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THE CANADIAN JOURNAL.

NEW SERIES.

No. LXXXIX.—DECEMBER, 1875.

LAPIDARIUM SEPTENTRIONALE.*

At length the *Lapidarium Septentrionale*, or "Description of the Monuments of Roman Rule in the North of England, published by the Society of Antiquaries of Newcastle-upon-Tyne," which has been passing through the press for the last five years, is completed by the appearance of Part V, embracing an "Appendix containing Additions, Notes. and Emendations," "Indices," "Preface" by Rev. Dr. J. C. Bruce, the Editor, "Introduction," and three "Maps." The five parts form a remarkably handsome folio volume, profusely illustrated by excellent woodcuts from faithful drawings of the objects that are described or explained; and the text is printed in a style and on paper that leave the most fastidious nothing to desire in these respects. The first four parts comprise the Roman inscriptions and most important objects of sculpture, numbering together over 900, which have been found in the counties of Northumberland, Durham, Cumberland, and Westmorland. Of "the Additions" in Part V. we do not presume to offer any opinion as to their completeness, for none but those antiquaries who reside on the spot, or who have visited the region with a view to researches of this kind, or who have access to well-furnished libraries of local Archæology, can form a competent judgment on such a subject.

We shall consequently limit our observations to the interpretations, and with some of these we are not satisfied. In n. 942 a grave-

* "*Lapidarium Septentrionale;* or, a description of the Monuments of Roman Rule in the North of England. Published by the Society of Antiquaries of Newcastle-upon-Tyne. Part V. Printed by Andrew Reid, and published by William Dodd, 1875."

stone is figured, unfortunately imperfect, so that "we do not know how much of the upper portion of the stone is wanting." It bears the inscription :—

PLVM * * *
LVNARI *
TITVL · POS
CONIVGI
CARISI
M

Dr. Bruce expands it thus :—"*Plumæ Lunaris titulum posuit conjugi carissimæ*," and offers the following remarks :—

"There is some little uncertainty about the reading of this inscription. The simplest, and therefore the most probable, rendering of it is to suppose that the husband, *Lunaris*, rears the tombstone to his wife, *Pluma*. *Lunaris* occurs among the list of Romano-Gaulish potters given in Mr. C. Roach Smith's Collectanea Antiqua, vol. vi., page 73. The name *Pluma* does not, so far as we know, elsewhere occur."

The first line seems to contain the ordinary formula *plus minus* (*i.e.*, PLVMIN with, perhaps, the S in the fork of the V), which is used when the exact age was not known. The name of the female &c., were on the lost portion of the stone.

In n. 943 a broken stone, "found in the Forum of the Station of Cilurnum, Feb. 3rd, 1875," is figured. It bears the inscriptions :—

ALVIS · AVGG ·
ELIX · ALA · II · ASTVR

VIRTVS
AVGG

Dr. Bruce expands them thus :—"*Salvis Augustis felix ala secunda Asturum Antoniniana ?—Virtus Augustorum*," and offers the following remarks on them :—

"The inscription is different from any that we have previously met with. The evident meaning of it is, "So long as the Emperors are safe the second ala of Asturians will be happy." A reference to the inscription, No. 121, leads us to suppose that the Emperors to whom this flattering compliment was paid were Elagabalus and Severus Alexander. Very soon after this inscription was carved Elagabalus was slain by the infuriated soldiery at Rome, and the second ala of Asturians, at Cilurnum, sympathizing with them, erased, though not entirely, the second G at the end of the first line, and that at the end of the inscription on the banner in the hands of the standard-bearer, as well as the whole of the third line of the principal inscription, which was probably an epithet which the

ala had been permitted to assume, by favour of the unfortunate Emperor when he was a popular idol."

The inscription, given by *Orelli, n. 864, confirms Dr. Bruce's view of the meaning:—*ΣΑΛΒΩ ΚΩΜΜΟΔΩ ΦΗΛΙΞ ΦΑΥΣΤΕΙΝΑ, i. e., Salvo Commodo felix Faustina,* but his reference of AVGG to Elagabalus and Severus Alexander is certainly incorrect. So far as we are aware, there is no example of the application of the term *Augusti* to those two Emperors. Nor is there any evidence that they were united under that name. To us it seems highly probable that the two Augusti were Caracalla and Geta, that the date is A.D. 211 after the death of Severus, and that the second G was erased after the murder of Geta in A.D. 212. But the most interesting result of this discovery is that the inscription throws light on another which unfortunately is lost. It is given from Horsley, in the *Lapidarium Septentrionale,* n. 27, and in *Britanno-Roman Inscriptions,* p. 133.

VICTORIAE
* * GGALFE
N S SENECIO
N COS FELIX
ALA I ASTO
[RV]M PRA

Of the true reading of the main part of the inscription there can be but little doubt. It is—*Victoriæ Augustorum, Alfenus Senecio Vir Clarissimus Consularis Felix Ala prima Astorum.* ALA has been regarded as standing for ALAE, the letters RVM as the final three of *Astorum* for *Asturum,* and PRA as the first three of *Præfectus.* Thus *Felix* was regarded as Præfect of the first Ala of Asturians. With others we have accepted this view, but it has always appeared strange to us that *Felix* had neither *prænomen* nor *nomen.* Now it seems most probable that *Felix* is used as it is in n. 943, and Baxter's reading—ALFENO SENECIONE is not so unlikely. What the letters at the side were that were crowded out can scarcely be conjectured with probability; they may have been something like *Curam Agente,* or *Curante, Præfecto.*†

With regard to the "Notes and Emendations," we cannot refrain from expressing our opinion that they are not what might reason-

* See also Eckhel, viii, 11.

† There is a strange mistake relative to this Præfect in Dr. Bruce's General Index to the *Lapidarium Septentrionale*: "Alfenius Senicio, Prefect of the Ala Prima Asturum, 31; his titles on other inscriptions, 31."

ably be expected in a work of this class. We subjoin a few examples of the omissions, some of which, we regret to say, are not trivial.

In n. 51 we have the following inscription :—

D) PP

On this Dr. Bruce remarks :—

"The stone possibly has some relation to the century of Peregrinus." [See n. 49.]

And yet on n. 140, bearing a similar inscription, the same Editor remarks :—

"Dr. McCaul suggests the reading *Centuria Primipili.*"

Of the correctness of this suggestion there can be but little doubt. See nn. 127 and 459.

In n. 150 a sculpture, found at *Cilurnum*, Chester, is figured; and the following are Dr. Bruce's observations on it :—

"Horsley, who was the first to publish this 'coarse though curious sculpture,' thought, at one time, that it was sepulchral in its character. Afterwards he adopted the opinion that it was mythological. The seated figure *he took to be* a female, 'holding a key in her right hand, and a thyrsus or hasta in her left;' the other part of the stone he describes as representing 'a human figure lying along, and a lion, with one of his paws, gently raising up the head.' 'This sculpture,' he adds, 'may very probably represent Cybele, for both the key and the thyrsus were her symbols, by one of which was denoted the opening of the earth, and by the other the producing of wine.' 'And if it be Cybele who is here represented, the lion that is gently raising up the head of the human figure, may signify the revival of man by the spring, and produce of the earth, or by the wine and fruits it affords; for the lion does not seem to be in a devouring posture, but rather guarding or cherishing.'

"The Rev. John Hodgson properly dismisses the idea that the seated figure was a female. He takes it to be 'a figure of Mithras seated on a bench, and having a flag in one hand, a wand in the other, and on his head the Persian tiara.' 'And,' he adds, 'I would hazard a conjecture that the whole relates to the Mithraic rites called Leontica; for the lion in the zodiac of the ancient heathens stood for Mithras, or the Sun, which threw its greatest heat upon the earth during its course through the constellation Leo, from July 24 to the same day of August.'

"There is yet another explanation of the sculpture, one that is simpler and more probable than either of these. It represents a scene in the amphitheatre. The presiding officer in his robes sits upon a chair of state. The staff of authority is in his left hand, and in his right is a flag to direct the sports. A contest between a gladiator and a lion has been going on, in which the man has been worsted. Probably the right-hand portion of the stone, which is wanting, contained a corresponding representation. It is not probable that so important

a station as Cilurnum would be destitute of an amphitheatre for the entertainment of the military. On the bank of the river, between the station and the 'Oxclose,' there are some semicircular recesses well adapted for the formation of an amphitheatre. The stone before us was found in this locality; when entire it would be a fitting head-stone for the principal entrance. For the view here given the author is indebted to Signor Montiroli, of Rome, the designer of the internal decorations of Alnwick Castle."

In the *Canadian Journal*, Vol. XII, 1873, p. 2, we find the following note referring to these observations:—

"Many memorials of the worship of Mithras have been found in Britain, and some of them are symbolical. In the *Lapidarium Septentrionale*, n. 150, a scene of this class is represented. A lion stands over a human figure lying down, with one paw raised to the head of the figure, and at the side is another human figure seated, with apparently a flag in one hand and a wand in the other. Mr. Hodgson regards the seated figure as representing Mithras, and adds, 'I would hazard a conjecture that the whole relates to the Mithraic rites called Leontica.' This conjecture is certainly well-founded, for this scene of a lion standing over a human figure lying down is often represented on Mithraic stones. See Mr. King's Gnostics, Plate II, 1, and XI, 4. The term *Leo* was the designation of a person admitted to the fourth step among Mithraists, and part of the ceremonial of initiation was for the neophyte to simulate death.

"The seated figure I take to be a representation of the officer under whose supervision the candidates for the fourth step passed through the preliminary rites; and I identify him with the *pater leonum*, or, it may be, *pater patrum* or *pater sacrorum*, under whom *prosedente* the ceremonial took place. See Henzen, nn. 5846, 6038, 6042*a*, 6042*b*. Part of a similar figure seems to be on a fragment figured n. 68, *Lapidarium Septentrionale*. The *pater patrum* may be regarded as=Grand Master, or his deputy, *pater leonum*=Master of the Lion Lodge, and *pater sacrorum*=Chaplain. In n. 65 of the same work, an altar is figured, bearing an inscription DEO, 'To the God.' Dr. Bruce properly refers it to Mithras, but has not noticed that the palm-branch on each side, with the wreath or crown in which the letters DEO are cut, are symbols of INVICTO, a term frequently applied to this god. We have also an example of the single word INVICTO, 'To the unconquered one'—denoting Mithras. See Henzen, n. 5846."

And yet there is no mention in the "Additions, Notes, and Emendations," in Part V., of this most satisfactory interpretation of the scene represented in the sculpture.

Again, we have another omission of a similar kind; in n. 270, a sculpture, found at *Vindolana*, Chesterholm, is figured, and the following are Dr. Bruce's observations on it:—

"This is a triangular stone, of which the left-hand corner has been broken off and lost. The carving has been rudely executed. Hodgson says that when he first saw it, it was in the wall of the farm-house of Low Foggerish, which is about half a mile south of Chesterholm.

"The carvings on this stone are probably Mithraic emblems. It were a vain task to attempt to unveil the enigma concealed under each. Probably the original upholders of these ancient mysteries could not themselves give an intelligent account of them.

"The Rev. John Hodgson has attempted to throw some light upon this obscure combination of figures; and as the reader may wish to have his observations at hand, the following passage is introduced from the *Gentleman's Magazine*, as referred to above:—"Here we have the umbilicated moon in her state of opposition to the sun, and the sign of fruitfulness. She was also, in the doctrines of Sabaism, the northern gate by which Mercury conducted souls to birth, as mentioned by Homer in his description of the Cave of the Nymphs, and upon which there remains a commentary by Porphyry.

"*The cross in Gentile rites was the symbol of reproduction and resurrection.* 'It was,' as Shaw remarks, 'the same with the ineffable image of eternity that is taken notice of by Suidas.'

"The crescent in Gentile rites was the lunar ship or ark that bore, in Mr. Faber's language, the Great Father and the Great Mother over the waters of the deluge; and it was also the emblem of the boat or ship which took aspirants over the lakes or arms of the sea to the Sacred Islands, to which they resorted for initiation into the mysteries, and over the river of death to the mansions of Elysium.

"The cockatrice was the snake-god. It was also the basilisk or cock adder. '*Habet caudam ut coluber*, vero corpus ut gallus.' The Egyptians considered the basilisk as the emblem of eternal ages. What relation had this with the Nehustan or Brazen Serpent, to which the Israelites paid divine honours in the time of Hezekiah?

"What is the circle with the seasons at the equinoxes and solstices marked upon it?—the signs of the four great Pagan festivals celebrated at the commencement of each of these seasons?

"I am not hierophant enough to unriddle and explain the hidden tale of this combination of hieroglyphics.

"This bas-relief seems to refer, in some dark manner, to matters connected with the ancient heathen mysteries."

In the *Canadian Journal*, Vol. XIV., pp. 1–8, the two principal objects are explained so as to leave no doubt of their meaning, and of the others a probable solution is given.

"On comparing the two representations of the carvings on the stone, it appears that the twisted, snake-like form of the tail of the bird, as given in the sketch supplied by Mr. Hodgson, is not observable in Dr. Bruce's wood-cut; nor can there be, *in my judgment, any reasonable doubt that the bird was intended to* represent a cock. As to the circular objec. in the right-hand angle, with intersecting lines, it seems to me to be nothing more than the representation of an ordinary loaf of ancient Italian bread, which, we know, was thus divided into four parts —*quadrae*. Thus we have in Virgil, *Æn.* vii, 114, 115—

Et vi clare manu malisque audacibus orbem
Fatalis crusti, patulis nec parcere quadris.

And in his Moretum, vv, 48, 49—

Lævat opus, palmisque suum dilatat in orbem
Et notat, impressis æquo discrimine quadris.

Quadra thus may be used here for *quarta*, and the two objects—the *gallus* (standing for *Galli*), and the *quadra* (standing for *quarta*)—may symbolize the *Gallorum Quarta*, the 4th cohort of Gauls. Now, from the *Notitia* we learn that this cohort was stationed in Britain, "*per lineam valli*," at Vindolana, and two altars (with a commemorative slab) erected by commanding officers of this cohort (see *Lapidarium*, nn. 244, 251, 262), that were found at Chesterholm, identify the places. So far there can, I think, be little or no doubt of the meaning of the symbols."

"The object regarded as a cross may be a monogram for IT=*iterum*, the tall I being crossed or the T elongated; and suggest, as the most probable solution consistent with this view, that the sun and moon are used, as the heads representing them are on a unique coin of Postumus, described by Eckhel, vii, p. 441, with the following comment:—*Solem et Lunam æternitatis esse symbola satis hactenus vidimus. In præsente numo aliam allegoriam constituunt, nimirum præclaris suis factis, inclarescere Postumum, et esse late conspicuum æque ac solem et lunam astra lucentissima.* Postumus held the office of Governor of Gaul, to which he had been appointed by Valerian, when he took the imperial title, and he entered on his second Consulship in that Province. According to this view the sun, moon and monogram stand for Postumus Augustus, Consul for the second time, *i.e.*, A.D. 259. This solution has the additional recommendation of accounting in some degree for the use of symbols, for in that year Valerian and Gallienus were really the Emperors, and Æmilianus and Bassus the Consuls, whilst Postumus was but a usurper of only one year's standing, not sufficiently firmly established to warrant the safety of recognizing him in the dignities that he had assumed. The 1st cohort of Dacians in Britain adopted the title *Postumiana*, as we know from altars found at Burdoswald,=*Amboglanna*, in Cumberland (see *Lapidarium Septentrionale*, nn. 359, 360), but no year is given for this adoption, and I suspect that the epithet was not publicly used before at least A.D. 262, when Postumus celebrated his *ludi quinquennales* and took the title *Germanicus Maximus*. According to this view, then, the objects carved on this stone may be regarded as symbolical of some such inscription as POSTVMO AVG·COS· II·COH · IIII · GALLORVM."

In n. 537, an altar, that was supposed to be lost, is figured. It bears the inscription:—

CONSERVATO
RI PRO SALV
TE M ** REL
ANTONINI
AVG * * IT MAX
* * * * * * * * * *
* * * * * * * * * *
* * * * * * BENS *
OB REDITV

Dr. Bruce expands it:—[*Iovi Optimo Maximo*] *Conservatori pro salute Marci Aurelii Antonini Augusti Britannici Maximi* ——— ——— *libens merito ob reditum*—and offers the following remarks:

"The formula at the close of the inscription, *libens merito ob reditum*, may refer to the emperor for whose well-being the altar was reared, or to the dedicant after his own return from some expedition or journey. It seems, however, most natural to regard the words as relating to the safe return of the emperor.

"The emperor, in acknowledgment of whose safe return the altar was raised, was probably Caracalla. As there is no mention on it of Severus or of Geta, we may safely infer that the occasion referred to was not the return to York from the Caledonian expedition, but the safe arrival of the emperor at Rome; and that the altar was not carved until after the death of Geta. As the brothers did not leave Britain until the summer of A.D. 111, and the younger was murdered in February, 112, the news of the arrival of the emperors in Rome would not long anticipate the tidings of Geta's death. The sixth and seventh lines of the inscription have been intentionally removed.

"They no doubt contained the name and office of the dedicator, who, notwithstanding this piece of flattery, seems subsequently to have incurred the tyrant's wrath. Neither friend nor foe was safe against his capricious cruelty.

"At High Rochester we shall presently encounter a slab bearing a dedication to Caracalla, when he was in possession of the tribunitian power for the nineteenth time (A.D. 216). From this inscription the name of the imperial legate and propraetor, who had caused its erection, has purposely been removed. He was probably the person who dedicated the altar we have now been examining."

Dr. Bruce's reading of the inscription is different from that of Hübner, who himself saw the stone. If IT MAX be correct, we may supply BR *(i.e., Britannici Maximi)*, and it may be assumed that the Emperor was Caracalla, when he was sole Augustus. But even on this assumption, Dr. Bruce's view of the occasion of the erection of the altar seems highly improbable. It would be better to refer the *reditum* to "the return" from Gaul, probably in January, 214 A.D. See Clinton's *Fasti Romani*, p. 224. But I much prefer interpreting *reditum* as "the return" of the individual, whose names are erased. It may be proper to notice that such violations of syntax as *ob reditu*, *pro victoriam*, &c., are sometimes found, and that the dates in Dr. Bruce's remarks should be A.D. 211 for "A.D. 111,"† and A.D. 212 for "A.D. 112."

In n. 551, an altar found at *Bremenium* (High Rochester), is figured. It bears the following inscription:—

† Even in "Notes and Emendations" mistakes have been overlooked. In "Page 130, n. 253," we have *Postumus* for *Postumius*, and in "Page 335, n. 643," *Maximus* occurs twice instead of *Maximinus*.

D · R · S ·
DVPL · N · EXPLOR
BREMEN ARAM
INSTITVERVNT
NEIVSC · CAEP
CHARITINO TRIB
V S L M

Dr. Bruce expands it thus:—"*Deæ Romæ sacrum. Duplares numeri exploratorum Bremeniensium aram instituerunt numini ejus curante Cæpione Charitino tribuno. Votum solverunt libenter merito.*" And offers the following observations:—

"The difficult points in the inscription are the D · R · S · of the first line, and the NEIVS of the fifth.

"Camden did not hazard an opinion about the first line. Horsley proposed *Deæ Romæ sacrum*, observing that it is well known 'that they made a goddess of Rome, and erected altars and temples to her.' He instances the grand altar found at Maryport, dedicated *Genio Loci, Fortunæ reduci, Romæ æternæ*, &c. The lines of Martial show in what estimation she was held:—

'Terrarum dea gentiumque Roma
Cui par est nihil, et nihil secundum.'
— Epig XII, viii.

"Prudentius informs us of the nature of the worship which was offered her:—

'Delubrum Romæ (colitur nam sanguine et ipsa
More Deæ) nomenque loci ceu numen habetur.'
— Contra Symm., lib., I.

"The coinage of the empire renders us familiar with her figure. She is usually represented as a female, of proud bearing, clad in military vestments, seated upon a pile of spoils. On her head she wears a helmet; when other nations are personified, the head is usually left bare.

"Horsley's expansion has not been universally acquiesced in. Muratori explained D · R · *Dianæ reginæ*. Orelli is not sure about *Deæ Romæ*, and suggests, as worthy of consideration, *Deæ respicienti, i.e., Fortunæ*, and *Deæ reginæ*. Professor Henzen, in the Index to his volume in continuation of Orelli, gives the preference to *Dianæ* vel *Deæ reginæ*. Dr. McCaul says: 'I am inclined to suggest *Dianæ reduci*, as more appropriate to the circumstances.'

"As to the other doubtful point, NEIVS, Camden and Horsley expand it by numini ejus; others, amongst them Hagenbuch and Dr. McCaul, prefer *nomine ejus*, in reference to the *numerus*."

In Prof. Hübner's n. 1037, the same inscription is given, with the following expansion and notes:—

"*D(eæ) R(omæ) S(acrum), Dupl(arii) n(umeri) explor(atorum Bremen(iensium) aram instituerunt n(umini) ejus, C. Cæp(asio ?) Charitino trib(uno). V(otum s(olverunt) l(ibentes) m(erito.)*"

"*N (omine eius) i.e. numeri proposuit Hagenbuch apud Orellium; sed tum tribuni nomen casu primo positum esse deberet.*"

We prefer *nomine ejus* to *numini ejus*, *Cæpario* to either *Cæpasio* or *Cæpione*, *curante* to *Caio*, or if the latter be adopted, either *solvente*, forming with *Charitino*, &c. an ablative absolute, or *solventes*, agreeing with *Duplarii*, to *solverunt*.

Prof. Hübner's *tribuni nomen casu primo positum* will yield no Latin construction, unless we expand S *solvit*.

In n. 576, a stone is figured that bears the following inscription :—

P · AEL · ERA
SINVS · TRIB.

Dr. Bruce expands it thus:—"*Publius Ælianus Erasinus tribunus.*"

Independently of the objection which may be urged against *Ælianus* as a *nomen*, this Tribune is probably the same mentioned in n. 571, on a stone found at the same place, whence it appears that we should read *Publius Ælius Erasinus Tribunus*. Prof. Hübner states this conjecture in his *Additamenta*, p. 312, but Dr. Bruce does not notice it in his Appendix.

In nn. 906, 907, two stones, one of which was certainly, and the other probably, found at Papcastle, are figured. The first bears the inscription :—

* NSIVM * * * *
EX · V · P · XIIII K
ETXIII KAL NOV
V S L M
ORDIANOETPONPEIANOC.

Dr. Bruce expands it thus:—["*Cuneus Frisionum Aballave*] *nsium ex voto posuit quarto decimo Kalendas et tertio decimo Kalendas Novembres votum solvit libens merito Gordiano iterum et Pompeiano Consulibus*—and offers the following observations :—

"Gordian III was consul for the second time, having Pompeianus as his colleague, A.D. 241.

"Why two days are named in this inscription, 19th and 20th of October, is not known; perchance the inscription may have been prepared to commemorate the opening of a temple, and the ceremonies may have lasted that time."

The second bears the inscription :—

* * * II * * * *
EGAVGIN C *
NVM FRISION
VMABALLAV
ENSIVM * * * *?
P XIIIIKALETXIIIKA *
NOV · GOR · II ET POMPEI * *
COS · ET ATTICO ET PRE * *
XTATO COS · V · S · L · M

Dr. Bruce expands it thus:—"*Legatus Augusti? in cuneum Frisionum Aballavensium Philippianum? quarto decimo Kalendas et tertio decimo Kalendas Novembres Gordiano iterum et Pompeiano Consulibus et Attico et Pretextato Consulibus votum solvit libens merito*," and offers the following observations:—

"At the end of the first line there seems to be a C, though it is somewhat difficult to distinguish it from a conchoidal fracture of the stone in this part. Believing the C to exist, we have read *cuneum* instead of *numerum* both in this inscription and the last. Mr. Watkin, in *Archæological Institute Journal*, has done so before us. The occurrence of [ABALLAVE]NSIVM in the last inscription, and of CVNEVS FRISIONVM ABALLAVENSIVM in this leads to the grave inquiry, is Papcastle the ABALLABA of the *Notitia?* High Rochester is believed to be the BREMENIUM of the Romans, because altars have been found there erected by a *Numerus exploratorum Bremeniensium:* on the same principle we must identify *Aballaba* or *Aballava* with Papcastle. Every effort having failed to identify, in the precise order of sequence, the stations on the Wall west of AMBOGLANNA with those named in the *Notitia*, we are compelled to look for them elsewhere.

"Mr. Watkin, Dr. McCaul, and Professor Hübner, all yield to the argument we have stated. When the *Notitia* was compiled, ABALLABA was the headquarters of the 'Præfectus numeri Maurorum Aurelianorum.'

"The latter part of the fourth line of this inscription has been purposely obliterated. We thought, however, that we could read beneath the obliterating marks PHILIP, and there is part of another P at the beginning of the next line. The *cuneus* has perhaps been allowed to use the epithet of *Philippianus*, and upon the overthrow of his dynasty in A.D. 249, it has cast it off with scorn. The only doubt we have about this reading is that Philip does not appear to have become a man of importance until A.D. 243, when he succeeded Timesitheus as prætorian prefect. This altar bears the double date of A.D. 241 and A.D. 242, on the first of which years the consuls were Gordianus for the second time, and Pompeianus, and in the second, Atticus and Prætextatus. Philip was slain A.D. 249."

The same inscriptions are given by Prof. Hübner, nn. 415, 416. He reads the M in n. 906 as IV, and expands the inscription

thus:—"*Numerus Frisionum Aballave]nsium? ex v(oto) p(osuit XIIII et XIII Kal(endas Nov(embris. (Votum) s(olvit) l(ibens) m(erito) [G]ordiano II et Ponpeiano Co(n)s (ulibus).*" In n. 907 the fragment of the first line is read by him as V, the second line as LEG · AVG · IIVI, and the third line as NVM · FRISION. On the inscription he offers the following observations:—"V 3, [4]. *De Aballava dixi in præfatione ad vallum Hadriani*, 4 [5]. *In fine litteræ quinque aut sex erasæ sunt. Erat fortasse cognomen numeri aliquod erasum postea nescio qualem ob causam.* 5 [6]. *Cur dies illi duo mentis Octobris hic et in titulo n.* 406 [*n.* 906] *celebrentur ignoramus.*"

The obscure parts of the inscription n. 907 are (*a*) the remains of the letters in the first line, the characters (*b*) after G in the second line, (*c*) before VM in the third line, and (*d*) after VM in the fifth line. As to (*a*), nothing feasible can be suggested. In the Journal of the Archæological Institute, XXVIII, p. 131, Mr. Thompson Watkin proposes IN CVNEVM as the reading of (*b*) and (*c*), and this is adopted by Dr. Bruce. With this opinion we cannot agree. The words *in cuneum* in this position yield no sense, and as we know from the *Notitia* that there was a *numerus* at *Aballava*, we might expect a *numerus* here. We ourselves, however, have nothing probable to offer in explanation. LEG · AVG = *Legatus Augusti* we regard, as designating the Legate of a Legion, not the Governor of the Province. If it had been the latter, we should most probably have had after LEG · AVG, some *sigla* of his titles, such as PR · PR. In (*d*) Dr. Bruce reads PHILIPP = *Philippianum*; but this reading must be at once rejected, for most certainly this epithet was not used by any military body during the life of Gordian, and he was not killed before A.D. 244. His view, however, that the erased letters formed some epithet derived from an Emperor seems very probable. On the difficulty, noticed by Prof. Hübner and by Dr. Bruce, of accounting for the days *XIIII & XIII Kal. Nov.*, *i.e.*, October 19th and 20th, we would suggest that they may have been devoted to *ludi* in honor of *Sol*. In the city these *ludi* occupied four days in October, from the 19th to the 22nd. It may also have been that the *armilustrium* was celebrated on the first of these days. See *Fasti Philocali* and *Commentarii Diurni*. It should also be borne in mind that in A.D. 241 the marriage of Gordian and the preparations for the Persian war took place. The inscriptions, in

themselves notable, are rendered more remarkable by the questions which they suggest relative to the topography of Roman Britain. The first printed notice that we have seen of such questions was in this journal, Vol. XII, 1870, p. 131.

"Another altar has more recently been found, bearing a similar date, and dedicated by a *Numerus Frisionum Aballavensium*; a designation which it is exceedingly difficult to comprehend. The difficulty, to which Dr. Bruce refers, is not as to the meaning of the words, for they plainly signify 'the detachment of Frisiones stationed at Aballava.' The *Frisii*, or *Frisiones*, regarded by some as identical with the *Frisianones*, or *Frisiavones*, or *Frisævones*, or *Frixagi*, are well known as a portion of the Roman auxiliary troops in Britain. The first cohort was there in A.D. 106, in A.D. 124, and at the beginning of the fifth century, as appears from the diplomas of Trajan and Hadrian, and from the *Notitia*. *Aballava* is also well known as a place in the island, although there are various opinions as to the identification of the site. In the *Notitia*, a detachment of Moôrs, called Aurelian, is said to have been stationed there. Nor is there any difficulty as to the use of *Aballavensium*. We have similarly *Numerus exploratrrum Nemaningensium*, Henzen's n. 6731, *Numerus Brittonum Triputiensium*, Orelli's, n. 1627, and *Numerus exploratorum Bremeniensium*, Bruce's Roman Wall, 3rd ed., p. 315. See Brit. Rom. Inscrip. p. 139. Dr. Bruce's difficulty as to the inscription, I apprehend, is that if the same principle, by which High Rochester has been recognized as *Bremenium*, on account of BREMEN and BREM in inscriptions on altars found there, be applied in this case, we must identify *Aballava* with Papcastle. If this be adopted, the views as to Brampton and Watchcross must be abandoned, and great latitude must be given to the terms *per lineam valli* in the *Notitia*. For the present it must suffice to have noticed the difficulty. At some future time I hope to examine the general question relative to the stations after Amboglanna, and to offer some suggestions that may, perhaps, be useful, even though in some cases expressed doubtfully, as I have not the advantage of personal knowledge of the localities."

But the first clear statement of opinion on the subject is given by Mr. W. Thompson Watkin, in his article "on the tenth iter of the British portion of the Itinerary of Antoninus," in the Journal of the Archæological Institute, XXVIII, 1871, p. 131:—

"The *successive order* of the *Notitia* garrisons, broken off at Lanercost, seems renewed at Papcastle, Moresby, and Ellenborough,"

In a note on this page, Mr. Watkin refers to the similarity of Dr. McCaul's views as expressed in this Journal, in Part XIII. The next notice that we have seen of this question is in a note to p. 212 of the *Lapidarium Septentrionale*, published in the close of 1872 or the beginning of 1873:

"Dr. McCaul thinks that the compiler of the *Notitia* ceases after AMBOGLANNA to give the stations of the Wall in regular order.

"If the proper order was to be abandoned, this seems the fitting place for doing so, as the Maiden way, coming from the south to MAGNA, and continued northwards from this station, brings AMBOGLANNA into direct intercourse with the contiguous forts in all directions.",

Subsequently, in 1873, Prof. Hübner's *Inscriptiones Britanniæ Latinæ* appeared, in which he identifies Maryport (otherwise called Ellenborough) with *Uxellodunum* (otherwise called *Axelodunum*), regards Papcastle as *Aballava*, and infers "*stationes Notitiæ omnes inde ab Aballaba numerari ordine nobis adhuc ignoto.*" We have thought it necessary to mention the facts that are here adduced, as the remark in the *Lapidarium*—

"Mr. Watkin, Dr. McCaul, and Prof. Hübner, all yield to the argument we have stated"

might be misinterpreted as indicating that Dr. Bruce had ever advocated these views before they were advanced by the above-named enquirers, or that he had in any way led to the inference.

In n. 725, Dr. Bruce gives the following inscription:—

D + M
CONDATI
ATTONIVS
QVINTIANVS
MEN EX CC IMP
EX IVSSU LL A (?)

His expansion is:—"*Deo Marti (?) Condati Attonius Quintianus mensor ex ducenario Imperatoris ex jussu lxtus libens merito.*"

And the following are his observations:—

"The expansion of the two last lines is that which the editor is informed Professor Mommsen long ago proposed, and which Dr. McCaul has also given in the *Canadian Journal*.

"Attonius Quintianus was a *mensor*, having previously been a *ducenarius Imperatoris*. Both of these terms admit of various applications. In a civil sense, the *ducenarii* were imperial procurators who received a salary of two hundred sestertia; in a military sense they were officers who commanded two centuries. The *mensores* were surveyors employed in various capacities; some had charge of measuring the space to be occupied by the tents in the camp, others provided quarters for soldiers on a journey; in a civil sense they were measurers of land, or of corn taken to the public granaries, or architects.

"See Smith's Dict. Ant.

"Probably the last letter on the last line was M, *merito*; if, however, it be correctly read, the A stands for *animo*."

Dr. Bruce, we think, should have given the credit which is due to Dr. McCaul for his interpretation, especially as he refers to the *Canadian Journal*, Vol. X, 1865, p. 96, in which it was first published, and as he evidently does not know (nor do we either) whether Professor Mommsen ever published it at all. A more remarkable example of this omission is to be found in the following, n. 656 :—

* * * * * * * * * * * *
LEG · A * * * * * * *
Q · CALPVRNIVS
CONCESSINI
VS · PRAEF · EQ
CAESA · CORI
ONOTOTAR
VM · MANV PR
AESENTISSIMI
NVMINIS DEI VS

Dr. Bruce's expansion is :—"*Legato Augusti* [*proprætore*] *Quintus Calpurnius Concessinius præfectus equitum cæsa Corionototarum manu præsentissimi numinis Deo (?) votum solvit.*"

And the following are his observations :—

"This inscription has given antiquaries much trouble. The simplest explanation of it is that which has been suggested by Professor Mommsen, and which is adopted in the expansion. It requires, however, the alteration of *dei*, in the last line, to *deo*. According to this view, the altar was reared by Concessinius, after having slain a number of the Corionototæ (a British tribe not elsewhere mentioned), to the god by whose presence and effectual help he had prevailed. The top of the altar, which has been broken off, no doubt contained the name of the god and the imperial legate."

Now this same solution of the difficulty was published in this *Journal*, Vol. IV, 1859, p. 175, and again in *Britanno-Roman Inscriptions*, p. 142. Dr. Bruce indeed refers to the latter, but he omits all notice of priority. And yet it is well understood that publication is the only reliable test of priority among authors. It sometimes happens that the same solution presents itself to the minds of different enquirers, but the credit is certainly due to him who first publishes it. It is true that neither does Professor Hübner in his work, *Inscriptiones Britanniæ Latinæ*, notice the previous suggestion in these pages of the same interpretations as those attributed to Prof. Mommsen, but it must be borne in mind that Professor Hübner had not consulted, nor perhaps seen, the *Canadian Journal*, whereas Dr.

Bruce frequently refers to it, and often uses its suggestions; as in a similar way, the omission by Professor Hübner, of reference to *Britanno-Roman Inscriptions*, is plainly due to his having read only parts of that volume, but the same excuse cannot be pleaded in Dr. Bruce's behalf, as he was evidently familiar with the whole of it.

The omissions in the "Additions, Notes, and Emendations," of which we have given specimens, are greatly to be regretted, as the volume is remarkably attractive, and affords the distant enquirer an excellent opportunity of inspecting well and faithfully-executed copies of the originals. In this respect it is far superior to Professor Hübner's book, which has almost no illustrations; but the latter, it must be admitted, is better adapted for the use of the student, even in the limited range to which the *Lapidarium Septentrionale* is confined. Dr. Bruce's diligence and fidelity deserve the highest commendation (especially when we look back on the successive editions of "The Roman Wall"), and his editorial labors have been admirably seconded by artistical and typographical skill, but he has not produced a volume that can compete with foreign works in those scholarly characteristics that mark the successful pursuit of Latin Epigraphy.

THE PRIMITIVE HISTORY OF THE IONIANS.

(*Continued from page 431.*)

BY JOHN CAMPBELL, M.A.,

Professor of Church History, &c., Presbyterian College, Montreal.

V.—ITALIAN CONNECTION.

Onnos or An-ra of Egypt, Oannes or Anu of Babylonia, Ion or Deion of Greece, is the same as the Latin Janus. Like Ion, he is reported to have been the son of Creusa the daughter of Erechtheus; and, as bearing the name Quirinus, he should have relations with the family of Romulus, who, like Erechtheus, designates Jerachmeel. As representing, in his double aspect, the union of the tribes governed by Romulus and Tatius, and thus assuming the role of Mithras the mediator, we shall find that his Italian story bears out the facts presented in other legends concerning the family of Onam. The association of the fish with Janus in the person of his sister or wife Camasane, who, like Atargatis, was half woman and half fish, has led many writers on comparative mythology to identify him with Oannes and other fish-gods.[140] He has also been regarded as an Apollo or god of the sun, by ancient mythologists. As the porter, holding the key and bearing the name Thuræus, he relates at once to Tentyra and Athor or Atargatis and to Abi-Shur his grandson. He has also been identified with Œnotrus, a name that suits better his grandson Jonathan.[141] Panda, the goddess of the gates, and Pandosia, a colony of the Œnotri, exhibit the same form as we have found in Pandion, a Jonathan with the prefix of the Coptic article. A similar form appears in Fontus, who is called a son of Janus, but who is really Jonathan his grandson. Œnotria may designate the land of the vine, and still not be discordant with the legends of the Onites, since the mythology of Greece has exhibited an important and repeated wine-connection.[142] Entoria, who is associated with Janus,

[140] Creuzer, Guigniaut, &c.

[141] Banier's Mythol. & Fab. explained by history, London, 1740, ii. 268.

[142] Oinos may have derived its name from Onam.

derived her name from the same original as Tentyra, Tyndareus, Onderah, Œnotrus, etc. As we have found that a daughter of Onam, as Onnos, Oannes and Deion, married Achuzam as Aches, Hea and Ixion, so, Latin mythology unites a daughter of Janus to Picus, a Coptic form of the name of the same Ashchurite.[143]

The family of Jadag seems to be the most important of the two families of Onam in the Latin or Italian traditions. Jadag himself is Æthex, the son of Janus, from whom the Æthices of Thessaly are said to have descended. Ion also had settled among the Perrhoebii of Thessaly, and thence Janus is said to have come to Italy. I have already indicated the strong Onite traces found in this Greek region. Another name for Jadag is, I am convinced, the Etruscan Tages, the son of Genius, who appeared to Tarchon, teaching him divination, and to whose oracles or books reference is made by various writers. The form of Evander's name would favour his being the same as Ahban or Abn-ra, but several facts concerning him combine to show that, although he brought the worship of Pan or Ahban to Italy, he is rather Jonathan, the son of Jadag, Tages or Æthex. Arcadia, his original home, simply denotes his Jerachmeelite descent;[144] but Pallantium, the town in which he was born, and Pallanteum, the city which he founded in Italy, lead us to the name of Pallas, who is called his son, and thus to Peleth, the son of Jonathan. The Aventine, on which he was worshipped as a god, sufficiently shows that the final *r* is a remnant of the Egyptian solar termination *ra*. The mother of Evander, named Carmenta, is called Tegean. I do not know who Jadag married, but Jonathan himself was united to a princess of the house of Tekoa, a daughter of Achashtari. With the Palatine hill, we find not only Pallas and his father Evander associated, but also Castor and Pollux, and Pallatia, the wife of Latinus. In the Greek connection we have found it probable that Pollux or Polydeukes and Pallas or Peleth, are the same, Castor being Achashtari, his grandfather on the mother's side. Latinus also, whom we have supposed to be Othniel, as L-Atin, is made the husband of Pallatia, in strict

[143] Picus, as I have shown in a former paper, sometimes denotes Achuzam, as Phix and the eponym of Phacussa, sometimes Coz the son of Ammon, the true Bacchus and father of Œnopion, who married the granddaughter of Achuzam.

[144] Thucydides and other writers give the Italians an Arcadian origin. Arcas, who is made son of Orchomenos, is really the same, both names denoting Jerachmeel. The Arcadian Azanes are the descendants of Ozem, son of Jerachmeel. The Pan who is called brother of Arcas must, I think, be Onam himself, his son. Aventinus is the name of an Italian king.

accordance with the inductive reasoning that has given to Othniel an Onite princess in marriage. She is also called Pallanto and Palatua. I have already thought it probable that Othniel was united to a daughter of Jonathan, who might very properly bear a name similar to that of her brother, or at least be commemorated by such a name. Pallas, the son of Evander, is said to have been killed by Turnus, and he, as the son of Faunus, Pan or Ahban, must be Harum, the father of Aharhel. The only other geographical connection of Peleth to which I direct attention is one already alluded to. Pola, the town of fugitives spoken of by Callimachus in connection with the Argonautic expedition, is undoubtedly a transplanted Beth-Palet, the house of flight, from the south of Palestine.[145] It is worthy of note that the Absyrtides, including Absorus, are near at hand, and that Epidaurus, like them commemorating Abishur, with Meleta or Meleda, similarly commemorating his son Molid, are situated along the same coast.

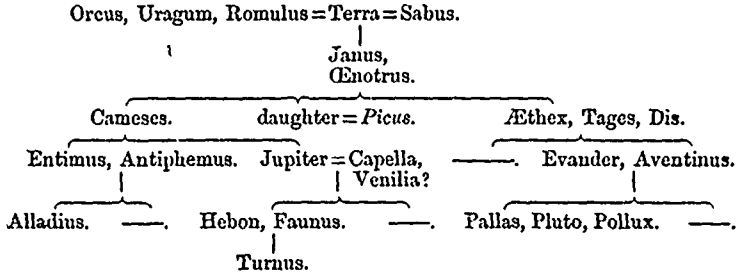
Turning with these memorials to the family of Shammai, we find his own name in Cameses, whom Macrobius gives as a king of Italy and contemporary of Janus.[146] Camasenus and Camasena are also made the brother, and sister or wife of Janus. I have already mentioned their fish relations in etymology with Oannes, An, and other representatives of Onam. The initial *S or Sh*, of Shammai, is in their case rendered by what was, at least in the Greek kamesenes, a hard sound, just as Æolian Cyme represented a softer Samos. Cumæ is an Italian geographical name, reproducing Samos and Cyme. It was a Greek colony, and its founder is called Hippocles, who must, I think, stand for Abichail, the wife of Abishur, she being, as Amalthæa or Capella, the Sibyl of Cumæ. Apollo was appropriately worshipped at Cumæ. I have not found Abishur appearing with any prominence in Italy and its legends, unless it be as Jupiter Pater and Lapis.[147] His wife, Juno, has frequently been associated with Janus, and may help to point out the connection of the king of the

[145] Callimachus *apud* Strab i. 2, 40.

[146] Macrobii Saturnalia, i. 7.

[147] Janus is called Janus-pater. In the Indian mythology Dyauspitar connects with the family of Indra. Tyr, the German sun god, has been made the same as Zeus and Jove by Grimm; and both Indra and Tyr will appear in the sequel to be of the family of Onam. It seems strange to find Absyrtus the unfortunate and the king of the gods in the same person, but the same reasoning which would lead to the rejection of the evidence would remove Julius Cæsar from the page of history, and deny that the enslaver of Israel, who was drowned in the Red Sea, was made a god during his life-time by the Egyptians.

gods with the family of Onam. Entimus or Antiphemus, who is said to have led a colony from Lindus, in Rhodes, to Gela, in Sicily, is, I think, Nadab; and Antium, in Latium, may probably be a reminiscence of the same hero of the Sun. As for Ahban, the son of Abishur, we find him in the god Hebon associated with Bacchus, as he is with Coz, the son of Ammon, and bearing the bull's head of his father, Taurus or Abi-Shur. The oracle of Aponus, with fountains recalling Daphne; Hipponium or Vibona, founded by the Locri; and the range of the Apennines, a western Lebanon, are Italian traces of the line of Ahban. I have already identified him with Faunus, and his son Harum with Turnus, the son of Faunus. The few Italian reproductions which I have noted of the line of Ahban, are as follow:—



VI.—CELTIC AND GERMANIC CONNECTIONS.

The mythologies or legendary histories of the Celtic and Germanic peoples afford ample material for tracing the families of Onam, but, as in the case of all that have preceded, lack of time to pursue my researches has hindered me from doing more than to indicate, by a few examples, the wide-spread influence exercised by this ancient stock. The Irish Tuatha-de-Danans are clearly the posterity of Onam. I am perfectly willing to admit that connections based upon mere verbal similarity are of the most deceptive character; but when, in a single family, I can discover, along with other attributes, a series of names showing intimate resemblance to those of notable persons in the line I seek to identify, I am compelled to ask a reason for this similarity, and, if no better can be given, to refer them to the same original. This is peculiarly the case with the family under consideration. The Tuatha-de-Danans[148] were not only

[148] Keating's General History of Ireland, Dublin, 1865, p. 86. See also General Vallancey's Specimen of a Dictionary of the language of the Aire Coti or Ancient Irish, Dublin, 1804.

notable magicians—a character which has already more than once been attributed to members of the Onite family—but their priests or workers of magic were the Dees, and their principal god the Sun. To them, likewise, belonged the Lia-fail, or stone of destiny, which lies under the English coronation chair, and recalls Jupiter Lapis, and the Petra of Greek idolatry connected with the name of Abishur. In their number we find Nuadh of the silver hand, whose story Mr. Cox has identified with Germanic and Indian legends that will yet appear in intimate connection with the sons of Shammai ;[148*] and their sacred cauldron is that of Dodona. But more remarkable than all this is the presence, in the royal and priestly genealogies of this people, of the following Onite names: Jarbhainel, who is Jerachmeel ; Eana, who is Onam ;[148**] Semias or Shammai ; Tait or Daghda, who may be Jadag ; Neid or Nuadh, who is Nadab, the brother of Abishur, and Gorias, who may be Abishur ; Jondaoi or Jonathan ; Ealathan son of Neid or Seled, of Nadab ; Falias, whence the stone Lia-fail, which is the Greek Palladium, or Peleth. Beachoil, one of their chief princesses, is Abichail, and Gabhneoin may represent her son Achban, with whose name Gobhan, the Irish *smith*, has been already associated. Eathoir may be the childless Jether, son of Jadag, a reminiscence of whose name seems to survive in that of Juturna, called the wife of Janus. Milesius, who is represented as pertaining to another line, may be Molid. He takes the place of his brother Ahban as the father of Heremon, the husband of Tea (an Onite name), who is plainly Harum, for his son is Irial or Aharhel. Fial, called the mother of Heremon, is the Egyptian, Palestinian and Greek Phiala, and, as a form of Abihail, should be his grandmother, he being the son of Ahban.

