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THE CANADIAN JOURNAL.

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CHRISTIAN EPITAPHS OF THE FIRST SIX CENTURIES.

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

THE following article contains the substance of a paper on the funereal inscriptions of the early ages of Christianity, that I read before the Canadian Institute, and, also, of a public lecture that I delivered on the same subject. I have availed myself of the opportunity, presented by its publication, to introduce many additional examples, and to arrange them all in classes. The selection of the inscriptions has been made without any controversial aim, and solely with a view to their forming a useful introduction to the study of Christian Archæology, so far as it is illustrated by the epitaphs of the first six centuries. I have limited myself to those inscriptions, within this period, that bear dates, so that there may be no question as to their age. No example has been given without *examination

* No one, but those conversant with epigraphy, can fully appreciate the necessity for such examination. There are whole classes of inscriptions so justly suspected, that no scholar would accept one of them without the greatest caution; such, for example, are the Spanish, given under the name of Cyriac of Ancona, or on the authority of Morales or Occo, or the Italian, vouched for by Ligorio, a name of

of its genuineness; and I have invariably stated the place (when known) where each was found, with the authority both for this statement, and for the text that I have adopted. The inscriptions, that are given in the lithographic plates, are †*fac-similes* of the originals, as they are represented in De Rossi's work; the others are copied with as much accuracy as I could attain, using ordinary type. The notes are few and brief, as many of the difficulties are explained in the expansions and translations that I have given.

I subjoin a list of the editions of the principal works to which I refer in the article:—

ARINGHI,	<i>Roma Subterranea</i> ,	<i>Lutetie Parisiorum</i> , 1659.
БОЕЧКЪ,	<i>Corpus Inscriptionum Græcarum</i> , . .	Berlin, 1828-1856.

itself sufficient to excite the strongest suspicion. Ligorio, a Neapolitan, was a practised forger of inscriptions, which he sold to collectors, and many of his impostures have been exposed by scholars. His work, however, was confined to imitation of the Heathen *tituli*. But there were others who took up the manufacture of Christian inscriptions. The celebrated epitaph on *Daciana Diaconissa*, who was "the daughter of Palmatus the Consul, and the sister of Victorinus the Presbyter, and prophesied many things," although it passed the ordeal of Maffei's fastidious scrutiny, is now known to have been forged, and has been traced to Ferrara. See De Rossi, p. xxx. Bosio's great work in Italian, on the Catacombs of Rome, was, as is well known, translated into Latin by Paul Aringhi, who made additions, to the original, contributed by himself and Severano. There is no doubt that a second Ligorio imposed on both of these scholars. See De Rossi, p. xxvi. Again, Boldetti, who published what may be regarded as a supplement to Bosio, was so deficient in scholarship and critical acuteness, and so regardless of accuracy, that no reliance can be placed on his copies, even of inscriptions that he himself saw. As this may appear to some to be too harsh a censure on a writer, whose authority was once held in high estimation, I subjoin one of the many adverse opinions pronounced on him by De Rossi, who was thoroughly acquainted with his work in all its details: *Hujus (scil. Boldetti) in id genus apographis excipiendis imperitiam et incuriam non centena, sed millena exempla testantur*. See p. 24.

Other authors might be mentioned in illustration of the necessity for examining the authority for each inscription; but, probably, enough has been said on the subject. It is a more agreeable duty to bear my testimony to the remarkable merits of Signor De Rossi's learned volume—*Inscriptiones Christianæ Urbis Romæ Septimo Sæculo Antiquiores*—a work, which is *facile princeps* of all that have been published on the subject.

† I have examined Perret's splendid volumes, but have not taken any extract from them. Their reputation for accuracy is not good; Burgoz does not hesitate to call the work "simply a Romance."

- BOLDETTI, Osservazioni sopra i cimiterii de' SS.
Martiri ed antichi christiani di Roma, Roma, 1720.
- BURGON, "Letters from Rome," London, 1862.
- CLINTON, *Fasti Hellenici and Fasti Romani*, . . . Oxford, 1834-1850.
- DE ROSSI, *Inscriptiones Christianæ Urbis Romæ Sep-
timo Sæculo Antiquiores*, Romæ, 1857-1861.
- FABRETTI, *Inscriptionum Antiquarum explicatio*, . . Romæ, 1699.
- GRUTER, *Inscriptiones Antiquæ*, Amstedæmi, 1707.
- HENZEN, *Inscrip. Latin. Select. Collectio*, Orelli, iii. Turici, 1856.
- KENRICK, "Roman Sepulchral Inscriptions," . . London, 1858.
- KIP, "The Catacombs of Rome," New York, 1859.
- KIRCHHOFF, *Corpus Inscriptionum Græcarum*, iv. 2, . . Berlin, 1859.
- MAI, *Veterum Scriptorum Nova Collectio*, . . Romæ, 1831.
- MAFFEI, *Museum Veronense*, Veronæ, 1749.
- MAITLAND, "The Church in the Catacombs," . . London, 1847.
- McFARLANE, "The Catacombs of Rome," London, 1852.
- MOMMSEN, *Inscriptiones Latinæ Antiquissimæ*, . . Berlin, 1863.
- MURATORI, *Novus Thesaurus Veterum Inscriptionum, Mediolani*, 1739.
- NORTHCOTE, "The Roman Catacombs," London, 1857.
- ORELLI, *Inscrip. Latin. Select. Collectio*, Turici, 1828.
- PERRET, "Les Catacombes de Rome," Paris, 1852-1857.
- REINESIUS, *Syntagma Inscrip. Antiquarum*, Lipsiæ et Francofurti,
RENIER, "Inscriptions Romaines de l'Algérie," Paris, 1858. [1682.]

I. THOSE IN WHICH ONLY THE NAME AND DATE ARE STATED.

1.

VIBIV · FIMVS · R · VII KA · SEP
DIC · IIII · ET · MAX · COS

(*E* *coemeterio Callisti; De Rossi, n. 16.)

*Vibiu (Vibius) Fimus recessit, VII Kalendas Septembres, Dicle-
tiano (Diocletiano) IV et Maximiano Consulibus.*

"Vibius Fimus retired (from this world), on the seventh day before the Calends of September, in the Consulship of Diocletian for the fourth time, and Maximian [for the third time]," *i.e.* August 26th, 290, A.D.

