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THE CANADIAN JOURNAL.

NEW SERIES.

No. LXVI.—DECEMBER, 1867.

CHRISTIAN EPITAPHS OF THE FIRST SIX CENTURIES.

BY THE REV. JOHN McCAUL, LL.D.,
PRESIDENT OF UNIVERSITY COLLEGE, TORONTO, ETC.

V. Those in which the Occupation or Position in Life of the Deceased is Stated.

A. *Secular.*

(a.) To a member of the Imperial household:— 49.

M · AVRELIO · AVGG · LIB · PROSENETI
A CVBICVLO · AVG ·
PROC · THESAVRORVM
PROC · PATRIMONI · PROC ·
MVNERVM · PROC · VINORVM
ORDINATOADIVOCOMMODO
IN KASTRENSE PATRONO PIISSIMO
LIBERTI · BENEMERENTI
SARCOPHAGVM DE SVO ·
ADORNAVERVNT ·

PROSENES RECEPTVS ADDEVM · V · NON***SSA*********NIA ·
[PRAESENTE · ET · EXTRICATO · II
REGREDIENS IN VRBE AB EXPEDITI ONIBVS SCRIPSIT
[AMPELIVS LIB

(*Via Labicana*. De Rossi, n 5.)

Marco Aurelio, Augustorum liberto, Proseneti, a cubiculo Augusti, Procuratori thesaurorum, Procuratori patrimonii, Procuratori munerum, Procuratori vinorum, ordinato a Divo Commodo in Castrense, Patrono piissimo, liberti benemerenti sarcophagum de suo adornaverunt. Prosenes receptus ad Deum quinto Nonas . . . . . Præsente et Extricato iterum. Regrediens in urbe (urbem) *ab expeditionibus scripsit Ampelius libertus.*

"To Marcus Aurelius Prosenes, freedman of the two Augusti, of the bed-chamber of Augustus, Procurator of the Treasures, Procurator of the Patrimony, Procurator of the Presents, Procurator of the Wines, appointed by the Deified Commodus to duty in the Camp, a most affectionate Patron. For him, well-deserving, his freedmen provided (this) sarcophagus, at their own cost."

"Prosenes received to God, on the fifth day before the Nones of . . . (in the Consulship of) Præsens, and Extricatus for the second time," *i.e.* . . . . 217 A.D.

"Ampelius, his freedman, returning to the city from the wars, set up this inscription."

l. 1. *Augg.* Marcus Aurelius and Lucius Verus. l. 2. *Aug.* Commodus. l. 2. *In Kastrense. Scil. munus*, or *officium.* Henzen remarks, "= *ratio castrensis.*" l. 11. *Receptus ad Deum.* This phrase may be regarded as sufficient proof of the Christianity of either *Ampelius*, or both *Prosenes* and *Ampelius*. In Henzen's n. 7418, a Pagan *titulus*, we have the similar phrase, *spiritus inter Deos receptus*, where, also, the word *refrigerat* or *refrigeras*, so common in Christian epitaphs, is strangely used. It is remarkable that this same expression occurs in another Pagan epitaph, given by Muratori, 978, 9, with the statement: "*Romæ. In Coemeterio Callisti. Ex Boldetto.*" The commencement of the two epitaphs is identical. *D·M· in hoc tumulo jacet corpus exanimis* (exanime) *cujus spiritus inter Deos receptus est; sic enim meruit.* And in both we have, *cujus fama in eterna* (in Muratori, *æterno*) *nota est;* but the division into lines is not the same, and, besides many other differences, the name of the deceased in the former, is *M. Ulpius Maximus*, in the latter, *L. Statius Onesimus.* Henzen, n. 6344, copies the inscription to Prosenes, but without the lines given above in smaller type, and, consequently, treats the inscription as Pagan.

l. 11. V·NON. After NON some letters are defaced; before SSA there are traces like III. De Rossi suggests, with a query, [APRI]LIS, *i.e. April 1st.* There are examples of this notation

of time, without mention of the Calends (see n. 12): but I am not aware of any instance at so early a period as 217. I am unable to offer any feasible conjecture as to the letters obliterated between SA and NIA. l. 12. *Scripsit Ampelius lib.* Thus, we have in Orelli, n. 4692: *Lib. Scripserunt.*

50.

IVLIVS FELIX VALENTINIANVS · VC · ET *sp*
EX SILENTIARIO SACRI PALATII EX COM̄ ·
CONSISTORII · COM · DOM̄ · QVI VIX*it*
ANN · LXVII · MENS · IIII · D · XXV DĒP · IN PACE
FL · EVTHARICO · CILLIGA · V̄C̄ · CONS

(*In Mus. Capit.*: De Rossi, n. 968.)

Julius Felix Valentinianus, Vir Clarissimus et Spectabilis, Ex Silentiario Sacri Palatii, Ex Comite Consistorii, Comes Domesticorum, qui vixit annos LXVII, menses IV, dies XXV. Depositus in pace, Flavio Eutharico Cilliga (Cillica), *Viro Clarissimo, Consule.*

"Julius Felix Valentinianus, a man of the highest distinction and consideration, ex-Silentiary of the Sacred Palace, ex-Count of the Consistory, Count of the Household Troops, who lived sixty-seven years, four months, twenty-five days. Buried, in peace, in the Consulship of Flavius Eutharic Cillica, a most distinguished man," *i.e.* 519, A.D.

l. 1. *Sp.* I have adopted De Rossi's certain restoration. Valentinian was *Spectabilis* as *Comes Domesticorum.* Other titles of honor are: V · C · = *Vir Clarissimus;* V · D · = *Vir Devotus,* or *Devotissimus;* V · I · = *Vir Illustris;* V · P · = *Vir Perfectissimus,* &c. On the application of these titles according to rank or position, see Böcking's edition of the *Notitia,* and Gothofred's edition of the Code of Justinian. It is impossible to find English adjectives that satisfactorily express these grades of titular dignity or compliment.

(*b.*) To a lawyer:— 51.

FELIX VITA VIRI FELICIOR EXITVS IPSE
CAIANI SEMPER CRESCIT PER SAECVLA NOMEN
NESCIT FAMA MORI SED SEMPER VIBIT VBIQVE
ADVENIT HOSPES ROMANVS PRINCEPS · IN VRBEM
QVI FVIT HIC PRIMVM IVRIS CONSVLTOR AMICVS
QVIESCITINPACEMDEPOSITVS DIEM QVAR

TVM NONAS AVGV
STAS FLAVIO FILIPPO
ET FLAVIO SALLEA CON
SVLIBVS PATER SABBA
TIVS FE CIT

(*?*; De Rossi, n. 101.)

Felix vita viri, felicior exitus ipse!
Caiani semper crescit per sæcula nomen.
Nescit fama mori, sed semper vibit (vivit) *ubique.*
Advenit hospes Romanus princeps in urbem,
Qui fuit hic primum juris consultor amicus.

Quiescit in pacem (pace), *depositus diem* (die) *quartum* (quarto) *nonas Augustas, Flavio Filippo* (Philippo) *et Flavio Sallea* (Salia) *Consulibus, Pater Sabbatius fecit.*

"Happy the life of the man, happier the death itself! The renown of Caianus shall ever increase throughout (all) ages. Fame knows not death, but ever lives, and everywhere. The Roman Emperor came, a stranger, to the city, whose first friend was this lawyer. He rests in peace. Buried on the fourth day before the Nones of August, in the Consulship of Flavius Philippus and Flavius Salia (*i.e.* August 2nd, 248, A.D.) His father, Sabbatius, made" (this).

l. 2. Read *crescet* for *crescit*. l. 4. Read *princeps Romanus* for *Romanus princeps*, or insert *princeps* between *advenit* and *hospes* l. 5. Read *cui* for *qui*, and *primus* for *primum*. The Roman Emperor was Constantine the Great, and the year, which is referred to, of his coming to Rome, is 326, A.D.

(c.) To a præfect of the city:— 52.

IVN·BASSVS·V·C·QVI VIXIT ANNIS·XLII MEN·II IN IPSA PRAEFECTVRA
VRBI NEOFITVS HIT AD DEVM·VIII·KAL·SEPT EVSEBIO ET YPATIO COSS

(*In cryptis Vaticanis*; De Rossi, n. 11:)

Junius Bassus, Vir Clarissimus, qui vixit annis (annos) *XLII, menses II. In ipsa præfectura urbis neofitus* (neophytus) *iit ad Deum, VIII Kalendas Septembres. Eusebio et Ypatio* (Hypatio), *Consulibus.*

"Junius Bassus, a most distinguished man, who lived forty-two years, two months. Whilst holding the office of Præfect of the City, he, a neophyte, went to God on the 8th day before the Calends of September, in the Consulship of Eusebius and Hypatius," *i.e.* August 25th, 359, A.D.

(*d.*) To a physician:— 53.

RAPETIGAME
DICVS CIVIS
HISPANVS QVI
VIXITINPANNPM
XXVHOCPATERNI
CAITVSFECITDNMA
MAXIMOAVGII

(*E coem. Cyriacæ;* De Rossi, n. 375.)

Rapetiga, medicus, civis Hispanus, qui vixit in p(ace) *annos plus minus viginti quinque. Hoc pater Nicaitus* (Nicetius) *fecit, Domino Nostro Magno Maximo Augusto iterum.*

"Rapetiga, a physician, a citizen of Spain, who lived in peace twenty-five years, more or less. Nicetius, his father, made this, in the Consulship of our Lord Magnus Maximus Augustus, for the second time," *i.e.* 388, A.D.

(*e.*) To a baker:— 54

HIC EST POSITVS BITALIS PISTOR ANA
SIIICESRSXIIOVIBICSITAN
NVSPLMINVSNXLVDEPC
SITVSINPACINATALED
OMNESSITIRETISTERT
IVMIDVSFEBBCONSVLA
TVMFLV MCEN T I VV CC
CONSS

(*In coenobio S. Pauli via Ostiensi;* De Rossi, n. 495.)

Hic est positus Bitalis (Vitalis) *pistor* . . . . . *regionis XII, ovi* (qui) *vicsit* (vixit) *annus* (annos) *plus minus numero XLV. Depositus in paci* (pace) *natale* (natali) *Domnes* (Dominæ) *Sitiretis* (Soteridis) *tertium* (tertio) *Idus Februarias Consulatum* (Consulatu) *Flavii Vincentii* [et Fraviti], *Virorum Clarissimorum, Consulum.*

"Here has been placed Vitalis, a baker . . . . . of the twelfth region, who lived forty-five years, more or less. Buried, in peace, on the birth-day of Saint *Soteres, the third day before the Ides of Feb-

---

* Thus, De Rossi, *Index*, p. 619; but Aringhi, i., p. 288, gives *Soter. Soter* is the name of a man; *Soteres*—otherwise *Soteris* and *Soteria* (in Jewish epitaphs, Orelli, n. 2523, Henzen, n. 6144)—is the name of a woman. Hence, in epitaph n. 46, I should prefer the translation, "Lampadius and Soteres, his most affectionate brother and sister," to the version

ruary, in the Consulship of Flavius Vincentius [and Fravitus], most distinguished men, Consuls, *i.e.* February 11th, 401, A.D.

l. 1. No one has yet been able to explain the word or words formed by the letters between *pistor* and *rs* (regionis). Le Blant, *Inscr. Chrét. de la Gaule*, i., 279, reads—MAGHICES; but De Rossi, p. 577, justly rejects this, observing that the *character between R and A contains two letters, and may be read either MI, or INI, or even AN. l. 2. RSXII. Ancient Rome was divided into fourteen regions. This baker had his shop in the twelfth. Thus, in Orelli, n. 1455, we have *pistor Romaniensis ex regione XIIII.* ll. 4, 5. *Domnes. Domina*, like the Greek κυρία, = our "Mistress," was a term of respect applied to females. It is commonly applied to the same who were otherwise called "*Sanctæ*." l. 5. *Sitiretis* This Saint is said to have suffered martyrdom, in the Appian Road, under Diocletian and Maximian, 304, A.D. See Aringhi, i., p. 288. l. 7. *Fl. Vincenti.* As he alone is mentioned, it appears that the name of the Eastern Consul, *Fravitus*, or *Fravita*, was not at the time known in Rome; and yet the plural—VVCC CONSS—is used, as if both names had been given.

(*f.*) To a gardener:— 55.

PASCASIVS · ORTOLANV
QI IDSIVLIASCOLSDECIVCC

(*In S. Agnetis*; De Rossi, n. 1020.)

[Hic quiescit] *Pascasius ortolanu* (hortulanus), [depositus] *septimo Idus Julias. Consulatu Decii, Viri Clarissimi. Consulis.*

"[Here rests] Pascasius, a gardener, buried on the seventh day before the Ides of July, in the Consulship of Decius, a most distinguished man, Consul," *i.e.* July 9th, 529, or rather, 486, A.D.

---

there given. Thus, *fratribus*, in Orelli, n. 4583; *fratrum*, in Tacitus, Ann xii., 4: and "*Lucius et Titia fratres emancipati a patre*," in Paul., *Dig.* x, 2, 38, cited by *Forcellini, in verb.*

* This character occurs in Roman inscriptions found in Britain, *e.g.* in a very perplexing one to the *Deæ Matres*, figured in the "Report of the Yorkshire Philosophical Society, for 1861." It seems as if it might also be read NV, or MV, or NN. De Rossi, in his comment, remarks "*Vox, quæ postremis versus primi et prioribus secundi litteris continetur, millies a me tentata est, sed irrito semper conatu.*" As this has, also, been the result of my experience, I merely state my impression, that the word is an Ethnic adjective, like *Romaniensis.*

(*g.*) To an ex-quæstor:— 56.

HIC REQVIESCINT IN PACE PRAETEXTATVS VI EX QVESTOR SCP · DP · VII · IDVS · OCTOBR · FESTO VC · CONS ET FILIA EIVS PRAETEXTATA · CF · DI · XV · KAL · [AVG . DECIO VC C

(*In S. Martini;* De Rossi, n. 844.)

Hic requiescint (requiescunt) *in pace Prætextatus, Vir Illustris, ex-quæstore Sacri Palatii, depositus VII Idus Octobres, Festo, Viro Clarissimo, Consule, et filia ejus Prætextata, Clarissima Femina, deposita XV Kalendas Augustas, Decio, Viro Clarissimo, Consule.*

"Here rest in peace, Prætextatus, an illustrious man, ex-quæstor of the Sacred Palace, buried on the seventh day before the Ides of October, in the Consulship of Festus, a most distinguished man (*i.e.* October 9th, 472, A.D.), and his daughter Prætextata, a most distinguished woman, buried on the fifteenth day before the Calends of August, in the Consulship of Decius, a most distinguished man." *i.e.* July 18th, 486, A.D.

l. 2. SCP. *Sacri Palatii. scil.* of the Emperor. See Epitaph n. 50, and *Notitia*, chap. xv. and xiv., vol. ii., ed. Böcking.

(*h.*) To a soldier:— 57.

ΕΝΘΑΔΕΤΟΝΑΓΡΗΓΟΡΟΝ
ΥΠΝΟΝΚΑΘΕΥΔΕΙΦΙΛΕ
ΕΥΓΝΩΜΟΝΙΟΣΠΡΟΤΙΚΤΟΡ
ΤΩΝΓΕΝΝΑΙΟΤΑΤΩΝ
ΑΡΙΘΜΟΥΜΑΡΤΗΣΙΩΝΠΡΟ
ΑΠΕΛΘΩΝΤΟΥΚΑΘΗΜΑΣ
ΒΙΟΥΜΗΝΙΙΟΥΛΙΟΥΔΕΚΑ
ΤΗΙΝΔΕΝΔΕΚΑΤΗΥΙΤΑ
Τ . . . ΣΦΑΒΙΟΥΜΑΓΝΟΥ
. . . . . ΤΟΥΜΕΓΑΛΟΠΡΕ
ΥΧ

(*In Museo Parisiensi;* Kirchhoff, n. 9449.)

Ἐνθάδε τὸν ἀγρήγορον ὕπνον καθεύδει, φίλε, Εὐγνωμόνιος, προτίκτορ (προτίκτωρ) τῶν γενναιοτάτων ἀριθμοῦ Μαρτησίων, προαπελθὼν τοῦ καθ' ἡμᾶς βίου μηνὶ Ἰουλίου δεκάτῃ, ἰνδικτιῶνι ἑνδεκάτῃ, ὑπατίας Φαβίου Μάγνου [μόνου] τοῦ μεγαλοπρεπεστάτου.

"Here, friend, Eugnomonius sleeps the sleep that knows no waking, a Protector, of the detachment of the most noble Martenses, having gone

before from our life on the tenth of the month of July, in the eleventh Indiction, in the Consulship of Fabius Magnus [alone], the most distinguished," *i.e.* July 10th, 518, A.D

l. 5. *ἀριθμοῦ*. This is used as the Latin *numerus*. A body of the *Martenses* is mentioned in the *Notitia*, as stationed at *Aletum*, now St. Malo.

(*i.*) To a præfect of the market:— 58.

HIC REQVIESCIT IN PACE SABINVS VS PRE ANNS QVI
[BISSIT ANNVS
LIIII ET DIES XXIIII DP XVI KAL AGVSTAS CONS
[SYMM ET BOETIO VC CONSS

(*In atrio eccl. S. Pauli*; De Rossi, n. 973.)

Hic requiescit in pace, Sabinus, Vir Spectabilis, Præfectus annonaes (annonæ), *qui bissit* (vixit) *annus* (annos) *LIV, et dies XXIV Depositus XVI Kalendas Agustas* (Augustas), *Consulatu Symmachi et Boetio* (Boetii), *Virorum Clarissimorum, Consulum.*

"Here rests in peace, Sabinus, a man of high consideration, Prefect of the Market, who lived fifty-four years, and twenty-four days. Buried on the sixteenth day before the Calends of August, in the Consulship of Symmachus and Boetius, most distinguished men, Consuls," *i.e.* July 17th, 522, A.D.

In the expansion I have corrected the formula given for the Consulship. It was, doubtless, *Consulatu Symmacho et Boetio Viris Clarissimis Consulibus.* In De Rossi's, n. 977, we have the strange mixture, *Consulatu Symmaci et Boeti Viris Consulibus.*

(*k.*) To a keeper of a public granary:— 59.

HIC REQVIESCITINPACECONSTANTINVSHIOR
REARIVSQVIVISETPM·AN·XLVII DIPOSITVSESTVII·KĀ
DEC·CONSFL·LAMPADIETORESTISVV·CC

(*In coenob. S. Pauli*; De Rossi, n. 1026.)

Hic requiescit in pace Constantinus horrearius, qui viset (vixit) *plus minus annos XLVII. Dipositus* (depositus) *est VII Kalendas Decembres, Consulatu Flavii Lampadii et Orestis, Virorum Clarissimorum.*

"Here rests in peace, Constantinus, a granary-keeper, who lived forty-seven years, more or less. He was buried on the seventh day before the Calends of December, in the Consulship of Flavius Lampadius and Orestes, most distinguished men," *i.e.* November 25th, 530, A.D.

I am unable (without type specially cut for the purpose) to represent the numerals after AN and before KA, as they appear in the inscription. They are given as they were read by Muratori, 421, 2.

(*l.*) To a book-keeper:— 60.

HIC REQVIESCIT IN PACE IOHANNIS VII
OLOGRAFVS PROPINE ISIDORI QVI VIX*it*
ĀNN·PLVS M·XLV DEP·X KALEN·IVNIAs
CONSVLATV VILISARI VC·

(*In crypt. Vatic.*; De Rossi, n. 1055.)

Hic requiescit in pace, Johannis (Johannes). *Vir Honestus, olografus* (olographus) *propine* (propinæ) *Isidori, qui vicit annos plus minus XLV. Depositus X Kalendas Junias, consulatu Vilisari* (Belisarii), *Viri Clarissimi.*

"Here rests in peace, Johannes, a respectable man, the book-keeper of the tavern of Isidorus, who lived forty-five years, more or less. Buried on the tenth day before the Calends of June, in the Consulship of Belisarius, a most distinguished man," *i.e.* May 23rd, 535, A.D.

I have adopted Marini's interpretation of *Holographus*, as explained by De Rossi, but I know no ancient authority for this signification. Although there are strong objections to receiving "the Consulship of Belisarius" as marking the year 535 in an Italian inscription, yet I have not ventured to follow De Rossi, who proposes the insertion of *post* after IVNIAS, *i.e. post consulatu* (consulatum) *Vilisari VC, scil.* A.D. 536 or 537.

B. *Ecclesiastical.*

(*a.*) To a bishop:— 61.

HICREQVIES
CITSANCTAE MEMO
RIÆPATERNOSTER
REPARATVSE·P·S·QVIFE
CITINSACERDOTIVMAN
NOSVIIIIMENXIETPRE
CESSITNOSINPACE
DIEVNDECIMV·KAL
AVGPROVNC·CCCCXXX
ETSEXTA

(*Orleansville in Algiers*; Renier, n. 3701.)

