in.	°	in.		in.		miles.	
Winter	+ .3478	+ 2.00	+ 1.305	+ 14.86	- 0.25	+ 1.69	- 1.07	- 05
Spring	+ .0109	- 2.21	- 3.148	- 6.00	- 6.88	+ 8.10	+ 2.45	+ 01
Summer	+ .0095	+ 0.60	- 3.549	- 8.09	..	..	+ 1.23	- 02
Autumn	+ .0397	+ 1.79	- 5.016	- 4.54	+ 7.11	+ 3.92	+ 0.35	- 04
Year	+ .0270	+ 0.37	- 10.399	- 3.87	- 0.02	+ 13.61	+ 0.75	..00

PERIODICAL OR OCCASIONAL EVENTS, 1874.

January..	16.	Bay frozen second time this winter.
February.	11.	Robins seen.
"	12.	First thunder storm of year.
March....	4.	Crows seen.
"	12.	Bay open; closed again same evening.
"	18.	Robins numerous. 19th Blue birds seen.
April.....	1.	Wild geese passing
"	20.	First trip "City of Toronto" 26th. Last snow of season.
"	29.	Very severe snow storm in W. S. "City of Toronto" covered with ice on her return trip.
May.....	3.	Swallows seen. 4th. Frogs croaking.
"	4.	First River steamer ("Spartan") arrived.
"	5.	Butterflies seen.
"	9.	Baltimore birds. Mosquitoes. May bugs. Maples in flower.
"	12.	Humming birds. Woodpecker.
"	19.	Last ice of season. Last hoar frost.
"	22.	Wild strawberries in flower. Flowering currant in flower.
"	23.	Plum and cherry trees in blossom.
"	24.	Dandelions in flower. 30th. Chestnut and lilacs in flower.
June.....	9.	Fireflies.
August... 15.		Humming birds numerous
"	20.	Grass burnt up, and trees suffering from want of water.
"	25.	Swallows gone.
October... 13.		First snow.
"	16.	First time thermometer fell to 32°. First ice.
November 4.		Last trip of "City of Toronto."
"	20.	First measurable snow.
"	30.	First sleighing.
December 13.		Bay frozen; broke up again; closed on 27th.

METEOROLOGICAL REGISTER.

MONTHLY METEOROLOGICAL REGISTER, AT THE MAGNETICAL OBSERVATORY, TORONTO, ONTARIO—FEBRUARY, 1875.
 Latitude—48° 39' 4" North. Longitude—84° 17' m. 33s. West. Elevation above Lake Ontario, 108 feet.