In the British mythology, Seithwedd Saida is represented as having been the same as Dagon, the king of Dyved, or the land of Hud, and the father of Hywy, who is probably Achuzam, son-in-law of Onam. In Saida, Dyved and Hud we must, I think, see Dagon of Ashdod, or Jadag, the son of Onam. Whether this be the case or not, for one mythology may present the same individual under different

Gorias of the Tuatha-de-Danans, whom I identify with Abishur, is connected by the latter writer with Stonehenge, which is called Choir Gaur or Temple of the Sun. To Soim or Semias, who is Shammai, he says wells and fountains were dedicated. Patrum was the name of the oracle drawn from wells. Dan is a poem, and Dana learning or poetry.

148* Cox's Aryan Mythology, i. 385.

148** Vallancey connects Jon, the sun, the god of the pagan Irish, with the Pehlvi Jhan.

aspects, it is evident that the Tuatha-de-Danans, who were masters of poetry as well as of enchantments, belong to the same stock as Tydain-tad-Awen, the Welsh originator of the poetic art, and that he reproduces the Indian Veda, whose relations are with Jadag. We have seen, however, that *gwyddoni* is the Welsh word answering to Jadag. I cannot, therefore, dismiss from the connection just specified, Gwyddon Ganhebon, another primitive bard, whose name enters with that of Tydain-tad-Awen into the bardic triad, nor Gwyddion, the son of Don, who appears in a similar triad of primitive astronomers. According to the learned Davies, Tydain-tad-Awen is Titan,[149] while Gwyddion, son of Don, is, like Tages, Sage, son of Genius.[150] The same writer informs us that Tydain-tad-Owen is solar, and relates to Apollo, and what is more important, that he is called Teyrn On, or sovereign of On, which Taliessin identifies with Heliopolis.[151] Now Davies knew nothing of what some are pleased to call my theory of mythology, which is no theory in reality, but the result, as astounding to myself as it can be to any one else, of legitimate inductive reasoning; yet had the result been before him, he could not have more completely justified it. With Tydain Ladon is associated, and with Awen the divinities Budd and Bun were worshipped at Stonehenge. At Seon of the strong door, Amathaon, another son of Don, is associated with Gwyddion. Seon is identified by Davies with Samothrace,[152] and Amathaon must, I think, seeing that he and Gwyddion are at times made the same, be Jonathan, the son of Jadag. In Tarw, the bull-demon, Abi-Shur or Taurus should be found. As Patarus, the British legends reproduce the son of Apollo in Bedwyr or Pedrog.[152*] Owen, the son of Urien, seems to point to Onam, the son of Uranus or Jerachmeel, and Adur as a progenitor of Tydain-tad-Owen may denote Atarah. The flat stone of Echemeint, called Carchar Hud, must have relations with the sacred stones of Irish and classical tradition, and, in its epithet Echemeint, may preserve the name of Acmon, Achban or Abn-ra.

Among the names which appear in the Arthurian romances, king Pescheur in the Lœgrian land, with Gawaine, Galahad the chaste,

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[149] Davies' Celtic Researches, 168.

[150] *Id.* 174.

[151] Davies' British Druids, 526.

[152] *Id.* 89, 168, 54. The Gwyllim or prophetic maids at Seon must be a reproduction of the Sibyls of Cumæ. Fleidur, son of Porthawr Godo, the door-keeper, may be Peleth.

[152*] A better identification might be Idris Gawr, whose keep, or Cader Idris, recalls Chuter Tautus.

and Pelles, have many links to bind them to the Onite Abishur, Achban, Seled and Peleth. It is a strange coincidence with the facts already established that appears in the chronicle of Geoffrey, where Evander is made a king of Syria.[153] In the same chronicle, Brutus is represented as the father of Kamber, Locrin and Albanact, while his wife is Ignoge, the daughter of Pandrasus, king of Greece.[154] To Kamber the region of the Severn fell as his kingdom, and the city of Brutus was Kær-Lud. Brutus is the same as Brathu, a form of Martu,[155] and denotes Mareshah; Lud, the name of his city, is Laadah, the father of Mareshah; Kamber, with the Severn, is Tiberinus, Tembrion, Khammurabi or Hebron, the son of Mareshah; and Ignoge, called his wife, is really the Heliopolitan Hanku, who married Cephren or Hebron, his son. Pandrasus challenges comparison with Pendaran Dyved of older forms of British tradition, who relates to the Awen line, and with the Greek Tyndareus and the Egyptian Tentyra. It probably denotes Jonathan-ra. As for Locrin and Albanact, though much out of place, they seem to designate Abishur in his Locrian connections, and Ahban in the Lebanon form of his name.

The Irish and Scottish traditions give a Scythian ancestry to the earliest inhabitants of the British islands. It is, therefore, interesting to find the Scythian Apollo called Œtosyrus, a name which Professor Rawlinson appropriately compares with the Indian Surya, and which denotes Abishur.[156] Paterus was also the name of the Celtic Apollo and his priests;[157] and from Penninus, a solar god who represents his son Ahban, the Pennine Alps and the Apennines received their name.[158] In Mediæval tradition, Helias or Ealadh, the son of queen Matabrune, with the legend of the golden collars which reappear in the golden rings of the Germanic dwarf Andvari, presents us with a form of Seled or Galahad, the son of Nadab or Nadab-ra, who is represented both by Matab-rune and Andva-ri.[159] Ealadh, or the

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[153] Geoffrey's British History, x. 5.

[154] *Id.* i. 2. Another female name of British story that finds an ancient equivalent is Blanchefleur, daughter of Merchiawn, who is Leucothoe, daughter of Orchamus, Merchiawn or Mark being a British form of Jerachmeel.

[155] Rawlinson's Herodotus, App. Book i. Essay x.

[156] *Id.* App. Book iv. Essay ii.

[157] Ausonius *apud* Banier, English ed. iii. 272.

[158] Livy *apud id.* iii. 274. He is the same as the Germanic Geban. Grimm's Deutsche Mythologie, 567.

[159] Cox's Aryan Mythology, i. 277; ii. 284.

swan, conducts us to Leda, the wife of Tyndareus, and other connections of the Onite line.

In Germanic legends the memory of Onam has been overlaid by Christian myths concerning the apostle John and John the Baptist. Grimm, in his Deutsche Mythologie, finds that Italy, as well as Germany and Scandinavia, maintained pagan rites under the name of John, who assumed the role of a water-god.[160] The same author, in his treatment of the Johannisfeuer, another pagan ceremonial, shows its connection with ancient solar worship, and appropriately directs attention to the Gebennaberg, on which Apollo was anciently worshipped, as one of the scenes of its observance.[161] In Gebenna we find the Gallic Penninus, or in other words Achban. The Sclavonic god, Kupalo, whom Grimm associates with Johannes, may be a form of Apollo, or designate Abihail, the wife and mother of solar divinities.[162] As for Baldag or Balder, the sun-god, who is found in the same company, he is Polydeukes or Peleth. This Johannes must be the head of the Scandinavian Vanir, who dwelt at Vanaheim. They were reputed to be especially wise and intelligent. Two of their goddesses, Skade, the wife of Njord, and Freya, bear names peculiarly Onite, Skade being called Ondurdis, and Freya, Vanadis, Syr, Gefn.[163] Vanadis, according to Grimm,[163*] is "nympha Vanorum," and she is the Undine whom Mr. Cox identifies with Daphne.[164] In Daphne, Ahban is not so perfectly preserved as in Gefn, the name of Freya or Vanadis, while her other epithet Syr gives us the Shur of Abi-Shur. It is interesting to note that Njord is represented as introducing vine culture, and that his children, Frey and Freya, were worshipped in Scandinavia, at Thvera and Upsala, which seem to be reminiscences of Abi-Shur and Abihail.[165] With Abihail also the island Abalus, or Basilea, in the same region, may connect. As for Ondurdis, the wife of Njord, she reproduces in her name the Egyptian Tentyra.[165*] For whom, in particular, Njord may stand I cannot tell.

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[160] Grimm's Deutsche Mythologie, 555. Andvari connects, 559.

[161] *Id.* 587. Here we must find the Egyptian connection of On and Ptah, and the Indian of Indra and Agni.

[162] *Id.* 591.

[163] Mallet's Northern Antiquities, Bohn, 426.

[163*] Deutsche Mythologie, 374.

[164] Cox's Aryan Mythology, i. 400.

[165] Grimm's Deutsche Mythologie, 197.

[165*] With Ondurdis the Indian Onderah, down to which the Asuras were driven by the Devs of Siva, has the closest verbal connection.

The most important legend regarding the Vanir is that which contains the story of their union with the Æsir, whom I have already identified with the Ashchurites. Njord, of Noatun, which recalls Jonathan, was given as a hostage to the Æsir, just as we have found Jonathan marrying a daughter of Achashtari, the son of Ashchur.[166] But the treaty of peace was concluded by the Æsir and Vanir unitedly forming a being called Kvasir, of great intelligence, whose blood, after he had been murdered by the dwarfs, was mixed by them with honey, and became the mead of the gods. Whoever drank the Kvasir acquired the gift of song.[167] This Kvasir was also called Son-ar and Hnitbiarga water.[168] The Kvasir has been identified with the Vedic Soma by many writers on comparative mythology, and with justice.[169] But should not some etymological connection be found in the two legends? Kvasir is the dismembered or murdered Abishur, Absyrtus, Icarius, etc., in the Geshur form of his name. Song, which has already been associated with the family of Onam, is the gift of Apollo, the sun-god. Sonar is simply the Sun with the Egyptian *ra* termination, for Sonne is San, Sham-as, or Shammai, the father of Abishur. Hnitbiarga may or may not relate to his brother Nadab, who is certainly the dwarf Andva-ri.

In still another form Abi-Shur appears before us in these Germanic traditions. He is Tyr, the strong and wise, whose hand was bitten off by the wolf Loki. In his story we find the Irish legend of Nuadh of the silver hand, and the Indian Savitar, whom I will yet prove to be Abishur. In the Irish legend his brother is made to do duty for him. Grimm has shown that Tyr is pre-eminently a sun-god.[170] Jadag is not unrecognized in the Germanic pantheon. He appears as Dagr or Tag, the son of Nott and brother of Donar; one of the husbands of Nott, although not Tag's father, bearing the name of Onar.[171] No solar theory can explain such an association of names, but a Bible Euhemerism can. Onar is simply An-ra or Onam; Tag or Dagr, Jadag-ra; and Donar, recalling the Greek Tyndareus and the Celtic Pendaran, is his son, Jonathan-ra.

The following tables present the Celtic and Germanic equivalents of the families of Onam:—

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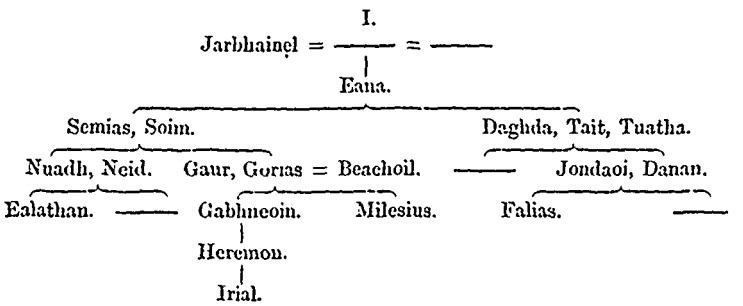
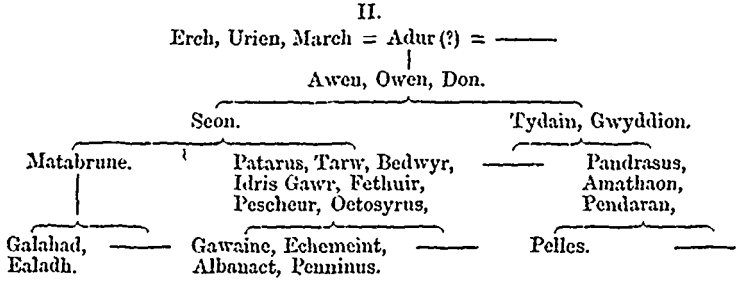
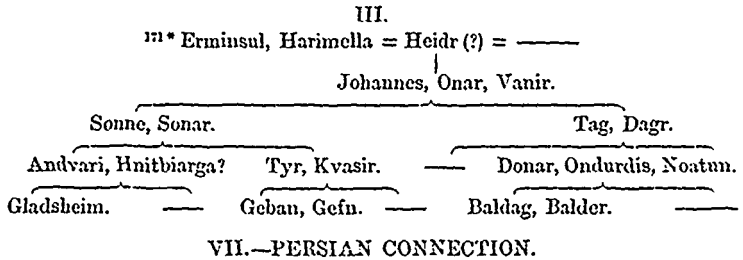
166 Mallet's Northern Antiquities, 418.
167 *Id.* 461.
168 Grimm's Deutsche Mythologie, 857.
169 Cox's Aryan Mythology, i. 369.
170 Grimm's Deutsche Mythologie, 175, *seq.*
171 *Id.* 697.







VII.—PERSIAN CONNECTION.

In Persian mythology Strabo's Omanus and Anadatus,[172] and Homa, Tir and Aban challenge comparison with Onam and Jonathan, Shammai, Abishur and Ahban, the latter of whom, however, answers better to Açman.[172*] The only deity to whom, at present, I direct attention is Mithras, the sun and the mediator. Guigniaut points out the fact that Pliny gives this name to the first king of Helio-

[171*] The Germanic gods Erminsul and Harimella must, I imagine, preserve the memory of Jerahmeel, whose name may have survived in the Marcomanni. For the connection of the Persian Tir with the Scandinavian Tyr, *vide* Le Dabistan, Paris, i. 39.

[172] Strabo, xi. 8, 4.

[172*] Guigniaut, i. 784. Behram, a deity, may be a Brahma form of Ram, who should not be forgotten in an empire that contained Arachosia, named after his father. Tahmouras, a name I have supposed to relate to Athom-ra, may, in the form Symouras sometimes given, denote Shammai-ra.

polis.[173] Herodotus identifies the goddess Mitra with Venus Urania, who is the same as Athara or Atargatis, the name Urania being taken from her husband Jerachmeel.[174] But Mithras is a male divinity, and is represented, in the position of Kvasir or Janus, as uniting two races. He was worshipped by the Romans, and especially at Antium,[175] a place already connected with the Onam line. There is no doubt that he was a solar deity. The keys, which appear in several representations of this god, suggest some relation with Janus and other porters. The bull, which the young man in the Phrygian bonnet is engaged in killing, often bears the inscription "Mithras," so that Taurus may be the root of the word, and Mithras may represent Abishur, *m* simply taking the place of *b*, one of the commonest of literal changes in etymology. It would thus resemble the Babylonian Misharu. The Persians asserted that Mithras was born of a stone. His mysteries were called Patrica. But more important and definite is the representation of the wine of Icarius, the mead of Kvasir, and the Vedic Soma, by the blood of the bull, into the neck of which the dagger is thrust. On one of the marbles representing Mithras, at the spot where the blood flows forth, the words "Nama Sebesio" were found inscribed. These words have vexed the minds of many learned antiquarians, and, although no difficulty has been found in rendering them from the Greek into *august stream* or *sacred fluid*, no one has been able to explain why it should be so called. Abishur as Kvasir, uniting the Æsir and Vanir, is the explanation. The sacred fluid is the Soma that commemorates Shammai, as Mithras does Abishur. We have thus, representing the murdered Abishur or Amchura, Absyrtus, Icarius, Abderus, Kvasir, and the bull of Mithriac worship; and in the case of three of these, Icarius, and the two latter, the victim furnishes a beverage to his murderers. One source only can explain this legend with its peculiar accompaniments—the Egyptian monuments of Aboo-Seir or elsewhere, that refer to Amchura and his family.

VIII.—INDIAN CONNECTION.

The Vedic and other traditions of the Hindoos furnish a more satisfactory exhibition of the line of Onam than any yet afforded, and

[173] Religions de l'Antiquité, i. 367.

[174] Herodotus, i. 131.

[175] Della Torri, Monument. Vet. Antii. *Vide* Bamer, Mythology and Fables of the Ancients i. 102 *seq.*

render important service in binding together names that may have seemed in certain cases to be arbitrarily connected. Onam, as I have already stated, is represented by the Sanskrit Indra, the son of Brachma or Brihaspati, the husband of Tara, in whom we recognize Jerachmeel and Atarah. Indra is a form like An-ra, the name of the solar god and king of Heliopolis, and Andreus, the early ruler of Grecian Orchomenos, the inserted *d* being a necessary expedient for the sake of euphony at first, although afterwards, as itself appearing in Jonathan, an original element of an important and closely allied word, with which the first was often necessarily confounded. Indra is the great deity of the Vedas,[176] which is most reasonable since they take their name from his son Jadag, Tages, Tydain, Tuatha, the bard of the world's second infancy. More truly a solar god than himself is Soma, the great son of Indra, the deity of the juice and of the verses.[177] He is Shammai, who takes the role of his son Icarius, Kvasir, Mithras. He is sometimes called the son of Atri the son of Brahma, instead of the son of Indra, but Indu-Soma and similar terms seem to show that in Atri Indra merely assumes the name of his mother Atarah. Another generation is given us in Indian mythology, and Savitri or Surya, the son of Soma, who is pre-eminently the god of the Sun, brings us down to Abishur. The Suryas are his Syrian descendants and their subjects. But Savitar himself is the golden-handed divinity whom Grimm identifies beyond all chance of doubt with the Germanic Tyr,[178] and whom Mr. Cox connects with the Irish Nuadh of the silver hand. Professor Max Müller sees nothing here but the solar myths rising out of Indian and German consciousness independently into an accidental coincidence. With a modern German proverb, "Morgenstunde hat Gold im Munde," he would explain the myth of Savitar, and that of Tyr, with the trite saying that victory, which Tyr represents, can only be found on one side.[179] Professor Müller's ingenuity is to be admired, but his incredulity is worthy of a different fate.

I do not know whether Sammata, the first king of the race of the Sun, according to Buddhist traditions, with his successor, Upa-chara, represent Shammai and Abishur or not, but I think it is very

[176] Müller, Science of Language, Series ii. Lecture x.

[177] *Vide* Muir's Sanscrit Texts. The union of the sacred beverage and of the gift of divine song in Soma agrees in all respects with the connections established.

[178] Deutsche Mythologie, *vide supra*.

[179] Science of Language, Series ii. Lecture viii.

probable.[180] Abishur, however, appears again under the not so easily recognized form of Vicram Maharajah, Vicramaditya or Vacradanta. As Vacradanta, he is king of Carusha, and prince of the Yavanas or Ionians.[181] As Vicramaditya, he follows Yoodistheer or Achashtari in the list of early Indian monarchs.[182] His father is Gandharba-Sena, but his grandfather is Indra.[183] Gandharba-Sena is certainly not like Soma, but his association with the Pitris and Apsaras favours the Abishur connection of his son, and in one place, at least, he and Soma are made husbands of the same wife.[184] Gandharba-Sena must, therefore, represent Soma in this legend. Kapila, who is Abihail, was the daughter of Daksha, and the mother of "Ambrosia, Brahmans, Kine, Gandharvas and Apsarasas;" but Indu Soma is made the husband of Daksha's daughter.[185] A better connection for Abihail, however, is found in the story of Vicram Maharajah, for there she is his wife Buccoulee, who is no doubt the same as Muchielal.[186] Following out the line of Abishur, Ahban appears in Chyavana, called the son of Manu, inasmuch as Ammon adopted him, when, after the death of Abishur, he married his widow Abihail. But Chyavana is also said to descend from the Pitris,[187] who, like the Paters, Pateras and Petras, have been already connected with Abishur or Dyauspitar. The son of Chyavana is Urva, a later Horus, Har-em-heb or Harum,

[180] Hardy's Manual of Buddhism, chap. vi.

[181] Pococke's India in Greece, 297. It is remarkable to find in the list of peoples connected with the Yavanas of Vacradanta, as under the dominion of Jarashanda, King of Magadha, Chedi, under Sisupula (very like Seplul, King of Chetas, on Egyptian monuments) Surasenas, Mucutas and Pulindas (representing, perhaps, Syrians, Maachathites and Pelethites), while Magadha, Mathoura and Dwaraca (answering to Megiddo, Hamath-Dor, with its springs, and Tarichæa), are places belonging to the story in which they occur. It is also to be remembered that this story is one of Pandoo (Pandionidæ) warfare.

[182] Yudistheer, as following Asoka, seems to be Achashtari. As the father-in-law of Jonathan he connects with the Pandoo line.

[183] Cox's Aryan Mythology, i. 273, note.

[184] Muir's Sanscrit Texts, i. 257, note.

[185] *Id.* 133, note, 124. Kine, in its form Gav, may not be foreign to Giv, Givan, Achban, and the Taurus of Abishur, his father. Brahmans the Onites were by descent from Jerachmeel. Apsarasas are water nymphs, connecting with Daphne, Vanadis, Undine, &c. The Indian Abissares of Arrian may have been their progeny. With the cows, Soma and the stones (Petra of Abishur) are connected in the Rig-Veda. As for Indu-Soma, I would naturally be disposed to refer Indu to Onam, the father of Shammai, were it not for the meaning of the root *Indu drop, sap*, which etymologically connects with the root *nataph, to drop*, with which the name Nadab is associated. From *nadav* the Sanscrit *indu* may easily be derived.

[186] Cox's Aryan Mythology, ii. 352.

[187] He is also called a son of Bhrigu, and this, I am convinced, is a form of Jerach, with the Coptic article. It connects with the lunar race of Pruyag. It was to avenge the Bhrigus, or ancient Phrygian stock, that Parasurama swept the Kshettriyas from the earth. With the hymn-singing Bhrigus the Germanic god of song Bragi must be united. I shall yet unite the Jerachmeelites with the Muses.

and

his son is Richica or Acharchel. From this Richica came, after two descents, Parasurama,[188] who swept the Kshettriyas from the earth, and he is the Greek Perseus on the one hand and the Egyptian Rameses on the other, who, at Joppa, where Perseus met the Ceto, Cheta or Hittites, and elsewhere in their Palestinian home, warred against the descendants of Achashtari, the son of Ashchur.[189] When the way is made clear by the recovery of the earlier history of the world in Egypt and neighbouring lands, I hope to enter upon the story of the later period to which Parasurama belongs. The wife of Chyavana was Arushi, and in her I recognize Marica, the wife of Faunus. She must have belonged to the family of Mareshah, being probably his daughter and the sister of Hebron.[190] The Indian form of her name is similar to that which appears in the Arish and Ærodach, as compared with the Marsyas and Merodach. The story of Alpheus and Arethusa may present the same fact. It is worthy of note that Indra is called Upendra or Abn-ra and Maghavan, a word like Machbenah, a place in Palestine, which was named in all probability after Achban. Rama also is called Upendra and Mahendra, the latter name indicating his descent from Indra or Onam.[191]

Turning to the second son of Onam, I cannot doubt, from the etymology of the word, that the Vedas took their name from him. He may be Jatavedas or Agni, and thus the early Egyptian Ptah or Ptah-hotep, a copy of whose book, written in the time of Assa-Tankera, or his grandson Zaza, was obtained for the Imperial library of France.[192] I do not assert that Ptah-hotep's book of morals and

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[188] *Vide* Muir's Sanscrit Texts, Vol. i. Ch. iv. Section xviii.

[189] This legend is one of the most famous in Indian story, and was among the first that led me to associate the myths of the Hindoos with the early period to which my researches have been confined. The connection is hinted at in my paper, "The Pharoah of the Exodus identified in the myth of Adonis," an essay entirely wrong in most of its conclusions, yet presenting the germs of developments more consistent with fact. In the paper on "The Coptic Element in the Indo-European Languages," I have worked out the common origin of Parasu and Labrad, denoting the axe. The Irish Labradh or Maom with the horse's ears, recalling the story of Midas, is really Meonothai or Seti-Menephthah, the father of Rameses, and the ears are those of the ass which appear on his monuments. Jupiter Labradeus has the same origin.

[190] The Arish, named from Mareshah, and taking the form Larissa, is the Sanscrit Rasa connected with the Indian story of "the cows."

[191] Rama, I think, must be the same person as Urva, who as Har-em-heb is made the same as Armais and Rameses in certain lists. As the son of Achban, Upendra is a name that he might easily bear.

[192] Lenormant and Chevalier, i. 209. I have already suggested that Ptah is the Indian Agni, although I cannot account for the etymological difference. He may represent Jadag, to whose name his bears a resemblance that the Coptic article makes complete.

any of the Vedas are identical, but that this old book was the first ever known by that name. The Atharva-Veda should not be foreign to Athor or Atarah, the grandmother of Jadag, and the divinity of Tankera and Assa. So far the fish of An-ra, Oannes, Dagon and Janus, has not met us in Indian story. It appears, however, in the Matsya Purana, bearing the name Janardana.[193] The connection of Janardana with Vishnou, if the latter, as I have supposed, represent Achuzam, may be that which has already appeared, the marriage of Jonathan to a daughter of Achashtari. Of this, however, I am doubtful.

Jadag appears in the Buddhist legends. He is a Buddha; not the only one, for Etam or Athom was one and Achuzam was another, but a very important Buddha nevertheless.[194] He is the Buddha who is connected with Soma, who is called the son of Tara wife of Brihaspati, just as Indra, his father, is found to have been. He was of the race Anu-sakya, and was named Devata Deva, recalling the Welsh Dyved and Hud. From Buddha came the Pandoos, their father also being called Divodasa.[195] It is impossible to avoid the conclusion that the Athenian Butes, chief of the priests, is the Buddha thus designated, and that Pandoo is the second Pandion who, in Greek mythical history, represents the Onite Jonathan. Draupadi, the mother of the Pandoos, connects in name with Zeripho or Semiramis of Ascalon, Zirpanit, and other names denoting a daughter of Achashtari, Xisuthrus, Asterius, the father of Chareph, Zervan, Sarpedon, etc., and we have found that Jonathan married such a wife.[196] The war between the Kooroos and Pandoos, in which the family of Nadab seems to have united with the former against their kinsmen, is a struggle between the Cherethites and Pelethites, which took place, doubtless, when the descendants of Jona-

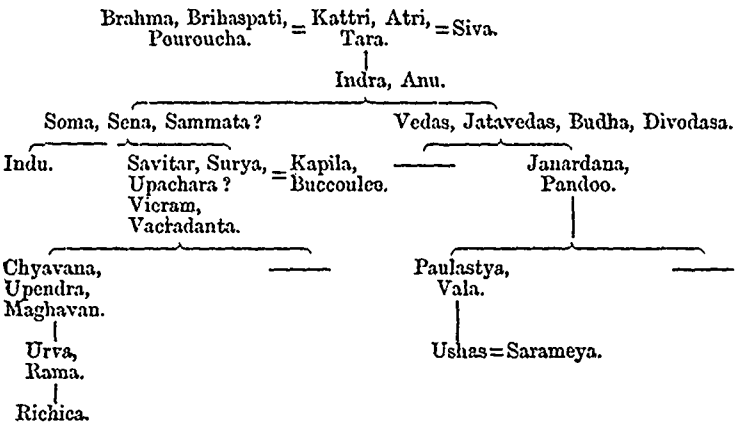
[193] Muir's Sanscrit Texts, Vol. i. Ch. ii, Section iii. Janardana must answer to the Chaldean Annedotus.

[194] The legends concerning the early Buddhas are so interwoven that it is difficult to make any use of the facts they contain for the elucidation of early historic notices. Etam, Achuzam and Jadag, the two latter being contemporaries, are, I think, the three principal Buddhas. In Etam we find the original Gautama. My paper on the Shepherd Kings contains some connections of Achuzam and Buddha, which are untenable. Even the Egyptian Thoth, as relating etymologically to *tot, the hand*, may refer more properly, so far as language is concerned, to Jadag (*jad, the hand*) than to Achuzam.

[195] Pandoo, like Pandion, Pandrasus, Pendaran, &c., is a Coptic form of Jonathan. Baneteren is the name of an Egyptian monarch answering in form to these. Pontus, recalling the Fontus of Janus, a region not deficient in the traces of the Onite family, may have received its name from the descendants of Jonathan.

[196] *Vide supra*, note 88.

than in the line of Peleth were driven out of Egypt, and were forced to maintain themselves in Beth Palet and other places in southern Palestine, against the encroachments and enmity of their Cherethite neighbours.[197] Paulastya is probably the same person as Peleth, and as the friend of Rama, seems to identify the latter with Harum. Thus India contributes its quota to clear up the obscure page of primitive universal history.



CONCLUSION.

It must have been observed that little has been said in the foregoing pages concerning Nadab, the elder son of Shammai, although his is the line of twenty descents. This is not because I have been altogether unable to trace his family, but because it has such widespread connections, especially with the line of Bethlehem, which I am not yet prepared to set forth with any adequate fulness, that I have hesitated to encumber the present essay with identifications

[197] The war between the Kooroos and the Pandoos will be found to agree with that which took place between the Ætolians and the Curetes, the latter, like the Kooroos, representing the Cherethites. The Ætolian connection is with the house of Bethlehem, but as yet I do not see how Jonathan and his line are related to Bethlehem, except in the person of Atarah, who was a daughter of Salma, the father of Bethlehem, as Tyro was a daughter of Salmoneus. There is great confusion in the Greek annals in this part of history, which has prevented me from obtaining so clear a view of the relations of the family of Bethlehem as its importance demands. Tyro also, as the wife of Cretheus, in the Greek story, must represent some descendant of Atarah, for the mother of Onam could not be the wife of Zereth, the head of the Cherethites, seeing that he was a generation later than her son Onam. Tyro, however, belongs to the story of "the cows," with which Indra or Onam, Ushas or Sarama, (Hushim the wife of Shaharaim and other members of the line of Onam, are concerned.

involving tedious explanation. I may mention, however, that Nadab appears in the Greek Antiphates, reproducing the Egyptian Entefs; Appaim in Iphis; and the other members of his family in corresponding names belonging to the Hellenic myths of "Thebes" and of "the cows." These myths I hope soon to be able to identify in every particular with similar legends in Indian story, and with historical facts in Egypt and on the borders of Palestine.

It remains merely that I should sum up a few of the particulars appearing in connection with names that, if not identical in form, which is not to be expected, are at least near in resemblance, and which, recurring from time to time in the same order and with similar relations, afford presumptive evidence that they designate the same persons. These I shall simply specify, leaving the reader to verify them by referring to the divisions of the paper in which they occur.

I.—The persistent re-appearance of Ionian, Tentyrian and Locrian forms, *i.e.*, names agreeing with them.

II.—Descent from a lunar line of Jerach.

III.—Ashchurite and Hebronite connections by marriage.

IV.—Adoptive relations of the head of the line.

V.—The recurrence of the two female names Atarah and Abihail.

VI.—Titanic character of the younger branch

VII.—Priestly character of the same.

VIII.—Solar character of the whole family.

IX.—The presence among them of supreme divinity.

X.—Identity of name in connection with cultus—Patera, etc.

XI.—Piscine symbols, attributes, &c.

XII.—Taurine names, symbols, &c.

XIII.—Sacred stones.

XIV.—Function of porter, sacred doors.

XV.—Smith and Anvil connections.

XVI.—Unhappy fate of the second son of Shammai.

XVII.—The connection of the same with wine and sacred liquor.

XVIII.—The gold and silver hand.

XIX.—The presence of a warrior class.

XX.—Its connection with a Cretan (Cherethite) line.

XXI.—Poetic gifts, bards, poems.

XXII.—High intelligence and magic arts, Sibylline oracles, etc.

XXIII.—Water divinities, nymphs, etc.
XXIV.—Relation to great mountain ranges.
XXV.—Union of two races.[198]

[198] The following may be a partial guide to the facts alluded to :

I.—1. On, Anu, Ioninin, Ono, Oannes, Anu, Ione, Ion, Deione, Æneos, Janus, Eana, Jon, Owen, Don, Johannes, Onar, Anu-Sakya, Yavanas. 2. Tentyra, Tantura in Palestine, Tyndareus, Donar, Œnotrus, Onderah, Ondurdis, Antenor, Baneteren, Pendaran, Pandrasus, Pandareus of Miletus. 3. Locris, Leogoras, Leucosyrii, Luceres of Italy, Locrin, Legria, Loguhr of India.

II.—Urukh, Orchamus, Jericho, Uranus, Erechtheus, Areas, Argus, Orchomenos, Jarbhainel, Merchiawn, Brachma, Brihaspati.

III.—1. Sesortasen I and daughter of Onnos, Aos and Danke, Ixion and Dia of Deion, Pieus and daughter of Janus. 2. Janias and Assis, among Ashchurite Shepherds, Xisuthrus and Titan, Tyndareus and Œneus with Leda and Althæa of Thestius, Pallas of Titan and Asteria, Castor and Pollux, Njord at Noatun, hostage to Aesir, Yoodisthcer and Pandoo. 3. Aten-ra and Taia of Ainnin, Danaus and Phœbe of Tyndareus, Latinus and Pallatia. 4. Cephren and Hauku, Khammurabi and family of Anu, Hyperion and Theia, Cebren and Œnone, Cephalus of Deion, Tiberinus and Daphne, Kamber and Ignoge.

IV.—The story of Chronicles, of Phœnician Anobret, of Ion, of Janus.

V.—Athor, Athara, Atargatis, Terra, Tara, Gayatri, Mitra, Phiala, Amalthæa, Capella, Beachoil, Buccoulee, Kapila.

VI.—In Babylonian, Greek and Welsh connections

VII.—Ptah-hotep, Butadæ, Buddhists, Tuathas, etc.

VIII.—Universal.

IX.—Baal Samen, Jupiter, Indra.

X.—Greek, Roman, Persian, Gallic and Irish,

XI.—On or An-ra, Oannes, Dagon, Janus, Janardana.

XII—Egyptian, Chaldean, Persian, Indian, Greek, Roman, Celtic.

XIII.—Babylonian, Greek, Roman, Persian, Indian, Celtic.

XIV.—Egyptian, Roman, Celtic.

XV.—Persian, Celtic and Greek.

XVI.—Icarus, Icarius, Abderus, Absyrtus, Kvasir.

XVII.—Icarius, Mithras, Kvasir, Soma.

XVIII.—Nuadh, Tyr, Savitar.

XIX. Pelethites, Velites, Peltastes, Hoplites.

XX.—Cherethites, Cretans, Kooroos.

XXI.—Tuathas, Tydain, Vedas.

XXII.—Ideona, Jannes, Oannes, Tages, Tuatha-de-Danans, Sibyl of Cumæ, Gwyllion of Seon, Patruins of Soim, Phiala.

XXIII.—Apsaras, Daphne, Vanadis, Undine.

XXIV.—Lebanon, Apennines, Pennine Alps, Cevennes.

XXV.—Janus, Mithras, Kvasir.

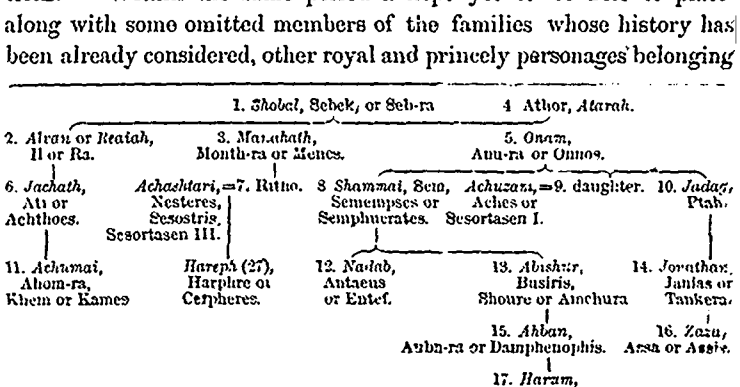
Turning to my paper on the Shepherd Kings, it will be seen that a totally different series of particulars connected with the identifications made, is presented. Thus, the Ashchurites are men of the horse and of the sea; to them belongs the tradition of the deluge; mythological serpents and dragons refer to one of the family; letters to another; lightning to a third. The whole family is Typhonian, funereal and sepulchral. Religious mysteries everywhere characterize it. Opposition to a solar Horite line continually marks its history. In all of thes particulars the Ashchurite line differs from that under consideration, while, as we have seen, there are links to bind the two races together. A critical analysis of the statements made concerning the members of these families already identified, as these are found on the monuments, in traditions and so-called mythology, should, with geographical, ethnological and philological aids, do much to restore the first page of early history.

The monuments of Egypt, Assyria and Babylonia must inform us of the early history of the great Onite, or, as we may term it, Ionian family. The other records from which I have taken my materials can only serve to confirm the conclusions drawn from the study of the monuments, and to connect the race which these commemorate with part of the populations among whom such traditional records occur. Yet by their means we may be enabled not only to build up a true ethnology, and a comparative philology worthy of the name, but also to restore universal history from before the time of Abraham to the commencement of the accepted historical periods of civilized nations, when their later annals have been subjected to well-founded criticism. So far it has simply appeared in this paper that a man, whom the Hebrew record calls Onam, left a Chaldean home to exercise sovereignty near the banks of the Nile; that he founded a dynasty—the members of which ruled in On, Aboo-Seir, Tentyra, Thebes, Hermonthis, and other parts of Egypt; that some of his descendants remained in that land until after the exodus of the children of Israel; that others were early expelled, and established themselves in Palestine, Syria, Assyria and Babylonia; and that thence they spread in different bands, carrying with them the same legends into Persia and India in the east, and in the west into Asia Minor, Thrace, Greece, Italy, Gaul and the British Islands. Side by side with them in these various countries have appeared Jerachmeelites, Horites, or Ashchurites, and within the Germanic area, which is peculiarly Ashchurite, their legends have occurred attesting an ancient and important connection of the two families. The student of the early history of Babylonia and Assyria may receive some assistance from the facts stated in this essay, but its chief importance is for the Egyptologist. It has added ten kings, princes or divinities, to the six whom my researches among the Horites brought to light, and the twenty-eight specified or alluded to in my paper on "The Shepherd Kings." Forty-four Egyptian names within at most six families, independently of many doubtful connections, I have thus professed to arrange in chronological and genealogical order.[199] They do not extend, however, over more than eight genera

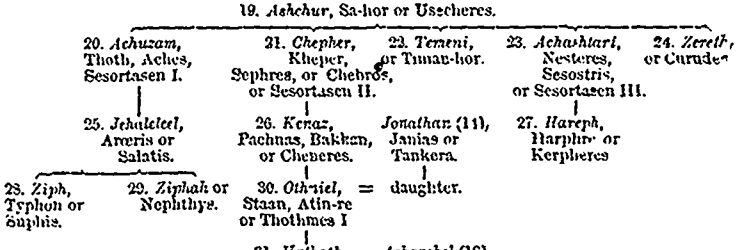
[199] The forty-four names occur as follows:

I.—Divinities, monarchs and princes of the Horites, Auritæ or Hor-shesu, including the Jerachmeelite family of Onam.

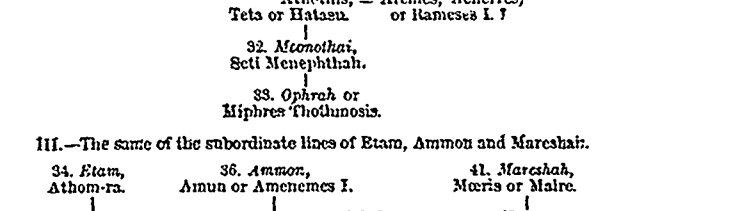
tions.[200] Within the same period I hope yet to be able to place along with some omitted members of the families whose history has been already considered, other royal and princely personages belonging



II.—The same of the Mestræi, Hylsos, Shepherds or Ashchuntes.



III.—The same of the subordinate lines of Etam, Ammon and Mareshah.



[200] This, I think probable only. It is true according to my present system. There is, at least, one weak point, however, in that system. It is found in the temporal relations of the line of Ammon with the Shepherds of the lines of Achuzam and Hepher, and appears prominently in the contemporaneousness of Jabez or Apophis and Meonothai or Menephthah. It is to be

to the lines of Jerachmeel and Salma, thus completing the scheme of early Egyptian, and with it, to a great extent, of early universal history. Meanwhile I await the verdict of those scholars, whose studies and researches qualify them to weigh and adjudicate upon the evidence which it has been my task, briefly, yet, I trust, with fairness, and a certain amount of perspicuity, to lay before them concerning the primitive history of the Ionians.

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remembered, however, that generations vary greatly in length, so that contemporaneousness cannot always be predicted in accordance with the same number of descents from a common ancestor. Also, it is not stated in Chronicles that Meonothai was the son of Hathath. He may have been her grandson through a daughter, and thus be a generation later. Here, however, as elsewhere, I have simply given the results of my inductive process, which embraces the genealogies of Chronicles, the Egyptian records, monumental and traditionary, with the mythological and other data furnished by the scriptures of the civilized Asiatic and European peoples, and have not sought to make them square with any system whatsoever. In view of the great obscurity of early history I have merely endeavoured, "parum claris lucem dare," and shall be well satisfied, though much be swept away by injurious criticism on the part of those who are qualified to criticise, if the residuum of truth help forward the knowledge of the world's ancient record.

AN OUTLINE OF THE GEOLOGY OF ONTARIO,

Based on a Sub-Division of the Province into Six Natural Districts.

By E. J. CHAPMAN, Ph. D.,
Professor of Mineralogy and Geology in University College, Toronto.

Communicated to the Canadian Institute, March 27th, 1875.

The Province of Ontario, regarded in its natural features, admits of a sub-division into six areas, more or less distinct in their physical and geological characters. These areas or districts succeed each other from east to west in the following order:—(1) The Lower Ottawa district; (2) The Gananoque and Back Townships district; (3) The Lake Ontario district; (4) The Erie and Huron district; (5) The Manitoulin district; and (6) The district of the Upper Lakes.

The Lower Ottawa district is an essentially agricultural area, underlaid by Palæozoic rocks in comparatively undisturbed stratification. It occupies the country between the right bank of the Ottawa and the left bank of the St. Lawrence, extending to the Province boundary near the junction of these rivers. On the west, it is bounded by a line extending roughly from Brockville to the vicinity of Perth, and from the latter point to the Ottawa a little north of the mouth of the Madawaska. It lies at an average height of from 250 to 300 feet above the sea, and presents a generally level surface. Here and there, however, some bold escarpments occur, especially around Ottawa City. These are mostly connected with faults. In other places, somewhat extensive swamps prevail; but viewed generally, the district is well timbered and of good fertility. A broad synclinal, with an intermediate fold, forms the floor of the country between the two rivers. The strata of the district belong to the Lower Silurian Series, but they are overlaid in many places by Drift deposits and more recent superficial accumulations. The Lower Silurian beds comprise representatives of the Potsdam, Calciferous, Chazy, Trenton, Utica, and Hudson River formations. The Potsdam strata are mostly sandstones and quartzose conglomerates, with a few interstratified beds of dolomitic limestone. They form a more or less

continuous belt around the southern and western limits of the district. The Calciferous strata are mostly dolomitic and arenaceous limestones, and they extend over a considerable area along the inner edge of the Potsdam belt. The Chazy strata (mostly limestone) form a broad zone east of the calciferous area; and the Trenton limestones, with succeeding bituminous shales of the Utica Formation, and Hudson River arenaceous beds, occupy smaller areas towards the central and eastern portions of the district. These Silurian beds are overlaid very generally by clays and sands belonging to the Drift and Post-Glacial periods. The fossil shells in the latter are all of existing species, and of marine or estuary type. The principal economic minerals of the district comprise the dolomitic limestone of Nepean (Chazy formation), from which the celebrated "Hull cement" is manufactured; beds of the same formation from near L'Orignal, which admit of a good polish; and the great peat deposits of Cumberland, Plantagenet, Gloucester, and adjacent townships.

The Gananoque and Back Townships district, lying immediately west of that just described, is of a very different character. In place of undisturbed limestones and other palæozoic strata, we have here great beds of hard crystalline rock, mostly tilted at high angles, and otherwise contorted and disturbed. The district forms a narrow belt of rugged country lying along the St. Lawrence, between Brockville and the vicinity of Kingston, but rapidly widening and covering a large area in its northern and north-western extension. Its southern boundary runs from the east of Kingston through the back townships of Frontenac, Addington, Hastings, Peterborough, Victoria, and Simcoe, and strikes Georgian Bay near the mouth of the Severn. From this point it forms the shore of the Bay to beyond French River. Its north-western boundary is to some extent a conventional line running from the latter spot to Lake Temiscamang. Strictly, perhaps, the district should not be separated from that of the Upper Lakes, but for descriptive purposes it is convenient to keep the two distinct. They present, moreover, certain points of difference. Both consist essentially of crystalline mineral regions; but in the lower district the gneissoid rocks are interstratified with many bands of crystalline limestone, containing various silicates and other minerals; whilst these limestone bands are apparently wanting in the more western country. In both regions iron ores abound; but those of the lower district are frequently titaniferous, whilst those of the upper

district are as a rule practically free from titanium. Again, the overlying Huronian and copper-holding rocks of Lake Huron and Lake Superior, with their associated beds and dykes of trappean rock, have have not been recognized in the Gananoque district. The mean elevation of the latter above the sea is probably about 800 feet. Its surface throughout is more or less of a broken, hilly character, with vast masses of bare Laurentian rock standing in many places high above the ground; and numerous lakes occur along its southern border, and within its area generally. Although not favorably adapted, as a rule, for agricultural occupation, the district contains valuable economic minerals. The principal of these comprise: the iron ores of McNabb, Bedford, Crosby, Sherbrook, Madoc, Marmora, Belmont, Minden, Snowdon, etc.; the auriferous mispickel of Marmora and adjacent townships; the galena of Frontenac, Galway, etc.; the apatites of Burgess and Elmsley; the mica of Burgess; and the marbles of the townships of Barrie, Elzevir, and surrounding country.