De Rossi compares *Fimus* (dung) with the name *Stercorius*, commonly used by Christians. Thus, also, we find *Stercoria* applied to females. It is believed that such appellations were chosen by Christians in humility and self-abasement. I am inclined to think that,

* *Coemeterium* is used to denote a "Catacomb," and the inscriptions, that have been found in the Catacombs, are distinguished by the term *coemeteriales*, although the words do not necessarily imply "subterranean."

at least, some of them were not selected by those, who bore them, or by their relatives, but were applied by the heathen in contempt, and then adopted. We often meet with names common to both Christians and Pagans, and sometimes find the former strangely called after heathen deities, e.g. *Mercurius*.

I have followed De Rossi in reading R as *recessit*; others prefer *requiescit*, or *reddidit*, sc. animam. We should have had III after MAX, for Maximian was consul for the third time in the same year (290) in which Diocletian was consul for the fourth time.

2.

IGNATIVS · SEM
NVS
XV · KAL FEB
HANNIBALIANO
ETASCLEPIODO
TO COSS

(*In vinea supra coemeterium Petri et Marcellini*; De Rossi, n. 19.)

Ignatius Semnus, XV Kalendas Februarias, Hannibaliano et Asclepiodoto Consulibus.

"Ignatius Semnus, on the fifteenth day before the Calends of February, in the Consulship of Hannibalianus and Asclepiodotus," i.e. January 18th, 292, A.D.

There is an ellipsis of a word between *Ignatius Semnus* and *XV Kal. Feb.* Either *decessit* or *depositus*—"died," or "was buried,"—may be supplied; of the two, the latter is the more probable in Christian epitaphs. A similar ellipsis is found in heathen sepulchral inscriptions. Thus, in the collection given by Lanzi, *Saggio*, i., p. 162, we have COELIA A · D · X · KAL · DIIC, i.e. *Coelia ante diem X Kalendas Decembres, scil.* "Coelia, on November 22nd." whereby we should understand, that her bones were collected on that day. See Mommsen, *Inscrip. Latin. Antiq.*, p. 210. In his n. 887, we have P for *Positus*, and in n. 957, *ossiva*, i.e. *ossa*.

3.

(See Plate I, 2.)

(*E coemet. Theodoræ*; De Rossi, n. 55.)

Constantio Aug. II et Constanti (Constante) Aug. (Conss.) Nonis Decemb. Clau(di)anus dormit in (pace.)

"In the Consulship of Constantius Augustus, for the second time, and Constans Augustus, on the Nones of December (*i.e.* December 5th, 339, A.D.), Claudianus sleeps in peace."

4.

(See Plate II, 2.)

(*In Mus. Vat.*; De Rossi, n. 69.)

KATAΘECIC ·
OKTABIAΛΛHC
ΠPOΘKACET
PΩMOYAI

Κατάθεσις Ὀκταβίλλης πρὸ θ καλ(ανδῶν) Σετ(εμβρίων) Ῥωμούλι.

"The burial of Octavilla (took place) on the ninth day before the Calends of September [in the Consulship] of Romulus," *i.e.* August 24th, 343, A.D.

'Ρωμούλι, with the Latin ending of the genitive, stands for 'Ρωμούλου, *i.e.* ὑπατέρι 'Ρωμούλου.

5.

GAUDENTIVS · DIE · III · KAL
AVG · SERGIO · ET · NIGRINIANO ·
COSS

(*E coemeterio Hippolyti*; De Rossi, n. 109.)

Gaudentius, die III Kalendas Augustas, Sergio et Nigriniano Consulibus.

"Gaudentius, on the third day before the Calends of August, in the Consulship of Sergius and Nigrinianus," *i.e.* July 30th, 350, A.D.

6.

DEPOSTIO SEDATI XII KAL
DECEMBRES · GRAT ANOV
ET TODOSIO CONSS

(*In coem. Theodoræ*; De Rossi, n. 291.)

Depostio (depositio) Sedati, XII Kalendas Decembres, Gratiano V et Todosio (Theodosio) Consulibus.

"The burial of Sedatus (took place) on the twelfth day before the Calends of December, in the Consulship of Gratianus, for the fifth time, and Theodosius," *i.e.* November 20th, 379, A.D.

I have regarded *depositio* as "burial." There are examples of

its use, in which it might be considered as standing for the place, or for the body itself.

7.

DEPOSITVS LEONEDES IN PACE
D IIII NONAS APRIL POST CONS
IOANNIS ET VARANA

(*In S. Agnetis extra Muros; De Rossi, n. 799.*)

Depositus Leonedes (Leonides) in pace, die IV Nonas Apriles, post consulatum Joannis et Varana (Varanæ or Varanis).

"Leonidas was buried in peace on the fourth day before the Nones of April, (in the year) after the Consulship of John and Varanes," *i.e.* April 2nd, 457, A.D.

I have uniformly translated *depositus* by our ordinary word, "buried." There are some, who think that it is used with a special reference to the resurrection. Thus Northcote, "The Roman Catacombs," p. 143, remarks: "Each body, as it was laid in its grave, was said to be *depositum* there; deposited, that is, only for a while, to be reclaimed again in that day when the sea and the earth shall give up their dead." This is a pleasing, but, in my judgment, incorrect interpretation. The word *depositus*, meaning "laid down," is used by Classical authors in the sense "despaired of," and "dead." See Virgil, *Æn.*, xii., 395; Ovid, *Trist.*, iii., 3, 40; *Ex Pont.*, ii., 47.

In Christian inscriptions, I regard it as signifying no more than "laid down," *i.e.* that the body (*corpus integrum*)—not merely portions of it, as was common among the heathen—was "buried."

II. THOSE IN WHICH ONLY THE NAME, AGE, AND DATE ARE STATED.

8.

SERVILIA · ANNORVM · XIII ·
PIS · ET · BOL · COSS ·

(*E coemeterio Lucinæ; De Rossi, n. 3.*)

Servilia, annorum XIII, Pisone et Bolano Consulibus.

"Servilia, of thirteen years (of age), in the Consulship of Piso and Bolanus," *i.e.* 111, A.D.

This inscription has no distinctive mark of a Christian epitaph; and yet the circumstances, under which it was found in the Catacombs, seem to warrant its being placed among them. See De Rossi, n. 3.

9.

ΕΡΜΕΙΑCΟΚΑΙ
 ΛΙΤΟΡΙC ΙΗΜΓΕ
 ΗΙΑΜΙΑC QVIET
 LITORIVS M VIII
 DIERXV EXCESSIT
 ALBINO II ETMAXI
 MO COS XIII KAPBH

(*Smyrnæ*; Boeckh, *Corp. Inscript. Græc.*, n. 3309.)