Day	Barom. at temp of 32°.			Temp. of the Air.			Tension of Vapor.			Humidity of Air.			Direction of Wind.			Velocity of the Wind.			Hail Inches	Snow Inches			
	6 A.M.	2 P.M.	10 P.M.	6 A.M.	2 P.M.	10 P.M.	6 A.M.	2 P.M.	10 P.M.	6 A.M.	2 P.M.	10 P.M.	6 A.M.	2 P.M.	10 P.M.	6 A.M.	2 P.M.	10 P.M.					
1	29.672	29.593	29.707	10.9	17.1	16.2	0.961	0.668	0.75	0.70	86	72	76	W	8	6	20.7	2.8	10.77	11.06	
2	29.827	29.763	29.880	23.2	29.0	32.6	1.02	1.33	1.69	1.33	82	83	80	W	8	4.3	11.0	6.38	6.38	...	0.2		
3	29.873	28.916	29.3	34.7	36.9	9.5	1.19	1.68	0.48	1.22	88	76	74	W	8	12.0	22.0	6.66	16.82	0.200	
4	29.882	29.515	29.96	2.6	6.2	3.7	0.597	0.37	0.42	0.39	78	76	82	W	8	24.0	26.8	22.66	22.72	...	...
5	29.985	29.980	29.889	1.0	9.3	12.4	0.74	0.28	0.47	0.66	71	72	68	W	8	10.4	13.4	12.53	12.68	...	0.4		
6	29.908	30.106	30.194	4.4	3.7	8.2	0.540	0.42	0.30	0.38	95	82	91	W	8	9.0	18.6	12.19	12.97	...	...
7	30.080	29.900	29.710	14.5	6.0	1.0	—	—	—	—	—	—	—	W	8	2.5	16.0	15.06	16.67	...	2.0		
8	29.628	29.552	29.688	0.8	6.6	10.7	0.389	0.32	0.24	0.31	88	76	91	W	8	3.2	21.2	10.02	10.17	...	...
9	29.625	29.981	30.120	2.0	7.1	7.7	0.76	0.23	0.34	0.31	100	90	100	W	8	14.0	15.0	14.14	14.42	...	...
10	30.191	29.746	29.832	11.7	11.1	20.7	1.78	0.23	0.34	0.31	92	80	94	W	8	2.5	20.0	18.8	13.2	...	...
11	29.196	29.228	29.481	28.6	22.5	1.9	0.65	0.52	0.39	0.92	96	80	83	W	8	12.0	20.0	15.06	16.67	...	4.0		
12	29.637	29.661	29.670	4.6	1.7	7.1	0.30	0.34	0.37	0.31	96	94	100	W	8	18.8	13.2	12.40	12.48	...	...
13	29.704	29.663	29.674	13.2	6.2	1.3	0.97	0.25	0.22	0.41	95	72	94	W	8	4.0	13.6	6.21	6.66	...	...
14	29.760	29.810	29.890	8.0	3.0	7.0	0.45	0.27	0.30	0.36	95	82	89	W	8	6.7	11.0	7.89	8.61	...	...
15	29.875	29.877	29.933	1.0	3.7	1.6	0.81	0.25	0.42	0.36	85	82	89	W	8	8.5	17.0	8.4	9.01	...	...
16	29.881	29.859	29.760	1.6	12.7	6.9	0.73	0.25	0.42	0.50	92	82	88	W	8	4.6	8.9	8.4	9.01	...	...
17	29.407	29.629	29.860	14.2	13.1	1.2	0.91	0.68	0.76	0.59	93	76	88	W	8	11.0	28.1	17.13	17.67	...	...
18	29.916	29.850	29.668	8.9	9.6	4.1	2.10	0.26	0.53	0.48	91	81	92	W	8	0.2	6.2	2.48	2.94	...	...
19	29.491	29.309	29.213	7.3	21.8	21.8	0.73	0.55	0.61	0.60	93	91	82	W	8	1.2	5.0	1.12	2.59	...	0.3		
20	29.122	29.206	29.206	20.3	26.6	18.5	0.90	0.61	0.60	0.90	93	73	83	W	8	0.0	12.0	6.7	6.10	...	0.3		
21	29.400	29.600	29.600	10.0	19.0	6.0	1.17	0.32	0.41	0.93	94	73	82	W	8	11.4	11.4	7.77	7.81	...	...
22	29.855	29.647	29.450	6.6	29.2	40.2	0.34	0.00	0.35	1.31	85	80	81	W	8	7.6	8.0	1.82	3.58	...	...
23	29.632	29.651	29.494	31.5	30.8	31.5	0.80	0.42	0.44	1.58	170	88	96	W	8	0.0	13.0	4.67	6.57	...	0.3		
24	29.207	29.316	29.595	33.3	34.6	26.5	0.34	0.68	10.7	18.5	261	85	96	W	8	1.6	0.0	2.65	8.06	...	...
25	29.339	29.178	29.333	30.1	30.4	25.0	0.28	0.7	3.27	164	165	98	92	W	8	8.2	19.2	5.27	10.86	...	...
26	29.640	29.622	29.682	6.215	11.3	16.0	0.83	0.62	0.57	0.43	0.61	86	74	73	W	8	13.0	13.4	12.93	13.67	...	1.5	
27	29.605	29.542	29.634	3.0	14.9	7.3	0.82	0.46	0.50	0.55	0.60	69	69	81	W	8	9.5	6.7	7.47	8.67	
28	29.800	30.010	29.980	1.6	8.0	4.0	0.396	0.21	0.48	0.39	86	—	—	W	8	6.7	9.0	6.37	8.06	...	...
29	29.645	29.626	29.603	16.30	16.30	9.30	10.16	-13.48	0.71	0.66	0.74	91	80	86	7.48	12.68	8.66	...	9.916	470	9.1

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR FEBRUARY, 1876.

COMPARATIVE TABLE FOR FEBRUARY.