Hic requiescit sanctæ memoriæ pater noster, Reparatus, episcopus, qui fecit in sacerdotium (sacerdotio). *annos IX, menses XI, et precessit nos in pace, die undecimo* (undecimo) *Kalendas Augustas, Provinciæ* [anno] *quadringentesimo tricesimo et sexta* (sexto).

"Here rests our father of holy memory, Reparatus, the Bishop, who passed in his priesthood nine years, eleven months; and went before us, in peace, on the eleventh day before the Calends of August, in the 436th year of the Province," *i.e.* July 22nd, 475, A.D.

l. 1. *Sacerdotium.* The bishops in Africa were sometimes called *Sacerdotes.* See Renier, n. 3704. The æra of the Province dated from 40, A.D., the year in which Mauretania was reduced. See Henzen, n. 5337; Renier, *Revue Arch.* xi. 443, xv. 565; Mommsen, *Epigraphische Analekten,* n. 20, in *Berichte der phil. Hist.,* 1852. p. 313.

(*b.*) To a presbyter. 62.

PRAESBYTER HIC SITVS EST CELERINVS NOMINE DIC[*tus*]
CORPOREOS RVMPENS NEXVS QVI GAVDET IN ASTRIS
DEP VIIII KAL IVN FL SYAGRIO ET EVCERIO

(*In S. Agnetis via Nomentana;* De Rossi, n. 303.)

Presbyter hic situs est Celerinus nomine dictus,
Corporeos rumpens nexus qui gaudet in astris.
Depositus IX Kalendas Junias, Flavio Syagrio et Eucerio.

"Here is been laid a Presbyter, called by the name Celerinus, who, breaking the bonds of the body, rejoices in the stars (in heaven). Buried on the ninth day before the Calends of June, in the Consulship of Syagrius and Eucherius," *i.e.* May 24th, A.D. 381.

In Kirchhoff's n. 9258, found at Ancyra, in Galatia, we have an example of a presbyter pursuing a secular occupation:—

ὁ δοῦλος τοῦ Θεοῦ Θεόδωρος πρεσβύτερος τῶν ἁγίον (ἁγίων) κὲ (καὶ) ἀργυροκόπος, *i.e.* "the servant of God, Theodorus, a presbyter (of the church) of the Saints (All Saints?), and a silversmith."

(*c.*) To the wife of a presbyter:— 63.

GAVDENTIVS · PRESB · SIBI
ET CONIVGI SVAE SEVERAE CASTAE HAC SANC[*tissimæ*]
FEMINAE QVAE VIXIT ANN · XLII · M · III · D · X
DEP III · NON · APRIL · TIMASIO ET PROMOTO

(*In coem. S. Pauli via Ostiensi;* De Rossi, n. 376.)

Gaudentius Presbyter sibi et conjugi suæ Severæ, castæ hac (sc) *sanctissimæ feminæ, quæ virit annos XLII, menses III, dies X. Deposit IV Nonas Apriles, Timasio et Promoto.*

"Gaudentius, a Presbyter, for himself, and his wife Severa, a chaste and most holy woman, who lived forty-two years, three months, ten days. Buried on the fourth day before the Nones of April, in the Consulship of Timasius and Promotus," *i.e.* April 2nd, A.D. 389.

(*d.*) To a deacon:— 64.

DEPS · FELIX DIAC · V · IDVS · MARTIAS ·
THEODOSIO · XV · ET · PLD · VALENTINIANO IIII
AA · VV · CC · CON · SS

(*In crypt. basil. Vaticanæ;* De Rossi, n. 684.)

Depositus Felix Diaconus, V Idus Martias, Theodosio XV et Placido Valentiniano IV, Augustis, Viris Clarissimis, Consulibus.

"Felix, a Deacon, was buried on the fifth day before the Ides of March, in the Consulship of Theodosius for the fifteenth time, and Placidus Valentinianus for the fourth time, Augusti, most distinguished men," *i.e.* March 11th, A.D. 435.

(*e.*) To a deacon's wife and children:— 65.

LEVITAE CONIVNX PETRONIA FORMA PVDORIS · HIS MEA DEPONENS SEDIBVS
[OSSA LOCO
PARCITE VOS LACRIMIS DVLCES CVM CONIVGE NATAE · VIVENTEMQVE DEO CRE-
[DITE FLERE NEFAS
DP · IN PACE III · NON OCTOB FESTO VC CONSS
HIC REQVIESCIT IN PACE PAVLA CLF · DVLCIS BENIGNA GRATIOSA FILIAS
DP VII KAL SEPT . . . . P NANTO VC CONSS
HIC REQVIESCIT DVLCISSIMVS · PVER GORDIANVS FILIVS SS
DP · ID SEPT · SYMMACHO VC CONSS
HIC REQVIESCIT AEMILIANA SAC · VG · DPV · ID DEC · PROBINO VC · CONSS ·

(*In S. Pauli;* De Rossi, n. 843.)

Levitæ conjunx Petronia forma pudoris—His mea deponens sedi-
[bus ossa loco.
Parcite vos lacrimis dulces cum conjuge natæ—Viventemque Deo
[credite flere nefas.
Deposita in pace tertio Nonas Octobres, Festo, Viro Clarissimo,
[Consule.
Hic requiescit in pace Paula clarissima fœmina dulcis benigna gra-
[tiosa filia supra scriptæ.
Deposita septimo Kalendas Septembres, Venantio, Viro Clarissimo,
[Consule.

Hic requiescit dulcissimus puer Gordianus filius supra scriptæ. Depositus Idibus Septembribus, Symmacho, Viro Clarissimo, Consule. Hic requiescit Æmiliana Sacra Virgo. Deposita quinto Idus De-
[cembres, Probino, Viro Clarissimo, Consule.

"I, Petronia, the wife of a Deacon, the type of modesty, lay down my bones in this resting-place. Refrain from tears, my sweet daughters and husband, and believe that it is forbidden to weep for one who lives in God. Buried, in peace, on the third day before the Nones of October (*i.e.* October 5th), in the Consulship of Festus, a most distinguished man, *i.e.* 472, A.D. Here rests in peace, Paula, a most distinguished woman, the sweet, kind, gracious daughter of the above mentioned; buried on the seventh day before the Calends of September (*i.e.* August 26th), in the Consulship of Venantius, a most distinguished man, *i.e.* 484, A.D. Here rests a very sweet boy, Gordianus, son of the above mentioned; buried on the Ides of September (*i.e.* September 13th), in the Consulship of Symmachus, a most distinguished man, *i.e.* 485, A.D. Here rests Æmiliana, a sacred virgin; buried on the fifth day before the Ides of December (*i.e.* December 9th), in the Consulship of Probinus, a most distinguished man," *i.e.* 489, A.D.

l. 1. *Levitæ.* This term is used for *Diaconus*, as the latter is unsuitable for hexameters. The difficulty is got over sometimes by syncope, *scil. Diacnus*, as by *Venantius;* sometimes by using *Zaconus*, for *Diaconus*. I have regarded *Petronia* as supposed to speak from the beginning. Others will, perhaps, prefer taking the first verse as expressed by the author of the epitaph. De Rossi's comment is well worth reading. It contains a most ingenious and conclusive argument, that Gregory the Great was a descendant of the persons named in this epitaph.

(*f.*) To a sub-deacon:— 66.

HIC QVIESCET APPIANVS SVBDIACONVS QVI VIXIT
[ANNVS·
XXXII DIES XXVIIII D III IDVS APRICON POSTV-
[MIANI VC

(*In basil. S. Alexandri via Nomentana;* De Rossi, n. 743.)

Hic quiescet (quiescit) *Appianus, Subdiaconus, qui vixit annus* (annos) *XXXII, dies XXVIIII. Depositus tertio Idus Apriles, Consulatu Postumiani, Viri Clarissimi.*

"Here rests Appianus, a Sub-deacon, who lived thirty-two years, twenty-nine days. Buried on the third day before the Ides of April, in the Consulship of Postumianus, a most distinguished man," *i.e.* April 11th, 448, A.D.

67.

LOCVS MARCELLI SVBD·REG·SEXTE CONCESSVM SIBI [ET POS
TERIS EIVS A BEATISSIMO PAPA IOANNE
QVI VIXIT ANN·PLM·LXVIII DEP PC BASILI VC ANN
IND·XI·VNDECIMV KAL IANVARIAS [XXII

(*In crypt. basil. Vaticanæ*; De Rossi, n. 1096.)

Locus Marcelli, Subdiaconi Regionis sexte (sextæ), *concessum* (concessus) *sibi et posteris ejus a beatissimo Papa Joanne, qui vixit annos plus minus LXVIII. Depositus post consulatum Basilii, Viri Clarissimi, anno XXII, Indictione XI, undecimu* (undecimo) *Kalendas Januarias.*

"The place of Marcellus, a Sub-deacon of the Sixth District, conceded to him, and to his posterity, by the most blessed Father John, who lived sixty-eight years, more or less. Buried in the twenty-second year after the Consulship of Basilius, a most distinguished man (*i.e.* 563, A.D.), in the eleventh Indiction, on the eleventh day before the Calends of January," *i.e.* December 22nd.

l. 1. *Regionis sextæ.* Pagan Rome was divided, as I have mentioned in the notes on epitaph 54, into fourteen regions, or districts. The ecclesiastical division was into seven.

(7) To an acolyte:— 68.

VS ACOLVT*us*
N CONSS·HO*norio*.

(*In S. Paul*: De Rossi, n. 631)

. . . *us Acolutus* . . . . . *n Consulibus Honorio et* . . . . .

. . . us, an Acolyte, ... n, in the Consulship of Honorius and . . ," i.e. 422, or 418, or 417, or 415, or 412, or 409, or 407, or 398, or 386, A.D.

This is the only notice of an Acolyte that I have observed in a Roman dated epitaph.* As the inscription is very defective, in consequence of the fracture of the stone, I subjoin another, but without the year:—

* In Mommsen's *Inscrip. Neapol.*, n. 1305, we have one, found at Æclanum, to *Murrasius Acoletus* (*sic*) of the date 529. A.D.

ACE ABVNDANTIVS ACOL·
REG·QVARTE TT VESTINE QVI VIXIT ANN·XXX
DEP·INP·D NAT·SCI·MARCI MENSE SE OCT·IND XII

(*In S. Agnetis via Nomentana*; De Rossi, n. 1185.)

[Hic requiescit in p]*ace, Abundantius, Acolutus Regionis quarte* (quartæ), *Tituli Vestine* (Vestinæ), *qui vixit annos XXX. Depositus in pace die natali Sancti Marci mense Octobri, Indictione XII.*

"Here rests in peace, Abundantius, an Acolyte of the Fourth District, of the parish-church of Vestina, who lived thirty-years. Buried, in peace, on the birth-day of Saint Mark, in the month of October, in the twefth Indiction."

l. 2. *Regionis quartæ.* See note on epitaph n. 68. *Tituli Vestinæ.* On this meaning of *Titulus*, see Du Cange, *in verb.* l. 3. *Die natali Sci Marci.* This Saint Mark is the Pope of that name, who succeeded Saint Sylvester, in 336, A.D. SE. These letters were repeated in mistake by the stone-cutter. Reinesius assigns 414, A.D., as the date of this inscription, but there is no ground for fixing even the century. Jacuti places it in the fourth; but De Rossi's suggestion, that it was of the sixth or seventh, is much more probable. This inscription, is, at present, to be seen in the portico of the Basilic.. of St. Mark; it is, however, not the original, for that is not extant, but a modern copy on marble.

(*h.*) To an exorcist:— 69.

HIC·REQVIESCIT·IN
SOMNO·PACIS·CAELIVS
IVHANNIS·EXHORCISTA
QVI·VIXIT ANNS·PLS·MS·γ
ΔEPOSITIO·EIVS·CII·IDS
ΔECEMBRES·FLS·FELICE·V·C
CONSVLE

(*Æclani*: Mommsen, I. N., 1293.)

Hic requiescit in somno pacis Cælius Jıhannis (Johannes), *exhorcista* (exorcista), *qui vixit annos plus minus* γ. *Depositio ejus VIII Idus Decembres, Flavius* (Flavio) *Felice, Viro Clarissimo, Consule.*

"Here rests, in the sleep of peace, Cælius John, an exorcist, who lived . . . . . years, more or less. His burial took place on the eighth day before the Ides of December, in the Consulship of Flavius Felix, a most distinguished man," *i.e.* December 6th, 511, A.D.

l. 4. Mommsen remarks: "*Guarini vidit et γ explicavit XX.*" l. 5. I have taken the character before II for C = Ϙ = 6. On the year, see De Rossi, p. 425.

(*i.*) To a reader:— 70.

(See Plate III. 2.)

(*E coem. Callisti et Praetextati*; De Rossi, n. 48.)

Equitius Heraclius, qui fuit in sæculum (sæculo) *annos XIX, menses VII, dies XX, lector regionis secundæ.* [Parentes] *fecerun*(t) *sibi et filio suo benemerenti in pace. Deces*(s)*it VII Irus* (Idus) *Februarias, Urso et Polemio Consulibus.*

"Equitius Heraclius, who was in this world nineteen years, seven months, twenty days, a Reader of the Second Region. [His parents] made (this) for themselves, and their well-deserving son, in peace. He departed on the seventh day before the Ides of February, in the Consulship of Ursus and Polemius," *i.e.* February 7th, 338, A.D.

71.

HIC REQVIESCIT IN SoMNo
PACIS CAELIVS LAVRENTIVS
LECTOR SANCTAE ECCLESIAE
AECLANENSIS QVI VIXIT
ANNoS PL M · XLVIII DEPoSITIo
EIVS DIE VII IDVS MAIAS FLAVIS
ASTERIo ET PRAESIDIo VV CC CoN

(*E crypt. Æclanis*; Mommsen. I. N., 1299.)

Hic requiescit in somno pacis Cælius Laurentius, lector sanctæ ecclesiæ Æclanensis, qui vixit annos plus minus XLVIII. Depositio ejus die VII Idus Maias, Flaviis Asterio et Præsidio, Viris Clarissimis, Consulibus.

"Here rests, in the sleep of peace, Cælius Laurentius, a Reader of the holy church of Æclanum, who lived forty-eight years, more or less. His burial (took place) on the seventh day before the Ides of May, in the Consulship of Flavius Asterius and Flavius Præsidius, most distinguished men," *i.e.* May 9th, 494, A.D.

(*k.*) To a custodian:— 72.

*lo*C DECI · CVBICVLARI · HVI*us basilicæ*
*hic q*VIESCIT CARO MEA NO*vissimo vero die*
per XPM̄ CREDO RESVSC*itabitur a mortuis*
dep · XV KAL · I˝˝N · ET ITER · Pc · (basili v · c ?)

(*In S. Pauli*; De Rossi, n. 1087.)

Locus Decii cubicularii hujus basilicæ. Hic quiescit caro mea; novissimo vero die per Christum credo resuscitabitur a mortuis. Depositus XV Kalendas Junias et iterum post consulatum Basilii, Viri Clarissimi.

"The place of Decius, Custodian of this Basilica. Here rests my flesh, but, at the last day, through Christ, I believe it will be raised from the dead Buried on the fifteenth day before the Calends of June, in the third year after the Consulship of Basilius, a most distinguished man," *i.e.* 544, A.D.

In the text, the letters in Italics are given according to De Rossi's restoration.

(*l.*) To a deaconess:— 73.

HIC IN PACE REQVIESCIT B·M
THEODORA DIACONISSA QVAE
VIXIT IN SECVLO ANNOS PL·MIN
XLVIII·D·XI·KAL·AVG·V·P·C·
PAVLINI IVN·V·C·IND·II

(*Ticini in Sanctissimæ Trinitatis;* Muratori, 424, 6.)

Hic in pace requiescit bonæ memoriæ Theodora Diaconissa quæ vixit in seculo (sæculo) *annos plus minus XLVIII. Deposita XI Kalendas Augustas, quinto post consulatum Paulini Junioris, Vi- Clarissimi, Indictione secunda.*

"Here rests in peace, Theodora, a Deaconess, of good repute, who lived in this world forty-eight years, more or less. Buried on the eleventh day before the Calends of August, in the fifth year after the Consulship of Paulinus Junior, a most distinguished man, in the second Indiction," *i.e.* July 22nd, 539, A.D.

l. 1. *Bonæ memoriæ.* Literally, "of good memory," *i.e.* worthy to be remembered for her virtues.

The duties discharged by females among the early Christians are noticed by heathen writers. Thus, Pliny, *Epist.* x., 96, says.— *necessarium credidi ex duabus ancillis, quæ ministræ dicebantur, quid esset veri et per tormenta quærere;* and Lucian, *De morte Peregrini*, 12:—ἐῶθεν μὲν εὐθὺς ἦν ὁρᾶν παρὰ τῷ δεσμωτηρίῳ περ- μένοντα γρᾴδια χήρας τινὰς καὶ παιδία ἀρφανὰ κ. τ. λ.

(To be Continued.)

SIR WILLIAM HAMILTON'S PHILOSOPHY: AN EXPOSITION AND CRITICISM.

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ARTICLE III.—*Criticism of Hamilton's System.*

In proceeding to the criticism of the philosophical system, of which the previous article in this series attempted an exposition, we are met by a number of doctrines which may be regarded as introductory; and accordingly to these, first of all, I request the attention of my readers.

The definition of philosophy, with which my exposition of Hamilton's system starts, might furnish matter for some observations at the outset, were it worth while that we should be thus detained from more important subjects: but in truth, as Hamilton himself remarks, the definition of philosophy "is the result of a lofty generalisation from particulars;"* and, therefore, the full discussion of such a definition might lead us prematurely into some of the problems which must afterwards demand consideration. The remark, which has been quoted in reference to the definition of philosophy, Hamilton applies also to its divisions; and, it appears to me, with even greater propriety: for the success of a science in the arrangement of its various departments must depend on the success with which it has investigated the distinctive nature of the various objects that constitute its province. While, however, a science may be in so crude a condition, as to leave room for doubt what place in a natural classification ought to be assigned to the various phenomena within its sphere, it is necessary to attempt some arrangement of these, were it merely for the purpose of guiding research. For such a purpose Sir William Hamilton's division of the philosophical sciences may be accepted; and every division of these ought, in the present state of philosophical inquiry, to be regarded as subject to the revision which may be rendered necessary by the researches it has served to guide.

The main efforts of Sir William Hamilton's power have been spent on the department which forms, in his classification, the first division of the philosophical sciences,——Empirical or Phenomenal Psycho-

* *Lectures on Metaphysics*, Vol I., p. 44.

logy; but even of this department he has by no means treated exhaustively all the subdivisions which he indicates. The third class of mental phenomena, for example, he enumerates merely incidentally in order to point out the different kinds of feeling which they originate; and although he not only discusses at considerable length the general theory of the feelings, but enters with some detail into the illustration of that theory, yet it is evident that the six lectures which he devotes to the subject, cannot be regarded as much more than a mere sketch. It is, therefore, the science of knowledge that occupies by far the most extensive portion of Sir William Hamilton's writings, though of this science itself his discussion on several sections is found to be very unfinished even when we have with difficulty and perplexity collated all the references scattered throughout his different works. It is not, however, to be overlooked that, while confining himself chiefly to the science of knowledge, he has yet, at least, indicated the principles on which he attempts to solve the most important problems in the science of being.

As introductory to Phenomenal Psychology, Sir William Hamilton discusses, in its most essential aspects, the universal condition of psychological phenomena, consciousness; and in his doctrine of consciousness are already implied the principles on which he founds the most important positions in his theories of knowledge and of existence. It is to the consideration of this doctrine that the present article will be limited.

At the outset it is necessary to notice the connection in which the subject of consciousness is introduced by Sir William Hamilton. In proceeding to classify the mental phenomena, he observes:—"These are *all* seen to comprise one *essential* element, or to be possible only under one *necessary* condition. This element or condition is consciousness."*

Now, it is impossible in this connection not to notice the fact that, in spite of the statement now quoted, Sir William holds, not only that there are states of mind without this element or condition, but that *all* states of mind, even after a consciousness of them has ceased, still continue to exist. The contradiction between these two positions must be admitted to be apparent, if it is not real; and it has not only been pointed out by Mr. Mill, in his *Examination of Hamilton's Philosophy*,† but it had been brought before the attention of Hamilton

* *Lect. on Metaph.*, Vol. I., p. 182.