In the Lake Ontario District we come again upon an agricultural area, underlaid by limestones, shales, etc., in comparatively undisturbed stratification. This district ranges along the entire north and west sides of Lake Ontario. Its eastern and northern limits are bounded by the crystalline Gananoque district described above. Its western boundary is the high escarpment which runs from the Niagara River by Queenston, Hamilton, Dundas, Georgetown, etc., to Cabot's Head on Georgian Bay. From that point the district forms the shore of the bay to a little beyond the mouth of the River Severn. As regards surface features, it presents but few marked inequalities of level. The ground rises gradually from Lake Ontario (232 feet above the sea) in a series of ridges or terraces running in a general east and west direction. These ridges are composed of Drift materials, mostly sand and gravels filled with boulders of various kinds, brought down from northern sources during the Glacial Epoch, probably by floating icebergs. The highest ridge in Albion and King townships has an elevation of from 700 to 750 feet above Lake Ontario, but becomes gradually lower in its eastern extension. Lake Simcoe to the north is 704 feet above the sea, and Balsam Lake (the northern part of which runs into the crystalline area already described) is still higher, its elevation being 820 feet above the sea. Belmont Lake and Rice Lake are each nearly 600 feet, and Scugog Lake (in the midst of the drift ridges) nearly 800 feet above the sea level.

The strata of the district consist entirely of Lower Silurian formations, except in the extreme west, where the Medina formation of the Middle Silurian series occurs. In ascending order, and succeeding each other from east to west, these strata comprise the Potsdam (slightly developed near Kingston); Trenton (including the Black River beds which cannot properly be separated from the higher Trenton strata); Utica; Hudson River; and Medina formations. Of these, the Trenton is composed of limestones and limestone shales. Some of its beds yield excellent building stone; and towards its lower portion a band of lithographic stone runs more or less continuously from near Kingston, by Marmora, etc., to Georgian Bay. The Trenton formation ranges along the lake shore from Kingston to Cobourg, and outcrops on several of the interior lakes and streams, as well as on Georgian Bay. The succeeding Utica formation consists of dark bituminous shales, as seen at Whitby and also west of Collingwood harbour. West of the Utica shales the thin bedded sandstones, etc., of the Hudson River series crop out, and range along Lake Ontario from about the River Rouge to the Credit, appearing also in force on the south-west shore of Georgian Bay, as at Cape Rich, Cape Crocker, etc. West of the River Credit to the western boundary of the district in the great Niagara escarpment, the red marls and sandstones of the Medina formation form the outcropping strata. The greater portion of the Lake Ontario district is overlaid however, by clays, sands, and gravels of the Glacial and Post-Glacial periods, by which the underlying rocks are much concealed. Beneath these deposits, the limestone strata, especially, are found very generally to be striated and polished by glacial action, the striæ running most commonly in a south-west direction. Many fresh-water shells, identical in species with those now living in our lakes and streams, occur at various levels in the post-Glacial accumulations; and their presence in these deposits apparently indicates the former union of our lake waters into one vast freshwater sea, held up on the east by a greater elevation of the gneissoid belt of rock which crosses the St. Lawrence between Brockville and Kingston, and expands into the wild district of the Adirondack Mountains in the State of New York; or perhaps by an enormous glacier descending from this elevated region and extending northwards into Canada. Bones and teeth of the beaver, wapiti, and other existing mammals are also occasionally found in these higher deposits, together with two extinct types: the mammoth,

an extinct species of elephant; and the mastodon, a related but entirely extinct proboscidean genus.

The Erie and Huron district is another agricultural region of great fertility. It lies immediately west of the Lake Ontario region, and is separated from the latter by the line of the great Niagara escarpment, which runs from the Niagara River, by Queenstown, Thorold, Hamilton, Dundas, etc., to Cabot's Head, on Georgian Bay. It thus forms, for the greater part, an elevated table-land, bounded on the south by Lake Erie, and on the west by Lake Huron. Along its eastern and north-eastern edge, as well as in its central portion, the district lies at an average elevation of from 1,200 to 1,300 feet above the sea; but the ground slopes gradually to Lake Erie, 565 feet, and to Lake Huron, 578 feet above the sea-level. Its surface, except where cut by river-valleys, is generally even; and it presents a marked contrast to the lower region of Lake Ontario, by the almost total absence of inland bodies of water. It is traversed, however, by many important rivers—as the Grand River, flowing into Lake Erie; the Thames, flowing into Lake St. Clair; and the Maitland and Saugeen, flowing into Lake Huron. The eastern and north-eastern escarpment is also cut through by numerous smaller streams, which thus flow through deep ravines, many of which are of a very wild and picturesque character. The strata of the district consist of the Middle and Upper Silurian, and various Devonian formations. These succeed each other generally from north-east to south-west, and comprise in ascending order the Clinton, Niagara, Guelph, Onondaga or Gypsiferous, Lower Helderberg or Eurypterus, Oriskany, Corniferous, Hamilton or Lambton, and Chemung-Portage formations. These strata, although practically undisturbed, are affected by several moderate anticlinals running across the more central part of the district in a general east and west or south-west direction; and it is thought that the petroleum of this part of the region has been brought towards the surface by fissures resulting from these anticlinals. A transverse or nearly north and south fold, forming a trough or synclinal filled with higher Devonian strata (of the Hamilton or Lambton formation), also occurs in the south-western portion of the district between Lake Erie and the south point of Lake Huron. Finally, it may be observed, that the strata of the district generally are much overlaid by boulder-clays, sands and gravels of the Glacial and Post-Glacial periods. These agree generally with deposits of the same age occur-

ring, as already described, in the Lake Ontario region. The more important economic minerals of the district comprise, in addition to petroleum, the gypsum of the Grand River valley, etc.; the hydraulic limestone of Thorold; the brine of the Goderich region; the ochres of Middlesex and Norfolk; and the peat beds of Humberstone and Wainfleet on Lake Erie.

The Manitoulin district partakes of the characters of both the Ontario and Erie districts, as the Silurian strata of these latter range entirely through it. The district comprises the Great Manitoulin Island, eighty miles in length, with the La Cloche and other smaller islands lying between it and the mainland, and Cockburn Island, Campement d'Ours, St. Joseph's Island, etc., farther west. Drummond Island belongs also geologically to the district, but lies beyond the Dominion boundary. The strata of the district succeed each other in passing from north to south, the general dip being in the latter direction. They comprise a slight development of Huronian quartzites, with representatives of the Chazy (?), Trenton (including the Black River beds), Utica, Hudson River, Medina and Clinton, Niagara and Guelph formations. The Niagara escarpment runs from east to west through the Great Manitoulin Island in the form of a cliff face, fronting northwards, and the southern half of the island is composed essentially of limestone beds of the Niagara formation, bare outcrops of these rocks forming in many places the surface of the ground. Northwards, the arenaceous shales of the Hudson River series, with outlying band of Utica slate, and fringe of Trenton limestone, are the more characteristic formations. The north part of the island contains numerous lakes, and its north shore is indented by comparatively deep bays. These and the lakes appear to lie in synclinal folds, formed by a series of anticlinals, with north and south axes, which traverse the island throughout its length. The rocks of the district generally are marked with glacial striæ, and northern boulders are abundant in many localities. Petroleum springs occur on the Great Manitoulin, in the Utica formation, but wells sunk upon these have yielded no permanent supply of any importance.

The district of the Upper Lakes may be defined in general terms as extending over the entire north-western portion of Ontario, from Lake Tamiscamang and French River, on Lake Huron, to the boundary of the Province beyond Lake Superior. It forms a rugged, mountainous region, broken up by numerous bodies of water, and

underlaid essentially by hard crystalline rocks, belonging, for the greater part to the Laurentian series. The surface of Lake Huron is 578 feet, and that of Lake Superior 600 feet above the sea. From these levels the ground rises more or less abruptly to an average height of from 1,000 to 1,500 feet, with occasional points of still greater elevation. The recognized rock formations comprise representatives of the Laurentian, Huronian, Upper Copper-bearing, and Chazy (?) series, with many eruptive granitic and trappean rocks, and overlying Glacial and post-Glacial deposits.

The Laurentian rocks are composed of vast beds of micaceous and hornblendic gneiss, quartzites and other crystalline strata; but the bands of crystalline limestone associated with these rocks in eastern districts are here apparently wanting. These Laurentian strata are mostly inclined at high angles, and are variously folded and contorted by undulations. In places also they are broken through by vast masses of granite. They form a great part of the north and east coasts of Lake Superior; but along the north shore of Lake Huron they are mostly overlaid by Huronian strata, although forming the coast-line from the River Thessalon to a short distance east of the Mississagui. In the back country of both lakes, however, they extend over almost the entire surface of the region.

The Huronian strata are composed mostly of green and other slates, quartzites, quartz and jasper conglomerates, and other rocks, for the greater part of semi-crystalline aspect. They are interstratified also with trappean bands, and are penetrated by numerous dykes of trap and greenstone. In many places likewise they are traversed by quartz veins carrying ores of copper and other metals. They form a broad belt ranging from Lake Temiscamang to Lake Huron, west of French River, and along the lake shore to the River Mississagui. They reappear again on the coast west of Thessalon River, and occupy a large area between Lake George and the country around Echo Lake. They occur also on the east and north-west coast of Lake Superior, and in a band at the back of Thunder Bay, as well as in several other bands farther west and north, where they appear, according to Prof. Robert Bell, to occupy synclinals, in folds of Laurentian strata. Their more important economic minerals comprise: the copper ores of Lake Huron (Bruce Mines, etc.); the iron ores of Echo Lake, Michipicoten River, Pic River, etc.; the antimony ore of Echo Lake country; the silver bearing veins (3 A mine, etc.) of the

Huronian belt of Thunder Bay; and the gold-bearing veins of the Lake Shebandowan country.

The strata known conventionally as the Upper Copper-bearing rocks of Lake Superior, overlie the Huronian formation in some places, and rest directly on Laurentian rocks in others. They belong to three series: a lower series, composed mostly of dark slates, beds of chert, and greenish-grey sandstones, with interstratified beds of trap or hardened volcanic mud; a middle or second series, consisting chiefly of red and white marls and calcareous sandstones, also with interstratified belts of trap or volcanic mud; and a third division, consisting of an enormous overflow of trap, resting uncomformably on both the lower series. The first or lowermost division occurs along the coast between Pigeon River and the eastern extremity of Thunder Bay, and is capped by the third division or so-called crowning overflow of trap in many places, as, more especially, at the bold promontory of Thunder Cape, at McKay's Mountain, on Pie Island, and elsewhere. The red and white marl and sandstone series occurs principally between Thunder Cape and Nepigon Bay, and is also capped by masses of trap belonging to the crowning overflow. It appears also to occur at other points on the north-east and eastern shores of the lake. Both the first and second divisions are penetrated by quartz veins carrying various metallic matters, as native silver, silver glance, galena, zinc blende, nickel ore, copper ore, etc. The Silver Islet, Thunder Bay, Trowbridge, Duncan or Shuniah, Jarvis Island, Spar Island, and other mineral locations lie on the lowermost series; whilst the North Shore, Caribou, Enterprise or Black Bay, Silver Lake, and other locations, belong to the second division. The age of these rocks is still a subject of controversy. By some observers they are regarded as Triassic, a view based chiefly on mineral aspect. Sir William Logan, on the other hand, stoutly maintains their Lower Silurian age, regarding them most probably as equivalents of the Potsdam and Calciferous formations of eastern localities, or, at least, as occupying a lower geological horizon than that of the Chazy formation; and the weight of evidence at present is certainly in favour of this view. Certain sandstone beds, commonly known as the Ste. Marie sandstones, are seen at points east of St. Mary's River, (as on the Island of Campement d'Ours, etc.,) to underlie fossiliferous limestones of the Trenton (or Black River) formation; and these same sandstones at points on the eastern side of Lake Superior overlie

strata with bedded traps, etc., apparently belonging to the second Copper-bearing series. The Sault Ste. Marie sandstones must, at least, be as old as the Chazy series of strata, if not older; and consequently, if the rocks on the east side of Lake Superior belong really to the Copper-bearing group, they cannot be far removed from the base of the Silurian series. Other arguments in support of this view might also be brought forward.

Finally, it may be observed that Glacial striæ occur more or less everywhere on the harder rocks throughout this region; and boulder clays, with Post-Glacial sands and other deposits, forming in places high ridges or terraces, are of very general distribution. Many of the rivers of Lake Superior and Lake Huron flow through alluvial tracts, in some cases, as on the lower course of the Kaministiquia, of considerable width and good fertility.

RELATION OF THE LAW OF GRAVITATION TO THE PRINCIPLE OF THE CONSERVATION OF ENERGY;

WITH A PROOF OF THE NECESSARY TRANSFORMATION OF THE FORCE OF GRAVITY, AT A CERTAIN LIMIT, FROM A FORCE OF ATTRACTION TO ONE OF REPULSION.

BY THE REV. GEORGE PAXTON YOUNG, M.A.,
Professor of Metaphysics and Ethics, University College, Toronto.

I purpose in this paper to show that, if the principle of the Conservation of Energy be accepted, the force of gravitation, which, at ordinary sensible distances, is one of attraction, must necessarily undergo transformation, at a certain limit, into a force of repulsion, and to indicate a higher law, under which the law of the attraction of bodies, according to the inverse square of the distance, falls.

1.—PRELIMINARY STATEMENT OF THE GENERAL CONCEPTION ON WHICH THE SOLUTION OF THE PROBLEM PROCEEDS.

The principle of the Conservation of Energy implies that, in a given finite material system, there is a definite amount of energy; exactly so much, and no more; an amount which, if not dissipated on the one hand, or augmented *ab extra* on the other, remains unaffected by the actions of the bodies in the system on one another. Hence, no law of mutual action between the bodies of the system, which would give rise to an indefinitely great velocity, can operate without limitation; for, energy means capacity for doing work; and the work done upon a given mass of matter is estimated by half the product of the mass by the square of the velocity; therefore, an indefinitely great velocity could not be produced unless at the expenditure of an indefinitely great amount of energy.

Let us apply this to the case of the law of gravitation, according to which, two particles, whose masses are m and n, attract one another with a force inversely proportional to the square of the distance. Two such particles, falling towards one another from rest, would, if the law of gravitation continued to hold good without limitation, acquire indefinitely great velocities as they approached indefinitely near to one another; in other words, an indefinitely great

amount of work would be done, involving the expenditure of an indefinitely great amount of energy: which, on the principle of the Conservation of Energy, is impossible. Consequently, either that principle must be abandoned, or the law of gravitation must, when a certain limit is reached, undergo transformation.

2.—Positive and Negative Energy.

I shall limit myself to the consideration of the simple system described in the last paragraph—namely, a system of two particles, P and Q, whose masses are m and n, and which fall towards one another under the influence of their mutual attraction from positions of rest A and B. To these positions we may suppose them first to have ascended (their centre of gravity remaining stationary) from positions C and D, where they had the velocities v and u. I speak of the particles as in their ascending course when they are moving apart from one another, and as in their descending course when they are falling towards one another. After reaching A and B, where their velocities have been reduced to zero, P and Q fall back to C and D.

The velocities v and u, which P and Q have in the positions C and D, are reduced to zero when the particles have ascended to A and B. The work done, or energy expended, in the reduction of these velocities from v and u to zero is represented by $\frac{1}{2}(mv^2 + nu^2)$. The energy so expended may be called negative, because the expenditure of it tends to lessen the distance between the particles. In ascending, then, from C and D to A and B, the *negative energy* of the system, available for lessening the distance between the particles, has been diminished by $\frac{1}{2}(mv^2 + nu^2)$; that is to say, it has been converted into energy in some other form, which we may call *positive energy*.

The particles, having ascended to A and B, immediately fall back to C and D. How has the negative energy of the system been affected by this? To produce the fall, the same expenditure of negative energy was required as took place in the ascent from C and D to A and B. In both cases the negative energy was operating in the way of lessening the distance between the moving particles. Hence, when P and Q have arrived at C and D in their descent, the negative energy of the system has been still further diminished, and the positive energy increased, by $\frac{1}{2}(mv^2 + nu^2)$.

To record these results in a convenient manner, the following symbols may be employed. The distance between A and B being r, and that between C and D being x, let the negative energy of the system, when the particles are at C and D in their descending course, be $N(r, x)$; and the positive, $P(r, x)$. Then, according to the explanations given,

$$N(r, x) = N(r, r) - \tfrac{1}{2}(mv^2 + nu^2),$$
$$P(r, x) = P(r, r) + \tfrac{1}{2}(mv^2 + nu^2).$$

And, by addition,

$$N(r, x) + P(r, x) = N(r, r) + P(r, r) = q;$$

where $N(r, r) + P(r, r)$, which we represent by q, expresses the total amount of energy conserved; while $N(r, x)$ and $P(r, x)$ are the parts, whose variations at every instant neutralize one another.

3.—How the Dependence of the Accelerations of P and Q on the Relative Quantities of the Two Energies is to be Conceived.

We might, if we pleased, conceive each of the two kinds of energy as operating effectively at every instant in producing its appropriate result. In this case equal quantities of the two energies would neutralize one another; and the resultant effective energy would be the difference between $N(r, x)$ and $P(r, x)$.

According to another mode of conceiving the subject, one of the two energies alone would be effective at a particular instant, the other lying in the meantime latent. Thus, in the career of P and Q which we have traced, the negative energy alone would be conceived as effective, the positive being in a state of latency, from which, however, it is destined in due season to come forth into effectiveness.

I adopt the latter of these two modes of conception. It will be understood, then, that *effective* and *latent* energy are distinguished from one another, the negative being effective when the positive is latent, and the positive effective when the negative is latent; neither energy ever rising beyond q, the maximum effective energy of the system.

4.—Negative and Positive Jars.

By way of figure, we may represent to ourselves the negative and positive energies as contained, apart from one another, in two jars. A certain part of the energy may flow from the negative into the positive jar, or from the positive into the negative; but the entire quantity in the two jars always remains the same.

5.—Relation between x and $N(r, x)$.

Attraction according to the inverse square of the distance being accepted as a fact when the particles are at ordinary sensible distances, we have

$$\frac{d^2x}{dt^2} = -\frac{c}{x^2},$$

where c is constant for the same particles. Therefore

$$\left(\frac{dx}{dt}\right)^2 = 2c\left(\frac{1}{x} - \frac{1}{r}\right).$$

But $v^2 = \left(\frac{n}{m+n}\right)^2\left(\frac{dx}{dt}\right)^2$, and $u^2 = \left(\frac{m}{m+n}\right)^2\left(\frac{dx}{dt}\right)^2$. Therefore

$$\tfrac{1}{2}(mv^2 + nu^2) = \tfrac{1}{2}\left(\frac{mn}{m+n}\right)\left(\frac{dx}{dt}\right)^2,$$

and, $$N(r, x) = N(r, r) - \frac{cmn}{m+n}\left(\frac{1}{x} - \frac{1}{r}\right);$$

the particles being supposed to be in their descending course. Or, putting k for $\frac{cmn}{m+n}$,

$$N(r, x) + \frac{k}{x} = N(r, r) + \frac{k}{r}.$$

6.—The Critical Value of x.

The quantity of energy represented by $N(r, r)$ will afterwards be found to be one half of the entire energy of the system; but at present I merely say that it is a positive quantity distinct from zero. For suppose, if possible, that it is zero. This means that, when P and Q are in the positions A and B, there is no energy in the negative jar; the entire energy of the system is collected in the positive jar. But, when P and Q have descended to C and D, the positive energy is greater than it was when they were at A and B; and therefore there is now latent in the positive jar more energy than the entire energy of the system. This, however, is opposed to the principle of conservation, which, as was pointed out in section 1, implies that, in a finite system such as we are now considering, neither jar can ever contain more than the fixed maximum q. Hence, $N(r, r)$ is not zero. Nor is it negative; for then the energy, $P(r, r)$, latent in the positive jar, would exceed q.

Since $N(r, r)$ is a positive quantity distinct from zero, it follows that, when x is made equal to r, $N(r, r) + \frac{k}{r}$ is greater than $\frac{k}{x}$; while, on the other hand, as x is taken indefinitely small, $\frac{k}{x}$ becomes greater than $N(r, r) + \frac{k}{r}$. Consequently, between r and zero, there must be

a value of x, say a, such that

$$\frac{k}{a} = N(r, r) + \frac{k}{r}, \text{ or, } k\left(\frac{1}{a} - \frac{1}{r}\right) = N(r, r),$$

and therefore, $N(r, a) = 0$.

I call a the critical value of x. The negative jar is then empty, and the positive jar is charged with the entire energy of the system.

Let us for a moment consider what has been happening since the last crisis, when the entire energy of the system was collected in the negative jar. That energy has been expending itself in diminishing the distance between P and Q, the amount expended being transferred to the positive jar, where it has lain in a state of latency, till now the order of things is reversed; the negative jar is empty; the positive energy becomes free, and begins to operate; and the portion of it which is expended in doing the appropriate work of positive energy passes over into the negative jar, where it lies latent till the next crisis.

7.—At the Crisis, when the Negative Jar has become Empty, the Law of Gravitation undergoes a Transformation from Attraction to Repulsion.

When $x = a$, though the negative jar is empty, the particles P and Q have acquired velocities, in virtue of which they sweep onwards towards one another across the critical positions. Now, at the crisis, the law of the reciprocal action of the particles changes from a law of attraction to one of repulsion. For suppose, if possible, that it continues as a law of attraction. Then the equation,

$$N(r, x) + \frac{k}{x} = N(r, r) + \frac{k}{r},$$

still holds. But x is now less than a; therefore $\frac{k}{x}$ is greater than $\frac{k}{a}$ or $N(r, r) + \frac{k}{r}$; hence $N(r, x)$ is negative: which implies that $P(r, x)$, the latent energy in the positive jar, exceeds the entire energy of the system. This, on the principle of Conservation, is impossible. Therefore, the force of gravity cannot continue to act as an attractive force subsequently to the crisis. The energy in the positive jar becomes effective, and repulsion is the result.

8.—The Distance between P and Q at the Crisis is the Harmonical Mean between their Distances at the Superior and Inferior Positions of Rest.

At the crisis, let the positions of P and Q be F and G. Then $FG = a$. When the distance becomes less than a, the particles, having entered the sphere of repulsion, are gradually retarded, and at length brought to rest at A' and B', where their distance is b.

We may call A', B', the inferior, and A, B, the superior, positions of rest. Since, between the positions F, G, and the positions A', B', the force is repulsive, we have

$$\frac{d^2x}{dt^2} = \frac{c}{x^2}.$$

I assume that c is the same as in the sphere of attraction. Unless there were some reason to suppose it not the same, the law of Parcimony would lead us to take for granted that no change occurs; and not only does there seem to be no reason to assume a change in this respect, but it is difficult to imagine that a constant, which indicates the amount of action between the particles at a given distance, alters its value *per saltum*. At the crisis, when $x = a$, there may be, indeed (as I have shown) there must be, reasons determining this mutual action to take the character of repulsion instead of that of attraction; but that the quantity of the reciprocal action should suddenly leap from one value to another appears to be at variance with the law of Continuity. Denoting by $P\ (b, x)$ the effective positive energy at the position in the sphere of repulsion where the distance of the particles, still in their descending course, is x, we obtain, by the same reasoning as in section (5),

$$P\ (b, x) + \frac{k}{x} = P\ (b, b) + \frac{k}{b}.$$

With respect to the sign of the terms in this equation containing k, I may observe that, the force being repulsive, this consideration, if taken alone, would have given k a different sign from what it has in the equation deduced in section (5); but, to counterbalance this, $P\ (b, x)$ is greater than $P\ (b, b)$, whereas $N\ (r, x)$ was less than $N\ (r, r)$. By putting $x = a$,

$$P\ (b, a) + \frac{k}{a} = P\ (b, b) + \frac{k}{b}.$$

But $P\ (b, a)$, at the limit of the sphere of repulsion, coincides with $P\ (r, a)$ at the limit of the sphere of attraction; and since, at that limit, the whole energy of the system is found in the positive jar, $P\ (r, a) = q$. Therefore $P\ (b, a) = q$. Also, since the Kinetic Energy of the system has, on the whole, been neither increased nor diminished in the passage of P and Q from the superior to the inferior positions of rest, no increase or diminution has taken place in the quantity of energy in either jar. Therefore

$$N\ (r, r) = N\ (b, b), \text{ and, } P\ (r, r) = P\ (b, b).$$

$$\therefore q + \frac{k}{a} = P\ (r, r) + \frac{k}{b} = q - N\ (r, r) + \frac{k}{b}.$$

$$\text{Therefore } k\left(\frac{1}{b}-\frac{1}{a}\right)=N(r,r).$$

$$\text{But, by section (6), } k\left(\frac{1}{a}-\frac{1}{r}\right)=N(r,r).$$

$$\therefore \frac{1}{b}+\frac{1}{r}=\frac{2}{a}.$$

9.—When P and Q are in Positions of Rest, whether Superior or Inferior, the Quantities of the Negative and Positive Energies in the System are Equal.

In the inferior positions of rest, the quantity of energy in the negative jar is $N(b, b)$ or $N(r, r)$. Hence, $N(r, r)$ is the quantity of positive energy that has been expended while P and Q were passing from F and G to A' and B'. From A' and B' the particles are driven apart till the limit of the sphere of repulsion is again reached; and, in effecting this, an additional quantity, $N(r, r)$, of positive energy is expended; so that the whole positive energy expended while the particles continue within the sphere of repulsion is $2\left\{N(r,r)\right\}$. But, as the reign of attraction ended, and that of repulsion began, with the circumstance of the negative jar being empty, so, if the two sorts of energy have a parallel relation to one another, we must suppose that the reign of repulsion ends, and that of attraction re-commences, with the circumstance of the positive jar being empty.* If this be so, then $2\left\{N(r,r)\right\}$ represents the entire energy of the system; and therefore $N(r, r)= P(r, r)$, and $N(b, b) = P(b, b)$.

10.—Higher Law under which the Law of Gravitation is Contained, and of which it is an Expression within Certain Limits.

The conclusions at which we have arrived imply that the law of gravitation does not prevail universally, but that it is only the form which a higher law takes within certain limits. That this higher law may receive convenient algebraical expression, let E_x denote the *effective* energy when the particles, having passed the positions of rest in the sphere, whether of attraction or of repulsion, in which they are moving, are at the distance x from one another. The equation, which represents the motions of P and Q in the spheres of attraction and repulsion alike, is

$$E_x = \pm k\left(\frac{1}{a}-\frac{1}{x}\right);$$

the positive sign of k being taken within the sphere of attraction, and the negative within the sphere of repulsion. It would be easy

* This is tantamount to saying that perfect elasticity prevails between the particles: and this, on the supposition on which the paper proceeds, namely, that none of the energy of the system is dissipated, while it is not increased *ab extra*, is involved in the principle of Conservation.

to show that this is merely a summation of the results established in the previous sections of the paper; but, instead of doing this, we shall point out how, assuming the wider generalization embodied in the equation given—a generalization which, apart from its greater width, has the advantage, over the law of gravitation, of exhibiting the motion of P and Q in its relation to the quantity of effective energy—the law of gravitation can be deduced as valid within certain limits, and as undergoing transformation, beyond these limits, into a law of repulsion.

First, let the particles be considered when they are moving within the sphere of attraction. Then the effective energy is the negative. Hence, E_x is the value of $N(r, x)$ after the positions of rest have been passed. But, between the time when the particles were in the positions of rest and the instant under consideration, an expenditure of negative energy, equal in amount to $\frac{1}{2}(mv^2 + nu^2)$, has taken place. Hence,

$$E_x = N(r, r) - \tfrac{1}{2}(mv^2 + nu^2).$$

Substitute for E_x its value in the assumed equation, taking the upper sign of k, and for $\frac{1}{2}(mv^2 + nu^2)$ its value, as found in section (5), $\frac{1}{2}\left(\frac{mn}{m+n}\right)\left(\frac{dx}{dt}\right)^2$. Then

$$N(r, r) - \tfrac{1}{2}\left(\frac{mn}{m+n}\right)\left(\frac{dx}{dt}\right)^2 = k\left(\frac{1}{a} - \frac{1}{x}\right).$$

$$\text{Therefore, } \frac{mn}{m+n}\frac{d^2x}{dt^2} = -\frac{k}{x^2}.$$

Or, putting c for $\frac{k(m+n)}{mn}$,

$$\frac{d^2x}{dt^2} = -\frac{c}{x^2}.$$

Next, let the particles be considered when they are moving within the sphere of repulsion, into which they must of necessity enter. Then the effective energy is the positive. Hence E_x is the value of $P(b, x)$, after the inferior positions of rest, whose distance from one another is b, have been passed. That is,

$$E_x = P(b, b) - \tfrac{1}{2}(mv^2 + nu^2).$$

Therefore, taking now the lower sign of k in the assumed value of E_x,

$$P(b, b) - \tfrac{1}{2}\frac{mn}{m+n}\left(\frac{dx}{dt}\right)^2 = -k\left(\frac{1}{a} - \frac{1}{x}\right).$$

$$\text{Therefore } \frac{d^2x}{dt^2} = \frac{c}{x^2}.$$

In a subsequent paper, I shall point out the effect of the introduction of foreign energy into the system.

LEAVES THEY HAVE TOUCHED;

BEING A REVIEW OF SOME HISTORICAL AUTOGRAPHS.

BY HENRY SCADDING, D.D.

(*Continued from page 502.*)

III. AUTOGRAPHS AND OTHER LITERARY RELICS OF DISTINGUISHED OXFORD AND CAMBRIDGE MEN.

I used in my younger days to think the worn condition of many of the old stone stairways at Cambridge a touching sight. In the short flights of steps leading to the entrance doors of the porters' lodges and dining halls, and in the corkscrew staircases of the turrets, conducting up to the rooms of students, the middle part of each step was to be seen scooped out by the attrition of feet, often to such an extent that the whole series of stairs was transformed almost into a steep inclined plane, without any distinction of steps remaining—a condition of things somewhat confusing to the foot in the ascent, and more so still in the descent. Who were they who had contributed to the wear and tear shown by these curious depressions? The possessors of what distinguished names in the literature, science, and general history of England? Under the influence of what busy thoughts, what hopes, what fears, had they not in their youth hurried up and down here! And in their maturer years, with what memories and cares, and perhaps honours laden, had they not re-paced the same ways! Here were veritable footprints left by preceding travellers, not on the sands, but the sandstones, the limestones, and other rocky concretions of time. This was a thought obvious enough, that would occur every day, adding to the magic spell that clings to so many spots and buildings in the University and town of Cambridge. Similar reflections would of course arise with equal, if not greater, force, in the mind of a sympathetic sojourner in venerable Oxford.

Having by me some autograph and other literary relics of men of note in their day in the universities of Oxford and Cambridge, I have reserved them for review by themselves, and I desire that they may in some sort take the place of these indented stones, and in the

inevitable absence amongst us of other sensible footprints left by the eminent persons of whom I shall speak, I hope the trifling objects I shall produce may serve as lively mementos of their former existence, and of the manner of men they were. Over those worn stairways the footsteps of many of England's worthies have unquestionably passed. So on these leaves, these pages, the hands of several of them have undoubtedly been pressed. If there is any pleasant glamour in the one thought, there must be a certain degree of it in the other. My collection also, such as it is, will incidentally furnish forth illustrations of that part of the complex English life which has for its sphere the two ancient universities of the kingdom.

My relics, as before, consist (1) of books, once owned or handled by eminent men; or (2) of notes and other MS. fragments in the handwriting of eminent men. I begin with my Oxford relics; and first I show a volume once belonging to the Library of Christ Church. It is a folio entitled *Italia Illustrata*, published in 1602 at Frankfort, by Andreas Cambierius, and dedicated to Andreas Schottus, who, Cambierius tells us, collected the several treatises of which the volume consists at a great expense, acting at the same time as editor and reviser, and removing many blemishes from the whole. It is a cyclopædia of Italian geography and antiquities; a kind of Murray for stay-at-home travellers. Twenty-eight pieces are presented to the reader, each giving an account of the history and archæology of a particular locality. The whole is in excellent Latin. The following are the names of some of the writers: M. Antonius Sabellicus, J. Chrysostom Zanchius, Torellus Sarayna, Gaudentius, Merula, Bonaventura Castillionæus, Paulus Jovius, Bernardus Saccus, Jacobus Bracelius, Andreas Magnotius, Cæsar Orlandius, Antonius Massa, Petrus Cursius, Antonius-Sanfelicius, Ubertus Folieta, Scipio Mazella, Joan. Franciscus Lombardus, Ambrosius Leo, Gabriel Barrius, Johannes Juvenis, Clar. Marius Aretius, Antonius Philotheus, Jo. Quinctinus Hednus. By these, most of whom, except Paulus Jovius, have become obscure to us, if not to Italians, we have pleasantly-written, elaborate accounts of Venice, Aquileia, Verona, Genoa, Naples, Nola, Tarentum, Sicily, Malta, &c. For a minute account of Rome itself, the reader is referred to other works. Torellus Sarayna gives his account of Verona in the form of a dialogue, after the manner of Cicero, between himself and Jacobus Villafranca. He also gives a large collection of ancient Latin inscriptions found

at Verona, and in its vicinity. Scipio Mazella gives the inscriptions at Puteoli and Cumæ. Franciscus Lombardus describes at great length the Baths at Puteoli and Baiæ, and those of Ænaria, naming the medicinal properties of each. It appears from this treatise that there was a great rivalry among the Baths. One at Puteoli was named Balneum Olei Petrolii, because it yielded petroleum—rock oil, as we are accustomed to speak. The virtues of this bath are thus enumerated :—

Hoc vitium lepræ, genus hoc serpiginis omne
Tollit, et è stomacho phlegmata salsa fugat.
Extinguit bilim, grossos subtiliat artus, &c. &c.
Vescicam curat quoties urina negatur;
Nulla potest melior renibus esse salus,
Si lapides ullos, seu si patiantur arenam,
Quælibet à morbo membra gravata juvat, &c.

(It may be remembered that years ago—long before petroleum was used for lighting purposes—this mineral fluid was imported here from the State of New York, and sold in bottles as a medicinal liniment, under the name of Seneca oil, so-called, it was reported, because the Seneca Indians, across the lake, had been accustomed to apply it with great effect to themselves.)

Although there is no formal account of Rome in the folio of Cambierius, there is incidentally a curious reference made by Bernardus Saccus to the troublesomeness of the mosquitoes in that city in his day, which may recall to ourselves experiences of our own in the primitive times. In summer, Saccus says, "prodeunt in tenebris infensæ cicindulæ, vulgo cicinsulæ dictæ, quas ego vel sucindulas, à sugendo, vel à vocis zîncino stridore cincinulas scribendas putarem. Hæc enim insectæ," Saccus continues, "vix cubili allato lumine simul adsunt, ac summisso sibilo improbo osculo nobis dormientibus insident, inflictoque fronti vulnere, humano cruore saturæ sub lucem abeunt, latentque rursus nocte reversuræ. Gloriare nunc rerum tuarum magnitudine, Roma!" exclaims Saccus, "quando tantillum animal noctes tibi tuisque Patriciis infestas facit, bellumque sine telo ciet!"—Almost the whole of the volume is printed in the Italic character. Let into the title-page is a large and very spirited woodcut of Cambierius's *impresa* or device: a lion and unicorn furiously contending against each other, without the intervention of a shield of arms between them. On the inside of the cover appears the book-plate of Christ Church, Oxford, bearing the arms

of the College, surmounted as usual by Cardinal Wolsey's hat; and below is the inscription, *Œdes Christi, in Academia Oxoniensi.* On the plate has been written the word "duplicate," to show that the book had passed out of the college collection honestly.—On the outside of my folio, stamped in gold very conspicuously, on both covers, are the following arms: Azure: two bars erm. on a chief argent three suns proper: Crest: out of a ducal coronet or, a lion's head erased gules, the erasure showing beneath the coronet, the motto: *Meliora spero.* These, I find, by reference to Burke, are the arms of Otho Nicholson, who is intimately connected with the history of Christ Church Library. The building used as the library of Christ Church had formerly been the chapel (dedicated to St. Lucia) of the Priory of St. Frideswide. At the beginning of King James the First's reign, its interior is described as being almost wholly bare and given up to flies and spiders. At this time, however, Otho Nicholson, Esq., a scholar of the college, and an examiner for the Court of Chancery, gave £800 for the purpose of renovating the library, building, buying books, and setting up cases and benches. The Earl of Dorset and Viscount Lisle added donations of twenty minæ (? pounds; properly a mina = £3 sterling) each towards the same object; John King, Bishop of London, and Dr. Edwards, Chancellor of London, gave £46 13s. 4d. William James, Bishop of Durham, gave £20; Earl Clauricard, £30. Dr. Thomas White, Canon of Christ Church, afterwards endowed the library with £6 a year, for the repair of old books and the purchase of new. In the south wall of the library of Christ Church there is to this day a tablet of black marble, bearing the following inscription:—"Hospes, quisquis es, circumfer oculos. Perantiqui et prænobilis hujus domicilii corpus intermortuum, foris, intus refinxit; unus impensis suis et novâ donavit animâ; totius quam vides exquisitæ pulchritudinis, Otho Nicholson, armiger, armarii istius literarii memorabilis instaurator. A Deo Librorum Opulentia." (In the closing motto, the following letters are cut in capitals, D, L, I, V, M, V, L, I. They give the date of the tablet; added together they make 1612.) Nicholson did not confine his benefactions to the University; he promoted the convenience of the town likewise, by bringing in, at a great expense, wholesome water to Oxford, from Hinksey Hill, by a conduit.

From the arms stamped on the covers of the volume before us, and from the date of the book, it is quite certain that this is one of

the original collection presented by Otho Nicholson to the library of Christ Church, in the renovated Chapel of St. Lucia. Very probably Otho Nicholson himself has lovingly handled it, while yet its exterior was smooth and glossy, fresh from the hands of the binder and gilder; while its leaves were yet crisp, its typography sharp, its ink brilliant. But during its sojourn within the precincts of Christ Church, who of the illustrious alumni of that body may not have pored over its pages? I think, for one, Robert Burton, author of the Anatomy of Melancholy, has done so. He was a member of Christ Church in 1599, and, bookworm as he was, he would be a frequenter of the library. The *Italia Illustrata* would be particularly attractive to him, for he was, as he tells us, ever especially delighted with the study of cosmography, although he never travelled, he says, except "in map or card, in which his unconfined thoughts freely expatiated." Eulogizing the founders of libraries, he names Otho Nicholson, and speaks of him as a founder of "ours in Christ Church." "How much," he exclaims, "are we all bound, who are scholars, to those munificent Ptolemies, bountiful Mæcenases, heroical patrons, divine spirits, that have provided for us so many well-furnished libraries as well in our public academies in most cities as in our private colleges." And in another place he actually names Schottus, the compiler of our *Italia Illustrata*, classing him with Bozius, Pomponius Lætus, Marlianus, Cavelerius, Ligonius, and other writers on cosmography. Not without some reasonable ground, then, we may please ourselves with the thought that in his day Democritus junior, as Burton was pleased to call himself, turned over the pages of our copy of the *Italia Illustrata*. Another man of note who may have done so is Ben. Jonson, who was in 1619 and previously an inmate of Christ Church, and from his scholarly predilections likely to take a special interest in the subject matter of this volume in the college library.

I have now to pass *per saltum* from the days of King James to our own era, not having in my collection at present any relic of Oxford worthies of the intervening period.

I show first two volumes from the library of the late Bishop Wilberforce, who is perhaps more distinctly remembered as Bishop of Oxford than as Bishop of Winchester, the title by which he was known at the time of his death. Both books—they are a copy of Archbishop Potter's well-known Archæological Græca, or Antiquities

of Greece—have the book-plate of the bishop, with his family arms and motto, "*Nos non Nobis*," and "Samuel Wilberforce," engraved below. Also on the title-page of each volume is his autograph, SAMUEL WILBERFORCE. I preserve likewise a note of his bearing the signature S. OXON, written throughout in a bold, hurried hand—dashed off possibly in the first-class carriage of an express train going at full speed. The bishop had, we are told, an apparatus by means of which he, to some extent, utilized the time passed in travelling, by replying, while in swift transit from one place to another, to the innumerable letters which were constantly reaching him. "The note you have kindly sent me again," the bishop says, "was never seen by me before. I consequently had not any directions by which to communicate with you. Will you take your breakfast with me at 26 Pall Mall on Friday, the 15th? I am most truly yours, S. OXON." The instantaneous death of Bishop Wilberforce, occasioned by a fall from his horse while riding with Lord Grenville, is fresh in the recollection of every one. He was a man greatly beloved; full of power, with every faculty instantly at command; brilliant, moreover, as a conversationist and wit. I remember, while in London in 1867, that on a review of the day at my lodgings in the evening, it took several pages of my memorandum book to record the extraordinary number of pleasant and clever things that were crowded into a few hours spent with the Bishop of Oxford and his friends, at his "table-round" in Pall Mall, to which the note above recited gave access.

I next offer an autograph note of another eminent Oxfordman—the present Dean of Westminster, Dr. Arthur Penrhyn Stanley, pupil and biographer of Dr. Arnold of Rugby. We have every now and then spread out before us the thoughts of the Dean, in the columns of the public prints and pages of widely-circulated magazines, showing him to be an Englishman who aims to fuse and weld together again, on a principle of nationality, the great community or society of Britain so long rent and distracted. By one of those anomalies to be met with here and there in England, Westminster Abbey, though in the diocese of London, is not under the jurisdiction of the bishop of London. Hence the Dean of Westminster is enabled to do some things which a clergyman elsewhere cannot do. Thus, not long since the Dean caused Max Müller, a layman, to read a lecture there on Missions; and lately, Dr. Caird, a presbyterian

minister from Scotland, delivered a discourse in the Abbey. Dean Stanley and his wife, lady Augusta, are known to be private friends of the Queen's, who from time to time drops in at their tea-table without ceremony, glad to have a few moments unartificial communion with non-courtiers,—just as she so evidently enjoys doing with honest Scottish folk when sojourning at Balmoral.—The note which I transcribe will give another glimpse into the busy, overstrained life of gifted and enlightened men, at the present epoch, when drawn within the vortex of public affairs. (The Dean has been pressed to say when he will deliver a certain lecture of which he had held out hopes to friends down at Bradford. We can conceive him in the midst of his multifarious occupations up in town replying as follows:)—"My lecture at Bradford is quite uncertain; but it cannot, under any circumstances, be before the winter. Many thanks for your kind invitation, of which I shall be very glad to avail myself; but at this distance of time I am unable to promise anything. Yours faithfully, A. P. STANLEY." I add a second note from the same hand, of interest to myself at least, as it recalls a very memorable visit under his guidance, to the famous Jerusalem Chamber (where Convocation was sitting at the time) in Westminster Abbey, and other amenities at the Deanery: "I shall be very glad to see you at 12 on Tuesday," he says in his note, "and will take you into the Jerusalem Chamber with the utmost pleasure. No official costume is needed. Yours faithfully, A. P. STANLEY." Not unworthy of insertion here is an autograph of Canon Liddon, one of the most eloquent of modern Oxfordmen, combining profundity of thought with facility of expression; as all will confess who have been so fortunate as to listen to him: under the dome of St. Paul's, for example, amidst assembled thousands held spell-bound by his ideas and words for an hour at a stretch. His relic is simply a request made to a friend in Christ Church, Oxford, to allow him to make use of some room in College of his, probably a lecture room, for a particular purpose. "Would you forgive me" he writes in a free, running, admirable hand, "for asking you if you would allow my guests to-morrow evening to assemble in your room at 7 o'clock. Yours very truly, W. P. LIDDON."

Next comes an autograph memento of Max Müller, Fellow of All Soul's, Oxford, and Taylorian Professor there, a great authority in the new science of Comparative Philology. I had the satisfaction

of hearing Max Müller lecture on the Nibelungen Lied at the Taylo Institute in Oxford. A note which I had made of his lecture havin become, on revision, obscure in a certain respect, to myself, I applied to him for information, forwarding him at the same tim "Canada and Merton"—a paper read by me before the Canadia Institute. The kind and frank reply received was the accompanyin note: "Many thanks for your interesting paper on Merton. Th sentiment which you refer to as forming the key-note of the Nibe lunge Not was probably "Leid nach Freud," "Sorrow after Joy." Yours very truly, MAX MÜLLER."