Ἑρμείας ὁ καὶ Λίτορις μ(ηνῶν)ῆ [ῆ]μ(ερῶν)[ι]ε. *Hermias, qui et Litorius, mensium VIII, dierum XV, excessit, Albino II et Maximo Consulibus, XIV Kalendas Apriles.*

"Hermias, who was also called Litorius, of eight months, fifteen days (of age), departed in the Consulship of Albinus for the second time, and Maximus, on the fourteenth day before the Calends of April," *i.e.* March 19th, 263, A.D.

If this be a Christian epitaph, as it probably is, it is more ancient than any of those, not found in Rome, that bear dates. We must read in line 3, HERMIAS; and in line 7, K·APRIL. See De Rossi, p. 15.

10.

(See Plate II, 3.)

(*E coemet. via Ardeatina*; De Rossi, n. 13.)

(Ἀύ)ρηλία Παῦλα α ἐγεννήθη Α(ύρηλιανῶ) (τὸ β̄) καὶ
 Καπιτωλείνω (ὑπάτοις) τελευτᾶ πρὸ ῆ καλανδῶν ω ἔζησεν
 ἐπὶ δύο (ἡμέρας) δέκα πέντε.

"Aurelia Paula was born in the Consulship of Aurelian for the second time, and Capitolinus (*i.e.* 274, A.D.) She dies on the eighth day before the Calends of She lived two years fifteen days."

The date of her death was 277, A.D.

11.

HE·IACET·MVSCVLA·QUAE ET·GALATEA
 QV·E VIX·ANN·DVOB·MENS·DVOB·ET DXVII
 DEI·XV·KAL·AVG·GRATIANO AVG·II ET
 PRO·O CONSS·IN PACE

(*E coemeterio Lucinæ*; De Rossi, n. 224.)

Hic jacet Muscula, quæ et Galatea, quæ vixit annis duobus, mensibus duobus et diebus XVII. Deposita XV Kalendas Augustas, Gratiano Augusto II et Probo Consulibus, in pace.

"Here lies *Muscula*, who was also called *Galatea*, who lived two years, two months, and seventeen days. Buried on the fifteenth day before the Calends of August, in the Consulship of Gratianus Augustus for the second time, and Probus (*i.e.* July 18th, 371, A.D.), in peace."

It has been suggested that *Galatea* may have been the Heathen, and *Muscula* the Christian, name of the deceased. Thus we find in *Reinesius*, n. 452: *Accia vel Maria est nomen mihi Tulliana, i.e.* her heathen name was *Accia*, but her Christian, *Maria*. This notice, however, of two names is not rare in heathen epigraphy. Perhaps *Muscula* was her pet name. In the text, I have adopted, in the third line, De Rossi's reading of ET for IT. The use of the ablative for time "how long," is common in inscriptions. Sometimes we have the two constructions in the same sentence, as in n. 34.

12.

TIBVRTIVS QVI VIXIT ANN · XXVI · ET MENS ·
VIII · DXI · DEP · VII · NON · DEC · DN · GRATI
ANO IIII · ET MEROBAVDE COSS · IN PACE

(*Ad S. Agnetis*; De Rossi, n. 268.)

Tiburtius, qui vixit annos XXVI et menses LX, dies XI. Depositus, VII Nonas Decembres, Domino Nostro Gratiano IV et Merobaude Consulibus, in pace.

"Tiburtius, who lived twenty-six years, and nine months, (and) eleven days. Buried on the seventh day before the Nones of December, in the Consulship of our Lord Gratianus for the fourth time, and Merobautes (*i.e.* November 29th, 377, A.D.), in peace."

1. 2. VII · NON · DEC. I have regarded this $\epsilon s = III \cdot KL \cdot DEC$. Thus we have in De Rossi, n. 442, VIII · X · (XIII) KL · MART, *i.e.* PRID · ID · FEB ·; and in n. 587, XVIII · KL · ENDAS NOBEMBRES, *i.e.* ID · OCTOB.

13.

IC POSITVS ETS LEO QVI
VIXIT ANNOS · XXVI DI
POSITUS · VIII · IDVS · O
CTOBRIS · NATVS EST
TAVRO · ET · FLORENTIO
CCSS

(*In Bibliotheca S. Gregorii—Marini*; De Rossi, n. 362.)

ΣΙΜΙΛΙΚΙΑ-Η-ΚΑΙ
 ΚΑΛΩΝΥΜΟΣ ΕΖΗ
 ΣΕΝ-Ε ΤΗ-ΙΑ-ΗΜΕΡΑΣ
 ΚΤ ΕΓΕΛΕΥΘΗΣΕΝ ΟΥΤΕΚΑΛ-ΝΟΒΕΜΒΡ ΦΑΥΣΤΩΚΑ
 ΤΑΔΔΩ ΥΠΙΑΤΟΙΣ

ΣΗΛΙΑΤΑΥΛΑ
 Α ΕΓΕΝΝΗΘΗ
 ΚΑΙ ΚΑΠΙΤΩΛΕΙΩΝ
 ΤΤΗ ΚΑΛΑΝΔΩΝ
 ΕΖΗCΕΝ ΕΤΗ-ΥΟ
 ΕΚΑΙΤΕΝΤΕ

ΣΩΚΡΑΤΗΣ ΔΕΙΛΙΝΗCΤΟC ΦΙΛΟ
 Δ ΗΠΟCΕΙΤΟΥC Θ-ΚΩΚΤΒΑ Μαντιφ
 ΑΝΝΟΥC ΤΡΙΠΙΝΤΑ ΙΝ ΠΑΚΕ



(H) *ic positus ets (est) Leo, qui vixit annos XXVI. Dipositus (depositus) VIII Idus Octobres, natus est Tauro et Florentio Consulibus.*

"Here has been laid Leo, who lived twenty-six years. Buried on the eighth day before the Ides of October. He was born in the Consulship of Taurus and Florentius," *i.e.* 361, A.D.

As Leo was twenty-six years of age at his death, it is evident that this epitaph is of the date, October 8th, 386, A.D.

14.

HIC REQUIESCET IN SOMNO PACIS
MALA QVI VIXIT ANNOS XXXVIII · M · V · DV ·
ACCEPTA APVT DE IV · IDVS IVNIAS AETIO CONL.