YEAR.	TEMPERATURE.				RAIN.			SNOW.			WIND.	
	Mean	Excess above Average.	Maxim. num.	Minim. num.	Range.	No. of Days.	Inches.	No. of Days.	Inches.	Resultant.	Direction.	Velocity.
1847	29.6	-1.4	40.9	0.0	40.0	2	0.550	13	27.3	0	...	0.69 lbs.
1848	26.6	+3.7	46.6	0.0	46.6	4	0.775	8	10.6	N 65 W	2.53	5.69 mls.
1849	19.5	+3.4	40.6	-9.8	50.4	2	0.240	13	19.2	N 41 W	1.48	6.58
1850	23.0	+3.1	49.6	-2.2	47.4	7	1.236	9	23.1	N 81 W	3.48	7.61
1851	27.6	+4.7	50.2	2.0	48.2	7	2.600	4	2.4	N 61 W	1.99	6.94
1852	23.4	+0.5	41.2	6.2	47.4	3	0.660	11	13.9	N 75 W	3.34	6.42
1853	24.1	+1.2	43.8	-10.8	53.6	5	1.464	15	12.6	N 49 W	2.51	7.30
1854	15.4	-7.6	39.0	-25.4	64.4	2	1.770	14	21.8	N 40 W	4.34	8.17
1856	16.7	-7.2	37.8	-18.7	56.5	0	0.000	8	9.7	N 81 W	7.70	10.71
1857	28.5	+5.6	52.4	-5.9	58.3	11	3.050	11	11.7	N 78 W	3.68	9.82
1858	17.0	-5.9	42.4	-7.3	49.7	1	Leap	16	26.7	N 72 W	3.22	9.12
1859	26.0	+3.1	46.2	2.1	44.1	6	0.465	14	8.3	N 54 W	2.72	8.50
1860	22.8	+0.1	50.2	-8.5	58.7	7	1.330	13	18.8	N 61 W	3.23	8.73
1861	28.1	+3.2	46.0	-20.8	66.8	4	0.815	17	29.7	N 77 W	3.86	10.58
1862	22.5	-0.4	37.8	5.2	43.0	3	0.180	17	23.1	N 65 W	3.93	8.62
1863	22.4	-0.6	41.6	-19.8	61.3	7	1.455	12	22.6	N 23 W	2.27	10.13
1864	24.3	+1.4	45.0	-15.0	60.0	2	0.397	14	9.9	N 84 W	4.6	10.11
1865	22.4	-0.6	42.2	-10.0	52.2	5	0.810	11	16.8	N 23 W	3.95	8.23
1866	22.6	-0.4	45.0	8.0	53.0	3	0.830	12	16.9	N 80 W	5.14	9.40
1867	28.9	+6.0	44.0	2.0	43.8	8	1.328	13	13.4	N 67 W	1.58	8.85
1868	17.2	-6.7	45.0	-11.5	56.5	1	0.040	16	32.8	N 69 W	3.23	10.84
1869	25.0	-2.1	46.0	-1.0	47.0	2	0.165	19	30.7	N 34 W	4.18	10.04
1870	21.5	-1.4	48.0	-6.6	47.2	3	0.520	18	22.0	N 70 W	4.26	9.87
1871	24.3	+1.4	48.0	-15.8	63.8	3	0.040	16	7.3	N 61 W	3.32	8.93
1872	20.7	-2.2	45.2	-3.6	48.8	6	0.350	9	10.4	N 68 W	4.29	10.21
1873	21.6	-1.4	43.0	-10.5	53.5	0	0.000	11	19.1	N 24 W	2.46	8.12
1874	22.6	-0.1	42.0	0.4	41.6	6	1.154	5	6.1	N 85 W	6.57	9.91
1875	10.2	-12.7	47.0	-16.0	63.6	5	0.470	9	9.1	N 85 W	6.57	9.91
1876	22.90	...	44.06	-7.68	51.77	3.97	0.856	12.49	18.63	N 65 W	3.14	8.68
1877	...	...	...	...	...	...	...	...	...	...	...	...
1878	...	...	3.51	...	...	...	...	...	...	...	...	...
1879	...	...	...	...	...	...	...	...	...	...	...	...
1880	12.74	...	...	...	...	...	...	...	...	...	...	...

NOTE.—The monthly means of Barometer and Temperature include Sunday observations. The daily means, excepting those that relate to the wind, are derived from six observations daily, namely, at 6 A.M., 8 A.M., 2 P.M., 4 P.M., 10 P.M., and midnight. The means and resultants for the wind are from hourly observations.