I now show the handwriting of one who in these days has don more than any other person to educate the common mind in relatio to Art, and the beautiful in Nature: Mr. Ruskin. "Moder Painters," his first production, bore on its title-page "by a Graduat of Oxford" simply. The book fell like a bomb-shell in the camp o the conventional critics and reviewers. "When public taste" th Graduate said "seems plunging deeper and deeper into degradatio day by day, and when the press universally exerts such power as i possesses, to direct the feeling of the nation more completely to al that is theatrical, affected, and false in Art; while it vents its ribal buffooneries on the most exalted truth, and the highest ideal of land scape that this or any other age has ever witnessed (the reference i of course to Turner's paintings), it becomes the imperative duty o all who have any perception or knowledge of what is really great i Art, and any desire for its advancement in England, to com fearlessly forward, regardless of such individual interests as are likel to be injured by the knowledge of what is good and right, to declar and demonstrate wherever they exist, the essence and the authorit of the Beautiful and the True." Since 1843 several volumes bearin the same title as the first production, viz.: "Modern Painters," hav appeared with Ruskin's own name prefixed. Also "The Stones o Venice," "The Seven Lamps of Architecture," "Pre-Raphaelitism," "the Political Economy of Art," and numerous other works, con stituting quite a literature on the subject of Good Taste. On accoun of a certain engaging egotism, a habit of having recourse to his own experience for illustrations, Ruskin has of late been compared t Montaigne. This modern celebrity is represented in my collectio by a short characteristic note in his neat, airy handwriting, readin as follows: "I fear I can't stay at home to-day. I want much t

have a little talk about music, and hundreds of things; but I've some friends with me whom I must really do the best I can for out of doors when the sun shines; and it looks half-promising to-day. I will stay at home myself at all events *to-morrow*, if you will promise to come.—Ever faithfully yours, J. RUSKIN." The note is dated from Brantwood, Coniston, Lancashire. The anxiety to do his best, out of doors, for his visitors, while the sun shines, doubtless for the sake of the effects on the landscape, is characteristic of Ruskin.

I regret that I have nothing more to show of Mr. Gladstone's late Chancellor of the Exchequer, than a plain unpretending autograph signature—ROBERT LOWE. Mr. Lowe from his youth has been regarded at Oxford as one of her eminent sons, although familiarly he is spoken of there, but among the juniors only possibly, as "Bob Lowe." Before attaining distinction as a statesman, he, like our Sir Edmund Head, had been an Oxford Fellow and tutor. He has also tasted of Colonial life, having passed about nine years in Australia, where he practised law and became a member of one of the legislatures.—To make up for the absence of a sentence from the pen of Mr. Lowe, I transcribe a few words from a note in the rather carelessly formed handwriting of his colleague Mr. Forster, whose name will be associated in history with English legislation in favour of popular education. "I am come down for my re-election, and for Christmas," he says, writing from Burley-in-Wharfedale, Leeds, Dec. 20, 1868, "but I shall be at the Council office on Tuesday or Wednesday week, and I shall be settled in London by the end of the first week in January.—Yours faithfully, W. E. FORSTER." Mr. F. however is neither an Oxonian nor a Cambridge man.

Of Sir George Cornwall Lewis, an eminent Oxford statesman I have a slight representative. He was a member of Christ Church, and like Mr. Gladstone, he won laurels in literature as well as in the public service. He wrote on the Romance Languages, on the Incredibility of the Early Roman History, on the Influence of Authority in Matters of Opinion. My MS. relic of Sir George shows him like other public men embarrassed by his engagements: He writes to a friend in a clear but rather slovenly hand:—"I am much obliged to you for your kind invitation to Headingley for the 27th instant, on the occasion of a meeting of the Leeds Mechanics' Institute. I regret however to say that my engagements at that time render it impossible for me to avail myself of your kindness.—Yours &c., G. C. LEWIS."

The earl of Carlisle writes a similar excuse but in stronger terms, in the note of his which I happen to possess ; it falls into its place here, the earl having been a member of Christ Church, and while at Oxford he gained two University prize-poems and the highest classical honors. He too, when engaging in public life, continued the cultivation of his intellectual powers and tastes, becoming the author of a "Diary in Turkish and Greek Waters," Lectures on the Life and writings of Pope, and other works. In a fine, rather quaint, backward leaning hand he writes to a friend from the "Vice-regal Lodge"—he was, as we shall remember, at one time Lord Lieutenant of Ireland—thus: "Your invitation makes my mouth water, but I have no hope of being able to escape from my duties here to do what I should have liked so much in every point of view.—Very sincerely yours, CARLISLE." The Earl of Carlisle travelled through Canada some years ago and I remember his appearance well. I also recollect, in St. James' Church, where I happened at the time to be officiating, and where he worshipped several times, that he always placed in the collecting-plate, when it was presented to him, a golden sovereign.

I add now an autograph note of Gilbert Scott's—Sir George Gilbert Scott, he now is—the eminent scientific ecclesiastical and civil architect : again I admit the hand of one not in our present category—but as the designer and builder of the well-known Martyrs' Memorial and other striking erections in the University, a relic of Sir Gilbert Scott may not inapproriately appear here. He writes thus in neat, unaffected scrip, from No. 20 Spring Gardens : "I thank you for the cheque which you have kindly sent me which closes my account for the Church. I shall be most happy to do what I can in the way of sketches and directions for the decoration, indeed I did some time back communicate several times on the subject with Mr. Castell the decorator, and I will see him again on the subject and communicate with you again.—I remain, &c., GEO. GILBERT SCOTT." "The whirligig of time brings its revenges." Gilbert Scott is the grandson of Thomas Scott, the commentator, a divine not noted for love of ecclesiastical architecture or Church ornamentation.

It will not be amiss perhaps if I give just one example of those little chaffing familiar missives which are frequently passing backwards and forwards in colleges between students and others, couched in language so grotesquely technical as to be unintelligible to outsiders, reminding one of the overstrained conceits of Dickens, by

which they have perhaps been in some degree suggested. Here is the acceptance of an invitation to dinner in the handwriting of a Christ Church man of eminence; it is evident that in the invitation the proposed repast had been facetiously spoken of as a practical lecture on food, accompanied by particular experiments, to which the guests were asked to be present. The Christ Church man replies:—"It is very kind of you to offer to admit senior members of the House to one of your Lectures, and though the title of the Lecture for the 8th ("On the disintegration of muscular tissue effected by molar action, with experiments in alcoholic circulation") is alarming to an amateur, yet I hope to attend and profit by it.—Gratefully yours, C. L. DODGSON."

I now pass over to the sister university of Cambridge, and produce what examples I have of "leaves which have been touched" by men of worth and note there. My Cambridge specimens I find are more numerous than my Oxford ones: I have gathered more I suppose, as feeling a special interest in the sons of one's own *alma mater;* and for the same reason I shall be excused if I venture to interweave some of the personal recollections which here and there occur in connexion with the objects shown.

Again I begin with a volume which once had a place on the library shelves of a famous College: Trinity College, Cambridge. It is Fanshaw's translation of the Lusiad of Camoens, a folio of the date 1655. Its full title reads as follows: "The Lusiad, or Portugal's Historicall Poem, writen in the Portugall Language by Luis de Camoens, and now newly put into English by Richard Fanshaw, Esq.—Horat. Dignum laude virum Musa vetat mori, Carmen amat quisquis carmine digna facit. London: printed for Humphrey Mosley, at the Prince's Arms in St. Paul's Churchyard, MDCLV." The dedication is to the Right Honorable William, Earl of Strafford, and is crowded full of conceits and pleasant discourse, containing an anecdote of Tasso, as well as some personal matter. It will appear that Fanshaw at the time was finding shelter in a country house of the Earl's called Tankersley. Only four years previously Fanshaw had been taken prisoner at Worcester while fighting on the Royal side. A few years later he joined the King at Breda, and was knighted. "My good Lord:" thus runs the Dedication: "I cannot tell how your Lordship may take it, that in so uncourted a language as that of Portugall should be found extant a poet to rival your

beloved Tasso. How himself took it, I can; for he was heard to say (his great 'Jerusalem' being then an embryo) *he feared no man but Camoens.* Notwithstanding which he bestowed a sonnet in his praise. But, admitting the Tuscan superior;—yet, as *he* with some anger of Guarini, when he saw, by the unquestionable verdict of all Italy, so famous a laureate as himself, by that man's *Pastor Fido* outstripped in the dramatic way of poetry, se non havuto visto il mio Aminta (because indeed the younger, for a lift in this kind, was beholding to the elder) :—So, and for the same cause, might my Portingal (Portuguese) have retorted upon him with reference to his own epic way.—*If he had not seen my Lusiad, he had not excelled it.* Since then I find Horace in the days of old held himself accountable to *his* potent friend Lollio for the profits of those vacant hours which *he* passed in his proper villa, whilst Lollio lay ledger in Rome about that which was the great domestic glory of the Roman nobility of those times :

> Trojani belli Scriptorem, Maxime Lolli,
> Dum tu declamas Romæ, Prænestæ relegi,
> Whilst thou, great Lollio, in Rome dost plead,
> I, in Prænestè, have all Homer read.—(Hor. l. 3. Ep. 2)

How much more obliged am *I* to bring unto your Lordship this Treasure-trove, which, as to the second life, or rather being, it hath from me in the English tongue, is so truly a native of Yorkshire, and holding of your Lordship, that from the hour I began it, to the end thereof, I slept not once out of these walls? And if the same Horace proceed :

> Qui, quid sit pulchrum, quid turpe, quid utile, quid non,
> Plenius ac melius Chrysippo et Crantore, dicit,
> Who what is right, what not, what brave, what base,
> Clearer and better than the Stoics, says—

Whether this poet also, however disfigured in the translating, yet still retaining the old materials, both political and moral, on a truer and more modern frame of story and geography than that of Homer —et quamvis plebeio tectus amictu, Indocilis privata loqui,—shall not be valuable on the like account, I appeal to your Lordship, whose devoted (since he turned Englishman) he is, by the title I have already mentioned, and by as many more, as I am, my Lord, your Lordship's humble servant, Richard Fanshaw. From your Lordship's Park of Tankersley, May 1, 1655." The book is printed throughout exactly in the style of the first folio Shakspeare, with heavy and worn

type like that used by Isaac Jaggard and Edward Blount, with the same motley mixture on each page of the Roman and Italic letter; all emphatic words beginning in the German fashion with a capital; the same uncouth and not always constant orthography; the signs of elision omitted; the proper names in small capitals, the U's and double U's seeming to cause especial trouble, the former being usually given as V s, and the latter as two V's disconnected, (whence our present form of W has come); frequently in the midst of a proper name, a letter larger or smaller than the rest, showing that the supply of small caps in the office was limited.—As to the translation itself, it may be said that Fanshaw's Camoens, read from the time-darkened pages of this first edition of 1655 might readily be taken for an original poem of the period, so easy and idiomatic is the style, so bold and powerful the language. In some complimentary verses prefixed, Sir John Denham, condemning servile translators, contrasts their style with that of Fanshaw, apostrophising him thus :—

> A new and nobler way thou dost pursue,
> To make translations and translators too.
> They but preserve the ashes, thou the flame,
> True to his sense, but truer to his fame.

The book-plate of the library of Trinity College has been removed to the back of the title-page in my folio Fanshaw. It has on it the motto *Virtus vera nobilitas*, and below is a medallion of Henry VIII. Trinity College, Cambridge, adores in some sort the shade of a Henry; but it is not, as at Eton, Henry VI. Gray, we shall remember, speaks in his ode xi of—"Either Henry,

> The murder'd saint and the majestic lord
> That broke the bonds of Rome."

It is the latter that Trinity is constrained to honour, as being its founder; his statue is to be seen over the gateway, with the royal arms below. The other Henry, however, "the murder'd saint," *is* honoured at Cambridge as a benefactor to King's, a college closely associated with Eton, where, as many of us have seen, a statue of Henry VI stands in the quadrangle.

The leaves of the copy of Fanshaw's Camoens before us have probably been turned over by many a right hand cunning in the building up of verse that has not perhaps in some instances even yet wholly perished. Andrew Marvell was at Trinity College subsequently to 1655, and Dryden and Cowley, to say nothing of later

names. In studying the translation, some one has here and there given proof, by manuscript annotations, that he had read the poem in Portuguese also. To certain curious lines and expressions he has annexed the MS. note "Not in the original." In one place he has detected, as he thinks, the source of some phraseology used by the poet Gray in the 1st stanza of *The Fatal Sisters*, from the Norse. Fanshaw renders the 31st stanza of the fourth canto of the Lusiad thus :—

> Now through the darkned Ayre barbd Arrows fleet,—
> Javelins, with other shott, fly whizzing round,
> Vnder the fiery *Coursers'* yron *Feet*,
> The Earth doth tremble, and the Vales resound ;
> Lances are crackt, and (dropping thick as sleet)
> The Horsemen armd come thundring to the ground.
> Upon feirce Nunio's Few, fresh Foes are pact;
> *Their* Art to multiply ; *his*, to abstract.

Opposite to this, with a dash under "darkned Ayre barbd Arrows fleet," and "thick as sleet," the annotator has written :—

> Iron sleet of arrowy shower
> Hurtles in the darkened air.—*Gray.*

I show another volume from the library of Trinity College. This is an Amsterdam edition of Phædrus, of the year 1667, with the copious notes of *Johannes Laurentius, Jurisconsult.* It contains a book-plate bearing the college arms with the inscription below :—"Collegium SS. et Individuæ Trinitatis in Academiâ Cantabrigiensi," and on the last page "Duplicate, Trin : Coll : Cam : 1859" is stamped. The book has numerous beautifully executed illustrations on copper let into the text, all of them quaint and curious. The large engraved title-page shows the Emperor Augustus, seated, presenting a cap of *Liberty* to Phædrus, who is in the act of writing from the dictation of Æsop, the latter dwarfed in stature and slightly deformed ; the expression of the countenance shrewd and humorous. At the end of the volume are very full indexes. The hands of innumerable great scholars have probably handled this copy of Phædrus ; but notably perhaps the hands of Richard Bentley, Master of the College, who himself edited a Phædrus at Cambridge in 1726. He would naturally consult such editions of Phædrus as were to be found in the library of his own college.

One more former occupant of a place on the shelves of Trinity College Library is my copy of Mackenzie on Solitude ; a small duo-

decimo printed in 1685. Its title is "A Moral Essay, preferring Solitude to Publick Employment, and all its appanages, such as Fame, Command, Riches, Pleasures, Conversation, &c., by Sir George Mackenzie, His Majesties Advocate in Scotland, and author of *Moral Gallantry* and *Jus Regium*. 2 Kings 4. 13.—Wouldst thou be spoken of to the king or to the captain of the Host? And she answered, I dwell among my own People." This was, in its day, a famous book, and was answered by John Evelyn in 1667. "Mackenzie," Isaac Disraeli says, in his Curiosities of Literature, ii, 50, "though he wrote in favour of Solitude, passed a very active life, first as a pleader, and afterwards as a judge. While Evelyn, who wrote in favour of public employment being preferable to solitude, passed his days in the tranquillity of his studies, and wrote against the habits which he himself most loved. By this it may appear," observes Disraeli, "that that of which we have the least experience ourselves, will ever be what appears most delightful." I cannot but think that among the number of those who have turned the pages of this copy of Mackenzie's Essay, Sir Isaac Newton must be reckoned. Himself a solitary student for many years in Trinity, the subject of the Essay would attract him. Newton's rooms in Trinity used often to be visited by me when in the occupation of Mr. Carus. They are over the principal entrance to the college, in the massive tower which constitutes the gateway. Above, in a higher storey, was his observatory, where he put to such noble use the humble reflector-telescope, constructed by himself, which is still preserved at Cambridge.

I now descend to contemporaries. I have a written relic of William Whewell, an illustrious Master of Trinity. There are many men in Universities who enjoy, and quite justly, a great repute locally, but who are little heard of outside University limits. Whewell, however, won for himself a name in the general world of British, if not European, science. He first appeared as the author of a number of elementary treatises on Mechanics, Statics, Dynamics, Geometry, and Conic Sections, which were used very generally as text-books in the lecture-rooms; but his reputation rests chiefly on two works, The History of the Inductive Sciences, and The Philosophy of the Inductive Sciences. He wrote also one of the Bridgewater treatises. In the intellectual arena of Cambridge, Whewell, as Tutor, Professor, and finally, Master of his College (Trinity), was regarded with considerable awe, on account of the

extra vigour of his mind and a certain tendency to domineer. , With Everett, in his lectures entitled "On the Cam," the expression is "Trinity's honoured head;" but Bristed, in his Five Years at an English University, speaks of "Whewell's awful presence." He was a Lancashire man, of stalwart frame and powerful physique; German, perhaps, rather than English, in the character of his countenance, which was open, fresh-hued, and round. In his younger academic days he was regarded with respect by the bargees of the river and the roughs of the town, between whom and the gownsmen there used to be, some years ago, periodical passages of arms. I have myself seen serious conflicts of this kind in the streets of Cambridge; quite senseless affairs, but attended with considerable risk to skin and limbs. If on such occasions one happened to be out of his own rooms and belated somewhere with a friend, it was highly advisable, when returning home to College, to get under the lee of Whewell, or some one else of his bulk and build. I was in residence when the old-fashioned "Charley," or watch, disappeared from the pavement and the modern policeman took his place. The effect on the public peace of Cambridge was very soon apparent. Whewell has left memorials of himself in Cambridge of the old durable mediæval kind. Previous to his death, a so-called Hostel for the accommodation of Trinity students was added to the College by his munificence; also a quadrangle, known as the Master's Court. Princely endowments were afterwards bequeathed by him for the perpetual maintenance of these augmentations to Trinity. He likewise by his will established and endowed a chair of International Law, with scholarships for students in the department of science. Whewell's first wife was a sister-in-law of Lord Monteagle (Spring Rice); his second was the widow of a clerical baronet (Sir Gilbert Affleck). By the custom of England this latter lady retained her name and title after her second marriage. The invitations to the Lodge used then to run in the following curious form.—"The Master of Trinity and Lady Affleck request the honour, &c." At Cambridge it was humorously said that Whewell's name was one that ought to be whistled. This was to correct the wrong rendering of it sometimes heard Whe-well. Another little jest among undergraduates used to be that no book of Whewell's ever appeared without the assertion somewhere or another in it of Newton's Three Laws of Motion. As years rolled on, an epigrammatic saying became current

that science was Whewell's forte, and omniscience his foible; it does not appear, however, that his acquirements in any direction were superficial. A curious story used to be told of some of the Fellows of Trinity mastering the contents of several elaborate papers on Chinese Music, which they had discovered in a Review published some years previously, and then raising, as if by accident, a discussion on the subject, expecting to take Whewell by surprise and to pose him for once. But after a brief silence, the observation quietly came: "Ah, I see you have been looking into the — Review of the year —. I have had reason to alter my ideas in regard to Chinese Music considerably since then." Whewell himself was the author of the articles which had been so laboriously crammed up for the occasion.—The manuscript relics which I preserve of Whewell are, first, a note addressed from "Trin. Coll." to the Editor of the *Philosophical Magazine*, accompanying matter for that periodical. It is characteristic of Whewell's ever busy intellect. "I send you," he says, "an account of the last meeting of the Philosophical Society here, which I shall be glad if you will insert in the *Philosophical Magazine* of next month, including the abstract of Mr. Murphy's paper and Prof. Airy's communication. I send you also a notice of some remarks of Berzelius, which I shall be glad if you can find room for. Yours faithfully, W. WHEWELL." And, secondly, a cordial welcome addressed by him to a friend or relative, on hearing of his intended visit to Cambridge. He happens to speak incidentally of the war raging at the time between the Northern and Southern States. "I am glad," he says, "that you are coming to the British Association. you shall have Victor's room, or some other, and will consider the Lodge your home in all other respects. . . . I am quite prepared to believe all that you tell me of McClellan. He seems to me to have shown great generalship. But I am afraid the Northerners have lost their opportunity of making a magnanimous end to the war when they were successful. I do not see now," he continues, "what end is possible except an end from pure exhaustion. Certainly both parties have shown great military talents on a large scale, but that is small consolation for the break up of such a constitution as theirs; and I fear that the cause of the black man's liberty is losing rather than gaining by the conflict. We have been in Switzerland," he then adds, "for a fortnight, and are now returned to our usual occupations. I am sorry that we have not seen our own dear Lakes this summer."

This note is dated from Trinity Lodge, Cambridge, Sep. 22, 1862. The hand is minute and clear, and not indicative of the imperious character which the writer was reported to possess. Whewell's death was occasioned by a fall from his horse in 1866. I add a brief eulogy pronounced at the time by Christopher Wordsworth, then Archdeacon of Westminster. It is an old friend's grateful testimony to the many excellent gifts and traits of character conspicuous in Whewell. "Before I proceed," Wordsworth said at a meeting of the Anglo-Continental Society held at Willis' rooms in London, "to move the next resolution, I must crave leave to give vent to personal feelings. I have come this morning from the west of England to London, where I have met with that sorrowful intelligence from Cambridge which has grieved so many hearts. It was my privilege," he said, "just a fortnight ago, to be enjoying the delightful hospitality of Trinity Lodge, a place endeared to me by so many delightful recollections, private and public, together with some members of my family; and it was there our happiness to enjoy the society of him, who though he had passed his three score years and ten, retained the vigour and buoyancy, and even the joyousness of youth, overflowing from the largeness of his heart with kindly and genial tenderness. This is not the place," he continued, "for dwelling on those intellectual gifts, with which he was endued in rich abundance, almost without an equal in his own College and University; nor may I dilate here on the happy consecration of those intellectual gifts to the cause of Christianity; but I may ask permission to say, that if there ever was a noble and magnanimous spirit, disdaining all that was low or mean, petty or paltry, loving whatever was honourable, high and holy, it was that of the late Master of Trinity College. Forgive this poor tribute from one who had the honour of enjoying his friendship for about forty years. *His saltem accumulem donis, et fungar inani Munere.*" Wordsworth speaks of Trinity Lodge as a place endeared to him by recollections private and public. He had himself been a Fellow; and his father was for many years Master. He had also been Public Orator, an elected functionary who on all public occasions is the mouthpiece of the University; and in this capacity I have often heard him deliver himself in the Senate House in fine Ciceronian Latin. My transcript from an autograph relic of Christopher Wordsworth, who is now Bishop of Lincoln, shall be one having reference to a personage once well known among our-

selves. "There is no name," the note says, "more honoured by good men in England, among Anglo-American bishops, than that of Bishop Strachan of Toronto."—Dr. Wordsworth, the Master of Trinity, was a Conservative of a strict type. Many of his Fellows were known to be advanced Whigs, and to be in confidential communication with Earl Grey and other members of the Government. Peacock, Snowball, and one or two other Fellows of the Conservative College of St. John's, were also of the advanced school. The period of 1832 and onwards, was an agitated one. The air was full of Reform, which, to the minds of not a few, meant Revolution. We, youthful onlookers, too unwotting at the time, of the grave issues at stake in Church and Commonwealth, used occasionally to amuse ourselves by marking the countenances of our superiors, detecting, as we would fancy, the interchange, now and then, of unamiable glances between groups known to be politically opposed; between the Master of Trinity, for example, and *his* friends, and Whewell, or Sedgwick, or Thirlwall, and *their* friends, as they passed and repassed each other when pacing round and round, for exercise, on a rainy day, the three sides of the cloisters in Neville's Court. There, dons of the highest grade, used to be seen intermingled with the ordinary ruck of M.A's, B.A's, questionists, three-year men, and other undergraduates, down even to freshmen, all in rapid circulation, but in non-interfering streams,—the whole Court resounding with animated talk heard above the quick, energetic patter of stout-soled shoes on the stone pavement of the cloisters.—On a lesser scale, a like curious scene of collected notabilities, passing and repassing one another in groups, at a modest pace however now, was to be beheld in the ante-chapel of Trinity on Sunday afternoons, just before Divine service began, while the men and others were assembling. Here, again, we detected glances, slightly defiant, interchanged, intensified by the glare given to the eyes by the intervention of spectacles worn in many instances, the lenses in some of them being of the old-fashioned large circular kind, seen in the portraits of Sir Joshua Reynolds and Bishop Horne, requiring the countenance to be brought round, sometimes in a sudden and startling manner, for the purpose of fairly confronting the object.—From an autograph letter of Dr. Wordsworth's I now transcribe a brief passage. Again we have a glimpse into a busy English life. "I *must* be in Cambridge," he says to his correspondent, "on Thursday at the latest, as we have much important

business with meetings of the Eight and Sixteen, both on Friday and Saturday. If my Brother is with you," he continues, "will you say that I am to be in Cambridge by the time mentioned, and that I shall be most happy to see him, and the sooner they can come after my arrival there the better, because Term will then be over, and it is very probable that business may very shortly after require my presence at Buxted and elsewhere." (Buxted was his Living. The Brother referred to was the poet.)

Another eminent man at Cambridge, well known by sight to all students of the year 1833 and downwards, was Adam Sedgwick. He was among the earliest English geologists of note, and bore the brunt of the first assaults on the new science. He was a Fellow of Trinity and the seventh occupant of the Woodwardian Professorship of geology. In 1833 he published a Discourse on the studies of the University of Cambridge, which ran through several editions and still maintains its ground. In a note to that work he thus speaks in relation to his favourite science: "We have nothing to fear from the results of our inquiries, provided they be followed in the laborious but secure road of honest induction. In this way we may rest assured we shall never arrive at conclusions opposed to any truth, either physical or moral, from whatsoever source that truth may be derived: nay, rather, as in all truth there is a common essence, that new discoveries will ever lend support and illustration to things which are already known, by giving us a larger insight into the universal harmonies of nature." He thus maintained the perfect compatibility of science with religion. In another place he asks a question as pertinent to be put to speculative philosophers in 1875 as it was in 1833." "Shall this embryo of a material world," he says, "contain within itself the germ of all the beauty and harmony, the stupendous movements and exquisite adaptations of our system, the entanglement of phenomena held together by complicated laws, but mutually adjusted so as to work together to a common end, and the relation of all these things to the functions of beings possessing countless superadded powers, bound up with life and volition? And shall we then satisfy ourselves by telling of laws of atomic action, of mechanical movements, and chemical combinations; and dare to think that in so doing we have made one step towards an explanation of the workmanship of the God of nature? So far from ridding ourselves," the Professor adds, "by our hypothesis of the necessity

of an intelligent First Cause, we give that necessity a new concentration, by making every material power, manifested since the creation of matter, to have emanated from God's bosom by a single act of omnipotent prescience." The third annual meeting of the British Association for the Advancement of Science took place in Cambridge in 1833, and Sedgwick was chosen its president for that year. In the address delivered by him on the occasion, he used language similar to the above, declaring that "man was compelled by his intellectual nature to ascend from phenomena to laws, and the moment he grasped the idea of a law he was compelled, by the very constitution of his inner mind, to consider that law as the annunciation of the will of a supreme intelligence." I preserve with care a report of this memorable meeting, especially for the sake of the autographs which it contains in *fac simile* of the numerous savans from all quarters who were present. There Sedgwick's own name appears, the counterpart of the manuscript signatures of his which I have. Like several other contemporaries of note at Cambridge, as, for example, the two Roses, Hugh James and Henry John, Sedgwick was from the north of England. His speech, in which he was very voluble and sometimes eloquent, was strongly northern in accent, as was theirs; and his countenance—long, bony, dark, and stern—was northern, perhaps Norse, in type. The relics which I possess of Professor Sedgwick are volumes, once his property, containing some curious manuscript annotations from his pen. The first book consists of two collections, bound up together, of verses by self-taught men—one named Sanderson, the other, Nicholson. The Professor, besides inscribing within both his name, "A. SEDGWICK," has recorded in characteristic language the manner in which he became possessed of the two collections, the authors of which seem to have somewhat interested him. Of Sanderson, he says: "During the summer of 1824 I visited the great quarries of Chalk near Risley, Cumberland, and purchased the following poems of the author, a common lime-burner, whose brains had been heated by the fumes of his kiln." Of Nicholson, he writes: "I met the author on the top of a coach. He was a rough son of the Muses, who was carrying bundles of his poems from village to village, and especially to the ale-houses, where he was too well known. 'In this kind of goods, I have all this side of Yorkshire to myself,'" he said. A second relic which I show of Professor Sedgwick is Richard Owen's discourse on

the Nature of Limbs, delivered, in 1819, before the Royal Institution of Great Britain. It has the Professor's autograph as before, and, besides, a multitude of his pencillings, evidently made in an eager and rapid perusal of the book.

A memento of Professor Farish, Jacksonian Professor of Natural and Experimental Philosophy, comes next. His career, however, began earlier in the University than Whewell's or Sedgwick's, but he was still giving his lectures in 1836, and I had the satisfaction of being present at some of them. They were on the practical application of mechanism to manufactures, to mining, ship building, fortification, and other matters. You might have thought it was Polonius himself who was lecturing, as you listened to the professor's simple, but earnest and effective language, and saw him suit the action to the word at every step, by constructing the part of the apparatus required, or exhibiting in use the implement spoken of. He was then quite an aged person, and the tones of his voice were those of an old man; but he spoke with vigour, and showed an unflagging enjoyment of his subject. His happy oval countenance ever wore a smile. At the close of each demonstration, he would, in a playful way, suddenly break up the structure which he had contrived for his purpose, separating it rapidly into its constituent parts; or if it should happen to have been a mould for the casting of a cannon or a bell, or the wall of a fortified town, or an isolated fortress, that he had been expatiating on, he would run his wand ruthlessly through the moist sand which had been used, and reduce the whole in a moment to a state of chaos, like a child demolishing at a blow, the tower of cards a moment before so laboriously built up. To enable him to effect promptly his numerous demonstrations, the professor had a wonderful collection of cog-wheels, cylinders, bars, pulleys, cranks, screws, and blocks, and an ingenious method of extemporizing, as it were, then and there, a contrivance for each experiment, by means of clamps which fastened together firmly and quickly, the several parts of the required apparatus, which parts, presently taken all to pieces again, would do duty equally well immediately afterwards in some other combination. When everything was ready, the Professor would give the word of command to his attendant in these terms: "Roger, make it go!" Water was then turned on, and the desired movement instantly followed. The apparatus had been long in use, and sometimes there was a slight

break-down. Once, I remember, some rusted spots in the sheet iron reservoir suddenly gave way while the Professor was mounted on the steps in front of it; the consequence was that several fine jets of water were projected horizontally from the well-filled tank, passing between parts of the Professor's robes, and descending upon us in a most mysterious way. One feat of the Professor's, I find, has survived in my memory with some vividness. I saw him make a hat; saw him clip off before our eyes, in the lecture-room, the fur of a rabbit-skin, which was supposed to be beaver; whip it up into a misty cloud by a bowstring arrangement; convert it into felt; shape it into a sort of bag; forcibly press it, all moist, upon a block, where at length the thing assumed, in some degree, the shape of a hat, with brim curled up at the sides. At several points in the earlier stages of the process, the lecturer interposed an "aside" to his audience, "Not much like a hat yet!" The manuscript relic which I possess of Professor Farish is slight, but somewhat curious. It relates to some electioneering business at Cambridge. A certain candidate is reported to have resigned; but then the letter purporting to convey that intelligence to the Vice-Chancellor may be a hoax. "My dear sir," the Professor writes: "The Vice-Chancellor should have *official* notice of the resignation of Mr. Grant. I hear he has received a *letter*, but how does he know that it is Mr. Grant's writing? I wish you had not been out, and that you and I had been able to go. I have hardly authority, and the V.-C. might ask: How do you know? The same objection does not lie to you. I think it would be well if you would take the earliest opportunity of calling as Chairman of Mr. G's committee. Yours truly, W. FARISH. 12 o'clock, Monday. P.S.—Taylor, the school-keeper, gave me the above hint." (Taylor, the school-keeper, was a well-known subordinate official, shrewdly skilled in wise-saws and ancient instances in relation to small points of ceremony and routine. School-keeper denotes caretaker of the schools, or rooms appointed for the public exercises in the several faculties. The Senate-house also is a part of his charge.) Looking into Carus's Memoir of the Rev. Charles Simeon, I lighted on a passage which exactly interprets the note just given. In a diary, under date of Nov. 19, 1822, Mr. Simeon writes: "Old Mr. Grant, with Professor Farish, called on me and dined with me. It was a great grief to me, that I could not vote for his son on Tuesday next: but I told him that I regard my vote for a member of Parlia-

ment, not as a right, but a trust, to be used conscientiously for the good of the 'whole kingdom,' and his son's being a friend to what is called Catholic Emancipation is in my eyes an insurmountable objection to his appointment. Viewing this matter as I do, I could not vote for Mr. Robert Grant, if he were my own son. I think I shall not vote at all." Then on Nov. 26, he makes an entry which curiously refers to the very withdrawal of which Professor Farish's note speaks. "Mr. Grant having withdrawn," he says, "I feel at liberty to vote for Mr. Bankes, who is a friend both to the existing Government and the Protestant Ascendancy." A memorandum is added, that the numbers for Mr. Bankes were 419; those for the unsuccessful candidates were: Lord Hervey, 280; Mr. Scarlett, 219. It thus appears that our friend, Professor Farish, had been going about among the resident M.A's at Cambridge, on an active canvass in favour of Mr. Robert Grant, in company with "old Mr. Grant," Robert's father; and that Robert's prospect of success did not finally prove such as to induce him to persevere in the contest. This Robert Grant was afterwards the Right Hon. Sir Robert Grant, Governor of Bombay. He was also a younger brother of Lord Glenelg, remembered in Canada as Secretary of State for the Colonies at the beginning of the present reign.

I now produce a trifling, but highly prized note in the handwriting of Professor Smyth, who from 1807 to 1849 occupied the chair of Modern History in Cambridge. His lectures on Modern History and on the French Revolution have taken a high place in English literature, and continue to be reprinted. He shows himself in them to have been a man much in advance of many of his contemporaries in respect of the philosophy of history. "When we read these lectures," a great Whig authority has said, "we are at no loss to understand why Cambridge has produced of late years so many illustrious thinkers. For two entire generations the political intellect of that University was under the training of a man who, perhaps was better fitted for an instructor on the great social questions of the modern world than any one who has filled the chair of professor in this country." (This, it is expedient to observe, was written in 1856.) When the Prince Consort came up to Cambridge in 1847, to be installed as Chancellor, he paid a visit expressly to Professor Smyth, in the rooms, the Professor being at the time in failing health and unable to go out. All residents in Cambridge became perfectly

familiar with the form of Professor Smyth. In costume and manner he followed the fashion of another century. Being a layman, he usually wore, under his academic gown, coloured clothes; a blue coat with brass buttons; buff small clothes; white stockings and buckled shoes; a hat of extra width of brim, from beneath which fell a plentiful growth of long white hair that was tossed about on the shoulders by the lively movements of the head from side to side; the face wearing a cheery, youthful look. Professor Smyth was the author of the well known lines carved underneath Kirke White's medallion, formerly in All Saints, but now removed to the new chapel of St. John's College. These sculptured lines and Professor Smyth himself used particularly to interest me, as I happened to occupy in St. John's the very rooms in which Kirke White died; and frequently I used to see moving about in the college-courts outside, old Mr. Catton, Kirke White's former tutor. The autograph relic which I transcribe, is simply a casual note making an inquiry of a friend; but in it he chances to speak of a "Sheridan Memoir," which was a privately-printed notice by himself of Thomas, Richard Brinsley Sheridan's eldest son, to whom the Professor had been private tutor. "My dear Sir," he says, "the day after I sent you Roscoe's Lines, I sent you the Sheridan Memoir. Be so good as to let me know whether you have received it; that if not, I may enquire about it. I put it into the Post Office myself. With kind remembrance to the ladies, believe me, dear Sir, very sincerely yours, Wm. Smyth." The note is written from Norwich.

The Regius Professor of Greek at Cambridge in my day, was the Rev. James Scholefield. The reputation as a Greek scholar of this occupant of the chair of Porson, did not extend, perhaps, far beyond Cambridge. As a divine he was more widely known. He published an edition of the Greek Testament and a volume of Hints towards an improved translation of the same. I used to like to listen to Professor Scholefield's very solid and learned discourses in St. Michael's Church, uttered to all appearance extemporaneously; but all of them most carefully framed and deliberately worded. The Professor's manner was unimpassioned and his speech slow. With fair complexion and sandy hair, his general aspect was Scottish. A volume of the notes from which his sermons were delivered was published after his decease, and is very curious; to non-Cambridge men not very intelligible, on account of the free use of algebraical and

geometrical symbols and other abbreviations commonly employed in the solution on paper of mathematical problems. My remembrance, of Professor Scholefield is a fine copy of Hutchinson's edition of the "Cyropædia" of Xenophon, printed in bold old contracted Greek at the Theatre in Oxford, in 1727. On a fly-leaf is the autograph, J. SCHOLEFIELD.

A great notability at Cambridge, up to 1836, was the Rev. Charles Simeon, already once mentioned. Mr. Simeon had no official position in the University. He was simply a fellow of King's College, and the occupant of rooms there, holding, at the same time, the incumbency of a church in the town. It was in this way that his influence as a religious instructor was established. Considerable numbers of the young men in each successive year voluntarily attached themselves to his ministry. His rooms were open to those who had been introduced to him, every Friday evening. I occasionally dropped in with friends. All sorts of questions were put to him for solution as he sat in a peculiar high chair on one side of the fire-place, and answers were given in serious or jocose strain, as the case might require. I once heard him illustrate the expression "outer darkness," and administer a caution to some unknown person, at one and the same time, thus. It would appear that a week or two previous, one of his visitors had lost his academic gown at Mr. Simeon's rooms. It had been thrown down in a corner in an outer apartment, as was customary at these visits, and on the breaking up of the party, it was nowhere to be found; and that was the last of it. Mr. Simeon mentioned the case, expressing his fear that the gown had been wilfully abstracted; and he said, if this should prove to be so, and he should discover the delinquent, he would most assuredly put him into "outer darkness!" (thundering out the expression all of a sudden) that is, he would exclude him from his rooms in the future, and leave him, as it were, out in the cold. I recollect one evening, after waiting some little time at the outset for a question, and none being offered, he started those present by informing them that he had that day been present at a fox-hunt. The explanation quickly added was that while out driving in his carriage he had been uncomfortably detained somewhere along the road by the crossing of a pack of hounds over the highway in full cry after a fox. The story was wound up with an abrupt—"Now then, gentlemen, start your fox!" meaning, lose no more time in proposing something for discussion.

My relic of Simeon is a volume once his property, containing an account of the life and writings of one Gerhard Tersteegan, a German mystic, who lived 1697–1769. On the whole, this book would be greatly in harmony with Mr. Simeon's own views and temperament. But at one place Tersteegan has expressed himself in a way that has occasioned a slight outburst on the part of Mr. Simeon. Tersteegan chanced to speak with approbation of a *fourfold* division of "Justification," thus: "Justification, according to scripture and experience, is properly *fourfold*; which, being seldom sufficiently distinguished, is the cause of so much misunderstanding and so much controversy." Tersteegan here seemed to know too much on a point in regard to which Mr. Simeon held himself to be a master. He accordingly could not refrain from seizing his pen and making the following marginal note in a bold hand, to which also he appends his initials: "A very confused head had this good man, with his fourfold justification! C. S." Mr. Simeon's personal appearance is familiar from the many engravings of him which are to be seen. The profile was somewhat Jewish. Mr. Simeon always exhibited a special interest in questions relating to the modern Jews; and, I think, he believed he had Jewish blood in his veins. I was present at his funeral, and after the ceremony, descended into the vault in which the body was laid, under the nave of King's College Chapel. I shared also in a momentary panic which took place on the occasion, egress for a time being made impossible by the numbers who kept pressing in. Mr. Simeon's twenty-one octavo volumes of skeleton sermons have been, with astonishing industry, minutely indexed by Hartwell Horne. I subjoin some judicious observations once made by Professor Farish to Mr. Simeon, on the use of ridicule in controversy. Mr. Simeon had indulged in some irony in an intended reply to strictures by Dr. Pearson on himself. Farish advises him to strike the ironical expression out. He remonstrates with his old friend thus: "Aristotle somewhere says that in Oratory, *geloia* [ironical words] are most advantageously rebutted by serious arguments, and *vice versa*. And the remark is very shrewd; but it is not to be followed throughout. I don't see that you get any advantage by it in the present case, that is not counterbalanced many times over by disadvantages. Ridicule, as the test of truth, is a very powerful weapon in the hands of a disingenuous infidel; but the sentiment is false, and the weapon suits ill in the hands of a Christian. I don't see the propriety of using it in

a serious subject, against an adversary that means seriously, and aims to speak candidly, which I really think is the case at present, though I never felt less conviction from an attack, in my life, with respect to the substance of it. I think, too, your opponent is too respectable a man to be so treated, and his office too respectable also. I think yon will have the prejudices at least, not to say the ingenuous proper feelings, both of your friends and enemies against you on this point. I see no good you get by following Aristotle. But only think what an advantage his rule will give to your opponent, or rather to those who will infallibly take up the cudgels for him."

Charles Hardwick, a learned Fellow of Catharine Hall, and author of a standard "History of the Christian Church from the Seventh Century to the Reformation," and other valuable works, was once the owner of my copy of Dr. Beaven's "Account of the Life and Writings of St. Irenæus;" and he has written his name therein, C. HARDWICK. While on a summer vacation tour a few years since, Mr. Hardwick was killed by a fall down a precipice in the Alps.—I value several autograph relics of Charles Merivale, the widely-known author of the "History of the Romans," now Dean of Ely, but in my own day at Cambridge, a Fellow and Classical Tutor in St. John's College. I owe to Mr. Merivale, in the last named capacity, a debt of much gratitude for early help, guidance and consideration. I transcribe the following words from a fragment in his handwriting: "You are quite right, I am sure, in exercising wariness and caution in such matters: and do not imagine that yielding upon any one point will conciliate and check people as to others. Innovation knows no bounds, and the appetite for it grows by every concession."

I have made excerpts already in a preceding division of these papers from my autograph relics of William Wordsworth, Coleridge, Tennyson, and Lord Lytton. I might have reserved them for this place; for Cambridge is proud to have these names on the long roll of illustrious English poets who, in their youth, trod her courts. But these are names that have now ascended to an upper, wider air. I feel tempted to note that all the economy, interior and external, of the lady-university in the Princess, "with prudes for proctors, dowagers for deans," is taken from Cambridge. This is an every-day Trinity scene—substitute only students of the ruder sex for "the sweet girl-graduates in their golden hair:"

The day then droopt: the chapel bells
Call'd us; we left the walks, we mixt with those
Six hundred maidens clad in purest white,
Before two streams of light from wall to wall,
While the great organ almost burst his pipes,
Groaning for power, and rolling through the court
A long melodious thunder to the sound
Of solemn psalms, and silver litanies,
The work of Ida, to call down from Heaven
A blessing on her labours for the world.

Wordsworth was of St. John's, where a portrait of him hangs, near one of William Wilberforce, also a former member of this college. In his poem entitled the Prelude, Wordsworth speaks largely of St. John's, and of his own life there. He describes particularly the well-remembered "twin-clock" as he calls it, which strikes the hours and quarters twice, first in a low key and then in a high. On examination days, when time is exceedingly precious, a very limited portion of it being allowed for each paper, the hours and quarters, as reported by this clock, used to fly with frightful rapidity. Coleridge was of Jesus College, which he speaks of with affection in his writings. Bulwer was of Trinity Hall.—I now show a relic of Julius Charles Hare. It is a copy of the "Epistolæ Ho-Elianæ, or Familiar Letters, Domestic and Foreign, by James Howell;" who having been repeatedly dispatched to the Continent on commercial business, became an accomplished modern linguist. He lived 1594–1666 I have not lighted on any stray allusion to Howell in the "Guesses at Truth," but I have no doubt the little tome which I possess has often been in Hare's hands. It contains his book-plate and engraved name, and it treats here and there of matters of special interest to a connoisseur in orthography. My own interest in Julius Charles Hare was first awakened in 1833 at Cambridge. Everyone in 1833, and for several years later, was urged to study a work on the title-page of which appeared his name. This was Connop Thirlwall and Julius Charles Hare's joint translation of Niebuhr's Rome. It was a book, we were told, which was about to revolutionize men's ideas in regard to history in general; and we must read it; must get it up, as the phrase was: and I doubt not that with many, now well on in life, the examination of that first English translation of Niebuhr formed an epoch in their mental history. Both Thirlwall and Hare were then, or had been quite lately, Fellows of Trinity.

In Forster's Life of Landor, Hare's name as "Julius" comes before us associated with those of Wordsworth and Southey, in some lines of blank verse, written by Landor at the parsonage at Hurstmonceux when the vicar (Hare) was suffering from severe illness. (Hare had placed in Landor's hands a short unpublished poem by Wordsworth.) Landor says:—

> Derwent! Winander! your twin poets come
> Star-crowned along with you, nor stand apart.
> Wordsworth comes hither, hither Southey comes,
> His friend and mine, and every man's who lives,
> Or who shall live when days far off have risen.
> Here are they with me yet again, here dwell
> Among the sages of antiquity,
> Under his hospitable roof, whose life,
> Surpasses theirs in strong serenity,
> Whose genius walks more humbly, stooping down,
> From the same height, to cheer the weak of soul
> And guide the erring from the tortuous way.
> Hail, ye departed! hail! thou later friend,
> Julius! but never by my voice invoked
> With such an invocation—hail, and live!