(*E. fundamentis vet. bas. Vaticanæ; De Rossi, n. 678.*)

Hic requiescet (requiescit), in somno pacis, Mala qui (quæ) vixit annos XXXVIII, menses V, dies V. Accepta apvt (apud) De(um) IV Idus Junias Aetio Consule.

"Here rests, in the sleep of peace, Mala, who lived thirty-eight years, five months, five days. Received before God, on the fourth day before the Ides of June, in the Consulship of Aetius," *i.e.* June 10th, 432, A.D.

l. 1. *Requiescet.* As if it were of the second conjugation: similarly *quiescet* and *requiescent*, for *quiescit* and *requiescunt*. In Gruter, 998, 10, we have *Hic requiescent*, in a heathen inscription, said of the living, *i.e.* we have the ordinary future.

15.

ΕΝΘΑΛΕΚΙΤΕΕΝ
ΕΙΡΗΝΗΜΑΡΙΑ
ΕΖΗ(ΕΝΕΤΗ . .
ΚΡΟΠΡΟCΒ . .
ΕΤΕΛΙΩΘΗ Ιου
ΛΙΟΥΚΣΥΠ
ΑΦΑΣΦΑΣC . . .

(*Rhegi; Kirchhoff, n. 9541.*)

Ἐνθάδε κίτε (κεῖται) ἐν εἰρήνῃ Μαρία. Ἐξήσεν ἔτη [μι]κρὸ(ν) πρὸς β. Ἐτελιώθη (ἐτελειώθη) Ἰουλίου κς ὑπ[ατ]ί[α] Φ.[Α]σ[π]α[ρο]ς.

"Here lies in peace, Mary. She lived a little more than two years. She finished her course on the twenty-sixth of July, in the Consulship of Flavius Aspar," *i.e.* 434, A.D.

I have given Kirchoff's reading and expansion. Corsini read the last line thus: Φ. Ας. Φ. ASC, *i.e.* *Flavii Ariovindi et Flavii Asparis*, giving the names of the two consuls. De Rossi suggests: ΦΑΣ·ΦΑΥCΤΟΥ, *i.e.* *Flavii Fausti*, or 490, A.D.

III. THOSE IN WHICH SOME CHARACTERISTIC OF THE DECEASED IS STATED.

16.

(See Plate II, 1.)

(*E coemeterio Laurentii*; De Rossi, n 23.)

Σιμπλικία ἡ καὶ Καλώνυμος ἔζησεν ἔτη ιᾱ ἡμέρας κγ̄ ἐτελεύτησεν πρὸ ιγ̄ καλ. Νοβεμβρίων Φαύστῳ καὶ Γάλλῳ ὑπάτοις.

"Simplicia, who was also rightly so named, lived eleven years, twenty-three days, died on the thirteenth day before the Calends of November, in the Consulship of Faustus and Gallus," *i.e.* October 20th, 298, A.D.

These consuls were Anicius Faustus, for the second time, and Virius Gallus. See De Rossi, p. 28, and Clinton, *Fasti Romani*, ii., 194.

"Ἡ καὶ, like the Latin *quæ et*, is frequently used to signify "who also was called." Here I have taken καλώνυμος as an adjective, as it has been understood by Montfaucon, Kirchoff, and De Rossi. The signification is, that her name, *Simplicia*, was a true indication of her habits and manners.

17.

INNOCENTISSIMO · PAVLO

QVI · VIX · M · X · D · XIII · DEPOSIT · PRID
NON · DECE · IN PACE · COSTANTIO · III · ET
COSTATE · II · CONS ·

(*E coem. Prætextati*; De Rossi, n. 61.)

Innocentissimo Paulo, qui vixit menses X, dies XIV. Depositus, pridie Nonas Decembres, Constantio III et Costate (Constante) II Consulibus.

"To the very innocent Paul, who lived ten months, fourteen days. Buried on the day before the Nones of December, in the Consulship of Constantius for the third time, and Constans for the second time," *i.e.* December 4th, 342, A.D.

18.

(See Plate II, 4.)

ΩΚΡΑΤΗC ΑΕΙΜΝΗCΤΟC ΦΙΛΟ
 ΔΗΠΟCΕΙΤΟΥC ΘΚΩΚΤΒΑΜ
 ΑΝΝΟΥCΤΡΙΓΙΝΤΑ ΙΝ ΠΑΚΕ

(*E coem. Cyriacæ*; De Rossi, n. 85.)

Σωκράτης αείμνηστος φίλο *depositus* θ̄ (IX) *Kalendas*
Octobres Amantio et Albino Consulibus, vixit annus (annos) triginta
in pace.

"Socrates, ever to be remembered . . . buried on the ninth day before the Calends of October, in the Consulship of Amantius and Albinus" (*i.e.* September 23rd, 345, A.D.). He lived thirty years, in peace."

19.

BONOSO BENE · MERENTI IN PACE
 QVI VIXIT ANNIS · II · M · III · D · XX
 DEP PRID · IDVS · SEPT · POST
 CCNSS · AMANTI ET ALBINI

(*Velutris*; De Rossi, n. 92.)

Bonosus bene merenti, in pace, qui vixit annis II, mensibus III, diebus XX. Depositus, pridie Idus Septembres, post consulatum Amantii et Albini.

"To Bonosus, well-deserving, in peace, who lived two years, three months, twenty days. Buried on the day before the Ides of September (*i.e.* September 12th), (in the year) after the Consulship of Amantius and Albinus," *i.e.* 346, A.D.

l. 1. *Bene Merenti.* This was a very general characteristic of the deceased, both in heathen and Christian epitaphs. It is frequently contracted thus: B · M · See n. 33.

20.

ΕΝΘΑΔΕ ΚΕΙΤΕ
 ΕΥΤΕΡΠΗ Η ΤΩΝ
 ΜΟΥCΩΝ CΥΝΤΡΟΦΟC
 ΒΙΩCΑCΑ ΑΠΛΩC ΚΑΙ
 ΟCΕΙΩC ΚΑΙ ΑΜΕΜ
 ΠΤΩC ΕΠΙ ΕΤ ΙΕ
 ΕΙΜ ΚΒ̄ ΜΗΝ Γ̄
 ΕΤΕΛΕΥΤΗ ΠΡΟ Ε̄ ΚΑΑ
 ΔΕΚΕΜΒ ΥΠΑΤΙΑ
 ΤΩΝ ΚῩ ΤΟ Ῑ ΚΑΙ ΤΟ Γ̄

(*Prope Motycam (in Sicilia)*; Kirchhoff, n. 9524.)