† See Chapter XV.

himself by some of his own students long ago. Mr. Mill, indeed, regards this as one of numerous contradictions, which Hamilton had failed to discover between his different opinions; and he founds his charge of inconsistency in the present instance on the fact, that the doctrine of latent mental states conflicts with several isolated expressions in Hamilton's writings tantamount to that which I have quoted above. I am not prepared to assert, that Sir William was himself unaware of the appearance of antagonism between the doctrines which are thus placed in opposition, nor do I think such antagonism can be proved to be real from the impossibility of reconciling separate statements made with different ends in view. It seems to me impossible to relieve Hamilton from the charge of not having sufficiently guarded these different statements, but in his expressions with regard to consciousness, as the condition under which alone the mental phenomena are realized, there is a certain caution which induces me to believe that he was consciously endeavouring to avoid any interference with his doctrine of latent mental states.

It is but fair, in interpreting an author's doctrine on any subject, not to press too stringently incidental allusions to it introduced in the course of a discussion on something else, but we may justly hold him bound by the expressions he employs, when his main object is to state the doctrine in question. Now, in the passage which I have quoted from the *Lectures on Metaphysics*, undoubtedly it was Hamilton's design to point out a general characteristic by which the phenomena of mind are distinguished; yet he takes care to limit his statement to the *phenomena* of mind as such, and seems purposely to avoid extending it to all mental states. "In this knowledge they (the phenomena of mind,) *appear*, or are realized *as phenomena*, and with this knowledge they likewise *disappear*, or have no longer a *phenomenal* existence." It is apparently with the same intention that he qualifies a statement in the posthumous note on consciousness, appended to his edition of Reid's Works. "Consciousness is to be regarded as a general expression, for the primary and fundamental condition of all the energies and affections of our minds, *inasmuch as these are known to exist*."* If this interpretation of these passages be correct, it must be supposed that Hamilton held consciousness to be the condition of mental states only in so far as these are phenomena or manifestations of mind, but that this condition does not preclude the existence of states which, as they

*See p 929.

do not manifest themselves, are beyond the sphere of consciousness.

There is, however, an objection to this interpretation, and it is with a view to this objection that I have drawn attention to the connection in which Hamilton introduces the subject of consciousness into his lectures. He introduces it as a subject that must be considered before entering on an account of the several species of mental phenomena; and the reason which he assigns for this is, that all these different species are contained under consciousness as their genus. Now, the classification of mental phenomena, which he describes in this connection, undoubtedly contemplates these as states of mind in general, without any limitation whatever; and it seems at times as if, in making consciousness the "one essential element," the "one necessary condition" of these phenomena, he meant it to be regarded as the differentiating characteristic by which, not some modifications of the mind are distinguished from others, but all are distinguished from the modifications of matter. I ground this remark, not so much upon the two isolated statements adduced by Mr. Mill, as upon passages where it must be supposed that Sir William was on his guard in his mode of expressing this doctrine. The sentence, which I quoted above from the posthumous note on consciousness, is immediately followed by another which is connected with it as its reason by the word *for*, and which runs thus: "While knowledge, feeling and desire, in all their various modifications, can only exist as the knowledge, feeling and desire of some determined subject, and as this subject can only know, feel and desire inasmuch as he is conscious that he knows, feels and desires, it is therefore manifest that *all* the actions and passions of the intellectual self involve consciousness *as their generic and essential quality*." Similarly in combating Reid's doctrine, that consciousness is a special faculty of knowledge distinguished from the other special faculties as they are from each other, he observes: "Consciousness, consequently, is not one of the special modes into which our mental activity may be resolved, but the fundamental form,——the generic condition of them all." * Notwithstanding these statements he maintains "that the sphere of our conscious modifications is only a small circle in the centre of a far wider sphere of action and passion, of which we are only conscious through its effects." † This position may admit of

* *Discussions*, p. 48.

† *Lect. on Metaph.*, Vol. I. p. 349.

being reconciled with the two other statements, but the reconciliation must be one which I am unable to conceive. These statements are not passing allusions which it might have been thought unnecessary to qualify with exact limitations; they are selected from passages which are intended as expositions of the doctrine regarding the relation of consciousness to the various forms of mental activity. If anywhere, it must be in such passages that we are to look for a statement on the subject, with all the necessary limitations; yet we find no limitation whatever to the assertion that mental action or passion without consciousness is impossible. It is, therefore, difficult to explain the qualifications which I have noticed as intended to limit the sphere of consciousness to certain states of mind considered as phenomena or manifestations; and this difficulty is increased by the consideration, that the statements containing these qualifications would, on such an interpretation, reduce themselves to the unimportant proposition, that consciousness is the necessary condition of those mental states of which, as phenomena, we are conscious.

At the very starting point of Hamilton's philosophy we are thus brought face to face with a dilemma which spreads a much wider perplexity than may at first sight appear. For (1) if consciousness is the essential quality by which states of mind may be distinguished from those of matter, what is to be understood by certain states which are described as being destitute of this quality and yet as mental? and (2) if there may be states of mind without consciousness, what is the quality that forms the difference between a mental fact and a physical? The former alternative of this dilemma is one which will turn up again in the criticism of Hamilton's doctrine of latent mental modifications; I confine myself at present to the point involved in the latter alternative, that, in consequence of explaining certain facts beyond the sphere of consciousness by the agency of mind, he has left us in doubt as to the property by which mental and physical facts are to be distinguished from one another. In treating of psychology as a distinct branch of science it is implied that he recognised the facts, which are investigated in that science, as forming a group by themselves, distinguished by some characteristic from all other facts within our experience; but what, in Hamilton's opinion, that characteristic is, I am unable to discover. It is certainly a serious deficiency in the exposition of a science, that the distinctive nature of the objects, with which the science is occupied, is left

altogether unexplained. It may be impossible, indeed, definitely to state the essential property by which the class of phenomena, forming the objects of a science, are distinguished from all others. Life in general, physical as well as mental, is so many-sided, that it seems to elude all our efforts to fit its various phenomena into a single definition; and even if we accept consciousness as the distinctive quality of mental facts, that is itself, as Hamilton remarks and as we shall find immediately, incapable of being exactly defined. Still, it is possible to furnish some conceptions regarding the distinctive nature of the objects to which the several sciences are devoted; and it is sufficient, as it is essential, that such conceptions should be clear and accurate enough to give a definite direction to the labours of students. Had Sir W. Hamilton uniformly, as he seems to have at times, made consciousness the *differentia* of all mental action and passion, he would have avoided a perplexity which it is now difficult to remove. As this perplexity has arisen from his referring certain actions of the nervous system to an unconscious agency of the mind, the further consideration of our present subject may be deferred till we have discussed his explanation of those nervous actions.

Since Sir William Hamilton holds that consciousness is the indispensable condition, if not of all mental states, at least of all mental phenomena, we may now inquire what he understands by consciousness. It has been already observed in passing that he maintains consciousness to be incapable of definition in the strict sense of the word, inasmuch as there is no more elementary fact by means of which it could be rendered clearer; and in this he will probably be sustained by the most of philosophers. But while he considers consciousness to be incapable of definition, he holds that it may be philosophically analysed. By referring to my exposition of his system it will be found that his analysis yields the following three factors as required to constitute every act of consciousness: (1) A mind or subject which knows; (2) a modification of that mind; (3) a recognition or knowledge by the mind of the modification. At the first glance nothing may seem more distinct than this analysis; and in the writings of some philosophers, even after matured examination, it might be found incapable of being misunderstood. As it stands, however, it must be taken in connection with the rest of Sir William Hamilton's philosophy; and in this connection it suggests several questions which cannot be easily or satisfactorily answered.

Of the three elements enumerated in this analysis, the first two, *viz.*, a mind and a modification of that mind, are, as Hamilton explains, the terms of a relation. That relation is a knowledge of the latter term by the former, and constitutes the third element in the analysis. Now, it is a principle, more than once adduced by Sir William under the technical formula, that the knowledge of correlative terms is one, or in other words, that the same act of knowledge, which apprehends one term of a relation, must of necessity apprehend the other also. It might, therefore, be supposed that, when he explains consciousness as a recognition by a mind of some modification of itself, he meant it to be understood that the mind recognizes itself along with the modification to which it is related by such recognition. This supposition might be confirmed by observing the illustrations which he uses to show what consciousness is. He draws attention to the fact that, when I know I must know that I know, when I feel I must know that I feel, when I desire I must know that I desire; and he explains that, while the various mental phenomena may be represented by the formulæ, *I know, I feel, I desire*, the consciousness of them may be represented by the formulæ, *I know that I know, I know that I feel, I know that I desire*. The most natural interpretation of this language would understand it as implying that, when I know feel, or desire, inasmuch as I must know that it is I who do know, feel or desire, I require to know *myself* in the same sense in which I know the action or state of knowing, feeling or desiring. Finally, it seems impossible to avoid this interpretation when an attempt is made to construe into its real meaning the expression, *a modification of the mind:* for when that expression is taken as representing not an abstraction of thought, but a fact of actual experience it can be understood as denoting only *the mind modified;* and, therefore, the terms, *my knowledge, my feeling, my desire*, must be regarded as merely abstract modes of designating *me knowing, me feeling, me desiring*.

Irresistible as seems to be the conclusion, that the preceding paragraph merely states explicitly what is evidently implied in Hamilton's analysis of consciousness, there is no doctrine which he has taken more care to repudiate. There is, probably, nothing in his philosophy which he would regard as more essential to its distinctive character than the position, that we know not real existences, but only their phenomena, modifications, qualities, attributes, properties. This gen-

eral doctrine forms so essential a part of his *Philosophy of the Conditioned*, that it is unnecessary to adduce any passages to justify the ascription of it to him; but it may be worth while in the present connection to cite a single statement, inasmuch as it contains a special application of the doctrine which will help us to understand his analysis of consciousness. "In so far," he says, "as mind is the common name for the states of knowing, willing, feeling, desiring, etc., of which I am conscious, it is only the name for a certain series of connected phenomena or qualities, and, consequently, expresses only what is known. But in so far as it denotes that subject or substance in which the phenomena of knowing, willing, etc., inhere,—something behind or under these phenomena,—it expresses what, in itself or in its absolute existence, is unknown.. Thus mind and matter, as known or knowable, are only two different series of phenomena or qualities."*

Certainly Sir William Hamilton cannot be charged with any tendency towards Empiricism; yet it is impossible to read such a passage as the above without remembering that, to his greatest critic also, the mind, so far, at least, as it is known and probably so far as it exists, is but a "series of feelings." This is also, it will be observed, identical with the account of the mind, of which a brief notice was given in the first article of the present series as the doctrine of David Hume. There is, however, an essential difference between the theory of Hamilton and that of Hume and Mill. It is, therefore, necessary to explain this difference, in order to comprehend the exact purport of Hamilton's doctrine.

To both theories there belongs a common view of the original and essential nature of mental phenomena. To them, mental phenomena are not originally states in which a mind knows or is conscious of itself as acting or affected in particular modes; they are merely phenomena which, in accordance with their own laws, generate the idea of a real or illusory substance to which they belong. The point, at which the two theories diverge, is in their explanation of the mode in which this idea is generated. According to every empirical theory the idea is the growth of a more or less prolonged experience; and this general doctrine admits of manifold modifications in accordance with its account of the various steps in the process through which the idea rises to maturity. On the other hand, in the theory of Sir William

* *Lect. on Metaph.*, Vol. I., p. 138.

Hamilton, as in that of Kant also, no mental phenomenon is possibl without a reference of it to a mind as its subject; so that, though there is never any consciousness of the self which is the subject of such a phenomenon, the idea of self flashes—a Pallas from the human brain—into a certain completeness of existence with the earliest dawn of mental life.

At this point, however, Hamilton's theory separates from Kant's, strikes in fact into an entirely novel path. There is a passage in his Lectures on Metaphysics,* in which Hamilton notices the three general facts, revealed in consciousness, of our Mental Existence or Substantiality, our Mental Unity or Individuality, and our Mental Identity or Personality. In this passage he refers briefly, but with the clear force of his concisest utterances, to Kant's theoretical doctrine, that, inasmuch as the belief in our Individuality and Identity is merely a condition of the possibility of consciousness, it is impossible to conclude that that belief reveals to us a reality. The general discussion on this subject, but especially the reference to Kant, I am unable to understand except on the supposition that Hamilton did not always keep in view the applications of his own philosophy in this direction. "In disputing the testimony of consciousness to our mental unity and substantiality," he says, "Kant disputes the possibility of philosophy and consequently reduces his own attempts at philosophising to an absurdity." But how does Hamilton himself treat the testimony of consciousness to our mental unity and substantiality? According to the explanation, which undoubtedly represents his maturest speculations and which is alone consistent with the most essential principles of his philosophy, the belief in a mind as the subject of mental phenomena is merely one of the mental necessities which draw their origin from the widely operating Law of the Conditioned. By referring again to the exposition in my previous article it will be found that this law is described as arising either from the relation of knowledge or from the relations of existence, and that the relations of existence are divided into two classes as being either intrinsic or extrinsic. The intrinsic relation is defined to be that which furnishes the subordinate form of the Law of the Conditioned, which is named the *Principle of Substance and Phenomenon*. This principle, Hamilton expressly states,† applies

* Vol. I, pp 371—5.

† *Discussions*, p. 605.

to mind as well as to matter; but like all forms of the general law under which it comes, as it arises from the limitation or impotence of the mind, it expresses merely a necessity of thought, not a necessity of things. It is evident that, on this theory, the compulsory reference, by our consciousness, of its changing phenomena to a mind as their permanent subject, is wholly inadmissible testimony to the real existence of such a subject. Now, there is undoubtedly a difference in the modes in which Hamilton and Kant severally explain, or rather explain away, this testimony of consciousness; but on what ground the former can justly complain of the latter for disputing the testimony as if he himself allowed it, one cannot very easily discover. It seems at times indeed as if the necessities of thought had been too strong in Hamilton's mind to yield before the attacks of his own philosophy of the Conditioned; and it is certainly difficult to read the passage, in which he discusses the existence, individuality and identity of the mind, without the conviction that, when he wrote it, he himself believed these facts to be revealed in trustworthy deliverances of our consciousness. He is not unwilling to speak of the belief in the existence or substantiality of the mind as an *intuition*; and, although he afterwards derives it from the Law of the Conditioned, he declares in the passage under consideration, that "it is a simple and ultimate fact of consciousness," which, as such, "cannot be deduced or demonstrated."†

Returning to the analysis of consciousness we can now more clearly understand what it implies. In spite of the language just quoted the general drift of Hamilton's most essential doctrines compels us to conclude that, in describing consciousness as a relation between a mind and its modifications, in which the former recognises the latter, he did not mean it to be understood that the mind recognises itself at the same time.

In reviewing this analysis of consciousness it is impossible to overlook the fact of its inconsistency with principles not only allowed, but even inculcated strenuously by Hamilton himself. I have already, in this connection, directed attention to his use of the logical law, that the knowledge of correlative terms is one; but it is instructive to notice more exactly the recoil upon his own doctrine regarding consciousness of the argument in which he urges this law against the doctrine on the same subject attributed to Reid. The doctrine of

† *Lect. on Metaph.*, Vol I., pp. 371–2.

Reid maintains that we are conscious of the operations of our minds, but not of the objects to which these operations are directed. An operation of the mind, Hamilton objects, is what it is only in relation to the object which it apprehends; and consequently, since we cannot know one term in a relation to the exclusion of the other, it is impossible to be conscious of an operation of the mind without being conscious of its object. In like manner, when Hamilton teaches that, in the relation of a mind to its modifications which constitutes consciousness, there is a knowledge of the modifications, but not of the mind, may we not object that, as the mind and its modifications are the two terms of a relation, it is impossible to be conscious of the latter without being conscious of the former?

A further ground of objection to Hamilton's doctrine has already been indicated in the meaning of the word, *modification*. A modification or mode of anything, he explains, is merely a particular manner in which it exists or acts; and this is the radical idea which with some subordinate varieties of meaning he finds embodied in the various terms, *state, quality, attribute, property, accident, phenomenon*.* Now, the manner or form of anything may undoubtedly, and for scientific purposes must frequently, be separated in thought from the thing itself, and contemplated and reasoned about apart; but no one dreams that manners or forms have any existence by themselves. To adduce Hamilton's own words in illustration, "thought," he says in a resumé of one of his Lectures on Logic, "thought, I showed, could be viewed, by an analytic abstraction, on two sides or phases. We could either consider the object thought or the manner of thinking it, in other words, we could scientifically distinguish from each other the matter and the form of thought. Not that the matter and form have any separate existence; no object being cogitable except under some form of thought, and no form of thought having any existence except some object be thought under it."† "This," he goes on to explain, "is merely one of a thousand similar abstractions we are in the habit of making;" and undoubtedly he would admit the distinction of a modification and a thing modified to be merely one of such scientific abstractions, not a real separation. It is true then that, in abstract or scientific speculation, I may contemplate my

* *Lect. on Metaph.*, sect. VIII.

† *Lect. on Logic*, Vol. I., p. 21. See also p. 15.

knowledges, feelings and desires without attending to *myself* who know, feel and desire, as it is also possible, in such speculation, to contemplate *myself* without attending to any of those states in one or other of which I must exist when I am conscious of myself. In actual life however I am conscious of my affections and actions not as abstract conceptions, but as concrete facts, and the statement that I am conscious of my affections and actions as such, can have no other intelligible meaning than that I am conscious of myself as affected or as acting.

In these suggestions I have by no means been seeking merely to drive an *argumentum ad hominem*, or to draw, by a mere play on the meanings of words or the relations of abstract notions, conclusions which have no value beyond abstractions, because incapable of being verified by observed facts. On the contrary, I believe that the facts revealed by the most accurate observation of mental phenomena will not for a moment tolerate a theory which implies that I am conscious of knowing and feeling, but that I am not conscious of myself who know and feel. What I am in reality who thus know myself in all that I am and do, is a question which belongs of course to the science of being, and will meet us therefore again at a subsequent stage of this criticism. In reference to the self, considered as a factor of consciousness, there are several other questions which might be discussed here appropriately enough, even though not directly suggested by Hamilton's analysis of consciousness, but as the most important of these must re-appear for consideration in other connections, and especially in connection with the knowledge of the not-self, their discussion may for the present be postponed.

The subject, which naturally presents itself next for our consideration, is the evidence and authority of consciousness. In connection with this, consciousness is to be considered first of all as the witness whose testimony reveals to us the phenomena of the mind. If Phenomenal Psychology is the science conversant about mental phenomena, and if consciousness is a knowledge of these phenomena without which they cannot exist, then clearly it is to consciousness that we must resort for an acquaintance with the objects of the science. This is the doctrine of Sir William Hamilton; but in maintaining it he placed himself unavoidably in conflict with phrenology and with those positivists who degrade psychology from the rank of an independent science to that of a mere branch of cerebral physiology. It is now our duty to inquire into the success of his polemic. In doing so

a special care is required lest we lose sight of the real questional issue; for there are certain positions of phrenology which must be canvassed on entirely independent ground without reference to the claims of any other science, while there are others which constitute phrenology a rival to psychology. The theories which it maintained or still maintains regarding the functions of different portions of the encephalon, its allegations regarding the development of the encephalon or of its different portions in different animals and at different ages, these are matters of purely physiological interest, at least they can affect only in an indirect manner the interests of any other science. When however it is asserted that the study of the brain supplies the exclusively reliable or even the principal information concerning mental phenomena, a doctrine is maintained which comes into direct collision with the claims of psychology. This doctrine the psychologist, studying mental phenomena by reflection upon consciousness, cannot choose but combat; with any other aspect of phrenology he has nothing necessarily to do.

Observing this distinction we are prepared to estimate more intelligently the mode in which Sir William Hamilton assails the pretensions of phrenology. Convinced that the doctrine of Gall, if true, "would not only afford a new instrument" for investigating mental phenomena, "but would in a great measure supersede the old,"* he made extensive observations with a view to test the principal facts on which that doctrine professes to be based, and the results, he states, "prove that no assistance is afforded to Mental Philosophy by an examination of the Nervous System."† His aim, it is thus evident, was to show that the science of mind must be founded upon a study of consciousness, and that not only can it not be wholly constructed, but it cannot even receive aid from a study of the brain. The proof, however, which he leads from his wide induction, seems to me quite irrelevant to this point. It is far from my intention, and it would be extremely futile in me, even if it were just, to disparage the value to science of the researches conducted by Sir William Hamilton with the purpose now under consideration. It is for the physiologist, or rather for the historian of physiology, to estimate the assistance which these researches have rendered in the solution of previously unsettled problems. I notice that his observations on the average size of the

* *Lect. on Metaph.*, Vol I., p. 406.
† Ibid., p. 264, note.