"Among the sages of antiquity, under the hospitable roof" of the parsonage at Hurstmonceux, my *Epistolæ Ho-Elianæ* had once its local habitation. To me, a particle of the Hurstmonceux atmosphere clings about the volume to this day.—Julius Charles Hare adopted in the "Guesses at Truth" and in his other publications a peculiar mode of rendering a number of English words, lopping off and striking out superfluous letters. His past passive participles he generally made to end in *t*, instead of *ed*, gravely writing preacht for preached, practist for practised, cought for coughed, kist for kissed! Tree he wrote tre, simile, simily, etc., etc. Mitford, we remember, in his History of Greece, and some other writers, indulged in like crochets. From modern editions these eye sores are for the most part removed. It were to be wished that publishers would speedily take the same liberty with Hare's books. At present these peculiarities are, of course, great disfigurements, (Landor's writings want the same kind of friendly revision).—Howell, too, the author of the Epistolæ Ho-Elianæ, advocated, to some extent, a phonetic mode of spelling English. Doubtless the following address to the Intelligent Reader, at the end of the volume which I possess, was read with satisfaction by Hare at Hurstmonceux, "Amongst other reasons," Howell says,

"which make the English language of so small extent, and put strangers out of conceit to learn it, one is, That we do not pronounce as we write, which proceeds," he thinks "from divers superfluous letters, that occur in many of our words, which adds to the difficulty of the language. Therefore the author hath taken pains to retrench such redundant, unnecessary letters in this work (though the printer hath not bin so carefull as he should have bin), as amongst multitudes of other words may appear in these few, *done*, *some*, *come*; which, though wee, to whom the speech is connatural, pronounce as monosyllables, yet when strangers com to read them, they are apt to make them dissilibls *do-ne*, *so-me*, *co-me*; therefore such an *e* is superfluous," etc. etc.

The parsonage at Hurstmonceux, in Hare's time, is thus described: "You entered and found the whole house one huge library—books overflowing in all corners, into hall, on landing places, in bedrooms, and in dressing-rooms. Their number was roughly estimated at 14,000 volumes, and though it would be too much to say that their owner had read them all, yet he had at least bought them all with a special purpose; knew where they were, and what to find in them; and often, in the midst of discussion, he would dart off to some remote corner, and return in a few minutes with the passage that was wanted as an authority or illustration. Each group of books (and a traceable classification prevailed throughout the house) represented some stage in the formation of his mind—the earlier scholarship, the subsequent studies in European literature and philosophy, the later in patristic and foreign theology. The pictures which he had brought from Italy, and for which he had almost a personal affection, gave their brightness to the rooms in chiefest use. Busts also were there, not as art-furniture merely, but as memorials of men whose names he honoured, or in whose friendship he rejoiced—his brother Augustus, Schleiermacher, Niebuhr, Bunsen, Wordsworth. Seldom has any house been so in harmony with the mind and character of its occupant. Seldom also, we may add, has any one house been the meeting-place of so many of those whose names have been conspicuous in our own time, and will live in the times that follow."

As a companion picture, I give a description by a writer in the London *Guardian*, of the study of Hare's collaborateur Connop Thirlwall. The scene is in Abergwili Palace, Carmarthen, and time, just before Thirlwall's resignation of the See of St. David's.—"Past

the large low dining-room, where preparations are being made for a dinner-party, up a long passage lined with bookshelves, an open doorway admits you to a room—large, certainly, but so choked with contents that it rather reminds one of the inside of a disorderly portmanteau. It is square, but for a bay-window in which stands a library table piled with books and papers, an old black velvet sermon-case, a battered travelling writing-case, and a desk with a wine-glass of water on the ledge, and a tattered sheet of blotting-paper, on which lies a bright blue book—"Artist and Craftsman"—the last study of the owner of the room, to judge from the paper-cutter between the leaves. It is flanked by "Lectures on Casuistry," and "*Geschichte des Alten Bund.*" A portentous waste-paper basket stands beneath; both this and the paper-cutter seem fitted by their unusual proportions to cope with their daily work. A hard horse-hair chair, without arms, springs or cushions, turns its back resolutely to the garden, and its face to the army of papers. Three tables and a what-not dispersed over the room, serve as foundations for a pyramid of books, reports, periodicals—Cornhills, Macmillans, *Revues des Deux Mondes*,—thatched with the *Times*, *Pall Mall*, *Saturday*, *Guardian*, and other papers unnumbered. Two wandering book-cases, with double faces and no backs, are stacked with motley rows of volumes, at which we will look closer. Saint Anselm de Canterbury, Artemus Ward, "Science d'Histoire," a long range of Dumas, Comte's "Systeme," "Ingoldsby's Legends." Are the contents of the shelves which line the walls less miscellaneous? Hardly less surprising. Here is a favourite shelf apparently, where the books stand loosely and unevenly, as if ready for immediate action—Lettish Bible, *Biblj Swata*, Wendisk Bible, "*Zwingli's Werke*" (pushed in hastily and upside down), a little Hindustani, and incomprehensible "Jalowicz Polyglotte der Oriental Poesie," "*Rabbinische Blumenlese.*" Nor, if you may not be surprised too far from the two modes of escape—the door and the window—are the other shelves less bewildering to a merely human understanding. Bopp, "*Sanskitsprache*," "*Koptische Grammatik*," "Miverian Archæology;" Arabic, Armenian, Celtic, Persian Dictionaries; Grammars of Icelandic, Erse, *Ægyptische*, seventy-eight volumes of "Memoires relatives à l'Histoire de France;" Dallas, the "Gay Science." (What may that be? Whist? fencing? dancing? Not at all—Criticism!) Dante, Shakspeare, Bunsen, Milton, Hallam, Sévigné, Luther. But a complete

list would take days to write and hours to read. Besides these, the library-steps are crowded with a haystack of unbound books, mostly Dutch, and two open portmanteaus are overflowing with papers and correspondence."

(A relic associated with the name of Hare's attached friend, Landor, overlooked by me before, but preserved with care, I notice now. It is a copy of the Manual of Epictetus, beautifully printed by Foulis at Glasgow, in 1750, from the library of Landor's father, Dr. Walter Landor, and showing his book-plate and name. In one of Landor's Imaginary Conversations, the interlocutors are Epictetus and Seneca; and in another, between Lucian and Timotheus, Lucian is made to say—"More of true wisdom, more of trustworthy manliness, more of promptitude and power to keep you steady and straightforward on the perilous road of life, may be found in the little manual of Epictetus, which I could write in the palm of my left hand, than there is in all the rolling and redundant volumes of this mighty rhetorician [Plato], which you may begin to transcribe on the summit of the great Pyramid, carry down over the Sphynx at the bottom, and continue on the sands half-way to Memphis." Let us suppose that the little manual of Epictetus, before Landor's mind at the moment, was this identical one from which, while in his father's library, he may have derived his first impressions of the philosophy of Epictetus!—I may note here, also, two other oversights. 1. In connection with relics of persons associated with Dr. Johnson, I omitted to describe my "Robin Hood's Garland," which is from the collection of Sir William Tite, who prized the book as having been once the property of Francis Barber, the negro body-servant of Dr. Johnson, often mentioned in the biographies of the doctor. Sir William thought fit to honour the volume with full binding in handsome calf, and to insert in it the following memorandum: "Bought by W. Morgan, bookseller and burgess of Lichfield, at the late Canon Bayley's sale, who died 1832. Bayley had it from Dr. Harwood of Lichfield, and it was well known to have been bought by him of the widow of Dr. Johnson's black servant, Francis Barber. Lichfield, 15 Dec. 1835." It is an ordinary chapbook, printed at Lichfield, with a rude woodcut of Robin Hood holding a bow, on the title-page. 2. When speaking of Continental autographs, I should have included one of the Count Oxenstiern in a copy of Montfauson de Villars' *Comte de Gabalis, ou Entretiens sur*

les Sciences secretes, printed at Amsterdam in 1715. The volume contains also the autograph and arms of Edward Finch, formerly M.P for Cambridge University, and once ambassador to Sweden, where he seems to have procured the book, as after E. FINCH we have "Stockholm, 1733." He probably valued it for the sake of the earlier possessor, who has written his name at the foot of the title-page. J. COMTE OXENSTIERNA. This was the son of the Swedish statesman, Oxenstiern, 1583–1654, and the recipient of the world-famous dictum: *Nescis, mi fili, quantillâ prudentiâ homines regantur* —"You do not yet know, my son, with what little wisdom mankind are governed."—The young man, while acting as one of the envoys sent to draw up the terms of the Peace of Westphalia, had expressed himself too diffidently in a letter to his father, because of his inexperience in diplomatic affairs.)

I now record a memorial of the late Canon Kingsley, a graduate of Magdalen, and some time Professor of Modern History in the University. I first transcribe the entry made by him in the guest-book of a hotel at the falls of Niagara, kindly cut out and forwarded to me: it is in these terms (he associates his name, we shall see, with the venerable building which he loved so well): "Canon and Miss Kingsley, Westminster Abbey, England." But I likewise copy a hurried inquiry in his handwriting, made probably during his preparation for the lectures delivered at Cambridge, and afterwards published under the title of "The Roman and the Teuton." In the heat of composition he posts off to his bookseller the following characteristic query and order (evidently written in great haste): "I forget whether Sir F. Palgrave published his 3rd volume of the History of Normandy and England. If so, please send it to me. C. KINGSLEY."

In the Senate House at Cambridge stands a magnificent marble statue of William Pitt, by Nollekens, arrayed in an M.A. gown and in the act of speaking. When Pitt died, large sums of money were subscribed by his admirers for the purpose of establishing memorials in his honour. From this sum were defrayed the expenses of a statue in Westminster Abbey by Westmacott, another in bronze by Chantry, in Hanover Square, and this one, by Nollekens, in the Senate House. The surplus which still remained was applied to the erection of the noble building known as the Pitt Press, which is to Cambridge what the Clarendon is to Oxford. (The legend which is

seen in Latin books printed here has an Italian look—*E prelo Pittiano.*) Pitt was of Pembroke College, and also M.P. for the University. I give a transcript from my manuscript relic of this great statesman and Cambridgeman; it is the circular addressed by the head of the government to his friends in Parliament, when a session is about to open: "As Parliament," he says, "will certainly meet on Tuesday, the 15th of January, I take the liberty of requesting your attendance in the House of Commons on that day; and of apprizing you that business of the greatest importance may be expected immediately on the opening of the session, which will render a full attendance particularly desirable. I have the honor to be, &c., W. PITT. Downing Street, 27th Nov., 1804."

I close with an autograph sign-manual of the Queen. I place it among my Cambridge mementoes, because it has happened with me that the Queen is mixed up with Cambridge associations. It was as one in the retinue of a deputation from the University that I had the good fortune once to have a close view of the Queen for several minutes, and to hear her voice. She had recently been shot at "from Oxford," as some one expressed it at the time: shot at, that is to say, by a maniac named Oxford. Addresses of congratulation at the happy escape from injury poured in, and amongst them one from Cambridge. Joining at the Thatched House Tavern the party deputed to present it, I walked with them in solemn procession to Buckingham palace. I have preserved the *ipsissima verba* which I heard the Queen speak on this occasion as a kind of royal autograph in the mind. Pronounced with peculiar correctness and with a very remarkable beauty of intonation, they were as follows:—"I gratefully acknowledge with you the providential interposition of the Father of all mercies in our recent preservation from unexpected peril. I thank you for the prayers which you offer up for my welfare, and I trust that I may continue to receive, as I shall always study to deserve, those expressions of loyalty and attachment which *this* occasion has so universally called forth."—This was on the 24th of June, 1840. On the Queen's left stood the Prince Consort, to whom she had been married about five months; and behind her were the Duchess of Sutherland, Lady Barham and other ladies. Near her right hand stood Lord Melbourne and others. The Prince looked unconcerned and even *ennuyé*. The Queen's countenance, I observed, assumed an expression of lively interest, as the address proceeded.

The spokesman for Cambridge was the vice-chancellor of the day, Ralph Tatham, Master of St. John's. He rather mouthed his words, and I overheard one of the "gentlemen at arms" behind us make a remark *sotto voce*, to a companion, contrasting unfavourably Dr. Tatham's delivery with that of the Duke of Wellington. The duke's voice had just been sounding in their ears. He was Chancellor of Oxford that year, and had immediately preceded us at the head of a deputation. As we were waiting in the Library at the Palace before we were summoned to go up, we saw the Duke descend the grand staircase arrayed in Academic robes and followed by many magnates of Oxford.—Very soon after the close of the Queen's reply, our whole party withdrew from the throne-room, all retiring towards the door backward. The many rooms or galleries through which we passed in our way to and fro, had grand objects of vertu placed here and there on stands along the sides, and paintings suspended from the walls. But the guards permitted no one to linger, however desirous he might be to examine and admire. The feet, I remember, as we walked along, sank in carpets of a luxurious moss-like depth of pile. —The royal autograph which I preserve is attached to a Canadian document of no particular interest, thus: VICTORIA R.—I should subjoin, perhaps, a mention of two other quasi-royal relics: one a volume from the library of the Queen's uncle, the Duke of Sussex, with his book-plate and motto: *Si Deus pro nobis, quis contra nos?*— The other, a book with the initials W. H. of the Duke of Clarence, another of the Queen's uncles, and afterwards William IV. The former is a black-letter, *Registrum Speculi Intellectualis Felicitatis Humanæ, atque Brevis Compendii de Bonæ Valetudinis Curâ*, printed at Nuremberg by Udalric Pinder, *circa* 1507. The latter is an edition of Anacreon, in Greek, with a prose translation by Gilpin, beautifully printed at York, by Wilson, Spencer & Mawman, in 1796.—Not unallied in their subject, with these royal memorials, are some verses in English and Latin which I transcribe from the autograph of their author, the scholarly Marquis of Wellesley, brother of the Duke of Wellington, overlooked by me before. "On the Burial of the Princess Augusta in the Royal Tomb House, Windsor Castle [Sept., 1840],

> Open, ye last abodes of George's race!
> Open your consecrated place of rest!
> Receive in Peace and hope, and heavenly grace,
> A spotless heart, an unpolluted breast.

Within these towers, beneath this ancient shade,
From infancy to age her virtues grew.
Parent, revered! near You her Tomb is laid,
To Truth and Faith her soul was trained by you.
Come to her Tomb ye gay and fair High-born!
Learn the great lesson how to live and die!
How lowly virtues lofty rank adorn!
What strenth in Death Religion can supply!

TRANSLATED. W.

Pandite! Regificæ requies Vos ultima Proles!
Pandite tranquillum sancta sepulchra sinum!
Spe lætum æternâ et divinâ pace beatum
Accipite in placidâ cor sine labe domo!
Has inter turres, veterique hâc edita sylvâ
Crevit, ad extremos intemerata dies;
O Pater! O Matris venerabilis umbra! propinqua
Reliquiis vestris Virginis ossa jacent;
Vos etenim primis animam hanc formastis ab annis,
Et docilem Cœli Vos docuistis iter.
Huc ades! o genere et formâ Quæcunque refulges!
Disce ex Augustâ vivere! disce mori!
Sperne leves fastus, et inanem stirpis honorem!
Mors tibi constanti sit superanda Fide!

These lines, in the handwriting of the Marquis of Wellesley, are at the end of my copy of the Marquis's *Primitiæ et Reliquiæ*, privately printed for him by W. Nicol, London, 1840. The volume has the following written memorandum by the well-known London antiquarian, John Gough Nichols: "The lines at the end of this Volume in manuscript are in the autograph of the Marquess Wellesley himself. They were given me by Mr. Smith (Author of the History of Mary-le-bone) who was formerly overseer at Mr. Nicol's printing office, whilst this volume was proceeding through the press. JOHN GOUGH NICHOLS."

I have now completed a review of the three divisions of my collection of historical autographs and other literary relics—the Canadian and United States division; the British and European; and finally, the division made up of those which were reserved as having come from, or been in their day possessed or turned over by, eminent Oxford and Cambridge men. The commentary with which I have ventured to accompany the objects spoken of, will perhaps hereafter be of some use in giving interest to the whole when I deposit them, as I hope some time to do, in the library of the University, or other

safe place, where such waifs and strays will be likely, notwithstanding their comparative insignificance and want of connection, to be noted with consideration, and find sympathetic perusers "meet though few." I think a degree of virtue adheres to "leaves that have been touched" by highly-gifted and remarkable persons. Examining such remains; contemplating pages which have engaged the attention—words, and marks and signs that have come fresh from the hands—of the wise, the good, the brave, while here yet warm with life, we grasp their character now and then, from unexpected and important points of view, and occasionally realize more perfectly our brotherhood with them as men. Moreover, by such means too, I think the love of historical study may here and there be deepened, and an ambition perhaps awakened to make researches in the Past by the help of original documents, whenever the chance for doing so may be presented.

THE PLANTS OF THE EASTERN COAST OF LAKE HURON,

AND THEIR DISTRIBUTION THROUGH THE NORTHERN AND WESTERN PORTIONS OF BRITISH NORTH AMERICA.

BY JOHN GIBSON, B.A., F.G.S., F.B.S.E.; AND
JOHN MACOUN, M.A., *Botanist to the British Columbia Exploring Expedition of 1875.*

The following lists of plants collected or observed upon the eastern coast of Lake Huron, and the southern and western shores of the Georgian Bay, with their eastern and western ranges indicated by a dash (—) in the respective columns, though necessarily very imperfect in detail, are presented to the botanists of Ontario in the hope that they may be of service in elucidating some points in the Geographical Botany of Canada.

	Eastern Ontario.	Lake Sup'rior	Western and North-western Extension.
RANUNCULACEÆ.			
Clematis Virginiana, L.	—	—	Rocky Mountains.
Anemone Virginiana, L.	—	—	"
" Pennsylvanica, L.	—	—	"
" nemorosa, L.	—	—	"
Hepatica triloba, Chaix.	—		Sitka Sound.
" acutiloba, D. C.	—		"
Thalictrum anemonoides, Mx.			
" dioicum, L.	—	—	Vancouver's Island.
" Cornuti, L.	—	—	Peace River valley.
Ranunculus aquatilis, L., var. trichophyllus, Chx.	—	—	Rocky Mountains.
" multifidus, Pursh.	—		Kotzebue's Sound.
" Flammula, L., var. reptans.	—	—	
" rhomboideus, Goldie.	—	—	
" abortivus, L.	—	—	North-West to lat. 57°.
" sceleratus, L.	—	—	McKenzie River to lat. 67° N.
" recurvatus, Poir.	—	—	Unalaska.
" Pennsylvanicus, L.	—	—	Pacific coast.
" fascicularis, Muhl.	—		
" repens, L.	—	—	Peace River valley.
" acris, L.	—	—	Vancouver's Island.
Caltha palustris, L.	—	—	Pacific coast.
Coptis trifolia, Salisb.	—	—	Sitka and Unalaska.
Aquilegia Canadensis, L.	—	—	Rocky Mountains.
Actæa spicata, L., var. rubra.	—	—	"
" alba, Bigel.	—	—	"

	Eastern Ontario	Lake Sup'rior	Western and North-western Extension.
MAGNOLIACEÆ.			
Liriodendron Tulipifera, L.			
MENISPERMACEÆ.			
Menispermum Canadense, L.	—		Saskatchewan plains.
BERBERIDACEÆ.			
Caulophyllum thalictroides, Mx.	—		
Podophyllum peltatum, L.	—		
NYMPHÆACEÆ.			
Brasenia peltata, Pursh.	—		
Nymphæa odorata, Ait.	—	—	Rocky Mountains.
Nuphar advena, Ait.	—	—	Pacific coast.
SARRACENIACEÆ.			
Sarracenia purpurea, L.	—	—	Peace River valley.
PAPAVERACEÆ.			
Chelidonium magus, L.	—		
Sanguinaria Canadensis, L.	—		Saskatchewan plains.
FUMARIACEÆ.			
Adlumia cirrhosa, Raf.	—		
Dicentra cucullaria, D. C.	—		North-West America.
" Canadensis, D. C,	—		
Corydalis glauca, Pursh.	—	—	Upper British Columbia.
" aurea, Willd.	—	—	Rocky Mountains.
CRUCIFERÆ.			
Nasturtium officinale, R. Br.	—		N. W. coast of America.
" palustre, D. C.	—	—	Pacific coast.
Dentaria diphylla, L.	—		
" laciniata, Muhl.	—		
Cardamine rhomboidea, D. C., var., purpurea, Torr.	—		
" pratensis, L.	—		North-West America.
" hirsuta, L.	—	—	Pacific coast.
Arabis lyrata, L.		—	
" hirsuta, D. C.	—	—	Peace River valley.
" lævigata, D. C.	—		
" Canadensis, L.	—		
" perfoliata, L.	—	—	Rocky Mountains.
" Drummondii, Graham.	—	—	Pacific coast.
Barbarea vulgaris, R. Br.		—	Pacific coast.
Erysimum cheiranthoides, L.	—	—	Pacific coast.
Sisymbrium officinale, Scop.	—		Vancouver's Island.
" canescens, Nutt.		—	Rocky Mountains.
Brassica Sinapistrum, Bois.	—	—	
Camelina sativa, Crantz.	—		
Capsella bursa-pastoris, Moench	—	—	Vancouver's Island.
Lepidium Virginicum, L.	—	—	Rocky Mountains.
" intermedium, Gray.	—	—	

	Eastern Ontario.	Lake Superior	Western and North-western Extension.
VIOLACEÆ.			
Viola lanceolata, L.		—	
" blanda, Willd.	—	—	Peace River valley.
" cucullata, Ait.	—	—	Arctic America.
" sagittata, Ait.	—		
" canina, L. var. sylvestris, Reg.	—	—	
" rostrata, Pursh.	—		*McKenzie River, lat. 59° N.*
" Canadensis, L.	—	—	Pacific coast.
" pubescens, Ait.	—		Saskatchewan plains.
CISTACEÆ.			
Helianthemum Canadense, Michx.	—	—	Saskatchewan plains.
Lechea minor, Lane.	—		
Hudsonia tomentosa, Nutt.		—	Little Slave Lake.
DROSERACEÆ.			
Drosera rotundifolia, L.	—	—	Unalaska, Pacific coast.
" longifolia, L.	—	—	
" linearis, Goldie.		—	Jaspar Lake, Rocky Mts.
HYPERICACEÆ.			
Hypericum Canadense, L.	—		
" corymbosum, Muhl.	—		
" ellipticum, Hooker.	—	—	
" Kalmianum, L.			
" mutilum, L.	—	—	
" perforatum, L.	—		
" pyramidatum, Ait.	—		Saskatchewan plains.
Elodea Virginica, Nutt.	—	—	
CARYOPHYLLACEÆ.			
Saponaria officinalis, L.	—		
Vaccaria vulgaris, Host.	—		
Silene antirrhina, L.	—	—	Pacific coast.
" noctiflora. L.	—		
Agrostemma Githago, L.	—		
Lychnis vespertina, Sibth.	—		
Arenaria serpyllifolia, L.	—		
" stricta, Michx.	—	—	Arctic Sea.
" lateriflora, Fenzl.	—		Arctic coast.
Stellaria media, Smith.	—	—	Little Slave Lake.
" longifolia, Muhl.	—		Sitka Sound.
" borealis, Bigelow.	—	—	Arctic America.
Cerastium vulgatum, L.	—	—	
" viscosum, L.	—		
" arvense, L.	—	—	Pacific coast, Oregon.
PORTULACACEÆ.			
Portulaca oleracea, L.	—		Fort Francis, Dawson route.
Claytonia Virginica, L.	—		
" Carolineana, Michx.	—		Rocky Mountains.

	Eastern Ontario.	Lake Sup'rior	Western and North-western Extension.
MALVACEÆ.			
Malva rotundifolia, L.	—		
" moschata, L.	—		
Abutilon Avicennæ, Gaertn.	—		
TILIACEÆ.			
Tilia Americana, L.	—		Rainy River, Dawson route.
LINACEÆ.			
Linum usitatissimum, L.	—		
" striatum, Walt.			
GERANIACEÆ.			
Geranium maculatum, L.	—		
" Robertianum, L.	—		
" Carolinianum.	—	—	W. of Rocky Mts. lat. 55° N.
Impatiens pallida, Nutt.	—		Pacific coast, Oregon.
" fulva, Nutt.	—	—	British America, lat. 66° N.
Oxalis Acetosella, L.	—		
" stricta, L.	—		West of Rocky Mountains.
RUTACEÆ.			
Xanthoxylum Americanum, Mill.	—		
ANACARDIACEÆ.			
Rhus typhina, L.	—		
" glabra, L.	—		Saskatchewan plains.
" Toxicodendron, L.	—		N. W. America, Rocky Mts.
" aromatica, Ait.	—		Saskatchewan River.
VITACEÆ.			
Vitis cordifolia, Michx.	—		
" riparia, Michx.			
Ampelopsis quinquefolia, Michx.	—	—	
RHAMNACEÆ.			
Rhamnus alnifolius, L'Her.	—	—	Hudson's Bay.
Ceanothus Americanus, L.	—		
" ovalis, Bigel.	—	—	
CELASTRACEÆ.			
Celastrus scandens, L.	—		
Euonymus atropurpureus, Jacq.			
" Americanus, L., var. obovatus.			
SAPINDACEÆ.			
Staphylea trifolia, L.	—		
Acer Pennsylvanicum, L.	—	—	British America, lat. 51° N.
" spicatum, Lam.	—	—	British America, lat. 51° N.
" saccharinum, Wang.	—	—	
" dasycarpum, Ehr.	—		
" rubrum, L.	—	—	Oregon.

	Eastern Ontario.	Lake Sup'rior	Western and North-western Extension.
POLYGALACEÆ.			
Polygala Senega, L.	—		Saskatchewan plains.
" paucifolia, Willd.	—		Saskatchewan plains.
" polygama, Walt.	—		
LEGUMINOSÆ.			
Lupinus perennis, L.	—		Behring's Strait and Arctic c.
Trifolium pratense, L.	—	—	
" hybridum.	—		
" repens, L.	—	—	
Melilotus alba, Lam.	—		
Medicago sativa L.	—		
" lupulina, L.	—		
Robinia Pseudacacia, L.	—		
" viscosa. Bent.	—		
Astragalus Canadensis, L.	—	—	Rocky Mountains, lat. 58° N.
" Cooperi, Gray.	—		
Desmodium nudiflorum, D. C.			
" acuminatum, D. C.			
" cuspidatum, L. & G.	—		
" Canadense, D. C.	—		
Lespedeza hirta, Ell.	—		
" capitata, Michx.	—		
Vicia sativa, L.	—		
" Americana, Muhl.		—	Rocky Mountains, lat. 67°, N.
Lathyrus maritimus, Bigel.	—	—	Kotzebue's Sound, Arctic Am.
" ochroleucus, Hook.	—	—	Bear Lake, lat. 67°, N.
" palustris, L.	—	—	Oregon and N. to lat. 55° N.
" palustris, L., var. myrtifolius.	—		
Apios tuberosa, Moench.	—		Woods of the Rocky Mts.
Amphicarpæa monoica, Nutt.	—	—	
ROSACEÆ.			
Prunus Americana, Marsh.	—	—	Saskatchewan valley.
" pumila, L.	—	—	Saskatchewan & Hudson's Bay.
" Pennsylvanica, L.	—	—	Rocky Mountains, lat. 57° N.
" Virginiana, L.	—	—	Great Slave Lake, lat. 62°, and west to the Rocky Mts.
" serotina, Ehr.	—		
Spiræa opulifolia, L.		—	Saskatchewan plains.
" salicifolia, L.	—	—	Saskatchewan plains.
Agrimonia Eupatoria, L.	—	—	
Geum album, Gmelin.	—		
" strictum, Ait.	—	—	Rocky Mountains, lat. 56° N.
" rivale, L.	—	—	Rocky Mountains, lat. 56° N.
" triflorum, Pursh.	—		Rocky Mountains, lat. 56° N.
Waldsteinia fragarioides, Tratt.	—		
Potentilla Norvegica, L.	—	—	Arctic America to Sitka Sound
" Canadensis, L.	—		
" argentea, L.	—		
" arguta, Pursh.	—	—	Rocky Mountains, lat. 65° N.
" anserina, L.	—	—	Arctic America to Pacific c.
" fruticosa, L.	—	—	Kotzebue's Sound.
" palustris, Scop.	—	—	Pacific coast, Kotzebue's Sound

	Eastern Ontario.	Lake Sup'rior	Western and North-western Extension.
Fragaria Virginiana, Ehrh.	—	—	North-West coast, lat. 64° N.
" vesca, L.	—	—	North-West coast, lat. 64° N.
Dalibarda repens, L.	—		
Rubus odoratus, L.	—		Saskatchewan plains.
" triflorus, Rich.	—	—	Rocky Mountains, lat. 56° N.
" strigosus, Michx.	—	—	Rocky Mountains, lat. 56° N.
" neglectus, Peck.	—		
" occidentalis, L.	—		
" villosus, Ait.	—		
" hispidus, L.	—		
Rosa Carolina, L.	—		
" blanda, Ait.	—	—	Bear Lake, lat. 67° N.
" rubiginosa, L.	—		
Cratægus coccinea, L.	—	—	
" tomentosa, L. var. punctata, Gray.	—	—	
" Crus-Galli, L.			
Pyrus coronaria, L.			
" arbutifolia, L., var. melanocarpa, Gray.	—	—	Saskatchewan plains.
" Americana, D. C.	—	—	Sub-Arctic America & N.W. c.
Amelanchier Canadensis, T. & G., var. Botryapium, Gray.	—	—	Sub-Arctic America.
" var. oblongifolia, Gray.	—	—	Sub-Arctic America, lat. 56° N.
SAXIFRAGACEÆ.			
Ribes Cynosbati, L.	—	—	Rocky Mountains.
" hirtellum, Michx.	—	—	Saskatchewan plains.
" lacustre, Poir.	—	—	N. and W. to the Arctic circle.
" prostratum, L'Her.	—	—	W. America to lat. 57° N.
" floridum, L.	—	—	Rocky Mountains, lat. 56° N.
" rubrum, L.	—	—	North of the Arctic circle.
" oxyacanthoides, L.		—	Rocky Mountains, lat. 56° N.
" Parnassia parviflora, D. C.		—	Rocky Mountains, lat. 53° N.
" Caroliniana, Mx.	—		
Saxifraga Virginiensis, Mx.	—	—	Rocky Mountains, lat. 56° N.
Mitella diphylla, L.	—		
" nuda, L.	—	—	West of Rocky Mountains, and [Arctic Sea.
Tiarella cordifolia, L.	—		
Chrysosplenium Americanum, L.	—		Saskatchewan valley.
CRASSULACEÆ.			
Penthorum sedoides, L.	—		
Sedum Telephium, L.	—		
HAMAMELACEÆ.			
Hamamelis Virginica, L.	—		
HALORAGEÆ.			
Myriophyllum spicatum, L.	—	—	Bear Lake, lat. 57° N.
" heterophyllum, Mx.	—		
Proserpinaca palustris, L.			
Hippuris vulgaris, L.	—	—	Sub-Arctic America, Sitka Sd.

	Eastern Ontario.	Lake Sup'rior	Western and North-western Extension.
ONAGRACEÆ.			
Circæa Lutetiana, L.	—		
" Alpina, L.	—	—	
Epilobium augustifolium, L.	—	—	Arctic America to lat. 69° N.
" var. canescens. Wood.	—		
" palustre, var. lineare.	—	—	Arctic America.
" coloratum, Muhl.	—	—	Rocky Mountains, lat. 56° N.
" paniculatum, Nutt.			Straits of De Fuca, Pacific c.
Œnothera biennis, L., var. muricata, Gray.	—	—	Rocky Mountains, lat. 56° N.
var. grandiflora, Gray.	—	—	Rocky Mountains, lat. 56° N.
Œnothera pumila, L.	—		Hudson's Bay.
Ludwigia palustris.	—		Saskatchewan plains.
UMBELLIFERÆ.			
Hydrocotyle Americana, L.	—		
Sanicula Marilandica, L.	—	—	Oregon; Pacific c. lat 56° N.
Daucus Carota, L.	—		
Heracleum lanatum, Mx.	—	—	Rocky Mts. and Pacific coast.
Pastinaca sativa, L.	—		
Archangelica atropurpurea, Hof.	—	—	
Thaspium aureum, Nutt, var., apterum, Gray.	—		
Zizia integerrima, D. C.	—		
Cicuta maculata, L.	—		Oregon, Pacific coast.
" bulbifera, L.	—		
Sium lineare, Michx.	—	—	Lake of Woods, Dawson route.
Cryptotenia Canadensis, D. C.	—		
Osmorrhiza longistylis, D. C.	—	—	Rocky Mountains, lat. 56° N.
" brevistylis, D. C.	—	—	Oregon, Sitka, Unalaska.
Erigenia bulbosa, Nutt.			
ARALIACEÆ.			
Aralia racemosa, L.	—		Rocky Mountains, lat. 54° N.
" hispida, Michx.	—	—	Hudson's Bay. Lake of Woods.
" nudicaulis, L.	—	—	Peace River valley, lat. 56° N.
" quinquefolia, Gray.	—		
" trifolia, Gray.	—		
CORNACEÆ.			
Cornus Canadensis, L.	—	—	Pacific coast, Unalaska.
" florida, L.			
" circinata, L'Her.	—	—	Lake of Woods, Dawson route.
" sericea, L.	—		N. W. coast, Vancouver's Isl.
" stolonifera, L.	—	—	Rocky Mts. & McKenzie River.
" paniculata, L'Her.	—		
" alternifolia, L.	—	—	Lake of the Woods.
CAPRIFOLIACEÆ.			
Linnæa borealis, Gronov.	—	—	Arctic circle, Kotzebue's Sd.
Symphoricarpus racemosus, Mx.	—	—	North-West coast.
Lonicera parviflora, Lam.	—		Rocky Mountains, lat. 53° N.
" " var. Douglasii.		—	Rocky Mountains, lat. 56° N.
" hirsuta, Eaton.	—	—	Edmonton, on Saskatchew. R.

	Eastern Ontario.	Lake Sup'rior	Western and North-western Extension.
Lonicera ciliata, Muhl.	—	—	Saskatchewan valley.
" *oblongifolia*, Muhl.	—	—	Saskatchewan valley.
Diervilla trifida, Mœnch.	—	—	Rocky Mts. & Hudson's Bay.
Triosteum perfoliatum, L.	—		
Sambucus Canadensis, L.	—		
" pubens, Michx.	—	—	Rocky Mts. Oregon and Setka.
Viburnum Lentago, L.	—		Saskatchewan valley.
" pubescens, Pursh.	—	—	Lake Winipeg, lat. 51° N.
" acerifolium, L.	—		
" Opulus, L.	—	—	Arctic circle and Rocky Mts.
RUBIACEÆ.			
Galium Aparine, L.	—		Oregon, Pacific coast.
" asprellum, Michx.	—	—	Lake of Woods, Dawson route.
" trifidum, L.	—	—	Oregon, Unalaska, Sitka.
" triflorum, Michx.	—	—	Unalaska, Sitka, Oregon, Cal.
" lanceolatum, Torrey.	—		
" boreale, L.	—	—	Oregon, North to Arctic circle.
Cephalanthus occidentalis, L.	—		
Mitchella repens, L.	—		
Houstonia purpurea, L., var. longifolia, Gray.	—	—	Saskatchewan valley.
Valeriana edulis, Nutt.			Oregon and the Rocky Mts.
COMPOSITÆ.			
Liatris cylindracea, Michx.	—		North-West Territory.
" squarrosa, Willd.		—	Edmonton, on Saskat/ ewan.
Eupatorium purpureum, L.	—	—	Saskatchewan valley.
" perfoliatum, L.	—		
" ageratoides, L.	—		
Aster corymbosus, Ait.	—	—	
" macrophyllus, L.	—	—	Saskatchewan valley.
" lævis, var. lævigatus, T. & G.			Lake of the Woods and Saskat- [chewan River.
" lævis, var. cyaneus, T. & G.			Saskatchewan valley.
" azureus, Lindley.	—		
" undulatus, L.	—		
" sagittifolius, Willd.	—	—	
" cordifolius, L.	—		
" *borealis*, Provancher.	—		Saskatchewan valley.
" multiflorus, Ait.	—		Rocky Mountains, lat. 56° N.
" miser, L., Ait.	—		
" simplex, Willd.	—		
" puniceus, L.	—	—	Hudson's Bay to Rocky Mts.
" Novæ-Angliæ, L.	—		
" ptarmicoides, T. & G.	—	—	Saskatchewan valley.
Erigeron Canadense, L.	—	—	Saskatchewan valley.
" Philadelphicum, L.	—	—	Arctic circle, Behring's Strait.
" annuum, Pers.	—		
" strigosum, Muhl.	—	—	*Oregon.*
Diplopappus umbellatus, T. & G.	—	—	
Solidago bicolor, L.	—	—	Saskatchewan valley.
" latifolia, L.	—		

	Eastern Ontario.	Lake Sup'rior	Western and North-western Extension.
Solidago cæsia, L.	—		
" stricta, Ait.	—	—	Hudson's Bay & McKenzie Riv.
" Houghtonii, T. & G.			
" arguta, Ait.	—	—	Sub-Arctic America.
" Muhlenbergii, T. & G.	—		
" altissima, L.	—	—	
" nemoralis, Ait.	—	—	Saskatchewan valley.
" Canadensis, L.	—	—	Sub-Arctic America to Oregon.
" serotina, Ait.	—	—	Sub-Arctic America to Oregon.
" lanceolata, L.	—	—	Sub-Arctic America.
Inula Helenium, L.	—		
Ambrosia artemisiæfolia, L.	—		
Rudbeckia hirta, L.	—	—	Saskatchewan plains.
Helianthus strumosus, L.	—		
" divaricatus, L.	—		Saskatchewan plains.
" decapetalus, L.	—		
Coreopsis lanceolata, L.		—	
Bidens frondosa, L.	—		
" connata, Muhl.	—		
" chrysanthemoides, Mx.	—	—	Little Slave Lake, lat. 54° N.
" Beckii, Torrey.	—		
Helenium autumnale, L.	—		Sub-Arctic America to Oregon.
Maruta Cotula, D. C.	—		
Achillea Millefolium, L.	—	—	Rocky Mts. to Arctic circle.
Leucanthemum vulgare, Lam.	—	—	Oregon.
Tanacetum vulgare, L.	—		
" Huronense, Nutt.		—	Hudson's Bay West to Oregon.
Artemisia vulgaris, L.	—		
" Canadensis, Mx.	—	—	Oregon to the Arctic circle.
" biennis, Willd.	—		McKenzie River & Rocky Mts.
" Absinthium, L.	—		
Gnaphalium decurrens, Ives.	—	—	
" polycephalum, Michx.	—		
" uliginosum, L.	—		Oregon.
Antennaria margaritacea, R. Br.	—		Rocky Mts. Unalaska & Oregon.
" plantaginifolia, Hook.	—	—	Rocky Mountains.
Erechthites hieracifolia, Raf.	—		Saskatchewan valley.
Cacalia tuberosa, Nutt.			
Senecio vulgaris, L.	—		Hudson's Bay.
" aureus, L., var. lanceolatus.	—	—	Rocky Mountains.
Centaurea Cyanus, L.	—		
Cirsium lanceolatum, Scop.	—		
" undulatum, Spreng.			Oregon.
" discolor, Spreng.	—		
" muticum, Michx.	—	—	Saskatchewan valley.
" arvense, Scop.	—	—	Saskatchewan valley.
Lappa major, Gærtn.	—	—	
Lapsana communis, L.	—	—	
Cichorium Intybus, L.	—	—	
Hieracium Canadense, Michx.	—	—	McKenzie River, lat. 66° N. to
" scabrum, Michx.	—	—	[Oregon.
Nabalus albus, Hooker.	—	—	
" altissimus, Hooker.	—	—	

	Eastern Ontario	Lake Sup'rior	Western and North-western Extension.
Nabalus racemosus, Hooker.			N. to lat. 56° in Peace River v.
Taraxacum Dens-leonis, Desf.	—	—	Pacific coast.
Lactuca elongata, Muhl.	—	—	Saskatchewan valley.
Mulgedium leucophæum, D. C.	—	—	Oregon and Saskatchewan v.
Sonchus oleraceus, L.	—	—	Saskatchewan valley.
" asper, Vill.	—	—	Oregon.
LOBELIACEÆ.			
Lobelia cardinalis, L.	—		Saskatchewan valley.
" syphilitica, L.	—		
" inflata, L.	—		Saskatchewan v. & Hud. Bay.
" spicata, Lam.	—		Peace River valley, lat. 56° N.
" Kalmii, L.	—	—	N. to lat. 60°, McKenzie River.
CAMPANULACEÆ.			
Campanula rotundifolia, L.	—	—	N. to lat. 64°, McKenzie River.
" var. linifolia, Gray.		—	North-West coast to lat. 64°.
" aparinoides, Pursh.	—	—	Saskatchewan valley.
" Americana, L.			
ERICACEÆ			
Gaylussacia resinosa, T. & G.	—		Saskatchewan valley.
Vaccinium Oxycoccus, L.	—	—	Rocky Mountains, lat. 56° N.
" macrocarpon, Ait.	—	—	Pacific coast.
" Pennsylvanicum, L.	—	—	Saskatchewan valley.
" Canadense, Kalm.			
" Corymbosum, L.	—		
Chiogenes hispidula, T. & G.	—	—	Rocky Mt. summits, lat. 54° N.
Arctostaphylus Uva-ursi, Ep.	—	—	Pacific coast.
Epigæa repens, L.	—	—	Saskatchewan plains.
Gaultheria procumbens, L.	—		
Cassandra calyculata, Don.	—	—	N. to lat. 60°, & W. to Rocky Mts.
Andromeda polifolia, L.	—	—	Arctic sea shore.
Kalmia glauca, Ait.	—	—	N. to lat. 60°, and near Pacific c.
Ledum latifolium, Ait.	—	—	Pacific coast to lat. 59° N.
Pyrola rotundifolia, L., var. [uliginosa, Gray.	—	—	Bear Lake, lat. 67° N.
" rotundifolia, L., var. [asarifolia, Gray.	—	—	Bear Lake, lat. 67° N.
" elliptica, Nutt.	—		Saskatchewan valley.
" chlorantha, Swartz.	—	—	Bear Lake, lat. 67° N.
" secunda, L.	—	—	Shores of Pacific.
Moneses uniflora, Gray.	—	—	N. to lat. 64°, & W. to Vancouver.
Chimaphila umbellata, Nutt.	—	—	Rocky Mountains in lat. 53° N.
Monotropa uniflora, L.	—	—	
Monotropa Hypopitys, L.	—		
AQUIFOLIACEÆ.			
Ilex verticillata, Gray.	—		
Nemopanthes Canadensis, D. C.	—	—	
PLANTAGINACEÆ.			
Plantago major, L.	--	—	N. to lat 68° on the McKenzie.
" lanceolata, L.	—		

	Eastern Ontario.	Lake Superior	Western and North-western Extension.
PRIMULACEÆ.			
Primula farinosa, L.		—	N. to lat. 56° on the McKenzie.
" Mistassinica, Michx.		—	Great Bear Lake, lat. 67° N.
Trientalis Americana, Pursh.	—	—	Saskatchewan valley.
Lysimachia thyrsiflora, L.	—	—	McKenzie River, lat. 60° N.
" stricta, Ait.	—	—	Saskatchewan valley.
" quadrifolia, Ait.	—		
" ciliata, L.	—	—	Puget Sound, Pacific coast.
" longifolia, Pursh.			
Samolus Valerandi, L., var. Americanus, Gray.	—		North-West coast.
LENTIBULACEÆ.			
Utricularia vulgaris, L.	—	—	Lakes near the Rocky Mts.
" intermedia, Hayne.	—	—	Bear Lake, lat. 67° N. & Rocky Mountains.
" cornuta, Michx.			
Pinguicula vulgaris, L.		—	McKenzie River, lat. 60° N.
OROBANCHACEÆ.			
Epiphegus Virginiana, Bart.	—		
Conopholis Americana, Wallr.	—		
SOROPHULARIACEÆ.			
Verbascum Thapsus, L.	—		Saskatchewan valley.
" Blattaria, L.	—		
Linaria vulgaris, Mill.	—		
Scrophularia nodosa, L.	—		Pacific coast.
Chelone glabra, L.	—		
Penstemon pubescens, Solander.	—		
Mimulus ringens, L.	—	—	Saskatchewan valley.
Gratiola Virginiana, L.	—		North-West coast.
Ilysanthes gratioloides, Benth.	—		
Veronica Anagallis, L.	—		Rocky Mountains, lat. 56° N.
" Virginica, L., Gore Bay. (Dr. Bell).			
" Americana, Schwein.	—	—	Norway House, Lake Winipeg.
" Scutellata, L.	—	—	North-West coast.
" serpyllifolia, L.	—	—	Sitka and Unalaska.
" peregrina, L.	—	—	McKenzie River to Unalaska.
" arvensis, L.	—		
Gerardia purpurea, L.	—		Saskatchewan valley.
" aspera, Doug. (Dr. John Bell).			Eastern flanks of Rocky Mts.
" flava, L.			
" quercifolia, Pursh.			
Castilleia coccinea, Spreng.	—	—	Saskatchewan valley.
Pedicularis Canadensis, L.	—		Lake Winipeg.
Melampyrum Americanum, Mx.	—	—	Peace River valley, lat. 56° N.
VERBENACEÆ.			
Verbena hastata, L.	—		Saskatchewan valley.
" urticifolia, L.	—		Saskatchewan valley.
Phryma Leptostachya, L.	—		

	Eastern Ontario.	Lake Sup'rior	Western and North-western Extension.
LABIATÆ.			
Teucrium Canadense, L. (R. aux Sables).	—		
Mentha viridis, L.	—		
" piperita, L.	—	—	
" Canadensis, L.	—	—	McKenzie River & Rocky Mts.
Lycopus Virginicus, L.	—	—	Saskatchewan valley.
" Europæus, L., var. sinuatus.	—	—	North-West coast of America.
Satureia hortensis, L.	—		
Calamintha glabella, Benth. var. Nuttallii, Gray.			
Calamintha Clinopodium, Benth.	—	—	Norway House, Lake Winipeg.
Collinsonia Canadensis, L.			
Monarda didyma, L.			
Monarda fistulosa, L.	—	—	Rocky Mountains, lat. 56° N.
Nepeta Cataria, L.	—	—	Little Slave Lake.
Brunella vulgaris, L.	—	—	North-West coast.
Scutellaria parvula, Michx.	—		Saskatchewan valley.
" galericulata, L.	—	—	McKenzie River to Pacific c.
" lateriflora, L.	—	—	North-West America.
" versicolor, ? Nutt. (Dr. Bell).			
Marrubium vulgare, L.	—		
Galeopsis Tetrahit, L.	—	—	
Stachys palustris, L. var. aspera, Gr.	—	—	N. W. America & McKenzie R.
Leonurus Cardiaca, L.	—		Norway House, Lake Winipeg,
BORRAGINACEÆ			
Echium vulgare, L.	—		
Symphytum officinale, L.	—		
Onosmodium Carolinianum, D.C.	—		
Lithospermum arvense, L.	—		
" hirtum, Lehm.	—	—	
Myosotis palustris, With. var. laxa.	—		
Echinospermum Lappula, Lehm.	—		North-West Pacific coast.
Cynoglossum officinale, L.	—	—	Saskatchewan valley.
" Virginicum, L.	—	—	Rocky Mountains, lat. 53° N.
" Morisoni, D. C.	—	—	Rocky Mountains, lat. 56° N.
HYDROPHYLLACEÆ.			
Hydrophyllum Virginicum, L.	—		North-West Pacific coast.
" Canadense, L.			
POLEMONIACEÆ.			
Phlox divaricata, L.	—		
CONVOLVULACEÆ.			
Calystegia sepium, R. Br.	—	—	Rocky Mountains, lat. 53° N.
Calystegia spithamea, Pursh.	—	—	Saskatchewan valley.
Cuscuta Gronovii, Willd.	—		

	Eastern Ontario	Lake Sup'rior	Western and North-western Extension.
SOLANACEÆ.			
Solanum Dulcamara, L.	—		
" nigrum, L.	—		North-West Pacific coast.
Physalis grandiflora, Hooker.	—	—	Saskatchewan River.
" viscosa, L.			
Datura Stramonium, L.	—		
GENTIANACEÆ.			
Halenia deflexa, Griseb.		—	Rocky Mountains, lat. 56° N.
Gentiana crinita, Froel.	—		
" detonsa, Fries.			Bear Lake and Arctic Sea shore.
" alba, Muhl.	—	—	
" Andrewsii, Griseb.	—		
" Saponaria, L. var. linearis.		—	
Menyanthes trifoliata, L.	—	—	Rocky Mts. and N. W. coast.
APOCYNACEÆ.			
Apocynum androsæmifolium, L.	—	—	Hudson's Bay.
" Cannabinum, L.	—	—	Pacific coast in N. W. America.
ASCLEPIADACEÆ.			
Asclepias Cornuti, Decaisne.	—		Saskatchewan valley.
" phytolaccoides, Pursh.	—		
" incarnata, L.	—		Saskatchewan valley.
" tuberosa, L.	—		Carleton House, Saskatchewan.
OLEACEÆ.			
Fraxinus Americana, L.	—		Saskatchewan valley.
" pubescens, Lam.	—	—	Saskatchewan valley.
" Sambucifolia, Lam.	—	—	Saskatchewan valley.
ARISTOLOCHIACEÆ.			
Asarum Canadense, L.	—	—	Pacific coast.
PHYTOLACCACEÆ.			
Phytolacca decandra, L.	—		
CHENOPODIACEÆ.			
Chenopodium album, L.	—	—	Bear Lake, lat. 67° N.
" hybridum, L.	—	—	Bear Lake, lat. 67° N.
" urbicum, L.	—		
" Botrys, L.	—		
Blitum capitatum, L.	—	—	Great Slave Lake.
AMARANTACEÆ.			
Amarantus paniculatus, L.	—		Saskatchewan valley.
" retroflexus, L.	—		
" albus, L.	—		A weed at Carleton, on the [Saskatchewan.
Montelia tamariscina, Gray.	—		
POLYGONACEÆ.			
Polygonum Pennsylvanicum, L.	—		North-West coast of America?
" incarnatum, Ell.	—		

	Eastern Ontario	Lake Sup'rior	Western and North-western Extension.
Polygonum Persicaria, L.	—	—	Saskatchewan valley.
" Hydropiper, L.	—		Saskatchewan valley (indig.)
" hydropiperoides, Michx.	—		
" amphibium, L., var. aquaticum.	—	—	Great Slave Lake, lat. 60° N.
" amphibium, L., var. terrestre.	—		North-West America.
" aviculare, L.	—		North-West coast to lat. 65° N.
" ramosissimum, Michx.	—	—	
" sagittatum, L.	—	—	Saskatchewan valley.
" cilinode, Michx.	—	—	Saskatchewan valley.
" convolvulus, L.	—		Hudson's Bay to Peace River
" dumetorum, L.	—	—	[valley, lat. 56° N.
Fagopyrum esculentum, Moench.	—		
Rumex Patientia, L. (Colpoy's Bay).	—		
" orbiculatus, Gray.	—	—	Rocky Mts. and Arctic Sea c.
" Salicifolius, Wein. (Colpoy's Bay).	—	—	Great Bear Lake, McKenzie R.
" verticillatus, L.	—		
" crispus, L.	—		
" obtusifolius, L.	—	—	
" acetosella, L.	—	--	North-West Pacific coast.
LAURACEÆ.			
Sassafras officinale, Nees.			
Lindera Benzoin, Meisner.	—		
THYMELEACEÆ.			
Dirca palustris, L.	—		
ELEAGNACEÆ.			
Shepherdia Canadensis, Nutt.	—	—	Fort Franklin, on the McKenzie [and Rocky Mountains.
SANTALACEÆ.			
Comandra umbellata, Nutt.	—		Rocky Mountains, lat. 56° N.
SAURURACEÆ.			
Saururus cernuus, L.			
CERATOPHYLLACEÆ.			
Ceratophyllum demersum, L.	—	—	
CALLITRICACEÆ.			
Callitriche verna, L.	—	—	Rocky Mountains, lat. 56° N.
EUPHORBIACEÆ.			
Euphorbia polygonifolia, L. (R. aux Sables).	—	—	North-West Pacific coast.
" glyptosperma, Engelm.	—		
" maculata, L.	—		
" corollata, L.			
" platyphylla, L.			
" Helioscopia, L.	—		
Acalypha Virginica, L.	—	—	Saskatchewan valley.