Ἐνθάδε κείτε (κέϊται) Εὐτέρπῃ; ἰ τῶν Μουσῶν σύντροφος βίωσασα ἀπλῶς καὶ ὀσειῶς (ὀσίως) καὶ ἀμέμπτως ἐπὶ ἔτη ἰε, ἡμέρας κβ, μῆνας γ. Ἐτελεύτησεν τῇ πρὸ ε̄ καλανδῶν Δεκεμβρίων ὑπατία τῶν κυρίων τὸ ἰ καὶ τὸ γ.

"Here lies Euterpe, the companion of the Muses, having lived simply, and piously, and irreproachably, for fifteen years, twenty-two days, three months. She died on the fifth day before the Calends of December, in the Consulship of our Lords, for the tenth time, and for the third time," (i.e. in the Consulship of Constantius, for the tenth time, and Julian, for the third time), i.e. November 27th, 360, A.D.

The abbreviation, whereby the names of the Emperors, or of the Emperor and the Cæsar, were omitted, and merely the numbers of their Consulships stated, is rare in Christian inscriptions. The most obvious example of it in heathen *tituli*, is—TER ET SEMEL COSS, i.e. 202, A.D., in which Severus was Consul for the third time, and Caracalla for the first.

21.

HIC POSITA EST ANIMA DVLCES
INNOCA SAPIENS ET PVLCHRA NOMINE
QVIRIACE QVE VIXIT ·ANNOS ·III ·M ·III ·DVIII
DP IN PACE IIII ·ID ·IAN ·CONSS ·DN ·TEVDOSIO ·AVG ·II
ET MEROBAVDE ·VC ·III ·

(In Mus. Lat.; De Rossi, n. 370)

Hic posita est anima dulces (dulcis), innoca (innocua), sapiens et pulchra, nomine Quiriace, quæ vixit annos III, menses III, dies VIII. Deposita in pace, IV Idus Januarias, Consulibus Domino Nostræ Tendosio (Theodosio) Augusto II et Merobaude, Viro Clarissimo, III.

"Here has been laid a sweet spirit, guileless, wise, and beautiful, by name Quiriace, who lived three years, three months, eight days. Buried, in peace, on the fourth day before the Ides of January, in the Consulship of our Lord Theodosius Augustus, for the second time, and Merobaudes, a most distinguished man, for the third time," i.e. January 10th, 388, A.D.

The name *Quiriace* is another form of *Cyriace*, both being Κυριακή Latinized.

There is great difficulty as to the junction of *Merobaudes* with *Theodosius*, in the second consulship of the latter. The *Fasti*, laws, and public acts mention, in his place, *Cynegius*. The best solution, of which I am aware, is that proposed by De Rossi in his note.

22.

HIC REQUIESCET QVODVVLDEVS HO
NESTERECORDATIONES VIR OVI VIC
XIT ANNOS · L · CI DEPOSITVS IN PACE
DIE V IDVS OCTOBRES CŌNSS DD NN
ARCADIO AV̄G QVATER ET HONO
RIO AV̄G TER CONSVLIBVS

(*In Mus. Lat.*; De Rossi, u. 436.)

Hic requiescet (requiescit) Quodvuldeus (Quodvultdeus), honeste (honestæ) recordationes (recordationis) vir, ovi (qui) vixit (vixit) annos LVII. Depositus in pace, die V Idus Octobres, Consulibus Dominis Nostris Arcadio Augusto quater et Honorio Augusto ter Consulibus.

"Here rests *Quodvultdeus*, a man worthy to be remembered with honor, who lived fifty-seven years. Buried, in peace, on the fifth day before the Ides of October, in the Consulship of our Lords Arcadius Augustus, for the fourth time, and Honorius Augustus, for the third time," i.e. October 11th, 396, A.D.

Christians assumed such names as *Adedatus*, *Deusedit*, *Quodvultdeus*.

23.

ΕΝΘΑΔΕ ΚΕΙΤΑΙ ΕΥΤΥΧΙΑΝΟΣ
ΖΗΣΑΣ ΕΝ ΧΩ ΤΕΛΕΥΤΑΤΗ ΠΡΟ
ΚΑΛΑΝΔΩΝ ΑΥΓΟΥΣΤΩΝ ΥΠ
ΑΝΙΚΙΟΥ ΑΥΧΕΝΙΟΥ ΒΑΣΣΟΥ ΚΑΙ
ΦΛΑΙΦΛΙΠΠΟΥ

(*Acris prope Syracusus*; Kirchhoff, n. 9478.)

Ἐνθάδε κείται Ἐυτυχιανὸς ζήσας ἐν Χριστῷ. Τελευτατῆ τῆ πρό θ̄ Καλανδῶν Αὐγούστων ὑπατία Ἀνικίου Αὐχενίου Βάσσου καὶ Φλ. Φιλίππου.

"Here lies Eutyuchianus, having lived in Christ. He dies on the ninth day before the Calends of August, in the Consulship of Anicius Auchenius Bassus, and Flavius Philippus," i.e. July 24th, 408, A.D.

24.

GVLFINVS · FAMVLVS · DEI
VIXIT · ANNOS · PLVS · MINVS · LXX
RECESSIT · IN · PACE D · III · KAL
AVGVSTAS · ERA · D

(*Hispani*; Maffei, *Mus. Ver.*, 423, 3.)

Gulfinus, famulus Dei, vixit annos plus minus LXX. Recessit in pace, die III Kalendas Augustas, era D.

"Gulfinus, a servant of God, lived seventy years, more or less. He retired (from this world), in peace, on the third day before the Calends of August, in the 500th year of the æra," i.e. July 30th, 462, A.D.

The Spanish æra counts from January 1st, 38, B.C. There are many examples of its use. The oldest that I have observed is that given above.

25.

AETERNALIS FA
MVLVS DEI VIXIT
AN · XLVI · REQ · IN
PAC · VI · KAL · SE
PTEM ERA DNI
D · XLVIII

(*Galistei in Lusitania, ex Emerita; Muratori, 1821, 9.*)

Æternalis, famulus Dei, vixit annos XLVI, requiescit in pace. VI. Kalendas Septembres, era Domini DXLVIII.

"Æternalis, a servant of God, lived forty-six years, rested in peace on the sixth day before the Calends of September, in the 500th year of the æra of (our) Lord," i.e. August 27th, 510, A.D.