African brain, when compared with the European, are still supported by recent inquirers;* and, not to go further into detail, the discoveries which he claims to have made, regarding the development of the cerebellum in proportion to the cerebrum, must be acknowledged to be of value in determining the function of the cerebellum as well as in other respects. But it might be admitted that he had succeeded in overturning every doctrine of importance in the organology of the phrenologists; and yet we should be far from his conclusion that the study of the nervous system cannot supersede reflection in the science of mind, still farther from the position, that that science cannot even be aided by such a study. For the general theory, which makes mental science altogether dependent on the physiology of the nervous system, is not involved in the truth or falsity of particular theories on the special functions of different parts of that system. It is therefore incumbent on the psychologist to adduce some grounds, apart from any properly physiological doctrines, to prove that consciousness, if not the only competent informer, is certainly an independent source of reliable information, with regard to mental phenomena. Yet this is exactly what Sir William Hamilton has failed to do. As far as his arguments against phrenology are concerned, the general principle of that doctrine is unassailed and might therefore be reproduced with a revised theory of cerebral organs.

It is the more remarkable that Hamilton should have missed the exact point of this argument, because the basis of psychology, as opposed to any exclusive organology, is so obvious. It is possible to conceive, as a department of physiology, a science which seeks to discover the cerebral organs of different mental powers, which yet would not interfere with the investigation of these as they are revealed in our consciousness of their exercise. But Hamilton contemplated and attacked an intolerant doctrine like that of Comte, which refuses to recognise in consciousness any trustworthiness as a revealer of mental phenomena. Now, in opposing such a doctrine it is wholly unnecessary to consider the special functions which it may ascribe to the several parts of the brain. It is unnecessary even to rest content with the statement of Mr. Mill, that "all real knowledge of the successions of mental phenomena must continue, for a long time at least, if not for ever to be sought in the direct study of the successions them-

* See the *Quarterly Journal of Science* for January, 1866, p. 46.

selves."* A much bolder assertion is justified by the facts of the case; for not only is it impossible to regard the phrenological method as the exclusively reliable way of obtaining information concerning the phenomena of mind, but it is evident that such a method by itself can discover nothing whatever of these phenomena. To make this evident it is not necessary to enter into the physiological questions discussed by Sir William Hamilton; it is necessary merely to consider what kind of knowledge alone can be furnished by an observation of cerebral structure and functions.

In this consideration I shall say nothing of the great imperfections which, in spite of the advances made even since the time of Hamilton, still continue attached to the physiology of the nervous system. Suppose this department of physiology and the corresponding department of anatomy were as perfect as they ever can be, what could they accomplish? They may furnish a minute acquaintance with the physical structure and with the chemical constituents of the brain and the nerves; they may succeed in generalising the physical or chemical laws of which nervous action presents a special form; they may thus bring the nerve-force into correlation and convertibility with the other forces of the material universe: but in all this what approach has been made to the discovery of one of those phenomena which are distinguished as mental? Absolutely, it must be answered, no approach whatever. For the phenomena of my mind—my thoughts, my feelings, my wishes—are all actions which *I* perform and am conscious of performing, or states in which *I* exist and am conscious of existing; whereas the phenomena revealed to me by observation of the brain are all actions performed by something that is not I, states in which something that is not I exists. Now, it is, indeed, impossible to prove the assertion, but to every one who reflects the assertion is self-evident, that *I*, as well as the actions which *I* perform and the states in which *I* exist, my thoughts, and feelings and wishes can be discovered only by *me*, that is, by a consciousness of myself, certainly cannot be discovered in anything that is not I. The evidence of this assertion may be made more pointed by the reflection, that all that can be discovered in the observation of the nervous system and its modes of action must be one or other of those phenomena which are capable of affecting the external senses; and, indeed, it is mainly to

* *Logic*, VI, 4, 1. The statement is homologated by Mr. Lewes in his *Comte's Philosophy of the Sciences*, p. 210.

the knowledge conveyed through the eye that such observation is limited. But what sense is constructed to receive impressions from the phenomena of mind? through what function of the eye can one see a thought or a wish? In putting this question it is not denied that there is a special portion of the brain or a special action of its fibres on which self-consciousness depends; and that, therefore, self-consciousness may have in the nervous system an organ which, by analogy with the organs of other mental acts, might be named a *sense*. While, however, the existence of such an organ is still a mere hypothesis suggested by the general correlations of mental and nervous actions, it is not by such an organ that observations are made upon the brain: and even if such an organ were discovered, the discovery could afford no assistance towards ascertaining the peculiar nature of those phenomena of which it is the organ. On the other hand, these phenomena,—the actions which I perform, the states in which I exist,—never occur without that knowledge of them which is commonly named consciousness; and without this knowledge it would be as impossible to conceive their peculiar nature as it is for the congenitally blind to form any conception of colour.

It is, therefore, evident that, without entrenching on the peculiar ground of physiology, the psychological method of studying mental science may be easily vindicated in opposition to an intolerant organology; but it still remains a question, what place in that science is to be assigned to the science which investigates the organ of mind? The doctrine of Sir William Hamilton, as we have seen, in its opposition to phrenology, goes to the extreme of maintaining, "that no assistance is afforded to Mental Philsophy by an examination of the Nervous System." There is, however, an *a priori* improbability in such a doctrine. The general connection of the sciences, which every year is rendering more extensive and more intimate, makes Hamilton's assertion, in its absoluteness, untenable; but it is specially unlikely that two sciences, so closely related as the philosophy of the mind and the physiology of the nervous system, should be of no assistance to one another; and it would not be difficult to show that there must be between them a mutual and beneficial reaction. It is altogether impossible, for example, to analyse so complex a phenomenon as any one act of sense-perception into its constituent elements so as to extricate the purely mental without ascertainining the nervous processes by which they have been conditioned; and the determination of many

still unsolved problems regarding sensation is to be sought as much from physiology as from psychology. I shall say nothing of the assistance which physiology has rendered in narrowing down the controversy regarding the origin of the different factors which constitute human knowledge, nor need I indicate the light which it may throw on many peculiarities among the phenomena of human consciousness. Sir William Hamilton himself, by his numerous interesting notes on the physiology of the nerves, has shown the psychological importance of this study; and in subsequent parts of this criticism we may have an opportunity of noticing the explanation of several phenomena which is furnished by attention to the laws of nervous action.

Although, therefore, the value of physiology in mental science may be too highly exalted, it is not legitimate to despise its contributions altogether. Its relation to psychology is in fact that of several other sciences whose borders at points unavoidably overlap those of the science of human nature. The science of language, to take an obvious instance, is growing every day into an importance which must be more fully accorded to it as a handmaid to the science of mind; for in the words which, expressing the most familiar and indispensable ideas, are to be found in all languages, in the nominal and verbal inflections of different tongues, in the manifold grammatical and lexical changes which human speech is everywhere undergoing, there is undoubtedly preserved a record of processes through which the human mind has been developed in pre-historic as well as in historic times, and by a more accurate and extensive study of this record we may be more easily and surely guided to the laws by which the mental development of mankind is regulated. I see no improbability in the prospect of attempts, as definite as those which have been made in favour of physiology, to supersede psychology by comparative philology. It is unnecessary, in further illustration of this subject, to do more than draw attention to the fact, that the most valuable assistance may also be rendered to the science of mind by the general history of the human race as well as by the special history of different departments of human activity, by the natural history of mankind and by those statistics of modern society, the accurate collation of which has become one of the most interesting studies among the facts of human life.

In connection with the evidence and authority of consciousness we have still to consider Hamilton's doctrine regarding the basis and

starting point of philosophy. The phenomena, which philosophy investigates, are, we have seen, discoverable only by consciousness: it is consequently on the facts revealed in consciousness that philosophy must be based; and in order that this basis should be secure consciousness must be a revealer of facts, not of illusions. In all this Sir William Hamilton will undoubtedly be followed with assent by those who have sought the ultimate foundation of our beliefs; but it is necessary to observe a distinction, which he draws, between two different aspects in which the testimony of consciousness may be viewed. In the first place consciousness may be regarded as bearing witness to its own existence; but it may also in a second aspect be considered as testifying with regard to facts beyond itself. Now, he maintains, it is impossible to question the testimony of consciousness in the former aspect; I cannot doubt that I am conscious without doubting and thus annihilating my doubt, since it must be a state of consciousness: but in the latter aspect the testimony of consciousness may, without contradiction, be doubted, though such a doubt, by surrendering the veracity of consciousness, would remove the foundation of philosophy. It appears to me, however, that Sir William Hamilton has not contemplated all the points of view from which the testimony of consciousness may be regarded. It is possible, I think, to ask three questions with regard to that testimony: (1) Is there such a fact as consciousness, am I really conscious at all? (2) Admitting that I am conscious, what is it I am conscious of? in other words admitting the existence of consciousness, what is the fact to which it testifies? (3) Suppose I know the fact to which consciousness testifies, is its testimony trustworthy? Now I am unable to explain Hamilton's application of the twofold distinction which he draws except on the supposition that he has failed to discriminate the first two of the three questions which I have now stated. His remarks on the former of the two aspects in which he contemplates the testimony of consciousness are true only in reference to the first of the three questions which I have distinguished; but he frequently urges his remarks, especially against an antagonist, as if they were true in reference to the second of these questions. For instance, to illustrate his distinction he takes the phenomenon of external perception, in which, he maintains, the fact declared by consciousness is that I have an immediate knowledge of a non-ego. "Of this," he argues, "*as a phenomenon*, doubt is impossible. For, as has been seen, we cannot

doubt the actuality of a fact of consciousness without doubting, that is subverting our doubt itself."* Now, in an act of perception, as in any other act, it is certainly impossible to doubt the fact that I am conscious of something; but what that something is of which I am conscious, is not in the same category of indubitable certainty at all. On the contrary I believe that not only in the case of external perception, but very frequently also in regard to other states of consciousness the point most difficult of determination is precisely the fact which consciousness really attests. This is a difficulty which is met not only in reflecting on the phenomena of mind, but also in observing the phenomena of matter; and Hamilton himself inculcates the caution which the difficulty renders necessary. In explaining the conditions of a legitimate hypothesis he lays down as the very first, that the phenomena, which the hypothesis explains, should be ascertained actually to exist; and lest the condition should appear too elementary to be worthy of statement, he warns his students that the necessity of the admonition is shown by "great and numerous examples of its violation in the history of science," quoting with approbation the remark of Cullen, "that there are more false facts current in the world than false hypotheses to explain them."† While the observation of physical phenomena is not unattended with risks that require the observer to guard himself by numerous precautionary measures, the difficulty of making exact observations so as to distinguish facts from mere illusory appearances Hamilton himself describes as immeasurably increased in seeking to detect the phenomena of consciousness. It is indeed one of his charges against the hypothesis of representative perception, that it fails to fulfil the above-mentioned condition of a legitimate hypothesis;‡ and not the least frequent criticism which he passes on theories opposed to his own is to the effect, that they mis-state the facts to be explained in order to suit their explanation. I hold therefore that a principle, not only prejudicial to science, but opposed to the explicit teaching of Hamilton himself, would be introduced by the doctrine, that it is impossible for any one to doubt what, at any conscious moment, the fact is, to which consciousness actually testifies and in which accordingly its veracity is involved. It is not therefore legitimate in Sir William Hamilton to assert that the fact of consciousness, as in-

* *Reid's Works*, p. 744. The italics are his own.

† *Lect. on Metaph.*, Vol. I., p. 169

‡ *Ibid.*, Vol. II. p. 138.

terpreted by him, in an act of perception, is beyond all scepticism; for we shall find when we advance to the consideration of this subject, that such scepticism is expressed by authorities who are perfectly competent to give their version of the fact attested by consciousness. Were it necessary to illustrate further the uncertainty that arises in ascertaining the testimony of consciousness, another appropriate example presents itself in connection with Hamilton's doctrine of the causal judgment. In that judgment, as observed by him, the fact attested by consciousness is merely the impotence of the mind to conceive that a phenomenon, now appearing, was formerly non-existent, and the consequent necessitation of the mind to conceive the phenomenon as having previously existed in other forms I should say, that probably not one of a hundred observers, on turning their attention to this subject, would accept such a statement as expressing the fact of which they are conscious when they judge that a certain phenomenon must have had a cause. Yet "there is in truth nothing," says Hamilton, "which men seem to admit so lightly as an asserted fact."* How many of his disciples have admitted his interpretation of the fact implied in the causal judgment merely because it is asserted by him?

Both Mr. Mill† and Professor Bain‡ have insisted on the difficulty, which I have now illustrated, of discovering the exact facts attested by consciousness; and their remarks are well worthy of study. They do not however point out the source of Hamilton's mistake, which, as I have indicated, is to be found in his confusion of two very different questions under one question of ambiguous import. His error is thus to be explained as a *Fallacia Plurium Interrogationum*. To use his own illustration, he might be regarded as saying to the defender of representative perception, "Do you admit the fact of consciousness in an act of external perception?" "Certainly," will be the answer, "the fact of consciousness cannot be doubted." "Then you must admit the reality of the fact, or you deny the truthfulness of consciousness and destroy the possibility of philosophy." "Hold!" the representationist may justly reply, "I admitted the fact of consciousness, meaning the fact that I am conscious; for that cannot be doubted: but I do not admit the fact of consciousness, if you mean the fact of which you say that I am conscious; *that* is by no means beyond scepticism."

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* *Lect. on Metaph.*, Vol. I., p. 169.
† *Exam. of Hamilton*, p. 502, 1st ed.
‡ *Emotions and Will*, pp. 513-9, 2nd ed.

It would certainly be a point of some importance in the interpretation of Hamilton's system, if we could be assured that he placed the foundation of philosophy in the fact of consciousness, that is, in the fact that consciousness exists. It is undeniable by those who have carried their inquiries back to the primitive chaos which the light of human thought has irradiated with its order, that after all, even the oldest, beliefs have slipped from under their feet and they are stepping timidly on the pathless waste of universal doubt, there remains in the doubt itself one fact which no doubt can remove; and that is the fact of consciousness. It is scarcely possible that this truth can ever be more clearly or more beautifully expressed than in the *Meditations* of Descartes, whose *Cogito, I am conscious,* undoubtedly embodies the ultimate resting-point as well as the primal starting-point of all human belief, even though it may not be admitted that the first step in advance from that point is *Sum, I exist,* without an explanation of what both "I" and "exist" imply. But it is far from certain that Sir William Hamilton perceived this fact to be the sole basis of philosophy, because he confounds it with another fact which is by no means on a par with it in absolute certainty. We find ourselves met by a similar difficulty in attempting to define the next stage in the upbuilding of Hamilton's philosophy. While he maintains that it is impossible to doubt a deliverance of consciousness as a testimony to the fact of its own actuality, it is possible, he admits, to question the truthfulness of its testimony to anything beyond that fact. When the question therefore is asked, on what ground the deliverances of consciousness are to be accepted as truthful, the most natural answer we should have expected from Hamilton, according to his own principles, would be, that these deliverances carry their evidence in themselves, that, while they form the proofs of other things, they cannot be proved by anything more evident; and I am inclined to believe that this was really his opinion. But after a careful comparison of various passages in which he treats of the subject one can scarcely believe that he was perfectly or at least uniformly clear in his own mind on the point. It is especially perplexing to find occasionally something like an attempt to prove the veracity of consciousness by arguments, such as the consideration that, if consciousness were mendacious, God would be a deceiver and the root of our nature a lie. That this or any other argument must ultimately appeal to one or other of the self-evident deliverances of consciousness is, however, so

obvious, that it may be supposed Hamilton did not in such considerations really intend to prove the veracity of consciousness, but rather to illustrate the necessity of admitting it by indicating the consequences implied in its denial.

The length, to which this article has extended, has allowed me merely to touch on this last subject. I am compelled also, for the same reason, to omit any reference to the rules, laid down by Hamilton, for applying the testimony of consciousness or to his claim of originality in their discovery.

ON THE AXES OF A CONIC IN TRILINEARS.

In vol. IX., No. 52, and vol. X, No. 59 of this Journal, were given some descriptions of particular cases of the trilinear equation to a conic. In the corresponding discussion of the general equation, it does not appear to have been noticed that the axes can be determined by the very same process as that used by Sir W. Thomson to obtain the principal radii of curvature at a point in a surface, the resulting equation differing only in the forms of the constants. This omission has been caused, I believe, by the systematic neglect of the relation (2) of this article, which was demonstrated and employed in the articles above referred to. I proceed to the general investigation.

Let the conic

$$\phi(\alpha, \beta, \gamma) = u\alpha^2 + v\beta^2 + w\gamma^2 + 2u'\beta\gamma + 2v'\gamma\alpha + 2w'\alpha\beta = 0.$$

be cut by the diameter

$$\frac{\alpha - f}{l} = \frac{\beta - g}{m} = \frac{\gamma - h}{n} = r,$$

where the point (f, g, h) is the centre, r is the distance between (α, β, γ) and (f, g, h), and l, m, n, are subject to the conditions

$$al + bm + cn = 0, \quad \ldots\ldots(1)$$

$$l^2 \sin 2A + m^2 \sin 2B + n^2 \sin 2C = 2 \sin A \sin B \sin C. \quad \ldots\ldots(2).$$

Then the two values of r are given by the equation

$$\phi(l, m, n)\, r^2 + \phi(f, g, h) = 0,$$

or, writing

$$-P \text{ for } \phi(f, g, h),$$

$$\frac{P}{r^2} = ul^2 + vm^2 + wn^2 + 2u'mn + 2v'nl + 2w'lm.$$

The products, mn ..... can be eliminated from this expression by aid of condition (1); thus

$$al + bm = -cn$$

and therefore

$$2ablm = c^2n^2 - a^2l^2 - b^2m^2.$$

Hence, making

$$H = u + \frac{a}{bc}(au' - bv' - cw'),$$

$$K = v + \frac{b}{ca}(bv' - cw' - au'),$$

$$L = w + \frac{c}{ab}(cw' - au' - bv'),$$

the above expression becomes

$$\frac{P}{r^2} = Hl^2 + Km^2 + Ln^2 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3)$$

To determine the axes, r is to be made a maximum or minimum by the variation of l, m, n, subject to the relations (1), (2); hence,

$$0 = Hldl + Kmdm + Lndn$$
$$0 = adl + bdm + cdn$$
$$0 = \sin 2A.\, ldl + \sin 2B.\, mdm + \sin 2C.\, ndn,$$

and using indeterminate multipliers λ, μ, we obtain

$$Hl + \lambda a + \mu \sin 2A.\, l = 0 \ldots\ldots\ldots\ldots (4)$$
$$Km + \lambda b + \mu \sin 2B.\, m = 0 \ldots\ldots\ldots\ldots (5)$$
$$Ln + \lambda c + \mu \sin 2C.\, n = 0 \ldots\ldots\ldots\ldots (6)$$

Then, l (4) + m (5) + n (6) gives

$$\frac{P}{r^2} + \mu 2 \sin A \sin B \sin C = 0$$

Substituting this value of μ in (4), (5), (6), they become

$$l = \frac{-\lambda a}{H - \dfrac{\sin 2A}{2 \sin A \sin B \sin C} \cdot \dfrac{P}{r^2}}$$

$$m = anal$$

$$n = \ldots\ldots$$

and multiplying these respectively by a, b, c, and adding,

$$\frac{a^2}{H - \dfrac{\sin 2A}{2 \sin A \sin B \sin C} \cdot \dfrac{P}{r^2}} + anal + \ldots\ldots = 0$$

or by an obvious reduction

$$\frac{\tan A}{2 \sin A \sin B \sin C \cdot \dfrac{H}{\sin 2A} - \dfrac{P}{r^2}} + anal + \ldots = 0, \ldots\ldots\ldots (7)$$

a quadratic in r^2 which gives the squares of the semi-axes.

To determine P, we have, since (f, g, h) is the centre,

$$\frac{\phi'(f)}{a} = \frac{\phi'(g)}{b} = \frac{\phi'(h)}{c}$$

$$= \frac{f\phi'(f) + g\phi'(g) + h\phi'(h)}{af + bg + ch}$$

$$= \frac{2\phi(f, g, h)}{2\Delta} = \frac{-P}{\Delta},$$

Hence P is found by eliminating f, g, h from the equations

$$\phi'(f) + \frac{aP}{\Delta} = 0,$$

$$\phi'(g) + \frac{bP}{\Delta} = 0,$$

$$\phi'(h) + \frac{cP}{\Delta} = 0,$$

together with $af + bg + ch = 2\Delta$;

and therefore P is given by the determinant

$$\begin{vmatrix} u, & w', & v', & \dfrac{aP}{2\Delta} \\ w', & v, & u', & \dfrac{bP}{2\Delta} \\ v', & u', & w, & \dfrac{cP}{2\Delta} \\ a, & b, & c, & -2\Delta \end{vmatrix} = 0, \ldots\ldots\ldots\ldots\ldots\ldots (8)$$

or if we expand the determinant

$$P = (2\Delta)^2 \frac{uu'^2 + vv'^2 + ww'^2 - uvw - 2u'v'w'}{a^2(vw - u'^2) + anal + \ldots + 2bc(v'w' - uu') + anal + \ldots}$$

On clearing the equation (7) of fractional forms, it will be found to reduce to

$$\frac{P^2}{r^4} - \frac{P^2}{r^2}(H + K + L) + (KL \sin^2 A + LM \sin^2 B + MN \sin^2 C) = 0, \quad \ldots\ldots\ldots\ldots \quad (9)$$

which is probably the most simple shape it can assume.