	Eastern Ontario.	Lake Sup'rior	Western and North-western Extension.
URTICACEÆ.			
Ulmus fulva, Michx.	—	—	
" Americana, L.	—	—	York Factory, Hudson's Bay.
" racemosa, Thomas.	—		
Urtica gracilis, Ait.	—	—	Fort Franklin, on the McKenzie
Laportea Canadensis, Eaud.	—		[and Rocky Mountains.
Pilea pumila, Gray.	—		
Boehmeria cylindrica, Willd.	—		
Cannabis Sativa, L.	—		
PLATANACEÆ.			
Platanus occidentalis, L.			
JUGLANDACEÆ.			
Juglans cinerea, L.	—		
" nigra, L.			
Carya alba, Nutt.	—		
" amara, Nutt.	—		
CUPULIFERÆ.			
Quercus alba, L.	—		Lake Winipeg.
" macrocarpa, Michx.	—		
" bicolor, Willd.	—		
" ilicifolia, Wang.			
" coccinea, Wang., var. tinctoria.	—		
" rubra, L.	—	—	Saskatcheman valley.
Castanea vesca, L., var. Americana.			
Fagus ferruginea, Ait.	—		
Corylus Americana, Walt.	—		North-West coast.
" rostrata, Ait.	—	—	Saskatchewan valley.
Carpinus Americana, Michx.	—		
Ostrya Virginica, Willd.	—		Lake Winipeg.
MYRICACEÆ.			
Myrica Gale, L.	—	—	McKenzie River valley.
BETULACEÆ.			
Betula papyracea, Ait.	—	—	Pacific coast, lat. 56° N.
" excelsa, Ait.	—	—	
" lenta, L.	—		
" pumila, L.	—		Peace River valley, lat. 56° N.
Alnus incana, Willd.	—	—	Ft. Franklin, on McKenzie Riv.
SALICACEÆ.			
Salix candida, Willd.	—	—	Ft. Norman, on the McKenzie.
" humilis, Marshall.	—		
" discolor, Muhl.	—	—	Saskatchewan valley.
" petiolaris, Smith.	—		Lake Winipeg.
" cordata, Muhl.	—	—	Great Slave Lake.
" livida, var. occidentalis.	—	—	Rocky Mountains, lat 53° N.
" lucida, Muhl.	—	—	Rocky Mountains, lat. 52° N.
" nigra, Marshall.	—	—	

	Eastern Ontario.	Lake Sup'rior	Western and North-western Extension.
Salix longifolia, Muhl.	—	—	West to the Pacific coast.
Populus tremuloides, Michx.	—	—	Rocky Mountains to lat. 64° N.
" grandidentata, Michx.	—		
" monilifera, Ait.	—		
" balsamifera, L.	—	—	Pacific coast, lat. 68° N.
CONIFERÆ.			
Pinus strobus, L.	—	—	West of the Rocky Mountains.
" resinosa, Ait.	—	—	West of the Rocky Mountains.
Abies nigra, Poir.	—	—	North to lat. 65° N.
" alba, Mx.	—	—	Almost to the Arctic Sea.
" Canadensis, Mx.	—	—	Pacific coast, lat. 57° N.
" balsamea, Marshall.	—	—	Little Slave Lake.
Larix Americana, Mx.	—	—	Peace River valley, lat. 57° N.
Thuja occidentalis, L.	—	—	Saskatchewan valley.
Juniperus communis, L.	—	—	Pacific coast.
" sabina, L., var. procumbens, Ph.		—	Rocky Mountains.
Taxus baccata, L., var. Canadensis, Gr.	—	—	Saskatchewan valley.
ARACEÆ.			
Arisæma triphyllum, Torr.	—		
Calla palustris, L.	—	—	Hudson's Bay and Saskatchewan valley.
Symplocarpus fœtidus.	—	—	
Orontium aquaticum.			
Acorus calamus.	—		Saskatchewan valley.
TYPHACEÆ.			
Typha latifolia, L.			
Sparganeum simplex, Hudson, var. angustifolium.	—	—	Great Bear Lake.
Sparganeum curycarpum, Engelm.	—		
LEMNACEÆ.			
Lemna minor, L.	—		Lat. 58° N., on McKenzie River.
" trisulca, L.	—		Lat. 58° N., on McKenzie River.
" polyrrhiza, L.	—		Lat. 58° N., on McKenzie River.
NAIADACEÆ.			
Nais flexilis, Rostk.	—	—	
Potamogeton natans, L.	—	—	North-West coast.
" Claytonii, Tuck.	—		
" amplifolius, Tuck.	—		
" gramineus, L.	—		
" prælongus, Wulf.	—	—	Lake Athabaska.
" perfoliatus, L.	—	—	Great Slave Lake.
" compressus, L.	—	—	Lake Athabaska.
" pauciflorus, Pursh.	—	—	
" pusillus, L.	—		Lake Athabaska.
" pectinatus, L.	—	—	North-West coast.
" heterophyllus, Schreber.	—	—	Saskatchewan valley,

	Eastern Ontario	Lake Sup'rior	Western and North-western Extension.
ALISMACEÆ			
Triglochin palustre, L.	—	—	Peace River valley, lat. 56° N.
" maritimum, L., var. elatum.	—	—	North-West coast.
Scheuchzeria palustris, L.	—		Rocky Mountains, lat. 55° N.
Alisma Plantago, L., var. Americana, Gray.	—	—	Peace River valley, lat. 56° N.
Sagittaria variabilis, Engelm.	—	—	Pacific coast.
" calycina, Eng. (Dr. J. Bell).			
HYDROCHARIDACEÆ.			
Anacharis Canadensis, Plan.	—	—	Saskatchewan valley.
ORCHIDACEÆ.			
Orchis spectabilis, L.			
Habenaria virescens, Spreng.	—	—	
" viridis, var. bracteata, Reich.			Rocky Mountains, lat. 55° N.
" hyperborea, R. Br.	—	—	Ft. Franklin, on the McKenzie.
" dilatata, Gray.	—	—	North-West coast.
" obtusata, Rich.	—	—	Bear Lake and N. W. coast.
" orbiculata, Torrey.	—	—	Saskatchewan valley.
" psychodes, Gray.	—	—	
" tridentata, Hooker.	—	—	
" Hookeri, Torrey.	—		
Goodyera repens, R. Br.	—	—	Rocky Mts. and Fort Franklin,
" Menziesii, Lind.	—		[on the McKenzie.
Spiranthes Romanzoviana, Chap.			
" gracilis, Bigel.	—		Ft. Franklin, on the McKenzie.
Listera cordata, R. Br.	—	—	N. W. coast, Sitka, Unalaska.
" convallarioides, Hook.		—	N. W. coast to Unalaska.
Pogonia ophioglossoides, Nutt.	—		
Calopogon pulchellus, R. Br.	—		
Calypso borealis, Salisb.	—	—	Bear Lake and Pacific coast.
Lipularia discolor, Nutt.			
Corallorhiza innata, R. Br.	—	—	Saskatchewan valley.
" multiflora, Nutt.	—	—	Pacific coast.
" Macræi, Gray.	—	—	
Cypripedium pubescens, Willd.	—		Saskatchewan valley.
" parviflorum, Salisb.	—		Rocky Mountains.
" spectabile, Swartz.	—		
" acaule, Ait.	—	—	Ft. Franklin, on McKenzie Riv.
" arietinum, R. Br. (J. M. Buchan).	—		Saskatchewan valley.
AMARYLLIDACEÆ.			
Hypoxys erecta, L.	—		
IRIDACEÆ.			
Iris versicolor, L.	—	—	
" lacustris, Nutt.			
Sisyrinchium Bermudiana, L.	—	—	Sitka and N. W. America.

	Eastern Ontario.	Lake Sup'rior	Western and North-western Extension.
SMILACEÆ			
Smilax hispida, Muhl.	—	—	
" herbacea, L.	—	—	Lake Winipeg.
LILIACEÆ.			
Trillium grandiflorum, Salisb.	—		North-West coast.
" erectum, L.	—	—	
" erectum, L., var. album, Pursh.	—		
" erythrocarpum, Michx.	—		
Medeola Virginica, L.	—		
Zygadenus glaucus, Nutt.	—		Great Bear Lake & Rocky Mts.
Tofieldia glutinosa, Willd.		—	Bear Lake to Sitka Sound.
Uvularia grandiflora, Smith.	—		Saskatchewan valley.
Streptopus roseus, Michx.	—	—	North-West coast.
Clintonia borealis, Raf.	—	—	Saskatchewan valley.
Smilacina racemosa, Desf.	—	—	North-West America.
" stellata, Desf.	—	—	North-West coast.
" trifolia, Desf.	—	—	Bear Lake and Rocky Mts.
" bifolia, Ker.	—	—	North-West coast.
Polygonatum biflorum, Ell.	—	—	Saskatchewan valley.
Lilium Philadelphicum, L.	—	—	Rocky Mountains.
" Canadense, L.	—		North-West coast.
Erythronium Americanum, Smith.	—		
Allium tricoccum, Ait.	—		
" Schœnoprasum, L.		—	North-West coast.
JUNCACEÆ.			
Luzula pilosa, Willd.	—	—	Saskatchewan valley.
Juncus alpinus, Vill., var. insignis, Fries.	—	—	Great Slave Lake.
" articulatus, L.	—	—	
" Balticus, Willd.	—	—	North-West coast.
" bufonius, L.	—		North-West coast.
" Canadensis, J. Gay, var. coarctatus, Eng.	—	—	Bear Lake.
" effusus, L.	—	—	North-West coast.
" filiformis, L.	—	—	Bear Lake.
" nodosus, L.	—	—	Bear Lake.
" tenuis, Willd.	—		Rocky Mts. and Bear Lake.
" Stygius, L. (R. Bell, La Cloche Island).			
PONTEDERIACEÆ.			
Pontederia cordata, L.	—	—	Saskatchewan valley.
ERIOCAULONACEÆ.			
Eriocaulon septangulare, Wish.	—		Saskatchewan valley.
EQUISETACEÆ.			
Equisetum arvense, L.	—	—	Rocky Mountains.
" pratense, Ehr.	—	—	Rocky Mountains.
" sylvaticum, L.	—	—	Ft. Franklin, on the McKenzie.

	Eastern Ontario.	Lake Sup'rior	Western and North-western Extension.
Equisetum limosum, L.	—	—	Saskatchewan valley.
" palustre, L.	—		Arctic Sea coast.
" hyemale, L.	—	—	Western coast.
" variegatum, Schleich.	—	—	Saskatchewan val. to Arctic Is.
" scirpoides, Michx.	—		Peace River valley, lat. 56° N.
FILICES.			
Polypodium vulgare, L.	—	—	Vancouver Isl. and N. W. coast.
Pellæa gracilis, Hook.	—	—	Saskatchewan valley.
" atropurpurea, Link.			Rocky Mts. and Bear Lake.
Pteris aquilina, L.	—	—	North-West coast.
Adiantum pedatum, L.	—	—	North-West coast.
Scolopendrium vulgare, Smith.			
Camptosorus rhizophyllus, Link.	—		Saskatchewan valley.
Asplenium trichomanes, L.	—	—	North-West coast.
" viride, Hudson.			Rocky Mountains.
" angustifolium, Mx.	—		
" thelypteroides, Mx.	—	—	
" Filix-femina, Bruh.	—	—	Sitka and N. W. coast.
Phegopteris Dryopteris, Fée.	—	—	Bear Lake and Rocky Mts.
Aspidium lonchitis, Schw.			Rocky Mountains.
" acrostichoides, Schw.	—	—	
" Thelypteris, Schw.	—		
" Noveboracense, Schw.	—		
" spinulosum, Schw., var. intermedium, Willd.	—	—	Rocky Mountains.
" spinulosum, Schw., var. Bootii, Gray.	—		
" cristatum, Schw.	—	—	Saskatchewan valley.
" cristatum, Schw., var. Clintonianum, Eat.	—		
" Goldianum, Hooker.	—		
" Filix-mas, Schw.		—	
" marginale, Swartz.	—	—	Saskatchewan valley.
Struthiopteris Germanica, Willd.	—	—	Saskatchewan valley.
Onoclea sensibilis, L.	—	—	Saskatchewan valley.
Cystopteris fragilis, Bernh.	—	—	Rocky Mountains.
" bulbifera, Bernh.	—		
Osmunda regalis, L.	—	—	Saskatchewan valley.
" Claytoniana, L.	—	—	
" cinnamomea, L.	—		
Botrychium ternatum, Swartz, var. lunarioides, Milde.	—	—	Peace River valley, lat. 56° N.
Botrychium Virginicum, Swartz.	—	—	North-West coast.
LYCOPODIACEÆ.			
Lycopodium lucidulum, Michx.	—	—	Peace River valley, lat. 56° N.
" annotinum, L.	—	—	Slave Lake.
" dendroideum, Mx.	—	—	Saskatchewan valley.
" clavatum, L.	—	—	North-West coast.
" complanatum, L.	—	—	Peace River valley, lat. 56° N.
Selaginella selaginoides, Link.		—	Saskatchewan valley.
" rupestris, Spring.	—	—	North-West coast.
" apus, Spring.	—		

In the following list no distribution has been attempted, inasmuch as we are yet in comparative ignorance regarding their range through British North America:

CYPERACEÆ.

Cyperus diandus, Torr.
Dulichium spathaceum, Rich.
Eleocharis obtusa.
" palustris, R. Br.
" acicularis, Torr. and Gr.
Scirpus pauciflorus, Light.
" cæspitosus, L.
" pungens, Vahl.
" riparius, Presl.
" sylvaticus, L.
" atrovirens, Muhl.
" Eriophorum, Michx.
Eriophorum alpinum, L.
" polystachyon, L.
" Virginicum, L.
" gracile, Koch.
Rhynchospora alba, Vahl.
" capillacea, Torr.
Cladium mariscoides, Torr.
Scleria verticillata, Muhl.
Carex gynocrates, Wormsk.
" monosperma, Macoun.
" scirpoidea, Michx.
" polytrichoides, Muhl.
" siccata, Dewey.
" teretiuscula, Good.
" vulpinoidea, Michx.
" stipata, Muhl.
" rosea, Schk.
" tenella, Schk.
" trisperma, Dewey.
" canescens, L.
" Deweyana, Schw.
" stellulata, Good.
" sychnocephala, Carey.
" scoparia, Schk.
" straminea, Schk.
" stricta, Lam.
" aquatilis, Wahl.
" lenticularis, Michx.
" limosa, L.
" irrigua, Smith.
" Buxbaumii, Willd.
" aurea, Nutt.
" livida, Willd.
" tetanica, Schk.
" Crawei, Dewey.
" granularis, Dewey.
" gracillima, Schw.
" plantaginea, Lam.
" platyphylla, Cary.

CYPERACEÆ. *Continued.*

Carex laxiflora, Lam.
" eburnea, Booth.
" vaginata, Tausch.
" pedunculata, Muhl.
" Pennsylvanica, Lam.
" varia, Muhl.
" scabrata, Schw.
" arctata, Boott.
" flexilis, Rudge.
" flava, L.
" Œderi, Ehrh.
" filiformis, L.
" lanuginosa, Michx.
" riparia, Curtis.
" Pseudo-Cyperus, L.
" hystricina, Willd,
" intumescens, Rudge.
" lupulina, Muhl.
" retrosa, Schw.
" utriculata, Boott.
" Tuckermani, Boott.

GRAMINEÆ.

Leersia oryzoides, Swartz.
Zizania aquatica, L.
Alopecurus aristulatus, Mx.
Phleum pratense, L.
Vilfa vaginæflora, Torr.
Sporobolus heterolepis, Gray.
" cryptandrus, Gray.
Agrostis scabra, Willd.
" vulgaris, Willd.
" alba, L.
Cinna arundinacea, L.
Muhlenbergia glomerata, Trin.
" Mexicana, Trin.
Brachyelytrum aristatum, Beauv.
Calamagrostis Canadensis, Beauv.
" stricta, Trin.
" arenaria, Roth.
Oryzopsis asperifolia, Michx.
Spartina cynosuroides, Willd.
Graphephorum melicoides, Beauv.
Eatonia obtusata, Gray.
" Pennsylvanica, Gray.
Glyceria nervata, Trin.
" pallida, Trin.
" aquatica, Smith.
" fluitans, R. Brown.
Poa annua, L.

GRAMINEÆ—*Continued.*

Poa serotina, Ehrh.
" cæsia, Smith.
" pratensis, L.
" compressa, L.
Festuca ovina, L. var.
" nutans, Willd.
Bromus secalinus, L.
" ciliatus, L.
Phragmites communis, Trin.
Triticum repens, L.
Elymus Virginicus, L.
" Canadensis, L.
Gymnostichum Hystrix, Schreb.
Aira flexuosa, L.
" cæspitosa, L.
Danthonia spicata, Beauv.
Avena striata, Michx.
Phalaris arundinacea, L.
Milium effusum, L.
Panicum glabrum, Gand.
" capillare, L.
" virgatum, L.
" latifolium, L.
" xanthophysum, Gray.
" dichotomum, L.
" depauperatum, Muhl.
" Crus-Galli, L.
Setaria verticillata, Beauv.
" glauca, Beauv.
" viridis, Beauv.
Andropogon furcatus, Muhl.
" scoparius, Michx.
Sorghum nutans, Gray.

MUSCI.

Sphagnum cymbifolium, Dill.
" acutifolium, Ehrh.
Gymnostomum curvirostrum, Hed.
" calcareum, Nees.
" rupestre, Schw.
Seligera recurvata, Br. and Sch.
" pusilla, Br. and Schimp.
Anodus Dormianus, Br. and Schimp.
Trematodon ambigua, James.
Dicranum viridis, Sulliv.
" virens, Hedw.
" varium, Hedw.
" heteromallum, Hedw.
" Schreberi, Hedw.
" montanum, Hedw.
" flagillare, Hedw.
" fulvum, Hook.
" congestum, Hedw.
" scoparium, L.
" Schraderi, Web and Mohr.
" undulatum, Torr.
" Drummondii, Mull.

MUSCI—*Continued.*

Ceratodon purpureus, Brid.
Leucobryum glaucum, Hampe.
Fissidens minutulus, Sulliv.
" incurvis, Sulliv.
" osmundioides, Hedw.
" adiantoides, Hedw.
" grandifrons, Brid.
" taxifolius, Brid.
Trichostinum rigidulum, Smith.
" pallidum, Hedw.
" glaucescens, Hedw.
" tophaceum, Brid.
Barbula ungurculata, Hedw.
" convoluta, Hedw.
" fallax, Hedw.
" tortuosa, Web and Mohr.
" ruralis, Hedw.
Didymodon rubellus, Br. and Sch.
" luridus, Hornich.
" cylindricus, Bruch.
Distichium capillaceum, Bruch.
Tetraphis pellucida, Hedw.
Encalypta ciliata, Hedw.
" streptocarpa, Hedw.
Drummondia clavatella, Hook.
Orthotrichum anomalum, Hedw.
" strangulatum, Bruch.
" Ohioense, Sulliv.
" speciosum, Nees.
" leiocarpum, Br.
" Ludwigii, Schw.
" Hutchinsæa, Smith.
" crispum, Hedw.
" crispulum, Hornsch.
" Bruchii, Brid.
" Americanum, Mit.
Schistidium apocarpum, Br.
Hedwigia ciliata, Ehrh.
Diphyscium foliosum, Web.
Atrichum angustatum, Br.
" undulatum, Beauv.
Polytrichum commune, L.
" formosum, Hedw.
" gracile, Menzies.
" juniperinum, Hedw.
Timmia megapolitina, Hech.
Aulacomnion heterostichum, Br.
Aulicomnion palustre, Schw.
Bryum pyriforme, Hedw.
" amiotinum, Hedw.
" albicans, Whl.
" nutans, Schreb.
" roseum, Schreb.
" argenteum, L.
" Pseudo-triquetrum, Hedw.
" Duvallii, Voit.
" bimum, Schreb.

MUSCI—*Continued.*

Bryum intermedium, Brid.
" capillare, Hedw.
" cæspiticium, L.
" pallescens, Schw.
" Blindii.
Mnium affine, Bland.
" orthorhynchum, Brid.
" stellare, Hedw.
" lycopodioides, Hook.
" punctatum, Hedw.
" serratum, Brid.
" spinulosum, Bry. Enop.
" Drummondii, Br. and Sch.
" cuspidatum, Hedw.
" rostratum, Schw.
Bartramia Olderi, Swartz.
" pomiformis, Hedw.
" fontana, Brid.
" Marchica, Brid.
" calcarea, Br. and Sch.
Meesia uliginosa, Hedw.
Cotoscopium nigritium, Brid.
Funaria hygrometrica, Hedw.
Fontinalis antypyretica, L.
Leucodon julaceus, Sulli.
Leptodon trichomitriom. Mohr.
Anomodon viticulosus, Host.
" apiculatus, Br. and Sch.
" obtusifolius, Br. and Sch.
" attenuatus, Hedw.
Leskea nervosa, Schw.
" rostrata, Hedw.
" Woolei, Austin.
Thelia hirtella, Sulliv.
Mymella Careyana, Sulliv.
" julacea, Bry. Enop.
Pylaisæa intricata, Br. Enop.
" polyantha, Br. Europ.
Platygynium repens, Br. Europ.
Cylindrothecium cladorrhizans, Hedw.
Neckera pennata, Hedw.
Omallia trichomanoides, Brid.
Climacium Americanum, Brid.
" dendroides, Dill.
Hypnum tamariscinum, Hedw.
" deticatulum, L.
" minututum, Hedw.
" scitum, Beauv.
" gracile, Br. and Sch.
" abietinum, L.
" Blandovii, Web.
" trigenteum, L.
" splendens, Hedw.
" brevirostre, Ehrh.
" Oakesii, Sulliv.
" Alleghaniense, C. Mull.
" strigosum, Hoffm.

MUSCI—*Continued.*

Hypnum deplanatum, Schimp.
" rusciforme, Weis.
" Sullivantii, R. Spruce.
" recurvans, Schw.
" Schraderi, Willd.
" cordifolium, Hedw.
" giganteum, Schimp.
" scorpioides, L.
" Cononi, Br. and Schimp.
" trifarium, Weis.
" uncinatum, Hedw.
" fidicinum, L.
" Crista-Castriense, L.
" imponens, Hedw.
" reptile, Michx.
" curvifolium, Hedw.
" Haldanianum, Grev.
" fertile, Lendtn.
" nitens, Schreb.
" salebrosum, Hoffm.
" lætum, Brid.
" acuminatum, Beauv.
" rutabulum, L.
" velutinum, L.
" rivulare, L.
" pratense, Hook.
" hispidulum, Brid.
" polymorphum, Bry. Em.
" Somerfeltii, Mypin.
" chrysophyllum, Brid.
" minutissimum, Sulliv.
" subtile, Hoffm.
" plumosum, L.
" populeum, Hedw.
" aduncum, Hedw.
" reflexum, Starke.
" adnatum, Sulliv.
" noterophyllum, Sulliv.
" serpens, Hedw.
" confervoides, Schw.
" radicale, Brid.
" orthocladon, Beauv.
" riparium, Hedw.
" denticulatum, L.
" pulchellum, Dick.
" turfaceum, Lindb.
" compactum, C. Mull.
" palustre, L.
" nitidulum, L.
" sylvaticum, L.

HEPATICÆ.

Marchantia polymorpha, L.
Preissia commutata, Nees.
Fegatella conica, Corda.
Aneura latifrons, Lind.
Steetzia Blyttii, Moanch.

HEPATICÆ—*Continued.*

Geocalyx graveolens, Nees.
Lophocolea heterophylla, Nees.
" crocata, Nees.
Jungermannia trichophylla, L.
" connivens, Dick.
" curvifolia, Dick.
" Schraderi, Martin.
Scapania Peckii, Austin.
" nemorosa, Nees.
Sphanæcetis Hubnaria, Raben.
Plagiochela porelloides, Lind.
Frullania Grayana, Montag.
" Virginica, Gott.

HEPATICÆ—*Continued.*

Frullania Eboracensis, Lehm.
Jejeunia serphyllifolia, Libert.
Madotheca platyphylla, Dumut.
" porella, Nees.
Radula complanata, Du.
Ptilidium ciliare, Nees.
Trichocolea Tormentilla, Nees.
Mastigobryum trilobatum, Nees.
Lepidoza reptans, Nees.
Calypogia Trichomanes, Cerda.
Jungermannia cordifolia, Hook.
Riccia Sorocarpa, Bisch.
Chylocyphus ascendens, Sulliv.

CANADIAN LOCAL HISTORY.

THE FIRST GAZETTEER OF UPPER CANADA.

WITH ANNOTATIONS,

BY THE REV. HENRY SCADDING, D.D.

(*Continued from page 541.*)

S.

Sables Dorés, Portage aux, in the Ottawa River, a little above Grand Calumet and Portage du Montaigne.

Sables, Riviere aux, runs into the south of Lake Huron, south of the highlands, and easterly to where the waters of that lake descend into River St. Clair.

Saganaskokam River: see Moira River. [(?) Englishman's River.]

Sayyathewigewam: now called the River Trent. [Outlet marked by a hut.]

Salmon Creek, rises near the salt springs of the River Trent, and running northerly, discharges itself into that river among several small islands.

Salmon Creek, Great, empties itself into the River Trent at its first great bend to the westward, a little below the second Rapids, near a few small islands.

Salmon Creek, Big, runs into Lake Ontario, between the townships of Cramahé and Haldimand.

Salmon Creek, Little, runs into Lake Ontario, near the centre of the township of Cramahé.

Saltfleet Township, in the county of Lincoln, lies west of Grimsby, and fronts Lake Ontario. [From a market-town and parish in Lincolnshire.]

Sandusky Island, in Lake Erie, lies a little south-east of the Bass Islands, and near to Sandusky Bay. [The same as Cunningham's Island.]

Sandwich Township is situated upon the upper part of the Detroit River, and comprehends the old French settlements; it has a thriving town of the same name, a little below the fort of Detroit, on the

east side of the river, where a gaol and court-house have been erected. [From Sandwich on the Stour, in Kent, the principal of the Cinque Ports.]

Sandy Bay, Little, on Lake Ontario, between Sophiasburgh and Marysburgh, is supplied by the East Lake, lying also between these townships, in the County of Prince Edward.

Sandy Bay, Great: see Sandy Bay.

Sandy Bay, on Lake Ontario, in the township of Ameliasburgh, lies immediately east of, and close to, the Isle de Quinté.

Sandy Point, at the easterly extremity of Isle Tonti, opposite to the mouth of Tonegayon Bay.

Sandy River, runs into the head of Little Sandy Bay, Lake Ontario.

Sangas, or St. Dusk's Creek, a small stream emptying itself into Lake Erie, east of Sangas Point: it affords a harbour for boats, having about three feet of water on its bar. [Possibly the humour of some voyageur transformed Sangas into St. Dusk. In like mood, certain American revolutionists made a saint of Tammany, a defunct Delaware chief.]

Sangas Point, or St. Dusk's Point, on the north shore of Lake Erie, east of the River Waveney: this is the most projecting point between the mouth of the Ouse and the North Foreland. [Sangas may be connected with Sangwewessin=It rings (like metal when struck.)]

Saumon River, on the north shore of Lake Ontario, lies between Pigeon Bay and Petits Ecors. [Not the Highland creek: it must be farther to the east.]

Saût, Long, third township, River St. Lawrence, is the greatest rapid on this river. The current runs with great velocity; very few accidents, however, have happened in passing this rift, there being no sudden fall in it, except at the foot of the Saût.

Savatte, Isle à la, a very small island in the River St. Lawrence, a little below Isle de Chenal Écarté. [Savatte = old shoe.]

Scarborough Township, so noted for its high banks, is in the east riding of the County of York, and lies to the west of the township of Pickering, fronting Lake Ontario. [From the name of a seaport and borough in Yorkshire.]

Serpent Le, is on the north shore of Lake Huron, and lies east of Mississaga River, and to the westward of Isle la Cloche. [This is a river marked on Bouchette's maps.]

Severn River, conveys the waters of Lake Simcoe from the northern extremity of that lake into the head of Gloucester Bay and Harbour, Lake Huron. [The northern extremity of Lake Simcoe is now known as Lake Couchiching: said to denote "where a river descends from a lake." The Ochipway name for the Severn is Wanantgitcheang=The round-about river.]

Shangwanac, on the north shore of Lake Superior, east of Black Bay. [In Bayfield's chart, Greater and Lesser Shaganash Fishery. Shaganash=Englishman. The word has reference to "the appearance of a sail upon the horizon."]

Shannon River, empties itself into the Bay of Quinté, ten or twelve miles above the Mohawk settlement.

Shawnese Township, lies at the mouth of the River Cheval Écarté, on the east side of the River St. Clair. [This name has disappeared. West Dover seems to have taken its place.]

Ship Island, is of very small extent, and is situated between the Bass Islands and Cunningham Island, in Lake Erie.

Short Point, on Lake Erie, township of Wainfleet, county of Lincoln: this is the first point east of the Six Nations' land, Grand River.

Shyon Cape, in Michipicoten Bay, Lake Superior, between Gorgontua Point and the mouth of the River Michipicoten. [In Bayfield's chart marked Cheyye.]

Sidney Township, in the County of Hastings, is situated at the head of the Bay of Quinté, immediately above Thurlow. [Probably from the first Viscount Sydney, Thomas Townshend.]

Simcoe Lake, formerly Lake aux Claies, Ouentironk, or Sheniong, is situated between York and Gloucester, upon Lake Huron. It has a few small islands and several good harbours: a vessel is now building for the purpose of facilitating the communication to Lake Huron by that route. [Also called Lake Toronto. Ouentironk is probably identical with Toronto, which, written more fully, was Atoronton and Otoronton, denoting a place where there are many inhabitants, a rendez-vous of numerous bands, *i.e.*, of Wyandots or Hurons. See Sagard and Parkman. This lake was long the centre of a populous region. Appended to this article in the Gazetteer is the following note:—So named by Lieutenant-General Simcoe, in respect to his father, the late Captain Simcoe, of the Royal Navy, who died in the River St. Lawrence, on the expedition to Quebec, in 1759. In the

year 1755, this able officer had furnished Government with the plan of operations against Quebec, which then took place: at the time of his death, Captain Cook, the celebrated circumnavigator, was master of his ship, the Pembroke.]

Sinclair River [or *St. Clair*, 2nd edition], runs from north to south, being the strait between Lake Huron and Lake St. Clair. [The correct form of the name is *Sainte Claire*, as given to the lake by La Salle, in 1679.]

Sinion, or Sheniong Lake, now Lake Simcoe; which see. [Sheniong possibly = Silver or silvery.]

Sister, East, The, a small island in Lake Erie, the easternmost of the three islands called the Sisters, and to the north of the Bass Islands.

Sister, West, a small island at the west end of Lake Erie, being the westernmost of the islands called the Sisters, and westerly of the Bass Islands.

Schlosser Fort, or Little Niagara. [From the name of a French officer of Engineers.]

Smith's Creek, runs into Lake Ontario, in the east part of the township of Hope. [The river at Port Hope: called elsewhere in the Gazetteer, Ganaraska.]

Sophiasburgh Township, in the County of Prince Edward, lies to the northward of Hallowell, and in the Bay of Quinté. [A compliment to the Princess Sophia.]

Sorcerer's Lake, or Lake Nipissing: *q. v.* [In Carver's map of the Province of Quebec in 1763, the Lake bears both of these names.]

Southwold Township, in the County of Suffolk, lies west of Yarmouth, having Lake Erie for its southern boundary. [From the name of a seaport in Suffolk.]

Sugar-loaf Hill, a small natural landmark, on the north shore of Lake Erie, between Point Abino and the Grand River, on the boundary between the townships of Humberstone and Wainfleet.

Sutherland's Creek, runs into Lake St. Francis, between Pointe au Bodet and Pointe Mouillée in the township of Lancaster.

T

Talbot's River, empties itself into Lake Simcoe, and on the east side thereof. [From Col. Talbot. The native name was Nummaibene-sippi, Sucker River.]

Talons, Portage de, on the south-west branch of the Ottawa River, immediately above Rapides des Porches. [From De Talon, Intendant under De Tracy.]

Tegaogen, on the north shore of Lake Ontario, lies about half-way between York and the head of the Bay of Quinté. [At Port Hope. It is a Mohawk word denoting a carrying-place.]

Thames River, formerly La Tranche or Trenche, and by the Indians, Esse-cunny-seepe, rises in the Chippewa country, and, running south-westerly, washes the Counties of (the west riding of) York, Norfolk, Suffolk, and Kent, and disembogues itself into Lake St. Clair, above Detroit: it is a river of considerable extent, without falls. From its upper branches it communicates by small Portages with Lake Huron and the Grand River. The site of Oxford is on its upper Fork, and that intended for Dorchester on its middle fork; London on the main fork, and Chatham on the lower fork. It is a fine inland canal, and capable of being highly improved. The lands on its banks are extremely fertile. [The native name, given above, means Horn River.]

Thessalon Point, in Muddy Lake, is the angle made by that lake and a channel leading to French River, Matchedash, &c., and lies parallel to Caribou Island.

Thessalon River, runs into Lake Huron, a little to the eastward of Muddy Lake, on the north shore.

Thompson's Island, lies near the entrance of the River St. Clair: it scarcely contains 200 acres of dry land fit for tillage, but a great many acres of marsh.

Thorold Township, in the County of Lincoln, lies south of Grantham, and is watered by the River Welland. [Probably from Sir John Thorold, M.P. for Lincolnshire in 1793.]

Thunder Bay, on the north shore of Lake Superior, opposite to the east end of Isle de Minatte. There is a remarkable high mountain at its easternmost cape.

Thunder Bay, in Lake Huron, lies to the eastward of Cabot's Head, and westward of Gloucester Bay.

Thurlow Township, in the County of Hastings, lies near the head of the Bay of Quinté, and eastward of Sidney. [A compliment to Edward Thurlow, Lord High Chancellor of England, created Baron Thurlow in 1792.]

Tilbury Township, in the western district, is situated upon Lake St. Clair, west of Raleigh, where the Thames disembogues itself into that lake. [From Tilbury Fort on the Thames.]

Tobacoke: see River aux Attokas. [The Etobicoke or Alder Creek.]

Tonagayon Bay, on Lake Ontario, opposite to the east end of Amherst Island, lies between Kingston and Ernestown. [In the Seneca dialect = Full of hickory bark.]

Tonianta Creek, runs into the River St. Lawrence, in the township of Yonge. [Tonawanda in the Seneca dialect is Swift Water.]

Tonti Isle, now called Amherst Island, by proclamation, the 16th July, 1792. [From the Italian form of Henri de Tonty's name, La Salle's companion and lieutenant. He had lost a hand, which was replaced by one of iron, over which he wore a glove. Troublesome Indians and others stood in awe of this mysterious hand.]

Tonti, Petite Isle, opposite the mouth of Tonagayon Bay, and off Sandy Point, the eastern extremity of Amherst Island.

Tonti River, runs into Lake Erie, west of Landguard.

Toronto, now called York, *q. v.* [The site of Toronto derives its name from a fort or trading-post usually known as Fort Toronto, but the official name of which was Fort Rouillé, so called from Antoine Louis Rouillé, French Colonial Minister in 1749. The fort or trading-house marked the point of debarcation for the overland march to the Toronto region, *i.e.*, the populous Huron country round Lake Toronto, the modern Lake Simcoe. The starting-place ultimately usurped the name of the goal.]

Toronto Bay, now called York Harbour.

Toronto Lake (or Toronto), Lake le Clie, was formerly so called by some: others called the chain of lakes, from the vicinity of Matchedash towards the head of the Bay of Quinté, the Toronto lakes, and the communication from the one to the other was called the Toronto River. [In the general map accompanying the North American and West Indian Gazetteer, 1778, this chain of lakes is named Toronto River.]

Toronto River, called by some St. John's River, now called the Humber.

Tortue, Portage de la, at the head of the south-west branch of the Ottawa River, near to the small lake which joins the portage leading to Lake Nipissing. [Tortue = Tortoise.]

Tourtes, Isle aux, in Lake Ontario, lies off the south-west point of Wolfe Island. [Tourtes = Wild pigeons.]

Tourtes, Point aux, on the north shore of Lake Superior, is the east point of a bay of the same name.

Tower Point, the easterly point that makes Duck Cove, in Marysburgh, and west of Point Traverse, in Lake Ontario.

Townsend, the Township of, including what is called its Gore, in the County of Norfolk, lies in the rear and to the north of Woodhouse. [From the Marquis of Townshend, a distinguished military officer, who, after the death of General Wolfe, became Commander-in-Chief. To him, as such, Quebec was surrendered.]

Trafalgar Township, is in the west riding of the County of York, on the Lake Ontario; and lies between the townships of Toronto and Nelson. Second Edition.

Traverse Bay, on Lake Ontario, is made by Cape Traverse and Point Traverse, both in Marysburgh. [La Traverse denoted a place in the route where the voyageurs took the opposite side of the stream, or struck directly across from one promontary to another, without coasting.]

Traverse Cape, in Marysburgh, on Lake Ontario, is the main point to the northward of Orphan Island, and south of Point Pleasant.

Traverse Isle, now called Prince William's Island, Lake Huron.

Traverse Pointe, is the south-east point of Marysburgh, in Lake Ontario, near to the Duck Islands: this point forms nearly a peninsula.

Traverse, Pointe à la, on the north shore of the River St. Lawrence, parallel with Isle Morpion, and about three miles above Pointe du Lac St. Francis.

Traverse, Rivière à la, runs into the St. Lawrence a little above Pointe au Chêne, amongst the St. Regis Islands.

Trent River, runs out of the Rice Lake, and discharges itself into the head of the Bay of Quinté. Some miles up this river there are salt springs, three gallons of the water making one gallon of salt: the natives make sufficient for their use. [A. Jones gives as the native name of the Trent, Sangi-chi-wig-e-wonk = Strong waters: rapids.]

Trois Chenaux Écartés, Isle de, in the River St. Lawrence, opposite the township of Osnabruck, contains from 600 to 700 acres: the soil good. [The Three Disused Channels.]

Trous Leveillier, on the Ottawa River, between the Petit Detroit and the portage Roche Capitaine. [Trou = Hole. Leveiller, proper name.]

Turkey Island, sometimes called Petite Isle aux Indes, is situated in the River Detroit, between the lower end of Fighting Island and

the marsh of the River Canards: it lies in front of the north-west angle of the Huron reserve. ["On y trouve des Poules d'Inde et des Cignes en quantité": thus Hennepin reports of this neighbourhood. Nouveau Voyage, chap. xix.]

Turkey Point, in the township of Charlotteville, situated in the bay of Long Point, Lake Erie, affords a harbour with a channel to it, of sufficient depth of water for any vessel: above the point is the town-plot and site for the barracks.

Turtle Island. A small island at the entrance of the Miami bay.

Two Rivers, The, run into Lake Ontario, near the centre of the township of Darlington. [A. Jones gives as a conjoint term for the 15 and 16 mile creeks (from Burlington Bay), Nan-swau-sink = Two creeks near each other. Properly, Nah-sah-gah-way, Where the stream forks or divides.]

U

Urfe River, afterwards called Grand River, now the Ouse, Lake Erie. [From D'Urfé, a French proper name.]

Uxbridge, in the east riding of the County of York, is to the northward in the rear of Pickering. Second Edition. [From Uxbridge in Middlesex, or in compliment to the Earl of Uxbridge of the day.]