I have given this example on account of the use of DNI, which is not common. If we had ANNO DNI, it would, of course, refer to the Christian, or Dionysian, æra; but this is said to have been first used in the year of Christ, 525. As it stands, DNI = *Domini* means Augustus, referring to his subjugation of Spain. Or, is DNI a contraction of *Domini*, i.e. of Roman rule?

IV. THOSE IN WHICH THE RELATIONSHIP OF THE DECEASED IS STATED.

(a.) To a father:— 26.

LEOPARDO PATRI DVLCISSIMO
BENEMERENTI IN PACE DEP
DIE XV · KAL · IAN · CONSTANTIO VIII
ET IVLIANO CAES · CONS

(*Ad S. Agnen.; De Rossi, n. 139*)

Leopardo, patri dulcissimo, benemerenti in pace. Depositus, die XV Kalendas Januarias, Constantio VIII et Juliano Cæsare Consulibus.

"To Leopardus (our, or my) sweetest father, well-deserving, in peace. Buried on the fifteenth day before the Calends of January, in the Consulship of Constantius, for the eighth time, and Julianus Cæsar," i.e. December 18th, 356, A.D.

The terms designating animals were commonly applied as names of persons, both by pagans and by Christians, who, also, were in the habit of using figures of those animals as representatives, as in modern heraldry we have "canting arms," *armes parlantes*. Thus, in the Catacombs, we find a lion for a man named *Leo*, a little pig for a girl named *Porcella*, with the object, as is believed, of enabling those who could not read, to distinguish the *loculus* of a friend or relative.

(b.) To a mother:— 27.

TIGRITI BEMEMERIII IN PACE
 QVE VICSIT ANNOS ·XXX
 MEN · II · DEPOSITA · VIII · KAL
 IAN · DD · NN · TEVDOSIO · III · ET
 EVGENIO
 EILIVS EECEI MATRI

(*In Lat.*; De Rossi, n. 414.)

Tigriti (Tigridi) *benemeriii* (benemeritæ), *in pace*, *que* (quæ) *vicsit* (vixit) *annos XXX*, *menses II*. *Deposita*, *VIII Kalendas Januariæ*, *Dominis Nostri Teudosio* (Theodosio) *III et Eugenio*. *Eilius* (filius) *cecei* (feci) *matri*.

"To Tigris, well-deserving, in peace, who lived thirty years, two months. Buried on the eighth day before the Calends of January, (in the Consulship of) our Lords Theodosius, for the third time, and Eugenius" (i.e. December 25th, 393, A.D.). I, (her) son, made (this) for (my) mother."

(c.) To a husband:— 28.

DEPOSSIO IVNIANI PRI · IDVS APRILES MARCELLINO
 [ET PROBINO CONSS ·
 QVI BIXIT ANNIS XL IN PACE RECESSIT ET AMATOR
 [PAVPERORVM VIXIT
 CVM BRGINIA ANNIS ·XV · BENEMERENTI BIRGINIA SVA
 [BICTORA
 BENEMERENTI FECIT AMATRIX PAVPERORVM ET
 [OPERARIA

(*In Mus. Lat.*; De Rossi, n. 62.)

Depossio (depositio) *Juniani*, *pridie Idus Apriles*, *Marcellino et Probino Consulibus*, *qui bixit* (vixit) *annis* (annos) *XL*. *In pace decissit* (decessit) *et amator pauperorum* (pauperum), *vixit cum brginia* (virginia) *annis* (annos) *XV*. *Bene merenti*, *birginia* (vir-

ginia) sua Bictora (Victoria), bene merenti, fecit amatrix pauperorum (pauperum) et operaria.

"The burial of Junianus (took place) on the day before the Ides of April, in the consulship of Marcellinus and Probinus (*i.e.* April 12th, 341, A.D.), who lived forty years. He departed, in peace, and (was) a lover of the poor. He lived with his wife fifteen years. To him, well-deserving, his wife Victoria, a lover of the poor, and attentive to her work made (this) to him well-deserving."

1. 3. *Brginia* = *Virginia* = a wife, who was a maiden when married. Thus, also, *Virginus* = *Maritus*. 1. 4. *Operaria* = industrious. This praise of a female is found in heathen epitaphs. Thus, *Ianam jecit*, Gruter, 769, 9; *lanifica*, Orelli, 4658; and *καὶ ἐργάτις*, Boeckh. *Corp. Inscrip. Græc.*, 954.

29.

LIMENIO · ET · CATVLINO · CONSS · III ·
IDVS · IANVARIAS · DEFVNCTVS · EST
EVVODIVS · QVI · VIXIT · ANNOS · LXV
MENSES · TRES · ET · DIES · XI · BENEME
RENTI · IN PACE FECIT · CONIVX

(*E coem. Prætextati*; De Rossi, n. 104.)

Limenio et Catulino Consulibus, III Idus Januarias, defunctus est Evvodius qui vixit annos LXV, menses III, et dies XI. Bene-merenti in pace fecit conjux.

"In the Consulship of Limenius and Catulinus (*i.e.* 349, A.D.), on the third day before the Ides of January (*i.e.* January 11th), Evodius died, who lived sixty-five years, three months, and eleven days. His wife made (this) to him, well-deserving, in peace."

30.

FELIX SANCTAE · FIDEI · VOCITVS · IIT IN PACE ·
CVIVS · TANTVS AMOR · ET CARITAS · RETENETVR · AB
[AMICIS IN AEVO
QVI CVM ESSET FVIT SOLACIVS · MISERICORS · OMNIBVS
AGRIPPINA FECIT · DVLCISSIMO SVO MARITO [NOTVS ·
CVM QVEM VIXIT SINE LESIONE ANIMI · ANNOS III ·
[ET M · X ·
FVIT IN SAECVLVM QUOD VIXIT · ANNOS XXXII · DEP · XIII ·
[KAL · SEPT · VALENTINIANO
NP ET VICTORI CONSS

(*E basilica Vaticana*; De Rossi, n. 211.)

Felix, sanctæ fidei, vocitus (vocatus) iit in pace, cujus tantus amor et caritas retenetur (retinetur) ab amicis: in ævo qui cum esset fuit solacius, misericors, omnibus notus. Agrippina fecit dulcissimo suo marito, cum quem (quo) vixit sine læsione (læsione) animi annos III et menses X. Fuit in sæculum (sæculo), quod (quoad) vixit, annos XXXII. Depositus, XIII Kalendas Septembres, Valentiniano, Nobilissimo puero, et Victori (Victore) Consulibus.