Cor. Hence we have at once the conditions that the curve may be an ellipse, parabola, or hyperbola respectively,

$$KL \sin^2 A + anal + \ldots \gtrless 0.$$

Again, since, if r_1, r_2 are the values of r,

$$\frac{1}{r_1^2 r_2^2} = \frac{KL \sin^2 A + anal + \ldots}{P^2},$$

the area of the curve when it is an ellipse is

$$\frac{\pi P}{(KL \sin^2 A + anal + \ldots\ldots)^{\frac{1}{2}}}.$$

The condition that it may represent an equilateral hyperbola is

$$H + K + L = 0.$$

That it may represent a circle, it is plain that the roots of (7) are equal when the denominators of the fractions are the same; that is, when

$$\frac{H}{\sin 2A} = \frac{K}{\sin 2B} = \frac{L}{\sin 2C}$$

and these conditions are therefore sufficient, but it can easily be proved that these conditions are also necessary, by applying the condition of equal roots to the equation (9). Thus, this condition is

$$4 (KL \sin^2 A + anal + \ldots\ldots) = (H + K + L)^2$$

or,

$$H^2 + K^2 + L^2 + 2 \cos 2A . KL + 2 \cos 2B . LH + 2 \cos 2C . HK = 0.$$

which is easily seen to be equivalent to

$$(H \cos 2B + K \cos 2A + L)^2 + (H \sin 2B - K \sin 2A)^2 = 0,$$

which requires

$$\frac{H}{\sin 2A} = \frac{K}{\sin 2B} = \frac{L}{\sin 2C}.$$

That the conic may break up into two lines not parallel, the condition is, since the axes in this case vanish,

$$P = 0.$$

the direct interpretation of which is that the centre is a point on the curve; and the determinant (8) becomes

$$\begin{vmatrix} u, & w', & v' \\ w', & v, & u' \\ v', & u', & w \end{vmatrix} = 0.$$

If simultaneously with this condition, we have also

$$KL \sin^2 A + anal + \ldots\ldots = 0,$$

the curve breaks up into two parallel lines.

J. B. C.

TORONTO, December, 1867.

MOLLUSCOUS ANIMALS.

NO 2.

BY REV. PROFESSOR HINCKS, F.L.S.

In my former paper on Molluscous animals I had to deal with a part of the subject where I might reasonably consider the materials for judging within my reach, and where I could maintain my opinions with some confidence. In proceeding to the subdivision of the several classes, I feel my task to be far more difficult and more uncertain in its results. It is true that in some of the classes orders have been proposed, and in the smaller classes the families answer the same purpose; but in some cases the attempts made, even by those whose authority is considered very high, are far from being satisfactory, and in others there can scarcely be said to have been any attempts made. A classification complete in all its steps is required for introducing students, most easily, to a knowledge of the structure and mutual relations of the creatures, and I have felt the need of it to such an extent as to be drawn to attempt something, whilst I feel that though I have very long interested myself greatly in this division of the Animal kingdom, my distance, for some years past, from the sea, from large collections, and from the most valuable books, throws great difficulties in my way, and prevents my feeling much confidence in what I have to offer. To begin with the class TUNICATA, both the subclasses have been divided by good authorities into Orders, in each case five in number, and seemingly well-founded, though the analogies usually perceptible between the divisions, corresponding in position, here escape

my notice, and I do not even recognise, in the case of the lower sub-class *Polyzoa*, any reason for the particular series, which I accept as usually given. In the higher sub-class the divisions are no more than family groupes, though for our present purpose, equivalent to orders. In the Polyzoa they have more extent, and include more variety of form, but are less certainly established. They are as follows:

A. TUNICATA

SUB-CLASS	SUB-CLASS
Polyzoa.	Tunicata proper, or Ascidioidea.
1 Cheilostomata.	1 Ascididæ.
2 Cyclostomata.	2 Clavellinidæ.
3 Ctenostomata.	3 Pyrosomatidæ.
4 Pedicellinea.	4 Botryllidæ.
5 Hippocrepia.	5 Salpidæ.

I merely refer to this class to give as much completeness as possible to the view of the sub-kingdom which I submit to you: I am myself acquainted with it only from books and preserved specimens, most of them belonging to Polyzoa.

We proceed to class Conchifera: of its highly interesting lower sub class, Palliobranchiata. I can only say at present that the eight families, into which they are divided in the best recent works, seem to me to require some combinations. This will, of course, depend on our views as to the mode of limiting families, some founding them chiefly on a single structural character, whilst others require the concurrence of several characters to mark the type of the groupe, but admit of variability in one or more of these, so long as the organism appears to be nearer to a particular type than any other; some admitting a family wherever they observe a certain resemblance amongst a few genera, whilst others expect the principal families which, in a sub-class, might almost as well be called orders, to express certain tendencies of development in analogy with corresponding divisions of other classes, thus occupying a definite place in a general system. Perhaps we may be justified in treating *Craniadæ* and *Discinidæ* as in our sense one family with their hingeless oyster-like shells, and as exhibiting the lowest Palliobranchiate type, next to these would come the *Lingulidæ*, and I should be tempted, conjecturally, to include *Orthidæ* under *Productidæ*, and to unite *Spiriferidæ* and *Rhynconellidæ* with their unpunctate shells and spirally folded arms, usually more or less supported by a shelly prop, suitably bent for

the purpose. The remaining family of *Terebratulidæ* may be received without question. It would be requisite before formally proposing such a modification of the classification, to examine carefully all that is known of the animals, or their shells, in a manner which my opportunities have not admit. I can therefore, at present, only express my expectation that the five tendencies, usually manifested under each class, or sub-class, will be observed here, as elsewhere, and that corresponding truly natural divisions will thus be formed. The *Palliobranchiata* are most of them known to us in a fossil state. The few recent species assist us in rightly interpreting the appearances they present.

We advance to the consideration of the *Lamellibranchiata*, the higher sub-classes of Conchifera, and one of the most extensive and important divisions of the molluscous sub-kingdom. It is a division in which the families have been worked out with considerable success, though the distinction between the greater families and sub-families has not always been duly attended to, but the combination of the families into orders has been either neglected, or performed in a manner that is far from satisfactory. La Marck proposes two orders: Monomyaria and Dimyaria, founded on the number of muscular impressions on the shell. It is not to be doubted that the single muscle marks inferior development, and is a useful character in determining lower groupes; but it may be greatly doubted whether it is an absolute character, sufficient to limit an order, and marking in itself a grand division among Lamellibranchiate Mollusks. It would not be allowable to place *Tridacna* in a different order from *Chama*, on account of its blended sub-central muscular impressions, nor to remove *Mytilidæ* from the lowest order, and from the near neighbourhood of *Aviculidæ*, on account of the presence of two almost combined muscular impressions, nor is it by any means proved that *Arcadæ*, which in several particulars seem to belong to the lowest division, must be separated from it on account of their two muscular impressions: much less can it be maintained that the *Dimyaria* have not divisions among themseles, on other grounds quite as important as their distinction from *Monomyaria*, and therefore increasing the number of orders. Another proposed leading division of *Lamellibranchata* is into Asiphonida and Siphonida. This depends on the entire separation, or union in some part of their margins, of the mantle lobes, leaving distinct openings for the incurrent and excurrent water which is drawn in by the action of cilia, and after providing both for nutrition and aeration is expelled through the other orifice. It is to be

remarked that this latter arrangement does not materially alter the nature of the processes performed, but is an adaptation of the common structure to the cases of living within sand or mud, or at some depth in it, the length of the siphons being adapted to the habit of the creature in this respect. It is nevertheless to be admitted that the simpler structure, where the water is directed in its proper course, though the mantle lobes and branchial lamellæ are entirely unconnected, is lower than the more complicated one, in which there is more or less coherence of these parts, and extension where required into elongated siphons: accordingly the differences in this respect may be assumed as valuable aids in classification, though here, as with all other characters, we meet with exceptions which might greatly embarrass us if we did not recognise them as deviative cases, necessarily belonging to a truly natural system. Who would remove *Dreissena* from *Mytilida* on account of its siphons? I have referred to the varying length of the siphons, and this has given occasion to another sectional distinction, much, and justly, valued since it has come into notice: I mean the distinction of all Lamellibranchiata into *Integropallialia* and *Sinupallialia*. The margin of the mantle-lobes leaves its impression on the shell. If there are no siphons, or short ones, the retraction of which within the shell does not disturb the position of the mantle lobes, the pallial impression will follow the curve of the margin of the shell all round, and is said to be entire, thus characterising the Integropallialia. If, on the other hand, the siphons are so much elongated that the muscular effort in their retraction draws back also a part of the mantle lobes, then the frequent repetition of this action will be marked in the pallial impression by a sinus, more or less deep, immediately behind the position of the siphons, in which case the shells are Sinupallialia. As we have here an index, in the appearance of the shell, to an important structural difference in the animals, the character is one of great utility. It would not, alone, distinguish orders, since it would not distinguish Asiphonida from Siphonida with short tubes, and a recognition of the importance of the length of the Siphons, implies that of their presence or absence, but combined with other characters, its great utility ought to be admitted. The form of the foot is undoubtedly a character of high importance, both because the varied development of this characteristic mollusean organ, might naturally be expected to yield valuable results, and because we can see the connection between its different conditions and different habits of life requiring it to be differently employed, as for the attachment of byssus, crawling, jumping, or boring,

and when it is nearly abortive, we know the animal to be either fixed to his place, or enabled to move by swimming. Dr. J. E. Gray has divided the Lamellibranchiata into orders according to the nature of the the foot, but though deserving of much attention, it is very doubtful whether it marks progress of development as well as the characters which we have previously considered, and it has the practical disadvantage of not being observable without seeing the animal alive, or in a well preserved condition. The medium of respiration, whether fresh or salt water, is deserving of much attention, and the microscopic structure of the shells is of considerable importance, there being a manifest progress observable from the lower to the higher forms, the painted porcellanous form seeming to claim a higher position than the plainer solid form, that than the nacreous, and all of these above the succession of thin overlying plates. Other characters, as slight peculiarities in the branchiæ position of the ligament, dentition of the hinge, &c., seem to be of so much less importance, that though they may be advantageously used for genera and families, they cannot be supposed to furnish distinctions of orders. It must nevertheless be observed that considerable reduction in the size of the shell-bearing portion of the mantle, accompanied by the habit of burrowing in stone, clay or wood, and frequently by the formation of a shelly tube to protect the Siphons, forms a series of characters marking the highest development in one direction, which has been used, to all appearance with great propriety, and which may be necessary to complete a natural series of orders from the data now obtained. These orders all arise naturally from principles which, for some time past, have been admitted by the best authorities, only requiring their proper combination to supply definitions which fulfil all the requirements for a good series of orders, or primary groupes, under the class. They are: Ord. I., ASIPHONIDA: Mantlelobes, and branchial lamellæ unconnected, or nearly so; muscular impression generally single; foot usually either obsolete or byssiferous. Families beginning with the lowest—

1 Ostræidæ.
2 Mytilidæ.
3 Aviculidæ.
4 Pectinidæ.
5 Arcadæ.

Ord. II., NAYADES.—Mantle margins united between the excurrent and incurrent orifices, and rarely in front of the latter; excurrent orifice plain, incurrent fringed; foot very large; branchial lamellæ united pos-

teriorly to each other, and to the mantle; sexes distinct; inhabit fresh water or estuaries; shell generally nacreous within. Families—

1 Mulleridæ.
2 Ætheriadæ.
3 Anodontidæ.
4 Trigoniadæ.
5 Unionidæ.

Ord. III., BRACHYSIPHONIDÆ.—Animal with Siphons, the mantle lobes being more or less united; Siphons short, pallial line simple.

Families: 1 Chamidæ, with sub-families { Chaminæ, Hippuritidinæ, Tridacninæ,
2 Lucinidæ.
3 Cardiidæ.
4 Cycladidæ.
5 Cyprinidæ.

Ord. IV., MACROSIPHONIDA.—Animal with long retractile Siphons; Pallial line Sinuated.

Families: 1 Myadæ, including Anatinidæ auct.
2 Solenidæ.
3 Mactridæ.
4 Tellinidæ.
5 Veneridæ.

Ord. V. INCLUSA.—Animals boring in stone, clay or wood, their long imperfectly retractile siphons sometimes inclosed in a shelly tube, to which the pair of shells is sometimes attached; shell incompletely covering the body, often hard and rasp-like, and with accessory pieces about the umbones.

Families not well determined—Gastrochænidæ and Pholadidæ are generally recognised.

I have not here attempted to give the characters of the families adopted, because they may be found in accessible books, except in the case of the Naides, where in giving them the importance of a distinct order, to which I think them well entitled, I have associated with them the little family of Trigoniadæ, agreeing with them in the large active foot, in the nacreous interior of the shell, and in having, as it appears to me, their curious hinge teeth, more related to those of Unionidæ than to any other form. I have also ranked as a family distinct from Unionidae, the shells without hinge teeth forming the genera Anodon and Mycetopus, with which Iridina must be associated, and I have

taken Actheria with its curious mode of attachment, and Mulleria with its Oyster-like mode of fixture and roughness of shell and its single adductor muscle, as types of families. I am well persuaded that besides Castalia there are several good genera capable of clear definition among the varied forms which constitute the immense genus Unio, my family Unionidæ.

(*To be Continued.*)

ILLUSTRATIONS OF THE GENUS CAREX.

We have great pleasure in making known to those of our members who are interested in Botanical pursuits a valuable addition to the library of the Canadian Institute, which we owe to the generosity of Mrs. Boott: the "Illustrations of the genus Carex" in 4 vols. folio, by her late husband, Dr. Francis Boott. We need not speak here of the extraordinary merit of this beautiful work on which its distinguished author laboured so long and earnestly; but as the cost of its accurate, and highly finished, figures unavoidably excludes it from the private libraries of most botanical students, it will be a satisfaction to them to know that the munificence of Mrs. Boott designed as a memorial of her husband, and extending, as we are informed, to a large number of Scientific institutions, has put it in their power to use a most important aid to their studies, from which they cannot fail to derive both pleasure and profit. The botanist of our district need no longer look with despair at his collection of species of this numerous and difficult genus, which contributes so largely to our local Flora. We may state, for the benefit of the uninitiated, that the Genus Carex consists of numerous species of plants, popularly called Sedges, and often confoundeded with coarse grasses, belonging to the order Cyperaceæ, which stands next to the true grasses amongst Monocotyledonous plants. About 140 species are natives of the Northern and middle United States and Canada; upwards of 60 are found in Britain, and many in India, South America and other parts. The distinctions of the species require minute and careful observation, and most botanists find them among the most difficult plants to determine satisfactorily. Hence the peculiar interest of a treatise upon them by one who had long and carefully studied those from all parts of the world; whose learning, experience, habits of minute observation,

and most favourable opportunities, in respect to books and specimens, qualified him to assist others, and who has spared neither labour nor expense in giving to his work the greatest possible value. At least one Canadian botanist, Mr. Macoun, of Belleville, Ontario, has made this genus a special study, and has been rewarded by remarkable success in detecting new and rare species. We may hope that the power of consulting Dr. Boott's splendid work, will induce more of our young botanists to turn their attention in this direction.

W. H.

ENTOMOLOGICAL SOCIETY OF CANADA.

REPORT FOR 1867.

The Council of the Entomological Society of Canada have much pleasure in presenting their *Fifth* Annual Report.

During the year 1867 considerable changes have been made in the list of members, chiefly occasioned, however, by removals. The total number has largely increased, being now 106; this increase is chiefly in the London Branch, which now number 53.

Five *regular* meetings, and one *special* meeting, have been held during the past year by the parent Society. The chief business transacted has been the preparation and adoption of a Constitution, which will shortly be published for the information of members, and the publication of a very valuable List of Canadian Coleoptera, prepared by Mr. Sanders of the London Branch. The Quebec Branch, with its usual activity, has held regular meetings, and continues in a flourishing condition.

The Council, in concluding this brief Report, beg to express the hope that the members of the Society will unite in infusing more life and vigour in its proceedings during the ensuing year, and that efforts may be made to increase the number of members, and render the meetings more attractive.

All which is respectfully submitted,

CHARLES J. S. BETHUNE,
Secretary

Toronto, Jan. 16, 1868.

CONSTITUTION AND BYE-LAWS OF THE ENTOMOLOGICAL SOCIETY OF CANADA.

SECTION I.—(OBJECTS AND MEMBERSHIP.)

1. The Society shall be called "The Entomological Society of Canada," and is instituted for the improvement and advancement of Entomological Science, and the investigation of the character and habits of Insects.

2. The Society shall consist of four classes, viz., Members Ordinary Life, Corresponding, and Honorary.

3. Ordinary Members shall be persons whose pursuits, or studies, are connected with Entomology, or who are collectors of Insects.

4. Life Members shall be persons who have made donations to the value of $50 in money, books, or specimens (the two latter to be valued by competent persons), or who may be elected as such at the general meeting of the Society, for important services performed, and after due notice has been given.

5. Corresponding Members shall be persons residing out of the Dominion of Canada, whose pursuits are similar to those of ordinary Members.

6. Honorary Members shall be persons of high standing, and eminence for their attainments in Entomology.

7. The number of Honorary Members shall be limited to twenty five.

8. The officers of the Society shall consist of a President, two Vice Presidents, and the *ex-officio* Vice-Presidents, as hereinafter provided, a Secretary, Treasurer, a Curator, and three other members to form a Council; all of whom shall be elected annually at the Annual General Meeting of the Society, and shall be eligible for re-election.

SECTION II.—(ELECTION OF MEMBERS.)

1. All candidates for admission into the Society, as Members, Corresponding Members, or life Members, must be proposed by a Member at a regular meeting of the Society, and be balloted for at the next regular meeting; the affirmative vote of three-fourths of the Members present shall be necessary for the election of a candidate.

2. Honorary Members must be recommended at least by three members, who shall certify that the person named is eminent for his Entomological attainments; the election in their case shall be conducted in the same manner as laid down for other members.

3. Whenever any person is elected a member in any class, the Secre-

tary shall immediately inform him of the same by letter; and no person shall be considered a member until he has signified his acquiesence in the election.

4. Every person elected a member is required to pay his first contribution within one month of the date of his election; otherwise his election shall be null and void.

SECTION III.—(CONTRIBUTIONS.)

1. The annual contribution of every ordinary Member shall be Two Dollars; all contributions to be due in advance, on the first day of January in each year. All new members, except those elected in the month of December, shall be required to pay the subscription for the year in which they are elected.

2. Every member shall be considered to belong to the Society, and as such be liable to the payment of his annual contribution, until he has either forfeited his claim, or has signified to the Secretary in writing his desire to withdraw, when his name shall be erased from the list of members.

3. Whenever any member shall be one year in arrear in the payment of his annual contribution, the Secretary shall inform him of the fact in writing; any member continuing two years in arrears shall be considered to have withdrawn from the Society, and his name shall be erased from the list of members.

4. Corresponding, Life, and Honorary Members shall not be required to pay any annual contribution.

SECTION IV.—(OFFICERS.)

1. The duties of the President shall be to preside at all meetings of the Society, to preserve good order and decorum, and to regulate debates.

2. The duties of the Vice-Presidents shall be the same as those of the Presidents, during his absence.

3. The duties of the Secretary-Treasurer shall be to take and preserve correct minutes of the proceedings of the Society, and to present and read all communications addressed to the Society, to notify members of their election, and those in arrear the amount of their indebtedness; to keep a correct list of the members of the Society, with the dates of their election, resignation or death, and their addresses, to maintain the correspondence of the Society, and to acknowledge all donations to it. He shall also take charge of the funds of the Society, and keep an accurate

account of all receipts and disbursements, and of the indebtedness of members, and render an annual report of the same at the Annual General Meeting of the Society.

4. It shall be the duty of the Curator to take charge of all books, specimens, cabinets and other properties of the Society; to receive and arrange in their proper places all donations of specimens; to keep a record of all contributions of books or specimens, with a list of the contributors, and to oversee and direct any exchange of specimens. He shall, also, report annually to the Society on the condition of the specimens and cabinets under his care,

5. The officers of the Society, together with three other members elected annually, shall form a Council who shall have the direction and management of all the affairs of the Society. The Council shall meet once in every quarter, the time and place of meeting to be appointed by the President, and notice to be given by the Secretary at least ten days beforehand.

6. The Council shall draw up a Yearly Report on the state of the Society, in which shall be given an abstract of all the proceedings, and of the receipts and expenditure of the Society during their term of office; and such Report shall be read at the Annual General Meeting.