Highest Barometer..... 30.194 at 10 p.m. on 6th } Monthly range
 Lowest Barometer..... 28.916 at 2 p.m. on 3rd } 1.278.
 { Maximum temperature..... 47° on 24th } Monthly range
 { Minimum temperature..... } 63°.
 { Mean maximum temperature..... 19°17 } Mean daily range
 { Mean minimum temperature..... } 0°65.
 { Greatest daily range..... } 46° from a.m. to p.m. of 22nd.
 { Least daily range..... } 6° from a.m. to p.m. of 4th.
 Warmest day..... 24th; mean temperature..... 31°68 } Differences = 42°40.
 Coldest day..... 9th; mean temperature..... -7°72 }
 Maximum { Solar..... } 124° on 21st } Monthly range
 Radiation { Terrestrial..... } 32° on 13th } 156°.
 Aurora observed on 2 nights, viz., 26th and 28th.
 Possible to see Aurora on 19 nights; impossible on 9 nights.
 Raining on 5 days; depth, 0.470 inches; duration of fall, 30.1 hours.
 Snowing on 9 days; depth, 9.1 inches; duration of fall, 49.0 hours.
 Mean of cloudiness, 0.59.

WIND.
 Resultant direction, S. 88° W.; resultant velocity, 0.67 miles.
 Mean velocity, 9.91 miles per hour.
 Maximum velocity, 31.5 miles, from noon to 1 p.m. of 17th.
 Most windy day, 4th; mean velocity, 22.72 miles per hour.
 Least windy day, 19th; mean velocity, 2.56 miles per hour.
 Most windy hour, 4 p.m.; mean velocity, 13.63 miles per hour.
 Least windy hour, 7 a.m.; mean velocity, 7.40 miles per hour.

Fog on 22nd. Solar haloes on 13th, 18th and 19th. Lunar haloes on 15th, 18th and 22nd.
 It will be seen from the comparative table that this month is the coldest February ever recorded in Toronto, and it is also the lowest monthly temperature recorded—the lowest previously being January, 1857, which was 12°75. From the 4th to the 18th inclusive of the present month, the daily minimum temperature never rose above zero.

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CONTENTS

	PAGE
I LEAVES THEY HAVE TOUCHED, BEING A REVIEW OF SOME HISTORICAL AUTOGRAPHS By HENRY SCADDING, D.D.	315
II ON A REMARKABLE FRAGMENT OF SILICIFIED WOOD FROM THE ROCKY MOUNTAINS By HENRY SCADDING, D.D., FRANK F. F. ELLIS, Professor of Biology in the College of Pharmacy, Newcastle-on-Tyne, and W. H. ELLIS, M.A., M.B., Lecturer on Chemistry in the School of Practical Science, Toronto.	348
III NOTES ON MECHANICS By J. J. HARRISON, Mathematical Tutor and Dean, University College, Toronto	354
IV NITRO GLYCERINE—ITS HISTORY, MANUFACTURE, AND INDUSTRIAL APPLICATION By W. H. ELLIS, M.A., M.B., Lecturer on Chemistry at Trinity College, Toronto	356
V CANADIAN LOCAL HISTORY—THE FIRST GAZETTEER OF UPPER CANADA WITH ANNOTATIONS By the Rev. HENRY SCADDING, D.D.	367
VI CANADIAN INSTITUTE.	
Annual Report of the Council for the year 1873-74	388
Communications	388
The Treasurer, in Account with the Canadian Institute	389
Appendix—Donations of Books and Pamphlets	391
METEOROLOGY	
August Meteorological Table for Toronto, 1874	cxxxii
Remarks on " " " " " "	cxxxiii
September Meteorological Table for Toronto, " " " " " "	cxxxix
Remarks on " " " " " "	cxxxix
October Meteorological Table for Toronto, " " " " " "	cxxxv
Remarks on " " " " " "	cxxxvii
November Meteorological Table for Toronto, " " " " " "	cxxxviii
Remarks on " " " " " "	cxxxix
December Meteorological Table for Toronto, " " " " " "	cxxxix
Remarks on " " " " " "	cxxxix
General Meteorological Summary for the year 1874	cxxxviii
January Meteorological Table for Toronto, 1875	i
Remarks on " " " " " "	ii
February Meteorological Table for Toronto, " " " " " "	iii
Remarks on " " " " " "	iv

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