"Felix, of sacred honor, (when) called (away) went in peace, whose love and affection are so warmly cherished by his friends: who, when he was in life, was known to all for sympathy with the afflicted, and compassion towards the distressed. Agrippina made (this) to her very sweet husband, with whom she lived, without jarring, three years and ten months. He was in this world, whilst he lived, thirty-two years. Buried on the thirteenth day before the Calends of September, in the Consulship of Valentinianus, the most noble boy, and Victor," *i.e.* August 20th, 369, A.D.

l. 1. *Sanctæ fidei*. Literally "holy faith," but the meaning seems to be "of sacred honor," "of strict integrity." *Vocitus* for *vocatus*, as *probitus*, *rogitus*. l. 5. *Sine læsione animi*. Northcote, "Roman Catacombs," p. 137, seems to regard such statements of conjugal harmony, as peculiar to Christian inscriptions; but this eulogy is often found in heathen epitaphs, both from husbands to wives, and *vice versa*. Other forms of it are *sine querela*, *sine jurgio*, *sine dissidio*. Hence, Kenrick, "Roman Sepulchral Inscriptions," p. 42, justly remarks: "The married life of the Romans appears to have been remarkably free from domestic differences." l. 7. *Nobilissimo puero*. *Nobilissimus* was the term applied to the *Cæsar* from the time of Commodus and Severus; but, in the fourth century, it was extended in its use.

31.

MIRE · SAPIENTIAE
 AVGENDO QVI VIXIT
 ANN PLVS MIN · LXXII
 CVM VXORE FECIT
 ANN XXX DEPOSITVS
 XVI · KAL OCTOB DN GRA
 TIANO AVG · II ET PROBO CŌN

(*Neapoli, in Mus. Borbon.; De Rossi, n. 225.*)

Mire (miræ) *sapientiæ Augendo, qui vixit annos plus minus LXXII. Cum uxore fecit annos XXX. Depositus, XVI Kalendas Octobres, Domino nostro Gratiano Augusto II et Probo Consulibus.*

“To Augendus, of wonderful wisdom, who lived seventy-two years, more or less. He passed thirty years with his wife. Buried on the sixteenth day before the Calends of October, in the Consulship of our Lord Gratian Augustus, for the second time, and Probus,” *i.e.* September 16th, 371, A.D.

1. 4. *Fecit. Facere* is often used in the sense “to spend,” “to pass,” in Christian epitaphs; and this signification is not peculiar to them.

32.

APRO · QVI · VIXIT · ANNOS XLVIII · MENSES III · DIES
XVI · DEPOSITVS IN PACE VI · KALENDAS MARTIAS
POST CONS · GRATIANI ET EQVITII · LIMFIRIA MARITO
FECIT MECVM ANNOS XX ·

(*E coem. Callisti. ; De Rossi, n. 248.*)

Apro, qui vixit annos XLVIII, menses III, dies XVI. Depositus in pace, VI Kalendas Martias, post consulatum Gratiani et Equitii Limfria marito. Fecit mecum annos viginti.

“To Aper, who lived forty-eight years, four months, sixteen days. Buried, in peace, on the sixth day before the Calends of March, in the year after the Consulship of Gratianus and Equitius (*i.e.* February 24th, 375, A.D.). Limfria to her husband. He passed twenty years with me.”

(*d.*) To a wife:—

33.

B M

CVBICVLVM · AVRELIAE · MARTINAE CASTISSIMAE AD-
[QVE · PVDI
CISSIMAE FEMINAE QVE FECIT · INCONIVGIO ANN ·
[XXIII D XIII
BENEMERENTI · QVE VIXIT · ANN · XL · M · XI · D · XIII
[DEPOSITIO EIVS
DIE · III · NONAS · OCT · NEPOTIANO · ET FACVNDI CONS ·
[IN PACE

(*In Mus. Lat. ; De Rossi, n. 43*)

Bene merenti. Cubiculum Aureliæ Martinæ, castissimæ adque (atque) pudicissimæ feminæ, que (quæ) fecit in conjugio annos

XXIII, dies XIV. Bene merenti que (quæ) vixit annos XL, menses XI, dies XIII. Depositio ejus, die III Nonas Octobres, Nepotiano et Facundo Consulibus. In pace.

“To (one) well-deserving. The sleeping-place of Aurelia Martina, a most chaste and modest woman, who passed in wedlock twenty-three years, fourteen days. To her, well-deserving, who lived forty years, eleven months, thirteen days. Her burial (took place) on the third day before the Nones of October, in the Consulship of Nepotianus and Facundus, (*i.e.* October 5th, 335, A.D.). In peace.”

1. 1. *B. M.* These letters stand sometimes for *bene merenti*, sometimes for *bonæ memoriæ*, never for *beatus* or *beata martyr* (as suggested by Bonfant), for which there is no authority. 1. 2. *Cubiculum*. This term for the grave or tomb, is found, also, in heathen epitaphs. It is applied, by writers on the Catacombs, to a chamber, which “was appropriated as the private vault, so to call it, of a particular family.”

34.

AVR · CANDIDIANAE BENE QVESQVEN
TI IN PACE QVAE VIXIT ANNIS XXXI
MENSES · VIII · CVM MARITO FVIT ANNOS
XI · MENSES · VIII · DIES · X · DEPOSITA KAL [COSS ·
APRIL · CONSTANTINO AVG · II · ET CONSTATE AVG ·

(*In pavim. æd. S. Apollinaris; De Rossi, n. 52.*)

Aureliæ Candidianæ bene quesquenti (quiescenti) in pace, quæ vixit annis (annos) XXXI, menses IX, cum marito fuit annos XI, menses VIII, dies X. Deposita, Kalendis Aprilibus, Constantino Augusto II et Constante Augusto Consulibus.

“To Aurelia Candidiana, resting well, in peace, who lived thirty-one years, (and) nine months. She was with her husband (*i.e.* her married life was) eleven years, eight months, (and) ten days. Buried on the Calends of April, in the Consulship of Constantinus Augustus, for the second time, and Constans Augustus,” *i.e.* April 1st, 339, A.D.

35.

VISCILIVS NICENI · COSTAE · SVAE
QVAE FVIT · ANNOR · P · M · XXXI · EX QVIBVS
DVRABIT · MECVM ANNOS XV · FECI IN SE
SI EO DONO · SIM · EXIBIT · DE SAECVLO
VI · IDVS · IVL · MAMERTINO · ET · NEVITA

(*In coem. S. Hermetis; De Rossi, n. 151.*)

Viscilius Niceni, costæ suæ, quæ fuit annorum plus minus XXXI, ex quibus durabit (duravit) mecum annos XV. Feci in se si eo dono sim. Exhibit (exivit) de sæculo, VI Idus Julias, Mamertino et Nevita (Nevitta).