SECTION V.—(MEETINGS.)

1. Ordinary Meeting shall be held once a month, the day and hour of meeting to be settled by Bye-laws, as may be deemed most expedient.

2. The Annual General Meeting of the Society shall be held on the First Tuesday in July in each year, to receive and deliberate upon the report of the Council on the state of the Society, and to elect officers and members of the Council for the ensuing year, and to transact any other business of which notice has been given.

3. Special meetings of the Society may be called by the President upon the written request of five members of the Society, provided that one week's notice of the meeting be given, and that its object be specified.

SECTION VI.—(BRANCHES OF THE SOCIETY.)

1. Branches of the Society may be formed in any place within the Dominion of Canada, on a written application to the Society, from at least six persons resident in the locality.

2. Each Branch shall be required to pay to the Parent Society one dollar per annum for each paying member on its list.

3. Every Branch shall be governed by the Constitution of the Society, but shall have power to elect its own officers, and enact Bye-laws for itself, provided they be not contrary to the tenor and spirit of the Constitution of the whole Society.

4. All the members of the Branches shall be members of the Society, and entitled to all the privileges of ordinary members,

5. No Corresponding or Honorary Members shall be appointed by the Branches, but such members may be proposed at General Meetings of the Society by any Branch, as well as by individual members.

6. The Presidents of the Branches shall be *ex-officio* Vice-Presidents of the Society.

7. Each Branch shall transmit to the parent Society an annual report of its proceedings, such report to be read at the Annual General Meeting.

SECTION VII.—(ALTERATION OF CONSTITUTION.)

1. No article in any Section of this Constitution shall be altered or added to, unless notice be first given at an ordinary meeting of the Society, or of a Branch, and the alteration or addition be sanctioned by two-thirds of members present at the next ensuing meeting; the Secretary of the Society, or of the Branch, shall then notify the Secretaries of all the other Branches; when the sanction of all the Branches has been obtained in the same manner, the alteration or addition shall become law.

ENTOMOLOGICAL SOCIETY OF CANADA.

BY-LAWS OF THE TORONTO BRANCH.

I. Ordinary meetings of the Society shall be held every month, the time and place to be appointed by the Council, and due notice to be given by the Secretary.

II. The following shall be the order of business at all ordinary meetings:—

1. The minutes of the previous meeting to be read and confirmed.
2. New members present to be introduced to the meeting.
3. Names of candidates for admission to be announced.
4. Business arising out of the minutes to be entered on.
5. Communications received since the last meeting to be announced, and read if required.

6. Donations received to be acknowledged.
7. Communications from the Conucil to be brought forward.
8. Election of candidates.
9. Papers to be read.
10. Specimens to be exhibited.

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MONTHLY METEOROLOGICAL REGISTER, AT THE PROVINCIAL MAGNETICAL OBSERVATORY, TORONTO, CANADA WEST,—JANUARY, 1867.

Latitude—43 *deg.* 39.4 *min. North. Longitude*—5 *h.* 17.33 *min. West. Elevation above Lake Ontario,* 108 *feet.*

Day	Barom. at temp. of 32°.				Temp. of the Air.				Excess of mean above Normal.	Tens. of Vapour.				Humidity of Air.				Direction of Wind.			Resul't. Direction.	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	10PM	ME'N		6 A. M	2 P. M.	10 P. M	M'N	6 A. M	2 P. M	10 P. M	M'N	6 A.M.	2 P M.	10 P.M.		6 A. M.	2 P. M.	10 P.M.	Re-sult'.	ME'N		
					°	°	°	°	°												°							
1	29.807	29.842	29.911	29.8582	20.1	26.2	16.5	20.77	— 4.45	.098	.124	.076	.098	91	87	83	86	W b N	W	Calm.	N 89 W	4.0	10.6	0.0	5.19	5.28	...	...
2	.884	.777	.737	.7047	16.1	19.4	18.3	17.10	— 8.10	.081	.068	.087	.076	90	65	87	81	Calm.	SW bW	W S W	S 65 W	0.0	7.0	9.0	5.02	5.07	...	...
3	.733	.703	.676	.7037	10.7	25.9	21.9	18.83	— 6.32	.059	.085	.084	.077	82	60	71	73	Calm.	S W b W	Calm.	S 51 W	0.0	6.2	0.0	3.20	3.23	...	...
4	.657	.666	.664	.6597	27 0	35.2	29.8	30.03	+ 5.90	129	.164	.154	.147	88	80	93	88	S W b W	Calm.	Calm.	S 5 W	4.0	0.0	0.0	0.54	2.07	...	0.5
5	.412	.162	.162	.2372	32.7	32.2	28.4	31.10	+ 5.97	.165	.155	.119	.143	88	85	76	81	E b N	N E b E	N N W	N 68 E	9.4	9.5	7.6	3.79	6.51	...	0.2
6	.289	.324	—	—	29.5	30.9	—	—	—	.136	.113	—	—	83	64	...	—	W b N	W N W	W b N	N 80 W	8.6	14.0	9.6	8.29	8.48	...	0.1
7	.543	.551	.541	.5520	17.6	21.2	17.6	18.18	— 6.95	.088	.072	.070	.074	92	63	72	76	W N W	W b N	W b N	N 72 W	8.0	12.6	2.8	7.23	7.30	...	0.1
8	.429	378	.436	.4162	17.9	21.2	13.2	17.90	— 7.23	.072	.072	.060	.072	74	63	75	73	W N W	N W b N	N W	N 40 W	1.0	12.0	4.4	4.37	4.44	...	0.1
9	.367	.221	.132	.2323	18.3	26.2	21.2	21.90	— 3.23	.087	.124	.099	.101	87	87	87	88	Calm.	Calm.	N b W	N 15 W	0.0	0.0	3.5	0.33	0.46	...	1.5
10	.079	.033	.198	.1327	17.2	22.6	19.7	19 72	— 5.33	.087	.076	.083	.081	92	62	78	77	N E b N	Calm.	Calm.	N 49 W	1.6	0.0	0.0	1.41	2.01	...	0.5
11	.303	.410	.599	.4567	15.8	23.3	10.4	16.43	— 8.62	.072	.074	.055	.067	80	59	78	73	Calm.	W S W	Calm.	N 67 W	0.0	9.6	0.0	4.07	5.64	...	0.1
12	.843	.968	.881	.8990	10.4	14.3	6.8	9.60	—15.48	.062	.041	.045	.049	89	48	75	74	W N W	N W b N	N E b N	N 7 W	10.2	4.8	0.0	6.15	7.66	...	0.5
13	.639	.426	—	—	8.6	11.1	—	—	—	.057	.065	—	—	91	92	—	—	N E b E	N E b E	N b E	N 46 E	13.5	13.4	3.0	9.40	9.97	...	4.0
14	.616	.627	.579	.6185	8.6	12.5	7.5	9.33	—15.77	.058	.055	.043	.052	91	73	69	77	N N E	N b E	N b E	N 22 E	2.6	0.5	9.6	4.16	4.22	...	...
15	.682	.765	.816	.7583	1.7	8.9	—2.7	3.12	—21.98	.038	.033	.033	.036	80	48	87	72	N	N W b N	Calm.	N 11 W	8.6	1.6	0.0	3.79	3.87	...	...
16	.713	.500	.352	.5023	7.8	23.7	21 5	17.75	— 7.25	.056	.117	.109	.093	91	91	94	92	Calm.	S W	N E	N 77 E	0.0	4.6	9.0	1.98	5.39	...	6.0
17	.350	.555	.811	.6023	14.7	13.6	9.6	12.22	—12.80	.078	.072	.053	.066	93	91	77	86	N	N b W	N N W	N 20 W	3.2	14.0	22.0	13.71	14.01	...	2.0
18	.027	.834	.784	.8417	—0.1	7.5	3.5	3.00	—21 97	.037	.049	.040	.041	85	78	75	80	N W b N	N W	N N W	N 39 W	8.0	22.0	18.5	15.68	16.09	...	...
19	.724	.545	.497	.5783	1.7	12.5	5.3	5.80	—19.08	.044	.055	.052	.048	91	73	92	84	Calm.	W b N	Calm.	S 89 W	0.0	14.5	0.0	4.13	4.22	...	...
20	.449	.355	—	—	11.1	17.9	—	—	—	.060	.091	—	—	83	94	—	—	Calm.	N E b N	N E b E	N 66E	0.0	9.5	17.7	9.16	9.57	...	15.0
21	.140	.130	.283	.1960	14.7	18.6	17.2	17.08	— 7.70	.078	.083	.087	.084	93	83	91	90	E N E	N b E	Calm.	N 33 E	11.8	10.0	0.0	5.25	5.60	...	3.0
22	.391	.480	.609	.5028	14.0	21.9	19.7	18.42	— 6.35	.071	.090	.096	.087	90	77	91	87	Calm.	Calm.	S W bW	N 61 W	0.0	0.0	7.8	3.58	3.62	...	...
23	.650	.687	.844	.7452	19.7	27.0	25.9	23.97	— 0.70	.096	.100	.110	.101	91	68	79	79	N W bW	N W	N W bW	N 52 W	9.6	18.6	10.6	8.92	9.23	...	inap.
24	.937	.935	.949	.9422	25.2	28.0	25.0	26.33	+ 1.77	.122	.124	.118	.122	90	81	86	86	N W b N	Calm.	N N W	N 25 W	6.0	0.0	0.6	1.26	1.67	...	...
25	.847	.400	.053	.4008	21.5	27.3	29.1	26.03	+ 1.45	.102	.126	.155	.129	88	84	96	99	N E b E	E b S	E b S	S 80 E	2.7	16.0	12.5	9.22	11.54	...	6.0
26	28.945	28.920	.076	28.9913	29.5	27.3	22.6	25.98	+ 1.50	.136	.118	.101	.119	83	79	86	84	S W b S	W S W	W	S 75 W	13.0	19.0	16.0	14.10	14.82	...	1.0
27	29.224	29.325	—	—	17 6	20.5	—	—	—	.088	.088	—	—	92	61	—	—	N W	W N W	N W bW	N 64 W	7.6	22 0	11.5	11.50	11.69	...	0.2
28	.632	.599	.549	29.6003	14.7	20.8	14.3	16.42	— 7.88	.078	.083	.071	.075	93	75	85	81	W b N	W S W	W S W	S 68 W	4.5	15.2	16.0	12.03	12.89	...	...
29	.562	.641	.848	.7037	6.4	10.4	7.5	8.27	—15.03	.044	.055	.054	.052	75	78	88	82	W S W	W b S	W b N	N 88 W	14.0	3.3	10.5	7.43	7.88	...	1.0
30	.984	.969	.831	.9202	4.2	14.0	12.9	10.53	—13.57	.047	.074	.063	.062	89	91	80	86	N b E	Calm.	W b S	S 46 W	1.6	0.0	4.6	3.04	4.35	...	0.2
31	.087	.579	.267	.4840	20.1	30.2	30.3	29.12	+ 5.13	.098	.149	.210	.155	91	89	93	93	S S W	S S W	S S W	S 43 W	1.5	1.0	8.0	6.16	6.99	inap.	...
M	29.5868	29.5527	29.5587	29.5676	15.12	21.18	17.02	17.59	— 7.21	.081	.090	.086	.086	88	75	83	82	.....	.....	.....	.....	5.00	8.76	7.12	.....	6.96	inap.	42.0

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR JANUARY, 1867.

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

Highest Barometer . . . . . 30.046 at 10 a.m. on 30th.
Lowest Barometer . . . . . 29.920 at 2 p.m. on 26th. } Monthly range = 1.126 inches.

Self-registering Thermometers:
Maximum temperature . . . 43°.8 on 31st.
Minimum temperature . . . —4°.8 on 16th. } Monthly range = 48°.6

Mean maximum temperature . . 23°.23
Mean minimum temperature . . 11°.61 } Mean daily range = 11°.62

Greatest daily range . . . . . 31°.6 from a.m. to p.m. of 31st.
Least daily range . . . . . 4°.2 from a.m. to p.m. of 17th.

Warmest day . . . . 5th ..Mean Temperature . . . 31°.10
Coldest day . . . . 18th .Mean Temperature . . . 3°.00 } Difference = 28°.10

Maximum Solar Radiation . . . . . 92°.0 on 23rd.
Minimum Terrestrial Radiation . . . . . —13°.8 on 16th. } Monthly range = 105°.8

No Aurora observed.
Possible to see Aurora on 10 nights; impossible on 21 nights.
Snowing on 21 days; depth 42.0 inches; duration of fall 165.1 hours.
Raining on 1 day; depth inapp.; duration of fall, 1.0 hours.
Mean of cloudiness = 0.73; Most cloudy hour observed, 6 a.m; mean = 0.82; least cloudy hour observed, 2 p.m; mean = 0.64.

Sums of the components of the Atmospheric Current, expressed in Miles.

North.	South.	East.	West.
2055.91	662.79	955.05	2937.46

Resultant direction, N. 55° W.; Resultant Velocity, 3.27 miles per hour.
Mean velocity 6.96 miles per hour.
Maximum velocity 25.3 miles, from 1 to 2 a.m. of 19th.
Most windy day 18th—Mean velocity 16.00 miles per hour.
Least windy day 9th—Mean velocity 0.46 miles per hour. } Difference 15.54
Most windy hour, noon. —Mean velocity, 8.97 miles per hour.
Least windy hour, 7 a.m.—Mean velocity, 5.09 miles per hour. } Difference 3.88 miles.

12th, Lunar halo 7 p m.—14th, Lunar halo.
29th, Stormy day, heavy snow storm continuing to about 7 p m. of following day.
25th, Stormy day, snow and drift
29th, Solar halo and parhelia

COMPARATIVE TABLE FOR JANUARY.

YEAR.	TEMPERATURE. Mean	Excess above Average	Maximum	Minimum	Range.	RAIN. No. of days.	Inches.	SNOW. No. of days.	Inches.	WIND. Resultant. Direction.	Velocity.	Mean Force or Velocity
	°		°	°	°							
1840	17.0	— 6.3	36.7	—18 6	55.3	4	1.395	11	...	...	...	...
1841	25.6	+ 2.3	42.3	— 6.4	48.7	2	2.150	14	...	...	...	0.36 lbs
1842	27.9	+ 4.6	49.4	1.9	47.5	5	2.170	9	...	...	...	0.78 "
1843	28.7	+ 5.4	55.4	— 1.8	57.2	6	4.295	12	14.2	...	...	0.69 "
1844	29.2	— 3.1	45.3	— 7.2	52.5	7	3.005	11	24.9	...	...	0.70 "
1845	26.5	+ 3.2	45.7	— 0.2	45.9	5	Imp.	9	22.7	...	...	0.70 "
1846	26.7	+ 3.4	44.0	— 1.3	45.3	5	2.335	10	6.0	...	...	0.55 "
1847	23.3	— 0.0	42.4	— 2.7	39.7	7	2.135	5	7.5	...	...	1.09 "
1848	28.7	+ 5.4	51.1	—11.4	62.5	7	2.245	8	7.1	N 82 W	2.03	5.82 ms
1849	18.5	— 4.8	39.2	—16.5	55.7	4	1.175	10	9.2	N 63 W	3.06	6.71 "
1850	29.7	+ 6.4	46.4	— 9.9	36.5	5	1.250	8	5.2	N 37 W	0.69	5.80 "
1851	25.5	+ 2.2	43.4	—12.8	56.2	4	1.275	10	7.8	S 77 W	3.26	7.69 "
1852	18.4	— 4.9	37.3	—19.6	47.9	0	0.000	19	30.9	N 68 W	3.14	7.67 "
1853	23.0	— 0.3	40.9	— 9.7	50.6	1	0.290	6	7.5	N 27 W	2.52	6.34 "
1854	23.6	+ 0.3	46.4	— 5.4	51.8	7	1.270	11	7.5	N 77 W	2.44	6.91 "
1855	25.9	+ 2.6	49.0	— 5.4	54.4	5	0.525	13	23.3	N 73 W	1.91	7.26 "
1856	16.0	— 7.3	34.4	—12.0	46.4	0	0.000	14	13.6	N 75 W	5.24	10.69 "
1857	12.8	—10.5	37.2	—20.1	57.3	3	Inap.	16	21.8	N 70 W	4.96	10.31 "
1858	30.0	+ 6.7	47.4	6.5	40.9	6	1.152	11	4.0	N 71 W	2.33	7.40 "
1859	26.4	+ 3.1	43.2	—26.5	69.7	6	1.449	19	16.4	S 81 W	3.17	8.76 "
1860	23.4	+ 0.1	46.4	— 6.8	53.2	6	0.740	16	8.7	N 89 W	6.09	9.37 "
1861	19.9	— 3.4	37.0	—11.2	48.2	4	0.685	23	20.6	N 86 W	2.92	9.30 "
1862	21.7	— 1.6	44.5	— 2.6	47.1	5	0.115	19	27.4	N 26 W	2.69	8.83 "
1863	28.1	+ 4.8	47.0	—14.0	61.0	10	1.122	17	20.6	N 61 W	1.13	7.23 "
1864	22.8	— 0.5	44.2	— 9.0	53.2	5	1.165	14	26.3	S 73 W	6.00	10.22 "
1865	17.7	— 5.6	37.2	— 9.0	46.2	1	0.440	18	14.8	N 85 W	4.80	9.39 "
1866	20.7	— 2.6	44.0	—14.0	58.0	4	0.522	19	10.3	N 75 W	2.98	9.34 "
1867	17.6	— 5.7	43.8	— 4.8	48.6	1	Inap.	21	42.0	N 55 W	3.27	6.96 "
Results to 1866.	23.29	...	43.62	—7.75	51.37	4.59	1.266	13.0	14.93	N 78 W	3.62	8.16
Ex. for 1867.	—5.69	...	+0.18	+2.95	—2.77	3.59	1.266	8.00	27.07	...	...	—1.20

MONTHLY METEOROLOGICAL REGISTER, AT THE PROVINCIAL MAGNETICAL OBSERVATORY, TORONTO, CANADA WEST, FEBRUARY,—1847.