V

Vaughan Township, in the east riding of the County of York, lies on the west side of Yonge Street, in the rear of, and to the northward of, the township of York. [From the fourth Viscount Vaughan, (1793,) who was also Earl of Lisburn.]

Vesey Cape, in the township of Marysburgh, on Lake Ontario, is the northern point which makes Prince Edward's Bay. [From Thomas Vesey, Baron Knapton, who was created Viscount de Vesci in 1776.]

Wabuscommong, is one of the lakes on the communication between Lake Simcoe and the Rice Lake. [= Rabbit Lake.]

Wainfleet Township, in the County of Lincoln, lies west of Humberstone, and fronts Lake Erie, being watered by the Welland to the north. [From the name of a market town in Lincolnshire, situated on a creek or inlet of the sea.]

Walpole Township, in the County of Norfolk, lies west of Rainham, and fronts Lake Erie. [From the distinguished English family name.]

Walsingham Township, lies west of Charlotteville, in the County of Norfolk, having the bay and marsh of Long Point in its front.

Wapose Island, in Lake Ontario, lies off the northerly point that makes Prince Edward's Bay, on the easterly shore of Marysburgh. [Wah-bose = Rabbit.]

Washquarter, or Weighqueta, afterwards called Lake Geneva, and now Burlington Bay, by proclamation, 16th July, 1792, is a very beautiful small lake, lying within the head of Lake Ontario, from which it is divided by a long beach : over the outlet has been erected a good bridge; and on the southern part of the beach, near the portage, is a good inn, erected by His Excellency Major-General Simcoe. [A. Jones gives the name as Wè-qua-te-tong, and says its meaning is simply Bay. The outlet, he says, was Pimmetetong-gonk = Creek running through the sand. Morgan says that Burlington Bay was called in the Mohawk dialect, De-o-na-sa-de-o = Where the sand forms a bar.]

Waveney River, in the County of Norfolk, rises in the township of Townsend, and running thence southerly, through the townships of Woodhouse and Walpole, discharges itself into Lake Erie, where it has about three feet water over the bar, and is a good harbour for batteaux. [The English Waveney falls into the Yare, not far from Yarmouth, Suffolk.]

Wenitagonk, runs into Lake Ontario, in the west part of the township of Clarke. [Perhaps the meaning is Frenchman's Creek. Baraga says Wemetigogi means Frenchman. He does not interpret the word, which, however, denotes "one who travels in a wooden canoe or boat."]

West Bay, Great, comprehends all that part of the Bay of Quinté from John's Island, upwards, to the head of the bay.

West Bay, lies in the south-west extremity of Lake Superior, within the Isles Royale and Philippeaux.

West Lake, lies between Sandy Bay and Little Sandy Bay, on Lake Ontario, east of the Isle de Quinté, and is in the township of Sophiasburgh.

Western District, The, was originally constituted and erected into a district by the name of the District of Hesse, in the Province of Quebec, by His Excellency Lord Dorchester's proclamation, of the 24th July, 1788. It received its present name by an Act of the Provincial Legislature: it is bounded southerly by Lake Erie; eas-

terly by a meridian passing through the eastern extremity of Long Point, now the North Foreland, and comprehends all the lands north-westerly of those boundaries, not included within the bounds of the Hudson's Bay Company, or the territory of the United States. The boundary which divides it from Louisiana is not well known after reaching the sources of the Mississippi. [In the Second Edition the boundaries are given thus: Southerly by Lake Erie; easterly by the London district; on the west by the Detroit, Lake St. Clair, and River St. Clair; and on the north by the River Huron.]

Westminster Township, is situated upon the River Thames, adjoining to London.

Whitby Township, in the east riding of the County of York, lies west of Darlington, and fronts Lake Ontario. [From a seaport of Yorkshire at the mouth of the Eske.]

Whitchurch Township, in the east riding of the County of York, fronts to Yonge Street, and lies to the northward of Markham. [There are five places of this name in England; the one in Shropshire has an ancient free school.]

Whitefish Island, at the east end of Lake Superior, a little west of the Isle aux Rables, and near to which the lake forces its passage by the Falls of St. Mary. [Otchipway for Whitefish is Atikameg, Deerfish.]

Williamsburgh Township, in the County of Dundas, is the fifth township in ascending the river St. Lawrence. [A compliment to Prince William, Duke of Clarence.]

Willoughby Township, in the County of Lincoln, lies between Bertie and the River Welland, on the west side of Niagara River. [Willoughby, a parish in Warwickshire, with Roman remains. Christopher Willoughby was created a baronet in 1794.]

Winchester Township, in the County of Dundas, lies in the rear, and to the northward of Williamsburgh.

Windham Township, in the County of Norfolk, lies in the rear and north of Charlotteville. [From the distinguished statesman, temp. George III. His bust, by Nollekins, is is Fellbrigg Church, Norfolk.]

Wolfe Island, in the County of Ontario, lies opposite to Kingston and Pittsburgh, in the narrow part, where Lake Ontario forces into the St. Lawrence. [The solitary local memorial of General Wolfe in Upper Canada.]

Wolford Township, lies partly in the Township of Grenville and partly in Leeds, in the rear and to the north of the townships of

Elizabethtown and Augusta, and is washed by the River Rideau. [From the name of the family seat of Lieut.-General Simcoe, near Honiton, in Devonshire.]

Woodhouse Township, in the County of Norfolk, lies west of Walpole, and fronts Lake Erie. [Several families of distinction bear this name in the English Norfolk. Sir John Wodehouse was raised to the peerage in 1797, as Baron Wodehouse, of Kimberley, in the County of Norfolk.]

Woods, Lake of the. See Lac du Bois.

Wye, River, runs from a small lake near the north-west end of Lake Simcoe, into Gloucester Bay, Lake Huron.

Y

Yarmouth Township, in the County of Norfolk, lies to the west of Houghton, and fronts Lake Erie. [Probably a compliment to Francis Seymour, Lord Conway, who in 1793 was made Earl of Yarmouth.]

Yonge Street, is the direct communication from York to Lake Simcoe, opened during the administration of His Excellency Major-General Lieut.-Governor Simcoe, who, having visited Lake Huron by Lake aux Claies, (formerly also called Ouentaronk, or Sinion, and now named Lake Simcoe,) discovered the harbour of Penetanguishene (now Gloucester) to be fit for shipping, and resolved on improving the communication from Lake Ontario to Lake Huron by this short route, thereby avoiding the circuitous passage of Lake Erie. This street has been opened in a direct line, and the road made by the troops of His Excellency's corps. It is thirty miles from York to Holland's River, at the pine fort called Gwillimbury, where the road ends: from thence you descend into Lake Simcoe, and having passed it there are two passages into Lake Huron—the one by the River Severn, which conveys the waters of Lake Simcoe into Gloucester Bay; the other by a small portage, a continuation of Yonge Street, to a small lake, which also runs into Gloucester Bay: this communication affords many advantages; merchandise from Montreal to Michilimackinac may be sent this way at ten or fifteen pounds less expense per ton, than by the route of the Grand or Ottawa River; and the merchandise from New York, to be sent up the North and Mohawk rivers for the north-west trade, finding its way into Lake Ontario at Oswego (Fort Ontario), the advantage will certainly be felt of transporting goods from Oswego to York, and from thence across Yonge

Street, and down the waters of Lake Simcoe into Lake Huron, in preference to sending it by Lake Erie. [This street was named from Sir George Yonge, a member of the Imperial Government, temp. Geo. III. He was of a distinguished Devonshire family.]

Yonge Township, in the County of Leeds, is the tenth township in ascending the River St. Lawrence.

York County, consists of two ridings, the east and west. The east riding is bounded on the east by the westernmost line of the County of Durham; on the south by Lake Ontario, until it meets the eastern boundary of a tract of land belonging to the Mississaga Indians; on the west by the easternmost boundary line of the said tract, running north 16 deg. west, the distance of 28 miles, thence north 74 deg. east, 14 miles, thence south 16 deg. east, 16 miles to the southern boundary of the lands belonging to the Indians, and thence along the said tract parallel to Lake Ontario, until it meets the north-westernmost boundary of the County of Durham. The west riding of the County of York is bounded on the east by the westernmost line of a tract of land belonging to the Mississaga Indians, running north 45 deg. west, to the River La Tranche (to be called the Thames); on the south by Burlington Bay and the carrying-place leading through the Mohawk village, to where it intersects the River La Tranche, or Thames; and thence up that river to the north-westernmost boundary of a tract of land belonging to the Mississaga Indians. The boundaries of this county were established by proclamation the 16th July, 1792. It sends, in conjunction with the County of Durham and the first riding of the County of Lincoln, one representative to the Provincial Parliament. [In the Second Edition, instead of "the eastern boundary of a tract of land, &c.," the description reads thus, "the eastern boundary of Toronto township, which, with the Mississaga tract,* gives its western limits; and on the north by Holland's

*The following is the text of the Instrument finally surrendering the Mississaga tract. (It used to be said that the whole tract was obtained by the Crown for the sum of ten shillings. It will be seen that this was a consideration named simply *pro formâ.* The object of the document was to quiet the title of the Crown, the original deed having been imperfectly filled up. The paper asserts, it will be observed, that "divers good and valuable considerations" had been received: it is not specified, however, what these were, the original document here showing a blank):—THIS INDENTURE made at the River Credit, on Lake Ontario, on the first day of August, in the year of our Lord One Thousand Eight Hundred and Five, between William Claus, Esquire, Deputy Superintendent-General and Deputy Inspector-General of Indians and of their affairs, for and in behalf of our Sovereign Lord the King, of the one part, and the Principal Chiefs, Warriors and People of the Mississaga Nation of Indians, for and in the name of the said Nation of the other part. WHEREAS on the twenty-third day of September, in the year

River, Lake Simcoe, and Talbot River, until it meets the north-westernmost boundary of the County of Durham. The west riding of the County of York is bounded on the east by the townships of King, Vaughan, and York; on the south by the Lake Ontario, Burlington Bay, and Dundas Street; on the west by the London district; and on

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of our Lord One Thousand Seven Hundred and Eighty-seven, at the Carrying Place at the head of the Bay of Quinté, it was agreed between the Honorable Sir John Johnson, Baronet, on the part of our said Lord the King, and Wabukanyne, Neace, and Pakquan, Principal Chiefs and War Chiefs of the said Mississagua Nation; two of which said Chiefs, that is to say, Wabukanyne and Neace, are now dead; that they the last mentioned Principal Chiefs would for divers good and valuable considerations received by them for and on account of their said Nation from our said Lord the King, duly convey all their right and title to a certain Tract or Parcel of Land hereinafter described, to our said Lord the King, his Heirs and Successors for ever. And WHEREAS in pursuance of that agreement a certain Instrument hereunto annexed was made at the said Carrying Place, bearing date the day and year last aforesaid, signed and sealed by the said Wabukanyne, Neace, and Pakquam, for the purpose of conveying the said Tract or Parcel of Land to our said Lord the King, his Heirs and Successors as aforesaid, which said Instrument did not ascertain or describe the Parcel or Tract of Land meant and intended to be conveyed thereby, and was and is in other respects defective and imperfect. Now this Indenture witnesseth that for carrying into execution the said agreement made on the said Twenty-third day of September, One Thousand Seven Hundred and Eighty-seven, and in consideration thereof, and for the more effectually securing and conveying to our said Lord the King the said Tract or Parcel of Land so agreed to be conveyed to him as aforesaid, and for the consideration of Ten Shillings of good and lawful money in hand paid to them by the said William Claus, Esq., for and on account of our said Lord the King, the receipt whereof by the said Principal Chiefs, Warriors, and People of the Mississagua Nation as aforesaid, is hereby acknowledged, have granted, bargained, aliened, released and confirmed, and by these Presents do grant, bargain, alien, release and confirm unto our Sovereign Lord the King, his Heirs and Successors, all that Tract or Parcel of Land commencing on the east bank of the south outlet of the River Etobicoke; thence up the same, following the several windings and turnings of the said river, to a Maple Tree blazed on four sides, at the distance of three miles and three quarters in a straight line from the mouth of the said river; thence north sixty-eight degrees east fourteen miles; thence south twenty-two degrees east, twenty-eight miles more or less, to Lake Ontario; thence westerly along the water's edge of Lake Ontario to the eastern bank of the south outlet of the River Etobicoke, being the place of beginning, containing two hundred and fifty thousand eight hundred and eighty acres, together with all the Woods and Waters thereon lying and being, and all the advantages, emoluments, and hereditaments whatsoever to the said Tract or Parcel of Land belonging or in anywise appertaining, and the issues and profits of all and singular the said premises and every part and parcel thereof with the appurtenances; and also all the estate, right, title, interest, property, claim and demand whatsoever of them the said Principal Chiefs, Warriors, and People of the Mississagua Nation for themselves, and for and in the name of their whole Nation, in and to all and singular the said premises and every part and parcel thereof, with the appurtenances, save and except the Fishery in the said River Etobicoke, which they the said Chiefs, Warriors, and People expressly reserve for the sole use of themselves and the Mississagua Nation: To have and to hold all and singular the said Tract or Parcel of Land, hereditaments, and premises in and by these presents released and confirmed unto our Sovereign Lord the King, his Heirs and Successors for ever, and to and for no other use, intent or purpose whatsoever. And also that His Majesty, his Heirs and Successors as aforesaid, shall and may at all times for ever hereafter peaceably and quietly have, hold, occupy, possess, and enjoy all and singular the said Tract or Parcel of Land with the appurtenances and every part and parcel thereof, without trouble, hindrance, molestation, interruption, or disturbance of them the said Principal Chiefs, Warriors, and People of the Mississagua Nation, or any of them, their Heirs or Successors, or any other person or per-

the north by the County of Simcoe. It sends, in conjunction, &c." In a note on a former page, a copy of the surrender of the Mississaga tract to the Crown has been given. In the subdivision of counties the proper signification of "riding," *i. e.*, "thriding," third part, is ignored.]

York is about 43 deg. and 35 min. of north latitude, and is the present seat of Government of Upper Canada. It is most beautifully situated within an excellent harbour of the same name, made by a long peninsula which confines a basin of water sufficiently large to contain a considerable fleet. On the extremity of the peninsula, which is called Gibraltar Point, are commodious stores and block-houses, which command the entrance to the harbour. On the main-land, opposite to the point, is the garrison, situated in a fork made by the harbour and a small rivulet which, being improved by sluices, affords an easy access for boats to go up to the stores. The barracks being built on a knoll, are well situated for health, and command a delightful prospect of the lake to the west, and of the harbour to the east. The Government house is about two miles above the garrison, near the head of the harbour, and the town is increasing rapidly: the River Don empties itself into the harbour a little above the town, running through a marsh which when drained will afford most beautiful and fruitful meadows. This has already been commenced in a small degree, which will no doubt encourage further attempts. The long beach or peninsula, which affords a most delightful ride, is considered so healthy by the Indians that they resort to it whenever indisposed; and so soon as the bridge over the Don is finished, it will, of course, be most generally resorted to, not only for pleasure but as the most convenient road to the heights of Scarborough. The ground which has been prepared for the Government house is situated between the town and the River Don, on a most beautiful spot, the vicinity of which is well suited for gardens and a park. The oaks are in general large; the soil is excellent, and well watered with creeks, one

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sons lawfully claiming or to claim by from or under them or any of them. In witness whereof we have hereunto affixed our marks and seals the day and year above written, having first heard this Instrument openly read and rehearsed in our own language, and fully approved by ourselves and our Nation

(Signed.) W. Claus, Dep Supt.-General, on behalf of the Crown. [L S]

Chechalk, Queuepenon, Wabukanyne, Okemapenegse, Wabenose, Kebonecense, Osenego, Achcton. [Each has his totem traced.]

Present at the Execution and Delivery of this Instrument, and witnesses thereto: John Williams, Captain, 49th Regiment; John Brackenbury, Ensign, 49th Regiment; P. Selby, Assist. Secretary, I. A.; I. B. Rousseau.

of which, by means of a short dam, may be thrown into all the streets of the town. Vessels of all sizes may be conveniently built here, and a kind of terrace or second bank in front of the town, affords an excellent situation for a rope walk. The remains of the old French Fort Toronto stand a little to the westward of the present garrison, and the River Humber discharges itself into Lake Ontario about two miles and a half west of that: on this river and the Don are excellent mills, and all the waters abound in fish. In winter the harbour is frozen, and affords excellent ice for the amusement of northern countries, driving in traineaus. The climate of York is temperate, and well sheltered from the northerly winds by the high lands in the rear. The Yonge Street leads from hence to Lake Simcoe, and the Dundas Street crosses the rear of the town. [In the Second Edition the following passages are omitted: "Which (*i.e.*, the garrison creek), being improved by sluices, affords an easy access for boats to go up to the stores. The ground set apart for the Government house is situated on a most beautiful spot, the vicinity of which is well suited for gardens and a park. The oaks are in general large; the soil is excellent, and well watered with creeks, one of which, by means of a short dam, may be thrown into all the streets of the town." The sluicing of the garrison creek, and the transformation of a stream to the east into a reservoir for the supply of water to be "thrown into all the streets of the town," are curious but bold ideas. Was the latter stream that in the ravine which now forms part of St. James's cemetery? In the second edition the Government house is stated to be "about two miles from the east end of the town, at the entrance of the harbour." This was the residence destroyed when the magazine exploded in 1813. The bridge over the Don is spoken of as finished, *i.e.*, a floating bridge near the outlet of the river. The name "York" was conferred on the town in honour of the King's second son, Frederick, Duke of York. On the 27th of August, 1793, a royal salute was fired in the harbour, to celebrate a success recently gained by the troops under the command of the Duke in Holland, and "to commemorate the naming of this harbour from his English title, YORK."

York Township, is in the east riding of the County of York, and lies to the west of Scarborough, having the River Humber for its western limit: its front is principally occupied by a long sandy beach, which forms the harbour. The rest of the township in front is open to Lake Ontario.

SKETCH OF THE LENGTH AND CIRCUMFERENCE OF THE FOLLOWING LAKES IN UPPER CANADA, BY ESTIMATION.

LAKES.	Greatest Length in Miles.	Circumference following the Shores.
Erie	200	610
George	25	58
Huron	250	1100
Michigan	260	945
Ontario	160	450
St. Clair	30	100
Superior	410	1525

TABLE OF LATITUDES AND LONGITUDES, FROM THE INFORMATION HITHERTO RECEIVED.

PLACES.	North Latitude.			West Longitude.		
	Deg.	Min.	Sec.	Deg.	Min.	Sec.
Detroit	42	38	0	81	40	
Do. River's Mouth	41	52				
Erie Fort	42	53	17			
Grand Remou	44	50				
Kingston	44	8	9	75	41	
Landguard	42	7	15			
Long Point, Carrying Place	41	39	21			
Michilimackinac	45	48	34			
Michigan Lake, South end	41	8				
Manitou Islands	44	46				
Niagara	43	15	47	78	25	
Oswego	43	20	0	75	43	
Ontario Lake, head of	43	47	3			
St. Regis	45					
York	43	35		50	29	

SKETCH OF THE ISLANDS IN THE FOLLOWING LAKES OF UPPER CANADA.

Lake Erie.—Bass Islands, Isle Bois Blanc, Isle Celeron, Cunningham's Island, East Sister, Grosse Island, Middle Island, Middle Sister, St. George's Island, Ship Island, Turtle Island, West Sister.

Lake Huron.—La Cloche, Duck Islands, Flat Islands, Grosse Isle, Isle Traverse, Manitou Islands, Michilimackinac, Prince William's Island, St. Joseph Island.

Lake Ontario.—Amherst Island, Isle La Barque, Carleton Island, Isle de Petit Cataraqui, Cedar Island, Isle Cauchois, Isle au Cochan, Isle du Chêne, Duck Islands, Duck Islands, Isle La Force or La Forté, Isle au Forêt, Gage Island, Grand Isle, Gull Island, Howe Island, Nicholas Island, Orphan Island, Isle De Quinté, Isle Tonti, Petite Isle Tonti, Isle aux Tourtes, Wolfe Island, Wapoose Island.

Lake St. Clair.—Island Chenal Ecarté, Harsen's Island, Hay Island, Peach Island, Thompson's Island.

Lake Superior.—Isle Grange, Isle de Minatte, Michipicoten, Isle Montreal, Patié Island, Isles aux Rables, White Fish Island.

FINIS.

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POSTSCRIPT.

Since the foregoing notes have come from the press, the Editor is informed that the Dundas Street has been considerably improved between the head of Lake Ontario and York, and that the Government has contracted for the opening of it from that city to the head of the Bay of Quinté, a distance of 120 miles, as well as for causewaying of the swamps and erecting the necessary bridges; so that it is hoped in a short time there will be a tolerable road from Quebec to the capital of the Upper Province.

Lands have been appropriated in the rear of York as a refuge for some French royalists, and their settlement has commenced.

In consequence of the increase of population, and for other reasons, an Act of the Provincial Parliament has lately passed for the further division of the Province, by which the districts are divided into twice their late number. Nineteen covered waggons with families came in to settle in the vicinity of the County of Lincoln about the month of June last, and the facility with which some of these people travel, particularly in crossing the small rivers, deserves to be noticed. The body of their waggons is made of close boards, and the most clever have the ingenuity to caulk the seams, and so by shifting off the body from the carriage, it serves to transport the wheels and the family.

The salt springs in the vicinity of the Trent have not proved so productive as, from the first report of them, it was hoped they would.

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THE

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

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

Day.	Barom. at temp of 32°.				Temp. of the Air.				Excess of Mean above Normal.	Tension of Vapour.				Relative Humidity				Direction of Wind.				Velocity of the Wind.				Rain in Inches	Snow in Inches
	6 A.M.	2 P.M.	10 P.M.	Mean.	6 A.M.	2 P.M.	10 P.M.	MEAN		6 A.M.	2 P.M.	10 P.M.	M'N.	6 A.M.	2 P.M.	10 P.M.	M'N.	6 A.M.	2 P.M.	10 P.M.	Res'l-tant.	6 A.M.	2 P.M.	10 P.M.	Res'l-tant.	MEAN		
					°	°	°	°													°						
1	29.777	29.812	29.822	29.8042	68.9	69.4	68.9	62.45	— 3.87	.316	.223	.338	.286	63	31	68	53	N W	N W	W	N 56 W	13.0	14.4	4.2	9.29	10.15	...	...
2	.831	.703	.699	.7540	66.4	69.4	54.2	61.20	— 5.30	.336	.282	.290	.305	74	39	68	58	N W	E	N E	S 74 E	2.4	7.4	2.7	2.68	4.98	...	...
3	.655	.603	.528	.5943	55.3	70.5	64.0	63.25	— 3.45	.299	.403	.427	.381	68	64	71	65	N E	E	N E	N 68 E	4.7	8.0	3.3	5.86	6.63	...	...
4	.490	.490	.560	.5190	63.0	84.0	76.0	74.25	+ 7.36	—	—	—	—	—	—	—	—	E	S	N	S 7 W	2.6	12.0	3.2	3.34	5.44	.180	...
5	.675	.694	.691	.6857	68.3	71.6	65.4	68.00	+ 0.93	.569	.555	.607	.579	82	72	97	85	N E	N E	S E	N 37 E	1.0	3.5	1.8	2.40	3.48	.260	...
6	.689	.611	.698	.6678	63.2	70.5	65.0	66.48	— 0.77	.543	.644	.559	.582	94	86	91	90	S W	E	N	N 17 E	0.4	8.4	4.7	1.04	3.97	.010	...
7	.801	.851	.687	.8520	63.6	73.7	65.8	67.27	— 0.10	.458	.572	.423	.474	78	69	67	70	N W	S	N W	N 66 W	6.4	8.2	5.2	1.45	5.08	...	...
8	.916	.899	.826	.8768	63.6	74.8	62.5	67.16	— 0.38	.458	.558	.460	.485	78	65	81	73	N	S	S E	N 16 E	8.0	7.0	2.4	0.88	5.14	...	...
9	.764	.608	.657	.6547	60.4	76.5	62.5	66.02	— 1.05	.475	.549	.501	.493	90	62	82	77	N E	S	S	S 14 E	0.8	4.8	2.0	1.80	3.24	...	...
10	.481	.356	.417	.4025	63.4	82.0	62.5	69.08	— 1.30	.640	.610	.291	.466	93	56	51	65	S	W	N W	S 85 W	3.8	20.0	17.0	7.50	10.22	...	...
11	.520	.552	.560	.5498	56.0	67.9	58.0	60.60	— 6.20	—	—	—	—	—	—	—	—	W	S	W	S 76 W	5.5	10.0	4.8	4.20	6.92	...	...
12	.584	.517	.440	.5017	52.8	71.5	58.2	62.75	— 5.25	.332	.433	.360	.380	83	56	74	67	W	S E	S E	S 20 E	2.0	10.0	3.0	3.41	4.81	...	...
13	.365	.352	.429	.3848	61.1	76.6	60.0	66.67	— 1.42	.442	.430	.396	.430	82	47	76	67	N E	W	N W	N 81 W	1.6	21.5	3.4	7.66	9.64	...	...
14	.440	.443	.435	.4375	55.8	72.8	60.4	64.38	— 3.80	.379	.441	.402	.418	85	55	76	70	N W	S	N E	S 4 E	3.8	9.5	4.4	2.66	5.15	...	...
15	.443	.398	.352	.3942	57.8	75.1	65.0	66.58	— 1.67	.402	.478	.408	.461	84	55	76	72	N E	E	E	N 88 E	1.2	9.2	3.2	3.67	4.37	...	...
16	.327	.341	.413	.3585	66.1	72.3	65.8	69.62	+ 1.35	.614	.694	.562	.623	95	87	88	86	S W	S	N W	N 88 W	4.0	3.0	10.4	2.30	6.50	.210	...
17	.469	.523	.450	.4803	64.3	70.5	64.0	66.30	— 1.55	.461	.433	.427	.455	76	58	72	69	N	S E	N E	N 59 E	6.0	10.4	4.8	2.80	7.70	...	...
18	.400	.450	.634	.5292	59.0	72.0	62.0	64.42	— 3.97	—	—	—	—	—	—	—	—	N	N	N W	N 20 W	7.0	18.0	7.0	8.66	9.43	.180	...
19	.756	.759	.695	.7368	57.1	74.1	58.5	64.38	— 4.03	.351	.384	.416	.357	75	45	85	66	N W	S	S W	S 14 W	3.4	10.0	2.8	2.26	6.60	...	...
20	.654	.556	.476	.5513	56.8	75.2	64.3	66.98	— 1.47	.355	.450	.473	.421	77	52	78	65	N	S	S W	S 10 W	0.2	11.5	3.0	3.54	5.67	...	...
21	.464	.465	.540	.4947	60.7	77.3	57.8	65.93	— 2.53	.376	.287	.354	.337	70	31	74	57	W	W	N	N 80 W	13.5	22.5	1.7	11.93	12.32	...	...
22	.496	.399	.363	.4183	59.3	79.5	66.5	68.60	+ 0.13	.463	.613	.538	.542	90	61	83	78	N E	S	W	S 8 W	0.8	17.0	3.4	5.70	7.35	...	...
23	.451	.500	.604	.5297	58.2	74.8	60.4	64.93	— 3.62	.325	.376	.353	.341	67	43	67	57	N W	N W	N W	N 64 W	7.0	11·2	4.6	6.35	7.87	...	...
24	.689	.699	.702	.6955	55.0	72.3	64.0	64.72	— 3.73	.313	.396	.465	.395	72	50	78	65	N W	S E	S	S 17 W	7.6	11.2	4.4	4.25	7.45	...	...
25	.700	.603	.628	.6568	60.0	78.0	71.0	70.77	+ 2.36	—	—	—	—	—	—	—	—	E	S	S	S 35 E	2.0	10.0	4.4	4.80	6.02	...	...
26	.597	.571	.661	.6145	67.9	76.2	68.7	72.28	+ 3.92	.636	.611	.496	.583	93	68	71	76	S W	W	N W	S 53 W	2.6	13.0	5.0	4·33	6.40	.070	...
27	.692	.668	.629	.6603	62.5	78.0	67.2	69.23	+ 0.87	.352	.266	.410	.346	61	27	61	51	N W	N W	S W	N 55 W	4.9	15.6	1.4	6.90	7.41	...	...
28	.603	.574	.548	.5740	64.3	77.3	65.8	69.87	+ 1.57	.449	.355	.495	.417	74	38	77	59	W	S	N	S 42 W	6.8	11.4	3.9	4.62	6.95	...	...
29	.493	.467	.466	.4762	60.7	75.9	68.3	69.37	+ 1.13	.376	.482	.615	.467	70	54	74	65	E	S E	S W	S 57 E	3.8	7.2	7.2	1.99	5.25	...	...
30	.509	.604	.719	.6255	65.0	78.9	55.3	65.78	— 2.42	.341	.359	.353	.336	55	36	81	55	W	N W	N W	N 56 W	10.6	12.0	8.0	9.84	10.83	...	...
31	.806	.789	.796	.7968	57.5	67.6	61.4	63.46	— 4.68	.323	.433	.317	.360	68	64	58	61	N	S	N	N 26 E	4.0	9.6	8.4	0.98	7.47	...	...
	29.5980	29.5820	29.5905	29.5896	60.46	74.36	63.17	66.67	— 1.34	.418	.456	.433	.435	78	54	75	67	...	...	...	...	4.56	11.21	4.70	...	6.78	1.810	...

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR JULY, 1875.

NOTE.—The monthly means of the Barometer and Temperature include Sunday observations. The daily *means*, excepting those that relate to the wind, are derived from six observations daily, namely, at 6 A.M., 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..... 29.942 at 8 a.m. on 8th. } Monthly range
Lowest Barometer..... 29.327 at 6 a.m. on 16th } 0.615.

Self-registering Ther.
- Maximum temperature.....88°0 on 26th. } Monthly range
- Minimum temperature.....46°4 on 11th } 41°6.
- Mean maximum temperature.....77°25. } Mean daily range
- Mean minimum temperature.....55°75. } 21°50.
- Greatest daily range.....28°1 from a.m. to p.m. of 11th.
- Least daily range.....12°6 from a.m. to p.m. of 17th.

Warmest day.....4th; mean temperature.....74°25
Coldest day.....11th; mean temperature.....60°60 } Difference=13°65.

Maximum Radiation
- Solar.....140°3 on 28th. } Monthly range
- Terrestrial.....27°2 on 11th. } 112.8.

Aurora observed on 2 nights, viz., 10th, and 13th.
Possible to see Aurora on 24 nights; impossible on 7 nights.
Raining on 6 days; depth, 1.810 inches; duration of fall 18.1 hours.
Mean of cloudiness, 0.43.

WIND.

Resultant direction S. 88° W.; resultant velocity 1.69 miles.
Mean velocity 6.78 miles per hour.
Maximum velocity 23.5 miles, from 11 a.m. to noon of 21st.
Most windy day 21st; mean velocity 12.32 miles per hour.
Least windy day 5th; mean velocity 3.43 miles per hour.
Most windy hour 2 p.m.; mean velocity 11.21 miles per hour.
Least windy hour 11 p.m.; mean velocity 4.18 miles per hour.

Fog on 5th and 26th.
Thunder on 5th, 6th and 16th.
Lightning on 3rd, 4th, 5th, 6th, 9th, 15th and 16th.
Solar halos on 1st and 31st.

COMPARATIVE TABLE FOR JULY.

YEAR.	TEMPERATURE. Mean.	Excess above aver'ge	Maximum.	Minimum	Range.	RAIN. No. of days.	Inches.	SNOW. No. of days.	Inches.	WIND. Resultant. Direction.	Vel.	Mean Velocity.
	°	°	°	°	°					°		
1847	68.0	+ 0.6	87.0	43.2	43.8	18	3.355	...	...	...	...	0.19h.
1848	65.5	— 1.9	82.2	44.1	38.1	10	1.890	...	...	N 14 W	0.16	4.94mls
1849	68.4	+ 1.0	88.6	45.2	43.4	4	3.415	...	...	S 5 W	0.75	3.52
1850	68.9	+ 1.5	86.2	51.6	34.6	12	5.270	...	...	N 81 E	0.59	4.56
1851	65.0	— 2.0	82.7	46.5	36.2	12	3.625	...	...	N 60 W	0.88	4.13
1852	66.8	— 0.6	90.1	48.5	41.6	8	4.025	...	...	N 43 W	0.93	3.33
1853	65.6	— 1.8	91.3	41.6	49.7	10	0.915	...	...	S 58 E	0.24	3.69
1854	72.5	+ 5.1	98.0	42.5	55.5	9	4.805	...	...	S 49 W	0.37	4.03
1855	67.9	+ 0.5	92.8	49.2	43.6	13	3.245	...	...	S 19 W	0.72	6.47
1856	69.9	+ 2.5	96.6	49.5	47.1	8	1.120	...	...	N 79 W	1.57	5.84
1857	67.8	+ 0.4	86.6	47.0	39.6	5	3.475	...	...	S 68 E	0.81	4.74
1858	67.9	+ 0.5	85.0	52.0	33.0	13	3.072	...	...	N 15 E	1.13	5.76
1859	66.9	— 0.5	88.0	44.7	43.3	12	2.611	...	...	N 56 W	1.48	5.81
1860	63.9	— 3.5	88.0	43.8	44.2	13	4.356	...	...	N 60 W	2.15	7.29
1861	65.4	— 2.0	84.5	47.0	37.5	16	2.635	...	...	N 74 W	1.42	4.66
1862	66.7	— 0.7	95.5	48.2	47.3	15	5.344	...	...	S 89 W	1.42	5.80
1863	67.6	+ 0.2	83.5	48.0	35.5	15	3.408	...	...	N 18 W	0.40	3.89
1864	69.7	+ 2.3	90.2	49.0	41.2	8	1.332	...	...	N 61 W	2.23	6.00
1865	65.0	— 2.4	83.0	45.8	37.2	11	2.470	...	...	N 86 W	2.28	5.34
1866	70.4	+ 3.0	94.0	47.8	46.2	16	5.390	...	...	S 79 W	0.94	4.17
1867	68.2	+ 0.8	94.0	48.2	45.8	12	1.965	...	...	N 48 W	1.40	5.45
1868	76.8	+ 8.4	93.4	59.0	34.4	5	0.510	...	...	S 87 E	0.72	4.66
1869	64.5	— 2.9	84.9	49.8	35.1	13	4.610	...	...	S 67 W	2.01	5.07
1870	68.8	+ 1.4	87.4	48.0	39.4	16	1.896	...	...	S 78 W	1.59	4.82
1871	66.0	— 1.4	88.4	47.8	40.6	11	1.255	...	...	N 88 W	1.55	5.67
1872	70.2	+ 2.8	96.0	52.2	43.8	13	2.297	...	...	N 67 W	1.19	3.56
1873	68.4	+ 1.0	87.5	47.5	40.0	11	1.915	...	...	S 75 W	1.71	6.11
1874	67.9	+ 0.5	83.5	44.4	39.1	11	3.350	...	...	N 58 W	1.26	6.55
1875	66.6	— 0.8	88.0	46.4	41.6	6	1.810	...	...	S 88 W	1.69	6.78
Results to 1874	67.42	...	88.89	47.58	41.31	10.74	3.186	...	...	N 77 W	0.83	5.03
Excess for '75	— 0.85	...	— 0.89	— 1.18	+ 0.29	— 4.74	— 1.376	..	...	...	...	+ 1.75

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

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

Day.	Barom. at temp. of 32°.				Temp. of the Air.				Excess of Mean above Normal	Tension of Vapour.				Humidity of Air.				Direction of Wind.				Velocity of Wind.					Rain in Inches.	Snow in Inches.
	6 A.M.	2 P.M.	10 P.M.	Mean.	6 A.M.	2P M.	10 PM	MEAN		6 A.M.	2 P.M.	10 P.M	M'N.	6 A.M.	2 P.M.	10 P.M.	M'N.	6 A.M.	2 P.M.	10 P.M.	Resul-tant.	6 A.M.	2 P.M.	10 P.M.	Re-sult't	MEAN		
					°	°	°	°	°																		
1	29.860	29.838	29.830	29.8387	54.0	61.8	56.5	57.80	—10.26	—	—	—	—	—	—	—	—	N E	E	N	N 56 E	5.2	7.6	6.0	6.56	7.28	...	
2	.810	.809	.749	.7852	55.7	67.0	62.9	62.65	— 5.37	.284	.367	.417	.356	63	54	73	63	N E	E	E	N 68 E	12.2	20.5	9.0	10.44	10.97	...	
3	.692	.670	.656	.6768	57.8	58.9	58.9	58.60	— 9.32	.449	.458	.482	.469	94	92	97	95	E	N E	N E	N 68 E	11.0	19.0	4.2	7.90	8.42	.200	
4	.675	.644	.612	.6377	58.6	69.0	61.1	63.43	— 4.42	.474	.646	.504	.505	96	77	93	87	W	S E	E	S 33 E	4.0	9.0	2.4	2.12	4.29	.030	
5	.588	.554	.483	.6352	61.8	71.2	63.2	65.82	— 1.93	.526	.559	.543	.550	94	73	94	87	S	S E	E	S 23 E	4.0	9.0	3.8	3.37	5.04	.010	
6	.318	.193	.216	.2350	65.0	66.8	62.9	65.03	— 2.63	.532	.604	.479	.536	86	92	84	87	S E	S E	S	S 46 E	9.0	15.0	11.1	9.78	10.63	.400	
7	.220	.335	.415	.3323	61.1	63.2	61.1	62.10	— 5.45	.491	.483	.479	.482	91	84	89	86	S	S	S W	S 10 W	10.5	17.0	8.2	11.28	11.88	...	
8	.460	.510	.550	.5155	59.0	73.5	62.5	64.48	— 2.99	—	—	—	—	—	—	—	—	S W	S W	W	S 64 W	4.5	9.6	2.2	7.23	7.63	Inap.	
9	.534	.514	.506	.5162	56.8	75.2	59.3	64.47	— 2.82	.439	.357	.454	.433	95	40	90	74	W	S W	S	S 68 W	1.6	5.5	1.8	4.04	5.15	...	
10	.503	.471	.432	.4625	57.5	75.9	65.1	67.56	+ 0.42	.441	.571	.521	.532	93	63	86	79	S	S E	N E	S 30 E	1.4	11.9	7.2	3.28	5.73	...	
11	.381	.387	.423	.4002	65.0	77.0	66.8	70.10	+ 3.05	.519	.616	.576	.578	84	66	88	79	N E	E	E	N 77 E	3.8	10.4	1.2	5.61	6.87	Inap.	
12	.462	.472	.483	.4742	65.8	74.8	68.6	70.16	+ 3.25	.602	.631	.634	.631	95	73	90	86	E	S E	S E	S 56 E	1.8	8.7	2.0	4.16	4.83	Inap.	
13	.513	.500	.520	.5127	65.1	77.0	65.4	69.25	+ 2.50	.531	.527	.501	.516	86	57	80	74	S W	S	W	S 4 E	2.8	14.0	0.6	5.55	6.24	...	
14	.546	.516	.532	.5277	67.8	76.6	67.9	68.40	+ 1.82	.426	.549	.507	.500	88	59	74	72	W	S	W	S 4 W	1.2	13.0	1.8	4.44	5.00	...	
15	.530	.466	.420	.4698	57.5	74.4	69.0	68.40	+ 1.07	—	—	—	—	—	—	—	—	N W	•	E	N 80 E	1.0	14.8	2.0	3.74	5.80	...	
16	.425	.412	.438	.4268	64.3	79.1	64.7	69.38	+ 3.13	.568	.618	.523	.564	94	62	86	79	Calm.		W	S 4 E	0.0	11.4	2.6	3.88	5.62	Inap.	
17	.466	.450	.468	.4643	59.6	78.4	66.8	68.75	+ 2.68	.461	.463	.508	.502	90	47	77	73	W		W	S 3 E	2.2	12.6	2.0	3.19	4.92	.010	
18	.461	.436	.431	.4357	59.6	72.6	65.0	66.90	+ 0.95	.499	.527	.506	.514	98	66	82	79	N W		N W	S 84 W	2.4	7.6	14.0	0.77	5.83	.110	
19	.427	.435	.491	.4613	63.2	70.1	60.4	64.45	— 1.23	.503	.538	.488	.510	87	73	93	85	N W	S	W	N 70 W	4.4	7.6	4.8	3.92	5.74	.020	
20	.550	.544	.591	.5683	59.3	72.6	64.3	63.97	— 1.53	.441	.513	.528	.482	87	64	86	81	W	S	S W	S 24 W	5.4	11.8	4.6	4.61	5.90	.010	
21	.622	.610	.719	.6637	59.6	69.7	60.7	63.47	— 1.82	.461	.551	.497	.500	90	76	94	86	S W	S E	S W	S 24 W	1.6	10.0	3.8	5.05	6.90	1.050	
22	.770	.820	.930	.8500	53.6	66.0	54.0	57.72	— 7.33	—	—	—	—	—	—	—	—	W	W	N W	N 72 W	6.8	16.5	12.3	10.02	10.67	.040	
23	.994	.979	.959	.9787	49.5	64.3	54.6	57.33	— 7.52	.269	.228	.331	.314	70	54	77	67	N W	E	N	N 21 E	7.0	9.6	5.7	4.87	7.25	...	
24	.991	.961	.941	.9640	55.7	66.5	56.8	60.38	— 4.22	.330	.347	.344	.348	86	53	74	67	N	N E	N E	N 34 E	7.2	10.2	4.6	5.91	7.38	...	
25	.915	.921	.853	.9038	54.6	69.4	60.0	62.28	— 2.07	.284	.381	.358	.359	66	53	69	64	N E	E	N E	N 68 E	6.4	11.4	6.0	6.58	7.00	...	
26	.868	.839	.824	.8420	55.3	73.0	62.2	64.80	+ 0.70	.353	.399	.426	.409	81	49	76	68	N E	E	N E	N 74 E	4.6	10.0	4.4	6.42	7.12	...	
27	.841	.813	.799	.8150	59.0	75.1	65.0	67.57	+ 3.73	.432	.521	.451	.485	86	60	73	73	N	S E	N E	N 80 E	6.0	8.0	5.2	4.24	5.67	...	
28	.821	.760	.707	.7653	60.4	78.4	63.2	68.72	+ 5.15	.488	.623	.543	.531	93	54	93	78	N E	S E	E	S 84 E	2.2	5.4	3.5	2.70	4.05	...	
29	.700	.660	.635	.6608	56.5	81.5	74.0	71.13	+ 7.81	—	—	—	—	—	—	—	—	N E	S E	N	S 35 E	0.6	9.5	8.3	1.76	5.50	...	
30	.698	.626	.629	.6476	64.0	76.6	65.0	69.48	+ 6.42	.453	.445	.269	.401	76	48	43	56	W	S	N	N 45 W	3.4	10.0	9.2	3.35	7.71	...	
31	.689	.667	.685	.6805	55.3	78.4	62.2	66.67	+ 4.07	.353	.394	.440	.397	81	40	78	63	W	S E	E	S 54 E	0.8	9.0	4.8	1.90	5.26	...	
	29.6245	29.6067	29.6105	29.6140	58.96	72.08	62.91	65.21	— 0.75	.448	.493	.474	.477	87	63	82	76	.....	.....	.....	.....	4.35	10.86	5.11	.....	6.70	1.880	...

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR AUGUST, 1875.

NOTE.—The monthly means of the Barometer and Temperature include Sunday observations. The daily means, excepting those that relate to the wind, are derived from six observations daily, namely, at 6 A.M., 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 .....30.015 at 8 a.m. on 23rd
Lowest barometer .....29.198 at 2 p.m. on 6th
} Monthly range= 0.817.

Self-registering Ther.

Maximum temperature .....81°9 on 29th
Minimum temperature .....48°0 on 23rd
} Monthly range= 33°9.

Mean maximum temperature .....74°39
Mean minimum temperature.....56°75
} Mean daily range= 17°64.

Greatest daily range.....27°7 from a.m. to p.m. of 20th.
Least daily range .....5°9 from a.m. to p.m. of 6th.

Warmest day ..... 29th; mean temperature.....71°18
Coldest day.....23rd; mean temperature.....57°38
} Difference=13°8C.

Maximum Solar.....143°2 on 9th
Radiation Terrestrial .....35°0 on 23rd
} Monthly Range= 108°0.

No Aurora observed.

Possible to see Aurora on 19 nights; impossible on 12 nights.

Raining on 14 days; depth, 1.880 inches; duration of fall, 41.3 hours.

Mean of cloudiness, 0.51.

WIND.

Resultant direction, S 56° E.; resultant velocity, 1.58 miles.

Mean velocity, 6.70 miles per hour.

Maximum velocity, 20.5 miles, from 2 to 3 p.m. of 2nd.

Most windy day, 7th; mean velocity, 11.88 miles per hour.

Least windy day, 4th; mean velocity, 4.29 miles per hour.

Most windy hour, 2 p.m.; mean velocity, 10.86 miles per hour.

Least windy hour, 3 a.m.; mean velocity, 4.48 miles per hour.

Fog on the 18th, 27th, and 28th.

Solar halo on the 10th.

Lightning on 6th, 10th, 11th, 15th, 21st, and 27th.

Thunder on 6th, 15th, and 21st.

Considerable number of Shooting Stars observed on 10th and 31st.

COMPARATIVE TABLE FOR AUGUST.

YEAR.	TEMPERATURE. Mean.	Excess above average	Maximum.	Minimum.	Range.	RAIN. No. of days.	Inches.	SNOW. No. of days.	Inches	WIND. Resultant. Direction.	Velo'y	Mean Velocity
	°		°	°	°					°		
1847	65.1	— 1.1	82.6	44.6	38.0	10	2.140	...	...	...	...	0.19 h.
1848	69.2	+ 3.0	87.0	48 7	38.3	8	0.855	...	...	S 21 E	0.98	4.55mls
1849	66.3	+ 0.1	79.0	49.0	30.0	10	4.970	...	...	N 71 W	0.60	3.76
1850	66.8	+ 0.6	85.0	41.0	44.0	13	4.355	...	...	N 15 W	0.35	4.46
1851	64.6	— 2.6	79.8	42.0	37.8	10	1.360	...	...	N 63 W	0.40	4.63
1852	65.9	— 0.3	81.2	45.8	35.4	9	2.695	...	...	N 70 E	0.56	3.30
1853	68.6	+ 2.4	94.9	42.5	52.4	11	2.575	...	...	S 36 E	0.30	4.26
1854	68.0	+ 1.8	99.2	45.6	53.6	5	0.455	...	...	N 64 W	1.76	4.60
1855	64.1	— 2.1	83.5	40.0	43.5	7	1.465	...	...	N 63 W	1.04	6.97
1856	63.6	— 2.6	82.7	41.5	41.2	12	1.680	...	...	N 50 W	2.88	7.03
1857	65.3	— 0.9	88.2	46.0	42.2	13	5.266	...	...	N 77 W	1.51	6.36
1858	67.6	+ 1.4	84.0	44.0	40.0	11	3.890	...	...	N 69 W	1.57	6.50
1859	66.6	+ 0.4	82.2	45.8	36.4	11	3.900	...	...	N 36 W	1.62	5.96
1860	64.5	— 1.7	87.0	46.8	40.2	14	3.405	...	...	N 70 W	1.83	5.80
1861	65.5	— 0.7	85.2	47.0	38.2	15	2.953	...	...	N 8 E	0.46	4.21
1862	67.6	+ 1.4	89.5	42.8	46.7	15	3.483	...	...	N 78 W	1.67	5.96
1863	66.6	+ 0.4	88.0	42.4	45.6	12	2.208	...	...	S 61 W	1.80	4.89
1864	68.6	+ 2.4	94.0	47.0	47.0	16	5.060	...	...	N 70 W	1.38	4.75
1865	65.2	— 1.0	87.8	44.4	43.4	8	1.990	...	...	N 60 W	1.55	5.07
1866	66.8	— 5.4	77.0	42.4	34.6	14	4.457	...	...	N 59 W	2.58	5.16
1867	68.1	+ 1.9	95.2	42.2	53.0	10	2.440	...	...	N 76 W	1.25	4.52
1868	67.2	+ 1.0	84 4	46.8	37.6	13	1.562	...	...	S 58 W	1.01	6.15
1869	63.6	— 2.6	89.0	43.5	45.5	11	4.278	...	...	N 42 W	1.98	5.13
1870	67.1	+ 0.9	84.0	40.0	44.0	14	3.422	...	...	N 75 W	1.80	5.92
1871	67 4	+ 1.2	89.5	46.0	43.5	8	2.800	...	...	N 52 W	1.09	6.86
1872	69.5	+ 3.3	91.8	51.0	40.8	19	2.405	...	...	N 51 W	1.43	3.78
1873	66.6	+ 0.4	85.0	46.4	38.6	12	1.913	...	...	N 84 E	1.35	5.56
1874	67.1	+ 0.9	95.0	48.0	47.0	4	0.380	...	...	N 23 E	0.70	6.16
1875	65.2	— 1.0	81.9	48.0	33.9	14	1.880	...	...	...	...	6.70
Results to 1874.	66.22	...	89.77	46.47	43.30	10.89	2.893	...	...	N 61 W	0.99	5.27
Excess for '75.	— 1.01	...	— 7.87	+ 1.53	— 9.40	+ 3.11	— 1.013	...	...	...	...	+ 1.43

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

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

Day.	Barom. at temp. of 32°.				Temp. of the Air.				Excess of Mean above aver'ge	Tension of Vapour.				Humidity of Air.				Direction of Wind.				Velocity of Wind.					Rain in Inches.	Snow in Inches.
	6 A.M.	2 P.M.	10 P.M.	MEAN.	6 A.M	2 P.M.	10 PM	MEAN		6 A.M.	2 P.M.	10 P.M.	M'N	6 A.M.	2 P.M.	10 P.M.	M'N.	6 A. M.	2 P.M.	10 P.M.	Res'l-tant.	6 A.M.	2 P.M.	10 P.M	Res'l-tant.	MEAN		
					°	°	°	°													°						
1	29.731	29.699	29.658	29.6945	66.0	80.6	66.5	69.30	+ 6.76	.389	.538	.507	.493	87	52	74	70	N	S E	S E	S 80 E	0.8	8.4	1.4	3.68	4.68	...	...
2	.633	.592	.544	.5893	66.8	75.9	69.4	71.55	+ 9.30	.604	.744	.703	.636	92	83	93	89	Calm.	S W	N W	S 40 W	0.0	8.5	4.8	2.63	3.87	.360	...
3	.621	.552	.218	.3460	67.9	73.0	68.7	70.40	+ 8.42	.590	.731	.636	.661	86	90	93	89	N E	E	S W	S 64 E	5.2	11.0	6.0	2.46	6.45	...	...
4	.253	.388	.541	.4020	65.4	60.5	52.1	62.40	+ 0.72	.581	.369	.397	.426	93	57	85	76	S W	W	W	S 81 W	11.4	26.0	5.4	14.41	15.08	...	...
5	.590	.430	.420	.4808	53.0	78.5	64.5	66.73	+ 5.31	—	—	—	—	—	—	—	—	S W	S W	W	S 40 W	3.4	14.0	3.6	7.34	8.05	...	...
6	.520	.521	.655	.5702	57.1	76.2	57.1	61.27	+ 3.22	.398	.315	.362	.351	82	36	72	61	S W	W	N W	N 39 W	4.8	23.5	9.0	4.31	11.80	...	...
7	.739	.712	.650	.7012	55.3	66.1	60.0	61.76	+ 1.03	.341	.315	.426	.379	78	49	81	70	N	S	S W	S 1 W	6.5	7.8	3.8	1.22	6.33	...	...
8	.643	.628	.607	.6185	57.5	78.8	63.2	67.93	+ 7.58	.441	.457	.423	.436	93	46	70	66	S W	S W	S W	S 33 W	3.9	10.0	4.2	6.75	6.83	Insp.	...
9	.668	.597	.437	.5482	60.0	78.4	66.9	69.02	+ 9.63	.468	.593	.621	.566	90	60	87	79	S	S	S	S 11 W	2.8	6.8	9.0	3.82	4.08	.060	...
10	.016	.823	.070	.6238	57.1	57.8	46.3	53.73	— 5.87	.409	.211	.228	.279	87	44	67	68	N	N	N	N 21 W	13.5	18.4	2.8	12.78	13.22	...	...
11	30.062	30.027	.045	30.0025	41.6	55.3	43.1	49.78	— 9.42	.173	.164	.248	.216	65	38	76	62	N	E	N E	N 51 E	5.6	9.2	7.0	6.18	7.59	...	...
12	29.900	29.789	.860	29.8148	48.0	64.7	50.0	56.12	— 2.70	—	—	—	—	—	—	—	—	N E	S	S W	S 26 E	4.4	13.0	2.0	5.03	7.75	...	...
13	.946	.903	.905	.9628	46.3	60.1	52.8	56.92	— 1.50	.232	.399	.344	.351	90	62	77	76	W	S	N W	S 4 W	4.4	9.0	1.6	2.61	4.19	...	...
14	.979	.923	.859	.9163	56.4	64.7	58.9	60.72	+ 2.70	.371	.357	.344	.358	82	58	68	68	N	S	S	S 2 E	1.0	7.0	2.0	1.06	3.45	.100	...
15	.756	.665	.696	.6612	53.9	64.7	58.9	59.58	+ 1.97	.371	.443	.492	.457	89	72	96	87	N W	S	N E	S 63 W	1.2	2.0	0.8	0.45	1.86	1.360	...
16	.476	.314	.382	.3885	59.5	49.9	41.2	50.53	— 6.69	.476	.336	.313	.345	97	93	97	94	N E	N E	N	N 45 E	12.6	17.6	9.0	9.82	10.73	...	...
17	.463	.547	.702	.5815	42.7	51.0	42.3	45.58	—11.20	.251	.221	.206	.213	91	53	77	71	N W	N	N W	N 30 W	11.6	17.8	10.0	11.56	11.84	...	...
18	.710	.634	.537	.6189	42.0	52.4	42.7	46.05	—10.32	.206	.221	.220	.210	76	57	79	68	N W	S	N E	N 26 W	4.4	8.0	3.6	0.59	4.67	.180	...
19	.400	.295	.230	.2976	42.0	54.0	50.6	49.78	— 6.17	—	—	—	—	—	—	—	—	E	E	S	S 81 E	13.4	13.4	13.5	11.11	12.01	.050	...
20	.257	.332	.590	.4135	42.0	53.1	41.6	46.83	— 8.72	.260	.200	.233	.268	97	73	83	84	S W	S W	W	S 70 W	4.4	10.2	7.6	7.74	10.16	...	...
21	.745	.785	.805	.7822	40.9	48.6	38.4	43.63	—11.47	.220	.166	.205	.198	86	48	75	71	N W	N W	N W	N 41 W	6.8	6.6	5.8	5.97	6.20	...	...
22	.849	.840	.898	.8683	33.3	49.5	37.6	41.17	—13.52	.181	.260	.195	.214	95	73	88	82	N W	N	N W	N 68 W	3.0	5.4	5.0	4.26	4.84	...	...
23	.933	.906	.902	.9167	32.6	57.8	45.2	47.43	— 0.83	.149	.287	.264	.245	80	60	76	73	N W	S	S W	S 23 W	2.0	11.2	3.0	5.56	7.47	...	...
24	.893	.781	.716	.7878	39.4	62.5	51.3	52.05	— 1.75	.222	.352	.290	.296	91	62	70	76	S W	S	S W	S 17 W	3.0	14.5	3.0	7.30	7.71	...	...
25	.018	.492	.520	.6133	45.2	64.6	44.5	50.09	— 3.33	.274	.352	.309	.313	90	82	93	88	S W	N W	N W	W	2.0	11.0	3.6	5.01	7.64	.010	...
26	.630	.476	.427	.4725	42.0	68.0	64.6	62.10	— 0.00	—	—	—	—	—	—	—	—	N W	W	W	S 80 W	4.2	17.0	12.5	8.57	9.48	...	...
27	.427	.202	.479	.4087	48.5	71.5	63.9	50.18	+ 6.58	.273	.291	.368	.312	80	37	85	65	S W	W	W	S 77 W	3.8	26.5	5.0	10.61	12.57	.100	...
28	.670	.741	.762	.7268	47.0	52.1	40.2	46.55	— 5.63	.292	.276	.234	.256	91	71	84	81	N E	S E	N E	N 61 E	8.6	10.6	5.4	4.90	7.84	Insp.	...
29	.673	.599	.328	.4823	40.2	47.0	44.8	44.77	— 6.98	.200	.234	.273	.241	81	73	92	82	N E	N E	N E	N 48 E	8.0	10.0	16.0	10.36	10.72	.250	...
30	.102	.233	.358	.2438	51.3	50.6	38.7	46.82	— 4.87	.352	.226	.185	.240	93	61	78	75	S W	W	N W	S 74 W	12.2	24.0	5.0	9.06	13.60	.140	...
	29.0438	29.6093	29.6210	29.6244	49.66	61.98	51.68	55.46	— 1.79	.337	.351	.347	.340	87	61	82	76	.....	...	...	...	5.63	12.65	6.75	...	8.09	2.820	...

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

Highest Barometer.....30.082 at 8 a.m. on 11th. } Monthly range
Lowest Barometer.....29.102 at 6 a.m. on 30th. } 0.980.

Self-registering Ther.
- Maximum temperature.....84°5 on 2nd. } Monthly range
- Minimum temperature.....32.0 on 23rd. } 52°5.
- Mean maximum temperature.....65°45 } Mean Daily range
- Mean minimum temperature.....46°21 } 19°24.
- Greatest daily range.....31°8 from a.m. to p.m. of 5th.
- Least daily range.....9°7 from a.m. to p.m. of 29th.

Warmest day.....2nd; mean temperature.....71°55 } Difference=30°38.
Coldest day.....22nd; mean temperature.....41°17 }

Maximum Radiation { Solar.....135°2 on 2nd. } Monthly range
Terrestrial.....19.8 on 22nd. } 115°4.

Aurora observed on 6 nights, viz., 2nd, 3rd, 4th, 8th, 20th and 30th.

Possible to see Aurora on 20 nights; impossible on 10 nights.

Raining on 13 days; depth, 2.820 inches; duration of fall, 63.9 hours.

Mean of cloudiness, 0.54.

WIND.

Resultant direction, S. 83° W.; resultant velocity, 1.89 miles.

Mean velocity, 8.09 miles per hour.

Maximum velocity, 27.0 miles, from noon to 1 p.m., of 4th.

Most windy day, 4th; mean velocity, 15.08 miles per hour.

Least windy day, 15th; mean velocity, 1.86 miles per hour.

Most windy hour, 1 p.m.; mean velocity, 13.16 miles per hour.

Least windy hour, 4 a.m.; mean velocity, 4.09 miles per hour.

Fog on 13th, 15th, 23rd, 24th, 25th and 30th.

Dew on 8 mornings.

Frost on 11th, 20th, 22nd, 23rd, 24th and 29th. Ice on 29th.

Solar halo on 8th. Lunar halos on 11th and 18th.

Lightning on 3rd, 5th, 8th and 29th. Thunder on 2nd, 3rd and 29th.

Rainbow on 12th.

COMPARATIVE TABLE FOR SEPTEMBER.

YEAR.	TEMPERATURE. Mean.	Excess above Average.	Maximum.	Minimum.	Range.	RAIN. No. of days.	Inches.	SNOW. No. of days.	Inches.	WIND. Resultant. Direction.	Velocity.	Mean Velocity.
	°	°	°	°	°					°		
1847	55.6	— 2.6	74.5	35.0	39.5	15	6.665	...	...	...	...	0.33 lbs.
1848	54.2	— 4.0	80.4	28.1	52.3	11	3.115	...	...	N 71 W	2.38	5.81 mls.
1849	58.2	0.0	80.1	32.7	47.4	9	1.480	...	...	N 75 W	0.09	4.23
1850	56.5	— 1.7	76.0	29.5	46.5	11	1.735	...	...	S 65 W	1.02	4.78
1851	60.0	+ 1.8	86.3	32.0	54.3	9	2.065	...	...	N 14 E	1.03	5.45
1852	57.5	— 0.7	81.8	35.8	46.0	10	3.030	...	...	N 77 W	0.53	4.60
1853	58.8	+ 0.6	85.5	33.9	51.6	12	5.140	...	...	N	1.06	4.33
1854	61.0	+ 2.8	93.6	35.8	57.8	14	5.375	...	...	N 22 W	1.33	4.04
1855	59.5	+ 1.3	82.8	33.0	49.8	12	5.585	...	...	N 20 E	1.29	7.01
1856	57.1	— 1.1	76.4	35.0	43.4	13	4.105	...	...	S 79 W	1.98	6.53
1857	58.6	+ 0.4	82.0	34.1	47.9	11	2.640	...	...	N 68 W	1.01	6.65
1858	59.1	+ 0.9	81.4	35.6	45.8	8	0.735	...	...	S 74 W	1.53	5.69
1859	55.2	— 3.0	75.4	35.7	39.7	15	3.525	...	...	N 44 W	1.60	6.36
1860	55.3	— 2.9	75.8	28.7	47.1	14	1.959	...	...	N 71 W	2.63	5.70
1861	59.1	+ 0.9	78.8	37.1	41.7	17	3.607	...	...	N 71 W	1.39	4.81
1862	59.6	+ 1.4	79.4	39.0	40.4	9	2.344	...	...	N 69 W	1.07	5.11
1863	55.9	— 2.3	80.0	31.4	48.6	8	1.235	...	...	N 16 W	0.92	6.46
1864	56.4	— 1.8	73.0	37.8	35.2	11	2.508	...	...	N 38 W	1.89	7.06
1865	64.6	+ 6.3	90.5	42.0	48.5	12	2.460	...	...	S 56 E	0.47	4.12
1866	55.2	— 3.0	80.0	34.4	45.6	15	5.657	...	...	N 33 W	1.45	4.63
1867	57.9	— 0.3	87.0	31.8	55.2	9	1.226	...	...	N 37 W	1.98	5.43
1868	56.6	— 1.6	75.5	36.0	39.5	16	4.239	...	...	N 74 W	0.88	4.68
1869	60.7	+ 2.5	81.0	34.4	46.6	8	4.027	...	...	N 53 W	1.16	4.80
1870	61.8	+ 3.6	78.0	45.8	32.2	11	6.794	...	...	N 29 E	2.26	5.04
1871	54.8	— 3.4	81.8	34.0	47.8	8	1.290	...	...	N 74 W	1.72	5.60
1872	59.1	+ 0.9	84.4	38.2	46.2	16	2.526	...	...	N 79 W	1.47	6.24
1873	57.3	— 0.9	79.0	33.5	45.5	14	3.020	...	...	N 81 W	2.02	7.39
1874	63.3	+ 5.1	88.6	39.5	49.1	11	1.554	...	...	S 14 E	0.09	6.30
1875	55.5	— 2.7	84.5	32.0	52.5	13	2.820	...	...	S 88 W	1.89	8.09
Res'lts to 1874.	58.20	.....	81.10	34.99	46.11	11.29	3.597	..	...	N 56 W	1.09	5.53
Excess for 1875.	— 2.74	.....	+ 3.40	— 2.99	+ 6.39	+ 1.71	— 0.777	...	...	...	...	+ 2.56

METEOROLOGICAL REGISTER.

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

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

Day.	Barom. at temp. of 32°.				Temp. of the Air.				Excess of Mean Above Normal	Tension of Vapour				Humidity of Air.				Direction of Wind.				Velocity of Wind.				Rain in Inches.	Snow in Inches.
	6 A.M.	2 P.M.	10 P.M.	Mean.	6 A.M.	2 P.M.	10 P.M.	MEAN		6 A.M.	2 P.M.	10 P.M.	M'N.	6 A.M.	2 P.M.	10 P.M.	M'N.	6 A.M.	2 P.M.	10 P.M.	Res'tant.	6 A.M.	2 P.M.	10 P.M.	Res'tant.	MEAN.		
					°	°	°	°	°												°						
1	29.372	29.381	29.548	29.4403	38.6	50.3	38.3	41.03	— 0.95	.172	.221	.182	.195	79	60	78	75	N	N W	N W	N 26 W	5.6	10.8	5.8	7.79	8.06	...	...
2	.654	.773	.906	.8002	35.5	52.4	36.2	42.32	— 8.27	.176	.242	.194	.204	85	60	90	76	N W	W	N W	N 80 W	4.8	17.0	3.0	7.49	7.83	...	...
3	.920	.764	.680	.7707	38.5	57.5	48.5	48.83	— 1.39	—	—	—	—	—	—	—	—	N E	E	S W	S 5 W	3.0	14.0	3.4	5.42	7.89	...	...
4	.563	.690	.647	.6073	51.0	58.6	49.9	53.27	+ 3.42	.316	.416	.336	.365	92	86	93	89	S W	N	N	N 59 W	3.2	8.0	5.2	2.62	6.52	.060	...
5	.682	.762	.814	.7630	45.2	45.6	44.1	44.97	— 4.66	.296	.282	.251	.276	98	92	87	92	N E	E	N E	N 56 W	3.2	7.9	9.0	6.40	6.67	.020	...
6	.662	.357	.265	.4252	39.8	48.5	52.1	47.03	— 2.10	.225	.314	.342	.259	91	92	87	88	N E	N E	S W	N 68 E	18.0	17.5	21.0	8.74	16.00	1.310	...
7	.625	.673	.619	.6456	43.0	50.6	44.5	46.28	— 2.50	.247	.226	.267	.251	89	61	91	81	W	W	S	S 82 W	9.0	11.4	2.4	9.49	10.16	.020	...
8	.648	.574	.796	.6402	43.4	50.3	35.1	43.47	— 4.98	.269	.211	.165	.218	96	57	80	77	S W	W	N W	N 77 W	3.8	20.5	2.8	7.75	9.77	.090	...
9	.836	.714	.540	.6763	34.4	47.0	45.0	42.82	— 6.32	.183	.223	.256	.223	91	69	83	81	N	S E	E	N 81 E	4.4	11.0	10.8	5.69	8.14	.020	...
10	.350	.360	.450	.3867	46.0	52.0	36.5	44.65	— 3.23	—	—	—	—	—	—	—	—	S W	W	W	S 66 W	7.2	20.0	9.6	8.47	11.31	.020	...
11	.551	.676	.837	.7078	33.3	43.0	34.4	37.15	—10.37	.172	.184	.168	.168	90	65	79	76	W	N W	N W	N 54 W	3.8	13.8	8.2	8.27	8.67	...	...
12	.926	.984	30.028	.9893	31.1	38.4	29.7	33.13	—14.06	.169	.122	.131	.137	91	52	80	73	N W	N W	N W	N 54 W	6.8	14.0	3.4	7.00	7.03	...	...
13	30.034	.966	29.893	.9585	31.9	45.6	34.0	37.22	— 9.68	.168	.195	.166	.176	87	64	78	76	W	S E	S W	S 12 W	6.2	8.2	3.8	2.88	5.17	...	...
14	29.778	.598	.441	.5892	31.0	55.0	47.7	46.23	— 0.37	.165	.269	.244	.232	92	62	74	75	S E	S	S E	S 24 E	4.2	12.0	5.0	6.92	7.32	...	...
15	.277	.213	.211	.2287	47.0	48.8	47.0	47.72	+ 1.37	.252	.320	.303	.305	87	93	91	92	S E	S	S W	S 3 W	2.0	7.4	2.8	4.94	5.42	.160	...
16	.263	.338	.464	.3623	34.0	38.3	34.4	36.42	— 9.65	.220	.160	.174	.182	100	68	88	85	N W	N W	N W	N 45 W	12.4	20.0	10.0	14.16	14.67	Inap.	...
17	.430	.371	.330	.3715	31.0	38.0	41.5	37.65	— 8.14	—	—	—	—	—	—	—	—	S W	S E	N E	S 14 E	1.0	7.4	4.6	0.88	6.40	.090	3.3
18	.468	.683	.868	.6027	36.0	34.8	33.3	34.48	—11.05	.196	.146	.142	.161	92	72	74	80	N W	N W	N W	N 29 W	11.0	13.6	4.2	9.14	9.57	...	...
19	.033	.901	.853	.8567	32.2	42.7	39.8	38.47	— 6.80	.162	.179	.196	.179	89	65	80	77	W	S	S W	S 68 W	4.0	9.8	6.8	3.94	5.21	...	...
20	.773	.650	.555	.6448	37.3	57.1	48.4	47.60	+ 2.55	.195	.264	.246	.231	87	50	71	71	S W	S W	S W	S 40 W	4.2	12.5	6.0	8.63	8.73	...	...
21	.490	.486	.573	.5100	45.2	56.8	51.0	51.10	+ 6.36	.277	.300	.280	.285	92	65	75	76	S W	S	N W	S 50 W	7.3	9.4	4.6	4.18	6.37	...	...
22	.613	.547	.495	.5536	43.0	56.0	43.0	46.75	+ 2.18	.238	.322	.210	.248	86	72	76	77	N	S E	N E	N 70 E	5.8	3.8	1.1	2.28	4.53	...	...
23	.453	.407	.405	.4190	47.4	61.8	50.3	53.70	+ 0.38	.308	.346	.310	.314	94	62	85	77	S W	S W	S W	S 36 W	4.6	8.0	2.8	4.70	5.44	...	...
24	.376	.330	.310	.3325	45.6	62.0	48.0	51.33	+ 7.25	—	—	—	—	—	—	—	—	S W	S	S W	S 30 W	2.0	7.8	3.6	4.27	4.35	...	...
25	.476	.023	.631	.5770	46.3	49.6	44.6	46.82	+ 2.02	.241	.269	.246	.246	77	76	84	80	N W	N	E	N 21 W	13.5	5.8	17.0	4.90	10.23	Inap	...
26	.351	.173	.202	.2347	45.2	48.8	43.4	45.80	+ 2.22	.246	.320	.205	.255	81	92	73	82	E	S W	S W	S 88 E	22.5	7.9	12.0	6.45	14.42	.255	...
27	.173	.348	.612	.4035	38.7	42.3	36.2	38.70	— 4.68	.160	.193	.167	.171	68	71	78	72	S W	W	W	S 70 W	19.5	24.0	9.0	16.50	16.64	.010	...
28	.718	.606	.538	.6148	32.0	39.8	40.5	37.92	— 5.18	.167	.179	.208	.184	89	73	82	80	N	E	N E	N 61 E	1.0	16.5	16.5	7.61	9.32	...	...
29	.542	.494	.418	.4677	39.1	39.8	41.2	39.92	— 2.95	.215	.200	.235	.224	90	84	90	91	N E	E	E	N 68 E	5.7	16.0	10.0	11.55	11.73	.150	...
30	.009	.023	.230	.1002	50.3	48.1	38.7	44.08	+ 2.35	.337	.199	.151	.226	92	58	63	72	E	S W	W	S 36 W	7.2	32.0	17.6	7.81	17.08	.210	...
31	.260	.300	.400	.3283	35.0	37.6	39.0	33.50	— 8 90	—	—	—	—	—	—	—	—	W	W	W	S 88 W	17.5	19.0	17.0	19.93	20.08	...	0.5
	29.5521	29.537	29.5651	29.5529	39.73	48.28	41.55	43.23	— 3.06	.224	.242	.221	.228	89	70	81	80					7.24	13.00	7.90		9.31	2.415	3.8

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR OCTOBER, 1875.

NOTE.—The monthly means of the Barometer and Temperature include Sunday observations. The daily means, excepting those that relate to the wind, are derived from six observations daily, namely, at 6 A.M., 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 ..... 30.030 at mid. on 12th } Monthly range=
Lowest Barometer ..... 28.960 at 8 a.m. on 30th } 1.070.

Self-registering Ther.
- Maximum temperature ..... 63°0 on 23rd, 24th } Monthly range=
- Minimum temperature ..... 27.6 on 14th } 35°4
- Mean maximum temperature ..... 50°92 } Mean daily range=
- Mean minimum temperature ..... 35°88 } 15°04
- Greatest daily range ..... 25°5 from a.m. to p.m. of 14th.
- Least daily range ..... 4°5 from a.m to p.m of 5th.

Warmest day ..... 23rd; mean temperature 63°70 }
Coldest day ..... 12th; mean temperature 33°13 } Difference=20°57.

Maximum Radiation
- Solar ..... 118°0 on 2nd } Monthly range=
- Terrestrial ..... 11°2 on 12th } 106°8.

No Aurora observed.

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

Raining on 16 days; depth, 2.416 inches; duration of fall, 62.4 hours.

Snowing on 2 days; depth 3.8 inches; duration of fall 9.5 hours.

Mean of Cloudiness=0.69.

WIND.

Resultant direction, N. 85° W.; Resultant Velocity, 2.62 miles.

Mean Velocity, 9.31 miles per hour.

Maximum Velocity, 32.0 miles from 2 to 3 p.m. of 30th.

Most Windy day, 31st; Mean Velocity, 20.03 miles per hour.

Least Windy day, 24th; Mean Velocity, 4.35 miles per hour.

Most Windy hour, Noon; Mean Velocity, 13.17 miles per hour.

Least Windy hour, 4 a.m.; Mean Velocity, 7.14 miles per hour.

First Snow of season on 17th.

Solar halos on 20th, 23rd and 24th.

Lunar halo on 14th.

Rainbow on 27th.

Fog on 6th, 9th, 12th, 14th and 16th.

COMPARATIVE TABLE FOR OCTOBER.

YEAR.	TEMPERATURE. Mean.	Excess above Average.	Maximum.	Minimum.	Range.	RAIN. No. of days.	Inches.	SNOW. No. of days.	Inches	WIND. Resultant. Direction.	Velocity	Mean Velocity.
	°	°	°	°	°					°	...	...	lbs.
1847	44.0	— 1.0	61.6	20.4	41.2	13	4.390	2	Inap	...	...	0.19
1848	46.3	+ 0.4	61.8	24.5	37.3	11	1.550	0	0.0	N 54 W	1.24	4.60
1849	45.3	— 0.6	68.9	24.2	34.7	13	5.965	1	Inap	N 12 W	1.27	7.76
1850	45.4	— 0.5	66.7	22.4	44.3	10	2.085	0	0.0	N 66 W	1.10	6.30
1851	47.4	+ 1.5	66.2	25.2	41.0	10	1.080	2	0.3	S 72 W	1.00	4.39
1852	48.0	+ 2.1	70.7	23.8	46.9	12	5.250	0	0.0	N 5 E	1.19	4.47
1853	44.4	— 1.5	64.7	23.4	41.3	10	0.875	2	Inap.	S 88 W	1.74	4.77
1854	49.6	+ 3.6	76.4	26.4	49.0	15	1.495	3	Inap	N 45 W	1.62	4.57
1855	45.4	— 0.5	68.0	22.6	45.4	14	2.485	5	0.8	N 82 W	4.91	9.88
1856	45.3	— 0.6	71.4	23.0	48.4	10	0.875	2	0.1	N 76 W	2.15	6.07
1857	45.4	— 0.5	64.6	26.5	37.6	10	1.040	2	0.2	N 19 W	2.93	6.24
1858	48.8	+ 2.9	76.3	31.5	44.8	17	1.797	1	Inap	N 34 W	0.30	5.96
1859	43.0	— 2.9	69.8	22.3	47.5	11	0.940	4	Inap	N 68 W	5.04	8.12
1860	47.3	+ 1.4	68.0	28.4	39.6	16	1.618	1	Inap	N 9 W	2.00	6.93
1861	48.7	+ 2.8	71.0	29.0	42.0	16	1.993	1	Inap.	N 61 W	1.06	5.96
1862	48.7	+ 2.8	76.6	26.2	50.4	19	2.684	2	0.5	N 78 W	2.89	6.53
1863	45.9	0.0	66.4	30.5	35.9	16	2.522	0	0.0	S 71 W	0.48	6.16
1864	45.2	— 0.7	67.0	28.0	39.0	22	3.321	1	Inap	N 60 W	3.17	6.66
1865	44.5	— 1.4	71.4	21.6	49.8	17	2.705	3	4.5	N 36 W	3.16	7.26
1866	49.1	+ 3.2	71.0	31.8	39.2	11	2.470	1	Inap	N 30 W	0.84	5.53
1867	49.0	+ 4.0	76.4	31.0	44.4	11	1.970	0	0.0	N 45 W	1.61	5.73
1868	42.4	— 3.5	67.6	24.0	43.6	10	1.365	2	2.0	N 89 W	1.27	7.10
1869	42.3	— 3.6	69.8	18.7	51.1	8	0.962	7	2.3	N 89 W	3.72	6.73
1870	50.0	+ 4.1	68.5	30.2	38.3	16	2.690	0	0.0	N 85 W	1.81	7.11
1871	48.3	+ 2.4	72.2	28.6	43.6	13	1.185	0	0.0	S 66 W	3.75	7.84
1872	45.6	— 0.3	70.0	25.2	44.8	14	3.288	1	Inap	N 18 W	2.22	4.59
1873	45.7	— 0.2	69.2	24.2	45.0	13	2.155	3	0.2	W	1.77	7.81
1874	47.5	+ 1.6	67.0	24.8	42.2	11	1.418	2	Inap	N 70 W	2.75	6.40
1875	43.2	— 2.7	63.0	27.6	35.4	15	2.416	2	3.8	N 88 W	2.52	9.31
Results to 1874.	45.89	.....	68.91	25.66	43.25	12.51	2.380	1.83	0.79	N 63 W	1.84	6.20
Excess for 1875	— 2.66	.....	— 5.91	+ 1.94	— 7.85	+ 2.49	+ 0.035	+ 0.17	+ 3.01	...	...	+ 3.11

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

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

Day.	Barom. at temp. of 32°.				Temp. of the Air.				Excess of Mean above Average	Tension of Vapour.				Relative Humidity				Direction of Wind.				Velocity of the Wind.				Rain in Inches	Snow in Inches
	0 A.M.	2 P.M.	10 P.M.	Mean.	6 A.M.	2 P.M.	10 P.M.	MEAN		6 A.M.	2 P.M.	10 P.M.	M'N.	6 A.M.	2 P.M.	10 P.M.	M'N.	6 A.M.	2 P.M.	10 P.M.	Res'l-tant.	6 A.M.	2 P.M.	10 P.M.	Res'l-tant.	MEAN		
					°	°	°	°	°																		
1	29.467	29.474	29.523	29.4813	31.5	34.8	32.2	32.95	— 9.22	.148	.152	.162	.146	83	65	89	78	W	W	W	S 80 W	19.2	15.5	4.5	13.50	13.67	...	...
2	.641	.749	.798	.7612	29.3	32.6	26.8	29.08	—12.84	.136	.106	.109	.115	85	57	75	73	N	N W	N	N 44 W	6.6	15.5	4.4	6.50	7.46	...	...
3	.754	.770	.520	.6300	24.3	29.7	30.1	28.10	—13.55	.123	.147	.150	.134	95	89	80	87	N	N E	N E	N 24 E	6.6	9.4	10.0	8.10	8.46	...	...
4	.478	.506	.591	.5312	30.1	38.0	27.5	31.98	— 9.43	.150	.128	.135	.138	89	55	90	77	N	N W	W	N 17 W	5.8	7.8	5.2	5.25	6.33	...	...
5	.610	.614	.701	.6485	31.1	40.2	35.5	35.68	— 5.67	.153	.132	.144	.144	87	63	69	70	W	W	W	N 79 W	3.2	14.0	2.6	5.54	5.82	...	...
6	.739	.777	.707	.7298	34.7	43.0	39.8	39.25	— 1.66	.154	.193	.196	.184	76	68	80	76	W	S	S W	S 27 W	4.4	7.0	5.3	5.50	6.10	...	...
7	.730	.762	.800	.7803	36.0	46.0	36.0	39.15	— 1.45	—	—	—	—	—	—	—	—	S W	N	N E	N 20 E	1.2	13.6	9.5	3.02	5.88	0.040	...
8	.870	.909	.950	.9225	32.6	36.0	30.4	33.28	— 7.03	.157	.162	.131	.163	85	76	77	80	N E	E	N E	N 51 E	5.0	7.0	4.4	6.07	6.37	...	...
9	.952	.969	.736	.8362	31.9	36.2	38.7	35.48	— 4.52	.158	.167	.186	.170	87	78	78	81	N E	N E	E	N 66 E	6.0	6.0	10.0	5.80	6.46	...	...
10	.538	.514	.432	.4562	38.7	38.7	37.3	38.05	— 1.62	.220	.231	.195	.216	94	98	87	94	S E	E	N W	N 52 E	7.5	2.6	5.6	2.02	5.67	.390	...
11	.548	.568	.516	.5197	31.1	42.7	37.6	37.45	— 1.85	.159	.205	.191	.188	91	75	85	84	W	S	S W	S 59 W	5.3	6.8	2.6	4.50	5.09	...	...
12	.520	.522	.511	.4893	31.4	49.9	43.8	43.23	+ 4.27	.174	.255	.227	.216	88	71	80	77	S W	S	N W	S 35 W	2.8	10.8	11.0	5.50	8.19	...	...
13	.572	.624	.684	.6963	39.4	39.1	32.2	36.43	— 2.17	.211	.165	.139	.171	87	65	76	79	N W	N W	N	N 28 W	11.9	9.5	10.6	9.89	10.48	.010	8
14	.400	.360	.340	.3583	28.0	32.0	29.0	28.83	— 9 39	—	—	—	—	—	—	—	—	N E	N E	N E	N 42 E	18.0	12.0	6.4	13.66	14.22	...	3.5
15	.300	.274	.286	.2513	28.6	36.2	38.3	34.42	— 3.42	.144	.201	.192	.180	92	93	83	90	N E	S E	S W	S 4 E	5.5	9.4	10.4	2.31	7.76	.030	...
16	.274	.230	.418	.3000	35.8	37.0	30.0	33.47	— 3.98	.189	.141	.106	.148	90	62	63	76	S W	W	W	S 84 W	8.2	28.0	18.0	13.61	14.81	.010	1.3
17	.636	.764	.916	.8320	22.8	29.0	26.8	26.20	—10.82	.094	.093	.102	.094	77	60	70	66	N W	N W	W	N 65 W	15.8	14.0	4.8	12.45	12.77	...	...
18	.812	.770	.285	.6200	30.1	34.4	37.6	34.70	— 1.90	.150	.136	.175	.160	89	68	77	79	S	S E	S	S 19 E	12.0	13.5	6.2	8.18	9.20	...	0.1
19	.173	.188	.525	.3618	40.9	39.4	35.8	38.88	+ 2.72	.211	.168	.173	.185	82	69	83	78	S W	W	S W	S 57 W	11.2	16.5	5.2	9.94	10.75	...	...
20	.667	.693	.662	.6680	34.4	37.6	35.6	34.68	— 1.03	.166	.140	.169	.152	84	62	80	75	N	E	S E	N 80 E	5.5	7.0	6.4	2.91	4.96	...	...
21	.630	.640	30.080	.8583	32.0	28.0	21.0	26.50	— 8.78	—	—	—	—	—	—	—	—	N W	W	W	N 72 W	3.6	26.0	10.0	12.07	12.74	...	...
22	30.173	30.225	30.020	30.1232	14.9	27.9	30.4	24.05	— 9.87	.075	.103	.123	.105	85	68	73	77	N	S	E	S 41 E	1.5	7.2	10.4	2.03	7.52	...	...
23	29.708	29.660	29.649	29.6903	37.3	39.8	37.6	38.12	+ 3.75	.137	.216	.166	.175	61	88	73	76	S	S W	W	S 14 W	11.0	8.7	6.6	5.89	9.93	...	...
24	.740	.854	30.137	.9322	33.3	30.8	27.5	29.92	— 3.98	.170	.118	.129	.133	89	69	86	80	W	N W	W	N 77 W	18.0	24.2	8.0	16.25	16.56	...	...
25	30.138	30.148	29.734	.9436	20.0	32.6	36.2	30.50	— 2.90	.099	.142	.143	.129	92	77	67	76	N W	S E	S E	S 62 E	2.0	12.0	10.8	5.80	8.94	...	...
26	29.440	29.416	.670	.5077	38.4	43.9	35.8	39.47	— 6.53	.226	.282	.156	.216	97	98	74	87	S E	S W	N W	S 69 W	6.2	6.2	14.0	4.90	10.71	.520	...
27	.869	.910	30.040	.9792	34.0	30.6	27.5	30.52	— 1.93	.156	.112	.129	.134	90	65	86	79	N W	N	N	N 25 W	9.0	11.0	4.0	7.07	8.98	...	8
28	.780	.733	29.450	.5817	30.0	32.9	36.0	33.17	+ 1.19	—	—	—	—	—	—	—	—	E	S E	S W	S 48 E	15.0	9.4	14.0	6.75	10 99	...	1.2
29	.667	.787	30.139	.9562	16.7	8.8	—1.0	7.05	—24.45	.066	.038	.035	.043	72	60	84	71	W	N W	N	N 68 W	38.0	29 5	8.8	22.41	24.80	...	0.1
30	30.168	30.161	29.980	30.0033	—3.8	8.7	3.7	1.07	—29.97	.035	.047	.047	.043	97	92	91	93	N	N	N E	N 10 E	9.0	8.0	10.0	8.90	9.33	...	1.6
	29.6688	29.6860	29.6866	29.6756	29.95	34.41	31.15	31.75	— 5.40	.148	.152	.147	.149	86	72	80	79	...	...	...	...	9.17	12.27	8.16	...	9.73	1.000	7.8

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

Highest Barometer..... 30.271 at 10 a.m. on 22nd. } Monthly range
Lowest Barometer..... 29.173 at 6 a.m. on 19th. } 1.098.

Self-registering Ther.
- Maximum temperature.....61°0 on 12th. } Monthly range
- Minimum temperature.....—6°8 on 30th } 68°0.
- Mean maximum temperature .....35°02. } Mean daily range
- Mean minimum temperature .....25°51. } 12°51.
- Greatest daily range.....37°6 from a.m. to p.m. of 29th.
- Least daily range..... 4°0 from a.m. to p.m. of 10th.

Warmest day .....12th; mean temperature .....43°23 } Difference=42°16.
Coldest day.....30th; mean temperature ..... 1°07 }

Maximum Radiation { Solar .....108°0 on 7th. } Monthly range
Terrestrial ..... —14°0 on 30th. } 122.0.

Aurora observed on 2 nights, viz., 21st and 22nd.

Possible to see Aurora on 13 nights; impossible on 17 nights.

Raining on 6 days; depth, 1.000 inches; duration of fall 24.8 hours.

Snowing on 8 days; depth 7.8 inches; duration of fall 30.5 hours.

Mean of cloudiness, 0.77.

WIND.

Resultant direction N. 66° W.; resultant velocity 3.03 miles.

Mean velocity 9.73 miles per hour.

Maximum velocity 38.2 miles, from 3 to 4 a.m. of 29th.

Most windy day 29th; mean velocity 24.80 miles per hour.

Least windy day 20th; mean velocity 4.96 miles per hour.

Most windy hour noon; mean velocity 13.17 miles per hour.

Least windy hour 1 a.m.; mean velocity 8.05 miles per hour.

Lunar halo on the 12th.

The 30th was the coldest day during any November on the records of the Observatory.

COMPARATIVE TABLE FOR NOVEMBER.

YEAR.	TEMPERATURE. Mean.	Excess above aver'ge	Maximum.	Minimum	Range.	RAIN. No. of days.	Inches	SNOW. No. of days.	Inches.	WIND. Resultant. Direction.	Vel'y	Mean Velocity.
	°	°	°	°	°					°		
1847	38.6	+ 2.5	57.9	8.7	49.2	14	3.155	3	Inap	...	...	0 56 lbs
1848	34.5	— 1.6	49.0	15.9	33.1	9	2.020	3	1.4	N 81 w	1.81	4.81 mls
1849	42.8	+ 6.7	56.4	26.5	29.9	10	2.816	2	1.0	N 39 w	1.55	4.78
1850	38.8	+ 2.7	62.8	11.0	51.8	7	2.955	1	Inap	N 42 w	1.43	5.27
1851	32.9	— 3.2	50.2	13.8	36.4	6	3.855	6	6.7	N 50 w	1.25	4.70
1852	36.0	— 0.1	50.4	18.2	32.2	7	1.775	3	2.0	N 59 w	1.53	6.50
1853	38.7	+ 2.7	55.6	12.8	42.8	15	2.425	6	2.7	N 9 w	0.55	5.52
1854	36.8	+ 0.7	55.4	13.8	41.6	13	1.115	4	1.3	West.	3.44	7.54
1855	38.6	+ 2.5	59.2	15.5	43.7	8	4.690	6	3.0	N 66 w	3.18	10.81
1856	37.4	+ 1.3	56.4	18.8	37.6	10	1.375	9	9.5	S 85 w	2.90	8.75
1857	33.5	— 2.6	58.2	— 3.5	61.7	14	3.235	9	6.9	S 61 w	5.45	9.25
1858	34.2	— 1.9	53.0	15.3	37.7	12	3.879	13	4.0	N 25 w	3.14	8.87
1859	38.9	+ 2.8	62.6	21.8	40.8	12	5.193	9	0.6	N 81 w	3.39	9.65
1860	37.9	+ 1.8	64.5	13.2	51.3	12	2.569	8	1.9	S 89 w	4.95	11.02
1861	37.1	+ 1.0	52.4	23.0	29.4	14	4.294	8	3.2	N 46 w	1.94	7.44
1862	35.6	— 0.5	58.0	16.2	41.8	11	2.205	11	5.3	N 46 w	3.00	6.60
1863	39.1	+ 3.0	67.0	17.8	49.2	13	3.656	6	0.1	N 88 w	3.50	7.86
1864	36.9	+ 0.8	60.2	21.0	39.2	11	3.765	8	4.5	S 72 w	3.82	7.64
1865	38.6	+ 2.5	63.2	23.6	39.6	5	0.975	7	1.1	N 79 w	2.98	7.90
1866	38.4	+ 2.3	54.2	21.8	32.4	13	2.903	4	2.2	N 88 w	3.06	6.96
1867	36.9	+ 0.8	60.4	9.6	50.8	8	1.835	9	0.9	N 87 w	4.02	7.76
1868	36.2	— 0.1	50.5	20.1	30.4	14	5.150	10	4.3	N 35 w	2.10	8.16
1869	32.7	— 3.4	58.0	13.0	45.0	9	2.510	18	10.2	N 78 w	3.69	8.12
1870	36.6	+ 0.5	57.2	19.4	37.8	6	0.694	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 45 w	4.08	10.35
1872	32.9	— 3.2	52.0	8.2	43.8	7	0.420	9	1.3	S 85 w	5.02	7.48
1873	27.6	— 8.5	51.4	0.8	50.6	5	0.510	18	19.6	N 50 w	3.08	6.67
1874	34.6	— 1.5	61.0	3.5	57.5	7	0.935	11	11.7	S 87 w	3.07	7.70
1875	31.7	— 4.4	51.0	— 5.0	56.0	6	1.000	8	7.8	N 66 w	3.03	9.73
Res'lts to 1874	36.11	...	56.58	14.28	42.30	9.71	2.798	7.37	3.99	N 77 w	2.77	7.66
Excess for '75	— 4.38	...	— 5.58	— 19.28	+ 13.70	— 3.71	— 1.798	+ 0.63	+ 3.81	...	...	+ 2.07

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