Latitude—43 deg. 39.4 min. *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.	Tens. of Vapour.				Humidity of Air.				Direction of Wind.			Result't. Direction.	Velocity of Wind.				Rain in inches.	Snow in inches.
	6 A.M.	2 P.M.	10 P.M.	Mean.	6 A.M.	2 P.M.	10 P.M.	M'N'S		6 A.M.	2 P.M.	10 P.M.	M'N'S	6 A.M.	2 P.M.	10 P.M.	M'N'S	6 A.M.	2 P.M.	10 P.M.		6 A.M.	2 P.M.	10 P.M.	Result'n.	M'E'N.		
					°	°	°	°	°																			
1	29.247	29.444	29.597	29.4453	40.3	34.2	28.7	33.57	+ 9.68	.176	.110	.145	.142	69	55	92	73	W	W B N	Calm.	N 78 W	19.2	18.6	0.0	9.19	10.04	...	...
2	.500	.191	28.926	.1755	26.2	26.6	31.6	28.50	+ 4.65	.124	.134	.156	.138	87	93	87	88	N E	E B N	E	N 82 E	9.0	21 0	17.0	14.29	15.63	.076	2 0
3	28.793	28.893	—	—	33.4	31.6	—	—	—	.188	.170	—	—	98	96	—	—	S W b S	W S W	W b N	S 66 W	11.8	11.6	12.1	9.52	10.90	...	2.5
4	29.325	29.332	29.182	.2747	29 1	31.5	31.3	30.23	+ 6.55	.141	.134	.174	.148	87	75	99	87	S W	E B N	E B N	N 72 E	2.2	5.2	15 8	7.77	9.07	...	3.0
5	.201	.378	.606	.4172	27.3	29.1	28.4	28.38	+ 4.80	.139	.126	.126	.129	94	78	81	83	N b E	W b N	W S W	N 69 W	6.5	5.8	3.3	4.02	5 58	...	0.4
6	.650	.739	.875	.7755	27.3	31.6	27.0	28.27	+ 4.75	.163	.156	.129	.133	89	87	88	87	S W	Calm.	S W b S	S 50 W	4.2	0.0	8.0	6 86	7.05	...	...
7	.906	.894	.852	.8775	25.9	36.0	25.9	29.20	+ 5.77	.120	.137	.120	.126	86	65	86	79	S W b S	S	Calm.	S 18 W	12.0	6.5	0.0	3.74	4 00	...	...
8	.766	.599	.396	.5692	21 5	39.2	37.4	32.37	+ 9.00	.102	.122	.170	.132	88	50	75	73	N E b E	E b S	N E	N 71 E	4.0	4.6	0.6	1.52	1.61	imp.	...
9	.232	.180	.305	.2452	33.1	27.7	17.9	25.87	+ 2.60	.174	.142	.085	.131	92	94	87	91	Calm.	N N W	W N W	N 49 W	0.0	20.2	25.5	17.12	18.42	...	2.5
10	.599	30.012	—	—	6.4	9 3	—	—	—	.044	.039	—	—	75	58	—	—	W b N	W N W	W S W	N 74 W	18.5	18.6	2.8	9.26	10 42	...	...
11	30.332	30.069	30.009	30.1268	11 4	27.0	31.6	21 30	+ 1.03	.062	.090	.096	.087	85	54	54	67	W S W	S W b S	S W b S	S 35 W	9.5	22.0	16.5	12 92	12 98	...	...
12	30.019	29.976	29.918	29.9865	33.4	38.8	34.5	35.35	+12.10	.171	.177	.181	.075	89	75	90	85	S W b S	S S W	Calm.	S 32 W	5 0	5 5	0.0	4.19	4.21	.082	...
13	29.820	.603	.528	.6128	38.5	38.5	39.2	39.28	+16.03	.208	.233	.241	.229	89	100	102	95	S W b S	S b W	S W b S	S 51 W	6.8	7.0	6.4	4.96	7.38	.630	...
14	.854	.892	.996	.9148	35.3	33.1	30.6	32.08	+ 8.82	.181	.145	.131	.148	88	76	76	80	N W b N	N b W	N	N 2 E	12.1	11.6	11.9	8.64	9.87	...	imp.
15	30.084	30.040	.834	.9742	20.1	25.9	29.5	25.03	+ 1.78	.091	.090	.144	.107	85	64	87	78	N E	E	E b N	N 82 E	6.0	10 5	17.6	12.61	12.85	.135	...
16	29.445	29 207	.332	.3150	35.6	41.7	37.8	38 37	+15.00	.202	.158	.122	.162	97	58	53	70	E	S W b S	S W	S 60 W	13.2	13.6	22.0	13.18	16.73	.250	...
17	.500	.659	—	—	35.6	36.3	—	—	—	.116	.107	—	—	55	49	—	—	W	W b S	Calm.	S 83 W	20.0	18 0	0.0	8.58	9.50	...	...
18	.688	.487	.584	.5862	32.0	33 1	28.0	31.70	+ 8.27	.158	.160	.131	.155	87	85	86	87	S E b E	E b N	W b N	N 30 E	4.2	7.8	2 8	3 35	6.15	...	0.2
19	.782	.858	.779	.8108	24 6	24.1	21.5	23.52	— 0 22	.112	.078	.063	.084	77	60	54	66	N N E	E N E	E	N 58 E	7.2	3.6	11.6	8.92	10.21	...	0.5
20	.062	.657	.727	.6815	12.2	25.2	25.5	21.62	— 2.00	.065	.115	.125	.107	86	85	91	90	N E b E	N E b E	E N E	N 68 E	17.0	11.0	11.0	10.30	10 66	...	1.0
21	.587	.408	.597	.5293	29.1	25 2	26.6	26.67	+ 2.93	.141	.115	.119	.124	87	85	82	85	E b S	N E	N W	N 17 E	7.6	15.5	10.4	7.20	10.90	...	1.5
22	.717	.848	.849	.8125	25.5	23.0	15.0	21.25	— 2.57	.118	.071	.069	.086	86	57	79	74	W N W	N W	N N E	N 56 W	15.0	16.0	2.0	5 49	10.10	...	imp.
23	.593	.249	.006	.2563	26.6	35.6	36.7	32.60	+ 8.67	.119	.149	.188	.160	82	72	86	85	E b S	E b S	Calm.	S 75 E	10.0	6.5	0.0	1.94	8 10	.110	0.1
24	.260	.528	—	—	30.6	27.7	—	—	—	.152	.128	—	—	89	84	—	—	W b N	W b N	N N W	N 63 W	24.5	17.0	9.9	11.25	12.06	...	...
25	.821	.789	.742	.7840	12.5	22.6	23.7	19.72	— 4.62	.062	.096	.095	.084	80	79	73	77	N b E	E N E	Calm.	N 56 E	6.8	7.0	0.0	3.46	3.73	...	imp.
26	.777	.865	.995	.8925	20.1	35 3	24.8	27.43	+ 2.65	.091	.104	.105	.104	85	51	79	72	Calm.	W b N	Calm	N 83 W	0.0	16.0	0.0	4.89	4.98	...	...
27	30.012	30.051	30.017	30.0248	17 9	30.2	30.6	26.72	+ 2.00	.085	.128	.138	.120	87	76	80	81	Calm.	E b S	E S E	S 86 E	0.0	8.6	4.6	2.67	3.39	...	...
28	29.794	29.657	29.627	29 6800	27.3	35.1	34.9	32.33	+ 7.43	.118	.165	.176	.152	79	81	86	82	N N E	Calm.	Calm.	N 79 E	2.4	0 0	0.0	1.22	1.32	.025	...
.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
M.	29.6998	29.6423	29.6370	29.6592	26.45	31.26	29.11	28.91	+ 5.24	.129	.130	.135	.132	86	73	81	81	.....	.....	.....	...	9.11	11.02	7.53	...	8.85	1.323	13.4

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR FEBRUARY, 1867.

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

Highest Barometer .....30.332 at 6 a.m. on 11th } Monthly range =
Lowest Barometer .....28.799 at 6 a.m. on 3rd } 1.533 inches.

Self-registering Thermom.
- Maximum Temperature.....44°0 on 13th and 16th } Monthly range =
- Minimum Temperature.....0°2 on 10th } 43°8
- Mean maximum Temperature.....34°32 } Mean daily range =
- Mean minimum Temperature.....21°59 } 12°73
- Greatest daily range.....27°6 from a.m. to p.m. of 11th.
- Least daily range .....2°4 from a.m. to p.m. of 14th.

Warmest day.....13th ..Mean temperature..... 33°28 } Difference = 19°56
Coldest day..... 25th ...Mean temperature..... 13°72 }

Maximum Radiation. { Solar ..... 113°5 on 22nd } Monthly range = 121°1
Terrestrial ..... —7°6 on 11th }

No Aurora observed
Possible to see Aurora on 7 nights; Impossible on 21 nights.
Snowing on 13 days; depth 13.4 inches; duration of fall 80.2 hours.
Raining on 8 days; depth 1.328 inches; duration of fall 30.6 hours.
Mean of cloudiness = 0.82.
Most cloudy hour observed, 4 p.m.; mean = 0.86; least cloudy hour observed, 2 p.m.; mean = 0.78.

Sums of the components of the Atmospheric Current, expressed in miles.

North.	South.	East.	West.
1693.36	1123.88	1886.45	2778.62

Resultant direction N. 57° W.; Resultant velocity 1.58 miles per hour.
Mean velocity.....8.85 miles per hour.
Maximum velocity.....29.0 miles, from 9 to 10 p.m. of 9th.
Most windy day..... 9th..... Mean velocity, 18.42 miles per hour. } Difference = 17.10 miles.
Least windy day.....28th..... Mean velocity, 1.32 ditto to
Most windy hour ..... 3 p.m.....Mean velocity, 11.72 ditto } Difference = 4.43 miles.
Least windy hour..... 1 a.m .....Mean velocity, 6.24 ditto

1st. Warm gusty wind. 4th. Solar halo and parhelia.
8th. Lunar halo. 9th. Heavy snow and drift.
11th. Solar halo, lunar halo during evening.
28th. Indistinct lunar halo.

COMPARATIVE TABLE FOR FEBRUARY.

YEAR.	TEMPERATURE. Mean.	Excess above aver'ge	Max.	Min.	Range.	RAIN. No. of days.	Inches	SNOW. No. of days.	Inches	WIND. Resultant. Direction.	V'y.	Mean Force or Velocity.
	°	°	°	°	°							
1840	28.0	+ 5.0	50.3	—10.5	60.8	8	1.475	6	..	...	...	.....
1841	22.4	— 0.6	44.1	— 1.3	45.4	1	inap.	9	...	...	...	0.61 lbs.
1842	26.9	+ 3.9	50.2	2.9	47.3	8	3.625	9	...	...	...	1.03
1843	14.5	— 8.5	38.5	— 9.4	47.1	1	0.475	21	14.4	...	...	1.05
1844	26.0	+ 3.0	47.9	0.6	47.3	4	0.430	7	10.0	...	...	0.43
1845	26.0	+ 3.0	49.1	— 4.2	53.3	5	imp.	9	19.0	...	...	0.99
1846	20.4	— 2.6	41.9	—16.7	58.6	0	0.000	13	46.1	...	...	0.65
1847	21.5	— 1.5	40.9	0.0	40.9	2	0.550	13	27.3	...	...	0.69
1848	26.6	+ 3.4	46.6	0.0	46.6	4	0.775	8	10.8	N 65 W	2.53	5.69mls.
1849	19.5	— 3.7	40.6	— 9.8	50.4	2	0.210	13	19.2	N 41 W	1.48	6.58
1850	26.0	+ 3.0	49.6	2.2	47.4	7	1.235	9	23.1	N 80 W	3.43	7.61
1851	27.6	+ 4.6	50.2	2.0	48.2	7	2.600	4	2.4	N 64 W	1.99	6.94
1852	23.4	+ 0.4	41.2	— 6.2	47.4	3	0.650	11	13.0	S 75 W	3 3⁄4	6.42
1853	24.1	+ 1.1	43.4	— 1.4	44.8	4	1.030	15	12.6	N 49 E	2.51	7.30
1854	21.1	— 1.9	42.8	—10.8	53.6	5	1.460	15	18.0	N 7 E	1.73	6.91
1855	15.4	— 7.6	39.0	—25.4	64.4	2	1.770	14	21.8	N 40 W	4.34	8.17
1856	15.7	— 7.3	37.8	—18.7	56.5	0	0.000	8	9.7	N 81 W	7.70	10.71
1857	28.5	+ 5.5	52.4	— 5.9	58.3	11	3.050	11	11.7	S 78 W	3.68	9 82
1858	17.0	— 6.0	42.4	— 7.3	49.7	1	inap.	16	26.7	N 72 W	3.22	9.12
1859	26.0	+ 3.0	46.2	2.1	44.1	6	0.455	14	8.3	N 54 W	2.72	8.50
1860	22.8	— 0.2	50.2	— 8.5	58.7	7	1.330	13	18.8	N 61 W	3.28	8.73
1861	26.1	+ 3.1	46.0	—20.8	66.8	4	0.815	17	29.7	N 77 W	3.86	10.58
1862	22.5	— 0.5	57.8	— 5.2	43.0	3	0.180	17	23.1	N 55 W	3.93	8.52
1863	22.4	— 0.6	41.5	—19.8	61.3	7	1.450	12	22.0	N 23 W	2.29	10.13
1864	24.3	+ 1.3	45.0	—15.0	60.0	2	0.397	4	9.5	S 84 W	6.48	10.11
1865	22.4	— 0.6	42.2	—10.0	52.2	5	0.810	11	16.8	N 23 W	3.95	8.23
1866	22.5	— 0.5	45.0	— 8.0	53.0	3	0.830	12	16.9	S 80 W	5.14	9.40
1867	28.9	+ 5.9	44.0	0.2	43.8	8	1.328	13	13.4	N 57 W	1.58	8.85
Results to 1866.	22.95	...	44.55	—7.60	52.15	4.2	0.986	11.9	18.00	N 70° W	3.20	8.39
Excess for 1867.	+ 5.95	...	— 0.55	+ 7.80	— 8.35	+ 3.8	+ 0.342	+ 1.1	— 4.60	.....	..	+ 0.46

MONTHLY METEOROLOGICAL REGISTER, AT THE PROVINCIAL MAGNETICAL OBSERVATORY, TORONTO, CANADA WEST,—MARCH, 1867.

Latitude—43 deg. 39.4 min. North. Longitude—5 h. 17 min. 33 sec. West. Elevation above Lake Ontario, 108 feet.

Day.	Barom. at temp. of 32°. 6 A.M.	2 P.M.	10 P.M.	MEAN.	Temp. of the Air. 6 A.M.	2 P.M.	10 P.M.	ME'N	Excess of mean above Normal.	Tens. of Vapour. 6 A.M.	2 P.M.	10 P.M.	M'N	Humidity of Air. 6 A.M.	2 P.M.	10 P.M.	M'N
1	29.508	29.240	28.967	29.2110	32.4	32.7	34.2	33.08	+ 7.87	.161	.150	.196	.169	87	80	99	89
2	.009	.358	29.653	.3770	38.5	22.3	15.8	24.68	— 0.73	.216	.101	.072	.122	93	85	50	83
3	.757	.701	—	—	9.6	19.0	—	—	—	.055	.085	—	—	77	83	—	—
4	.391	.561	.757	.5863	14.7	23.9	24.1	21.20	— 4.80	.072	.081	.100	.088	85	62	77	77
5	.827	.918	30.022	.9848	25.9	29.1	22.3	26.00	— 0.20	.128	.083	.101	.103	91	50	85	76
6	30.114	.998	29.858	.9675	16.5	30.2	25.9	23.88	— 2.67	.076	.128	.107	.108	83	76	76	79
7	29.599	.650	.975	.7580	25.5	28.4	16.8	23.15	— 3.67	.135	.119	.073	.106	96	76	78	83
8	30.088	30.084	30.062	30.0715	18.3	32.0	27.0	25.75	— 1.48	.095	.143	.129	.118	94	79	88	84
9	29.875	29.851	29.840	29.8510	24.8	32.0	29.3	28.78	— 1.27	.120	.106	.136	.123	90	58	82	78
10	.671	.388	—	—	32.0	37.1	—	—	—	.158	.182	—	—	87	83	—	—
11	.558	.754	.769	.7153	36.7	35.5	30.9	34.28	+ 6.05	.205	.127	.141	.158	94	61	81	79
12	.566	.500	.636	.5673	27.7	34.2	31.6	30.93	+ 2.38	.142	.147	.156	.146	94	75	87	84
13	.562	.432	.581	.5252	30.2	33.1	19.0	27.13	— 1.83	.149	.160	.085	.129	89	85	82	84
14	.753	.812	.893	.8328	11.1	18.6	15.4	14.73	—14.58	.060	.052	.059	.058	83	51	66	69
15	30.005	.991	.995	30.0030	10.0	23.0	19.4	17.83	—11.88	.051	.058	.087	.070	78	47	83	72
16	29.961	.747	.501	29.7088	16.1	26.0	25.5	23.15	— 6.88	.074	.084	.125	.102	83	58	91	81
17	.229	.298	—	—	24.8	28.0	—	—	—	.120	.139	—	—	90	90	—	—
18	.862	.676	.727	.7002	11.1	21.9	16.8	15.45	—15.40	.055	.072	.066	.061	74	61	72	68
19	.828	.891	30.004	.9213	4.2	29.5	19.0	19.98	—11.28	.042	.106	.078	.084	78	65	76	74
20	30.073	30.087	30.042	30.0652	20.8	33.1	27.3	28.02	— 3.65	.104	.057	.126	.104	92	30	84	71
21	29.901	29.777	29.678	29.7767	30.9	34.5	33.1	32.53	+ 0.45	.149	.144	.174	.168	86	72	92	85
22	.718	.752	.830	.7725	30.9	34.9	32.7	32.77	+ 0.28	.171	.144	.157	.158	99	71	84	85
23	.852	.854	.814	.8417	32.4	36.0	34.2	34.72	+ 1.93	.161	.162	.177	.171	87	76	89	85
24	.752	.626	—	—	33.1	35.6	—	—	—	.184	.193	—	—	98	93	—	—
25	.646	.810	.974	.8285	34.2	30.2	26.6	29.97	— 3.60	.160	.112	.119	.126	81	67	82	76
26	30.007	.902	.726	.8548	18.6	29.1	26.2	25.25	— 8.73	.082	.126	.124	.111	87	78	87	82
27	29.481	.393	.423	.4245	25.2	27.0	26.2	26.05	— 8.37	.122	.129	.128	.127	89	88	90	89
28	.449	.461	.509	.4760	22.3	32.0	24.4	26.00	— 8.72	.094	.092	.083	.088	78	51	62	63
29	.513	.406	.409	.4400	17.6	39.6	29.5	29.48	— 5.62	.083	.091	.137	.107	85	37	83	68
30	.286	.287	.210	.3262	29.1	43.5	36.0	37.05	+ 1.55	.118	.109	.172	.132	73	37	81	62
31	.894	.396	—	—	32.4	42.8	—	—	—	.153	.168	—	—	83	61	—	—
M	29.7052	29.6997	29.7265	29.7123	23.30	30.49	25.79	26.61	— 3.77	.116	.111	.120	.116	86	64	82	78

Day.	Direction of Wind. 6 A.M.	2 P.M.	10 P.M.	Resultant Direction.	Velocity of Wind. 6 A.M.	2 P.M.	10 P.M.	Re-sul't.	ME'N	Rain in Inches.	Snow in Inches.
1	E N E	E	Calm.	N 51° E	9 0	6.5	0.0	0.96	6.18	.050	...
2	W	N W b W	N W	N 52 W	21.0	29.0	12.5	16.23	17.43	...	...
3	N E	E	N E	N 64 E	6 0	9.0	16.5	10.73	11.92	...	1.0
4	N b W	W b N	Calm.	N 36 W	11.6	2.3	0.0	2 80	3.15	...	0.5
5	S W	W	W	N 79 W	3 2	15.0	0.5	5 50	5 45	...	...
6	N b E	E b S	E	N 75 E	11.0	11.6	17.5	12.36	13.35	...	2 0
7	E b N	N N W	N b W	N 18 E	16.2	11.2	1.0	4.54	6.33	...	1.0
8	Calm.	SE b S	N E	N 64 E	0.0	5.0	4.2	3.36	4.78	...	...
9	NE b E	E S E	NE b E	N 69 E	5.2	4.8	3.2	4.68	4.97	...	...
10	E b N	E N E	S E	N 60 E	9.5	5.6	1.9	1 36	8.38	.185	...
11	W b N	N N W	N b E	N 22 W	10.5	5.0	1.8	4.92	5.70	...	0.2
12	N N E	N b E	N N W	N 18 E	3.6	5.4	7.6	4.33	4.69	...	1.0
13	E	S W b S	W b S	S 78 W	1.8	11.0	23.0	12.94	14.30	inap.	0.2
14	W b S	W b S	SW b W	S 75 W	9.0	17.0	8.5	11.35	11.55	...	...
15	W b S	W S W	SW b W	S 63 W	1.5	9 8	5 8	5.81	5.86	...	...
16	Calm.	E b N	E b S	S 82 E	0.0	16 5	16.8	12.77	13.05	...	5.5
17	SE b E	W	W b S	S 89 W	4 8	15.2	14 2	14.01	14.59	...	1.5
18	W b S	W b S	W	S 78 W	17.0	15.5	2 0	7.86	7.94	...	...
19	Calm.	Calm.	W S W	N 4 W	0.0	0.0	1.5	0.96	1 12	...	...
20	N N E	E S E	N E	N 75 E	2 2	10.0	1.0	5.68	5.97	...	...
21	E b N	E b N	E	N 85 E	12.5	19.8	15.0	14.59	14.67	...	15.0
22	E	E	Calm.	S 89 E	10.0	5.2	0.0	3.25	3.42	...	1.5
23	E N E	E b N	NE b E	N 73 E	2.8	8.8	3.6	4.60	4 63	.007	...
24	Calm.	E b N	SE b S	S 41 E	0.0	4.0	3.7	0.86	3.15	.070	1 5
25	W S W	W N W	N W	N 68 W	10.3	17.0	10.0	12.18	13.20	...	...
26	N	S	E N E	N 70 E	4 6	2.0	1.2	4.13	6 18	...	0.5
27	NE b E	NE b N	Calm.	N 18 E	16.2	7.0	0.0	6.35	8 19	...	2.0
28	NW b N	W N W	W b N	N 49 W	17.0	21.4	15.0	14.07	14.68	...	...
29	W b N	W N W	W N W	N 74 W	10.2	22.0	11.2	14.43	14 52	...	...
30	W b N	W S W	Calm.	S 81 W	12.4	15.0	0.0	8.17	8.56	...	...
31	W	S W b S	Calm.	S 60 W	1.0	3.4	0.0	0.93	3.15	.355	...
M	....	....	....	....	7 75	10.68	6.43	.. ...	8.52	.617	33.4

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

Highest Barometer . . . . . 30.127 at 10 a.m. on 6th.
Lowest Barometer . . . . . 28.912 at Mid. on 1st. } Monthly range= 1.215 inches.

Self-registering Ther.
- Maximum Temperature . . . . . 46°.8 on 31st.
- Minimum Temperature . . . . . 3°.0 on 19th. } Monthly range= 43°.8
- Mean Maximum Temperature . . 33°89
- Mean Minimum Temperature . . 21°11 } Mean daily range=12°78
- Greatest daily range . . . . . 27°6 from a.m. to p.m. of 19th.
- Least daily range . . . . . 2°6 from a.m. to p.m. of 11th.

Warmest day . . . . 30th ...Mean Temperature . . . 37°05
Coldest day . . . . . 14th ...Mean Temperature . . . 14°73 } Difference=22°.32

Maximum Solar Radiation . . . . . 117°.0 on 28 & 30
Terrestrial . . . . . —5°.4 on 19th } Monthly range= 122.4

Aurora observed on 1 night, viz.—7th.
Possible to see Aurora on 11 nights: impossible on 20 nights.
Snowing on 14 days; depth 33.4 inches; duration of fall 107.3 hours.
Raining on 6 days; depth 0.617 inches; duration of fall 31.0 hours.
Mean of cloudiness=0 72; most cloudy hour observed, 4 p.m.; mean=0.75; least cloudy hour observed, 12 p.m.; mean=0.68.

Sums of the components of the Atmospheric Current, expressed in Miles.

North.	South.	East.	West.
1836.57	529.80	2238.77	3117.56

Resultant Direction, N. 34° W.; Resultant Velocity, 2.12.
Mean Velocity, 8.52 miles per hour.
Maximum Velocity, 32.3 miles, from 1 to 2 p.m. of 2nd.
Most windy day, 2nd —Mean velocity 17.43 miles per hour. } Difference, 16.31 miles
Least windy day, 19th—Mean velocity 1.12 miles per hour.
Most windy hour, 1 p.m.—Mean velocity 11.26 miles per hour. } Difference, 5.10 miles
Least windy hour, 10 p.m.—Mean velocity 6.16 miles per hour.

1st. Fine Solar halo. Lightning during evening, first of year.
4th. Solar halo. 6th, perfect Solar halo.
15th. Lunar halo. 16th, Solar halo, very stormy night.
19th. Lunar halo. 20th, Lunar halo.
21st. Heavy snow storm from 1 p.m to noon of 22nd.
26th. Solar halo. 27th, stormy morning, snow and drift.
28th. Solar parhelia. 30th, Solar halo.
31st. Blue Birds numerous.
27th. First Schooner arrived at Rees' wharf.

COMPARATIVE TABLE FOR MARCH.

YEAR.	TEMPERATURE. Mean.	Excess above Average.	Maximum	Minimum	Range.	RAIN. No. of days.	Inches.	SNOW. No. of days.	Inches.	WIND. Resultant. Direction.	Velocity.	Mean Force or Velocity
	°	°	°	°	°							
1840	33.3	+ 3.4	58.6	9.2	49.4	8	1.640	8	...	...	...	...
1841	27.7	— 2.2	54.6	—6.7	61.3	5	1.170	7	...	...	...	0.51 lbs
1842	35.8	+ 5.9	70.3	15.1	55.2	4	3.150	8	...	...	...	0.71 "
1843	21.3	— 8.6	39.9	—2.5	42.4	2	0.625	18	25.7	...	...	1.18 "
1844	31.3	+ 1.4	60.8	9.6	41.2	8	2.470	8	14.0	...	...	0.57 "
1845	35.4	+ 5.5	62.7	6.6	56.1	5	inapp.	8	2.8	...	...	0.66 "
1846	33.1	+ 3.2	49.6	8.3	41.3	9	1.965	5	2.3	...	...	0.30 "
1847	26.2	— 3.7	43.9	5.6	38.3	5	0 850	6	4.2	...	...	0.71 "
1848	28.6	— 1.3	58.6	0.0	58.6	5	1.220	6	9.7	N 66 W	2.03	5.80 ms
1849	33.5	+ 3.6	53.0	15.1	37.9	7	1.525	2	2.3	N 3 W	1.48	5.37 "
1850	20.8	— 9.1	46.5	7.2	39.3	2	0.745	7	11.2	N 52 W	2.62	7.62 "
1851	32.4	+ 2.5	59.3	12.0	47.3	3	0.770	9	8.8	N 21 W	1.93	7.05 "
1852	27.7	— 2.2	44 8	—7.4	52.2	8	3.080	12	19.5	N 8 W	0.71	5.81 "
1853	30.6	+ 0.7	56 3	0.0	56.3	6	1.081	8	7.1	N 58 W	2.00	5.96 "
1854	30.7	+ 0.8	55.1	7.4	47.7	9	2.425	3	2.8	N 53 W	3.39	8.03 "
1855	28.5	— 1.4	49.4	—2.9	52.3	5	1.483	11	18.1	N 88 W	4.76	9.95 "
1856	23.1	— 6.8	41.4	-14.0	55.4	0	0.000	12	16.2	N 71 W	7.68	11.39 "
1857	27.8	— 2.1	57.6	—5.5	63.1	4	0.335	15	11.3	N 63 W	6.63	10.84 "
1858	28.4	— 1.5	55.4	—5.5	60.9	10	0.917	6	0.2	N 58 W	5.45	8.56 "
1859	36.3	+ 6.4	54.2	9.8	44.4	15	4.054	8	1.0	N 64 W	1.96	10.39 "
1860	34.5	+ 4.6	67.0	12.8	54.2	5	0.882	11	2.4	N 64 W	7.61	12.41 "
1861	26.9	— 3.0	47.4	—5.2	52.6	8	2.125	14	7.1	S 54 W	4.33	10.56 "
1862	28.8	— 1.1	43.2	8.0	35.2	8	2.560	11	18.5	N 12 W	2.50	9.38 "
1863	25.8	— 4.1	42.2	—4.0	46.2	4	0.687	17	11.4	N 27 W	2.02	9.27 "
1864	29.1	— 0.8	50.2	3.0	47.2	9	1.620	12	3.7	N 53 W	2.29	8.41 "
1865	33.6	+ 3.7	55.6	—3.5	59.1	10	3.050	12	18.9	N 61 W	2.16	8.80 "
1866	27.6	— 2.3	45.8	7.5	38.3	8	1.915	18	7.2	N 73 W	6.84	11.51 "
1867	26.6	— 3.3	46.8	3.0	43.8	6	0.617	14	33.4	N 34 W	2.12	8.52 "
Results to 1866.	29.92	...	52 35	2.96	49.39	6.37	1.629	9.7	9.43	N 58 W	3.46	8.83 "
Exc. for 1867.	—3.32	...	—5.55	+0.04	5.59	—0.37	1.012	+4.3	+23.97	...	...	—0.31 "

MONTHLY METEOROLOGICAL REGISTER, AT THE PROVINCIAL MAGNETICAL OBSERVATORY, TORONTO, CANADA WEST,—APRIL, 1867.

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.	Tens. of Vapour.				Humidity of Air.				Direction of Wind.			Resul't. Direction	Velocity of Wind.					Rain in inches.	Snow in inches.
	6 A.M.	2 P.M.	10 P.M.	Mean.	6A.M.	2 P.M.	10PM	ME'N		6 A.M.	2 P.M	10 P.M.	M'N	6 A.M.	2 P.M.	10 P.M.	M'N	6 A.M.	2 P.M.	10 P.M.		6A.M.	2P.M.	10 P.M.	Re-sult'.	M'N.		
					°	°	°	°	°												°							
1	28.941	29.010	29.158	29.0428	34.9	38.8	36.3	36.67	+ 0.43	.186	.186	.193	.188	92	79	90	87	N N E	W S W	W b S	S 80 W	2.5	14.5	1.5	12.91	13.2	.140	...
2	29.256	.509	.733	.5293	34.5	38.5	31.8	34.72	— 1.92	.144	.115	.123	.125	72	47	68	62	W	W N W	W b N	N 75 W	18.0	26.0	4.0	12.91	13.14	...	...
3	.883	.860	.696	.8018	28.0	39.9	34.9	34.58	— 2.43	.117	.121	.133	.127	76	49	68	64	N W b N	S E B S	N E b E	N 82 E	1.0	5.0	7.6	4.30	5.11	...	...
4	.522	.364	.364	.4085	36.0	45.0	36.0	38.28	+ 0.95	.189	.239	.196	.201	89	80	93	87	E N E	Calm.	E b N	N 71 E	5.0	0.0	13.5	6.23	6.58	1.155	...
5	.177	.138	.177	.1708	33 8	36.3	30.9	33.25	— 4.47	.183	.157	.128	.155	94	74	73	81	E b N	W b S	N b W	N 69 W	4.8	8.0	16.6	6 47	8.68	...	2.2
6	.391	.423	.356	.3920	27.6	41.7	37.4	35.67	— 2.37	.121	.140	.179	.141	82	53	80	69	W	W	S W	S W b S	N 51 W	6.0	8.5	8.6	7.15	7.98	...	...
7	.294	.528	—	—	37.0	42.5	—	—	—	.176	.173	—	—	79	63	—	—	S W	W b S	Calm.	S 88 W	7.4	20.2	0.0	6 98	8.46	...	...
8	.563	.560	776	.6463	39.9	39 2	34.5	37.82	— 0.90	.172	.223	.157	.177	69	94	78	78	N N b E	W b S	W	N 49 W	3.7	7.8	6.5	4.43	6.23	.175	...
9	.918	.840	.716	.8127	30.2	42.1	32.0	35.32	— 3.72	.128	.170	.143	.148	76	62	79	71	W S W	S W b W	Calm.	S 12 W	2.0	1.2	0.0	0.34	1.37	...	...
10	.616	.417	.378	.4572	32.4	36.7	35 6	35.27	— 4.15	.146	.179	.177	.166	79	82	85	80	Calm.	N b E	W b N	N 25 W	0.0	1.0	0.4	5.13	5.67	.100	...
11	.484	.548	.526	.5213	25.9	38.1	35.6	33.50	— 6.23	.100	.126	.149	.126	70	55	72	65	N W b N	S S W	S W	N 64 W	17.0	8.4	5.2	5.07	7.23	...	...
12	.433	.444	.456	.4565	32.7	52.6	45.0	44.83	— 4.70	.150	.227	.167	.184	80	57	55	62	S W b W	S b W	N W b N	S 73 W	1.0	0.8	2.2	1.12	4.13	...	...
13	.581	.718	.770	.6965	36.3	39.6	34.5	37.17	— 3.27	.151	.159	.157	.157	71	64	78	71	E N E	E S E	E	N 87 E	7.2	5.5	4.0	6.60	6.04	...	...
14	.768	.722	—	—	36.3	44.1	—	—	—	.168	178	—	—	78	61	—	—	E N E	E b N	S	N 74 E	8.6	6.4	3.3	5.34	5.68	...	...
15	.502	.414	.372	.4223	43.5	49.7	48.2	47.03	+ 5.98	.231	.287	.332	.290	81	80	98	89	Calm.	E	S S W	S 58 E	0.0	2.5	1.8	0.61	1.21	.205	...
16	.310	.284	.389	.3330	46.4	52.6	45.7	48.35	+ 6.87	.310	.342	.259	.301	98	86	84	88	N E b N	N	N w b N	N 8 W	3 0	11.0	8.5	9.96	10.37	...	...
17	.518	.601	.716	.6235	39.8	57.6	43.9	47.67	+ 5.92	.207	.083	.094	.129	85	16	32	43	N W b N	N W b N	N w b w	N 40 W	10.6	23.6	11.0	15.32	15.92	...	...
18	.906	.956	.912	.9295	38.1	47.9	36.3	40.72	— 1.35	.134	.119	.143	.125	58	34	66	50	N N W	N W	Calm.	N 31 W	10.2	8.0	0.0	3.01	5.69	...	...
19	.843	.762	—	—	37.8	46.1	—	—	—	.173	.170	—	—	77	54	—	—	E N E	E S E	Calm.	N 84 E	3.8	7.6	0.0	4.59	4.75	.007	...
20	.392	.165	.279	.2708	38.9	55.5	44.6	46.80	+ 4.02	.194	.283	.217	.233	81	63	74	72	S R b E	W b N	W b S	West	2.8	0.5	12.2	8.69	10.04	.060	...
21	.396	.421	—	—	40.7	48.6	—	—	—	.180	.202	—	—	70	58	—	—	W	W S W	N E b E	N 64 W	19.0	10.2	2.5	6.24	8.94	...	0.5
22	.281	.182	.489	.3155	33.4	38.1	34 5	35.28	— 8.08	.171	.201	.174	.177	89	88	87	85	N E b N	N N W	N W b W	N 30 W	8.7	13.8	11.2	11.30	12.71	inap.	3.5
23	.649	.751	.852	.7635	32.7	38.9	32.2	34.93	— 8.77	.128	.117	.156	.133	68	49	85	67	N W	W b N	Calm.	N 56 W	13.2	10.8	0.0	4.59	5.77	...	inap.
24	.840	.745	.768	.7820	32.7	33.4	32.4	33.43	—10.57	.165	.178	.169	.169	88	93	91	88	N E b E	E b N	Calm.	N 83 E	3.5	8.8	0.0	4.11	6.40	...	1.0
25	.806	.752	.694	.7438	34.5	45.7	46 8	43.17	— 1.23	.192	.230	.295	.242	96	75	92	86	S W b S	S b W	S S W	S 21 W	5.0	13 2	2.8	6.86	6.96	inap.	...
26	.667	.499	.314	.4775	37.0	54 0	46.1	47.27	+ 2.57	.193	.190	.180	.187	87	45	57	59	S S W	S S W	S b W	S 36 W	1.2	17 0	9.2	10 25	13.16	.055	...
27	.431	.714	.788	.6723	35.6	37.1	29.1	33.38	—11.63	.142	.106	.114	.114	68	48	71	60	W b N	N W b W	N b E	N 31 W	19.2	22.0	5.7	11.74	12.23	...	...
28	.847	.836	—	—	27.8	38.5	—	—	—	.126	.105	—	—	84	44	—	—	N b E	E	E N E	N 88 E	1.0	11.2	8.8	7.03	8.56	...	...
29	.635	.534	.445	.5302	38.5	44.3	40.4	42 90	— 2.83	.182	.248	.259	.229	78	86	82	82	E b N	E b N	S	S 70 E	7.0	11.0	8.0	5.10	6.54	inap.	...
30	.436	.389	.374	.3928	45 1	54.0	48.6	48.48	+ 2.43	.262	.346	.269	.294	94	82	79	86	S	S E b E	N W b N	N 4 W	3.6	3.0	13.0	4.64	7.42	.250	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
M	29.5255	29.5127	29.5309	29 5277	35.44	43.89	38.37	39.46	— 1.53	.172	.191	.183	.181	81	66	77	73					6.53	9.58	5.60		7.89	2.147	7.2

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR APRIL, 1867.

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

Highest Barometer.....29.958 at 8 a.m. on 18th } Monthly range=
Lowest Barometer .....28.930 at 8 a.m. on 1st } 1.028 inches.

Self-regist'g Thermom.
- Maximum Temparature .....65°5 on 20th } Monthly range=
- Minimum Temperature .....25°4 on 11th } 40°.1
- Mean Maximum Temperature .....47°73 } Mean daily range=
- Mean Minimum Temperature .....33°79 } 13°93
- Greatest daily range.....27°2 from a.m. to p.m. of 12th.
- Least daily range.....5°9 from a.m. to p.m. of 5th.

Warmest day.....30th . Mean Temperature .....48°48 } Difference=15°23
Coldest day .....5th...Mean Temperature .....33°25 }
Maximum Radiation. { Solar .....108°.0 on 13th } Monthly range=93°6
{ Terrestrial .....14°.4 on 3rd }

Aurora observed on 2 nights, viz :—8th and 24th
Possible to see Aurora on 15 nights; impossible on 15 nights.
Snowing on 5 days; depth 7.2 inches; duration of fall 27.1 hours.
Raining on 12 days; depth .147 inches; duration of fall 56.3 hours.
Mean of Cloudiness=6 62.
Most cloudy hour observed 2 p.m.; Mean=0.67; least cloudy hour observed 10 p.m.; Mean=0.54

Sums of the components of the Atmospheric Current, expressed in Miles.

North.	South.	East.	West.
2145.18	930.47	1270.67	2771.31

Resultant Direction N. 51° W.; Resultant Velocity 2.68 miles per hour.
Mean Velocity 7.89 miles per hour.
Maximum Velocity 30.5 miles from 6 to 7 p.m. of 20th.
Most Windy day 17th; Mean Velocity 15.92 miles per hour. } Difference 14.71
Least Windy day 15th; Mean Velocity 1 21 do } miles.
Most Windy hour 10 a.m.; Mean Velocity 10 57 do } Difference 4 98 miles.
Least Windy hour 10 p.m.; Mean Velocity 5.39 do }

3rd, Solar halo. 4th, heavy rain storm.
9th Solar halo, lunar halo at 10 p.m.
14th, Solar halo. 16th, dense fog.
20th, Thunder storm.
6th, Robins numerous. 14th, Wild Pigeons passing N.
16th, Woodpeckers numerous. 20th, Frogs heard.
25th, Swallows and Butterflies seen.
1st, Bay clear of ice. 13th, First Steamer arrived "City of Toronto."

COMPARATIVE TABLE FOR APRIL.

YEAR.	TEMPERATURE. Mean.	Excess above aver'ge	Maximum.	Minimum.	Range.	RAIN. No. of days.	Inches.	SNOW. No. of days.	Inches.	WIND. Resultant. Direction.	Velo'y.	Mean Force or Velocity
	°	°	°	°	°							
1840	42.4	+ 1.2	68.7	22.8	45.9	14	3.420	2	...	...	...	...
1841	39.2	— 2.0	64.8	19.9	44.9	3	1.370	3	...	...	...	0.51 ms
1842	43.1	+ 0.9	89.8	20.1	69.7	8	3.740	2	...	...	...	0.57
1843	40.9	— 0.3	71.6	14.7	56 9	7	3.185	3	0.1	...	..	0.46
1844	47.5	+ 6.3	74.6	14.9	59.7	10	1.515	1	inap.	...	..	0.24
1845	42.1	+ 0.9	66.7	15.5	51.2	11	3.290	4	1.5	...	...	1.00
1846	44.0	+ 2.8	81 8	24.2	57.6	10	1.300	2	1.3	...	...	0.55
1847	39.2	— 2.0	65.1	9.3	55.8	8	2 870	2	4.0	...	...	0 59
1848	41.3	+ 0.1	65.1	22.7	42.4	5	1.455	1	0.5	N 77 W	1.46	4.89mls
1849	39.0	— 2.2	72.0	15.5	56.5	10	2.655	2	1.7	N 43 W	3.14	7.50
1850	37.9	— 3.3	65.7	18.0	47.7	7	4.720	2	1.1	N 39 W	1.12	7.64
1851	41.3	+ 0.1	59.3	25.8	33.5	11	2.295	3	1.2	N 14 E	2.52	8.07
1852	38.2	— 3.0	53.8	20.0	33.8	6	1.990	4	9.4	N 23 E	2.44	6.68
1853	41.9	+ 0.7	65.7	25.0	40.7	10	2.625	1	1.0	N 12 W	1.95	5.20
1854	41.0	— 0.2	64.5	20.2	44.3	12	2.685	4	2.7	N 50 E	2.57	6.81
1855	42.4	+ 1.2	69.4	10.7	58.7	8	2.030	3	1.6	N 36 W	3.99	7.57
1856	42.3	+ 1.1	72.2	14.2	58.0	13	2.780	3	0.1	N 29 E	1.64	6.05
1857	35.4	— 5.8	52.0	5.9	46.1	10	1.755	11	12.9	N 50 W	4.15	10.24
1858	41.5	+ 0.3	65.2	21.8	43.4	13	1.642	2	0.1	N 14 W	1.64	9.57
1859	39.5	— 1.7	64.8	22.6	42.2	9	2.527	8	1.2	N 36 W	2.33	10.79
1860	39.5	— 1.7	61.8	19.5	42.3	11	1.282	5	0.3	N 37 W	4.10	10.30
1861	42.0	+ 0.8	67.0	23.8	43.2	12	1.619	4	6.9	N 37 E	2.31	8.90
1862	39.6	— 1.6	68.0	14.5	53.5	10	2.235	4	0.2	N 50 E	2.48	9.77
1863	42.0	+ 0.8	69.0	8.6	60.4	8	2.210	4	1.6	N 14 E	3.75	9.29
1864	40.9	— 0.3	59.4	28.1	31.3	16	3.633	3	3.5	N 41 E	3.39	7.77
1865	43.1	+ 1.9	62.5	23.0	39.5	17	3.972	6	2.0	N 84 W	2.11	8.39
1866	43.9	+ 2.7	71.0	28.5	42.5	7	1.675	2	inap.	N 42 W	3.34	7.95
1867	39.5	— 1.7	65.5	25.4	40.1	12	2.147	5	7.2	N 51 W	2.68	7.89
Results to 1866.	41.19	...	67.09	18.88	48.21	9.85	2.462	3.4	2 29	N 13° W	2.03	8.07
Excess for '67.	— 1.69	...	— 1.59	+ 6.52	— 8.11	— 2.15	— 0.315	+ 1.6	+ 4.91			— 0.18