"Viscilius, to Nice his rib, who was of thirty-one years (of age) more or less, of which she passed with me fifteen years. I made it for ourselves, if I am (should be) worthy of such a gift. She departed from this world, on the sixth day before the Ides of July, in the Consulship of Mamertinus and Nevitta," *i.e.* July 10th, 362, A.D.

1. 1. *Niceni*. This change of the declension of nouns is common. Thus we have *Lcopardeti, Eirenети, &c. Ispeti*, for *Spei*, is a notable example of *metaplasmus*, with the introduction of the prefix *i*. See n. 41.

Burghon was not aware of this usage. In p. 197, he gives an inscription—*filicæ Mercuraneti*—and asks: "Who ever heard of such a name as *Mercuranetis*? and yet, since I am sure that the word is copied accurately, what else can the nominative be?" It was *Mercurane*, otherwise *Mercuriane*.

Cor. There is no authority for the use of *costa* for *uxor*, but there are two examples in Greek, in which Gregory Nazianzen uses the term, doubtless with reference to Genesis, ii., 21.

1. 3. *Feci in se si eo dono sim*. It is very difficult to give a satisfactory interpretation to these words. Lami, to whom we are indebted for the suggestion that *costæ* stands for *uxori*, does not attempt to explain them. Oderic enquires: *an forte FECI, hunc nimirum titulum, ne conjux mea SINE EO DONO SIT, nempe ne careat hoc amoris mei fignore?* Danzetta proposes: *FECIMUS IN SEculo SIne VLLO DOLORE SIMul*. De Rossi justly rejects both of these. He explains *FECI IN SE*, as standing for *FECI INTER SE*, *i.e.* *annos XV feci una cum ea*, and explains *EO DONO* as governed by *dignus* understood; whilst he regards *SIM* as used for *fuero*, or *fui*, *i.e.* *si tamen eo dono dignus fuero*, or *fui*—"quo elogio non aliud aptius Christianæ uxori ab viro Christianæ humilitatis studioso potuit inscribi."

This is an ingenious, but unsatisfactory, explanation. I am inclined to take *feci* in the ordinary sense, "made," and *se* as used for "ourselves;" and, adopting De Rossi's suggestion of an ellipsis of *dignus*, to regard *dono* as referring to the "gift," or "blessing," of burial with her; but I am not satisfied.

36.

ERENI QVE VIXITANN
 PMXLVCVMCVPARE
 SVO FECITANNVSVIII
 QVERECESSITIIINONIN
 PACESVBDAMASOEPISCO ·

(*In Mus. Lat.*; De Rossi, n. 190.)

Ereni (Eirenæ), *que* (quæ) *vixit annos plus minus XLV*, *cum cupare* (compare) *suo fecit annus* (annos) *VIII*, *que* (quæ) *recessit III Nonas in pace sub Damaso Episcopo*.

"To Eirene, who lived forty-five years, more or less, passed eight years with her husband, who retired on the third day before the Nones, in peace, under Bishop Damasus," *i.e.* 366 or 367, A.D.

Mamachi, Zaccaria, and Morelli inferred from this inscription, that the names of the Bishops of Rome were used, from the fourth century, to mark dates. But, in all the dated epitaphs, there is only one other example of this use. See De Rossi, n. 139. The reason for using the terms *sub Damaso Episcopo* here is, that in the first two years of his Episcopate there was a rival bishop, *Ursinus*, or *Ursicinus*, whose claims were supported by a considerable portion of the laity. The deceased, or her friends, took the side of Damasus.

37.

HIC REQUIESCIT IN PACE FELICISSIMA
 QVÆ VIXIT ANNVS LX · QVÆ FECIT CVM VIRO
 SUO ANNVS XL · DEPOSITA PRIDIE · KAL · IAN ·
 HONORIO · AUG · VII · HILARANVS CONTRA
 VOTVM POSUIT

(*In Mus. Capitol.*; De Rossi, n. 577.)

Hic requiescit in pace Felicissima (Felicissima), *quæ vixit annus* (annos) *LX*, *quæ fecit cum viro suo annus* (annos) *XL*. *Deposita, pridie Kalendas Januarias, Honorio Augusto VII. Hilaranus contra votum posuit.*

"Here rests in peace, Felicissima, who lived sixty years, who passed with her husband forty years. Buried on the day before the Calends of January, in the Consulship of Honorius Augustus, for the seventh time (*i.e.* December 31st, 497, A.D.) Hilaranus placed this against his wish."

This use of *contra votum* is found in heathen inscriptions. The origin of it, I suspect, was, that when a person had made a vow

contingent on the recovery of some one from illness, he was disinclined, or was afraid, to omit the performance of the vow, even though the object had not been attained. Here, and in other places, the words simply mean "against the wish." Mark the use of both U and V.

l. 2. LX. In De Rossi's copy we have XL: I have followed Muratori.

38.

HIC REQUIESCIT IN PACE IANVARIA
 L · F · QVAE VIXIT P̄L · M · ANN · XXVIII · C · MA
 RITV · FEC · ANN XV · M · XI · D · X · DEP ·
 D · XV · KAL · FEBRVAR · II · P̄C BILI
 SARI V̄I P IND · PRIMA
 HIC REQUIESCIT IN PACE FILICELLVS SVBD ·
 QV

(*Note*; De Rossi, in comment. n. 1055)

Hic requiescit in pace Januaria, laudabilis femina, quæ vixit plus minus annos XXVIII, cum marito (marito) fecit annos XV, menses XI, dies X. Deposita, die XV Kalendas Februarias, II post consulatum Bilisari (Belisarii), Viri Illustris, per indictione (indictionem) prima (primam). Hic requiescit in pace Filicellus subdiaconus qui

"Here rests in peace, Januaria, a praiseworthy woman, who lived twenty-eight years, more or less; passed with her husband fifteen years, eleven months, ten days. Buried on the fifteenth day before the Calends of February, in the second year after the Consulship of Belisarius, during the first Indiction (i.e. January 18th, 538, A.D.) Here rests in peace, Filicellus, a Subdeacon, who"

l. 3. *Ann. XV · M · XI · D · X.* From this it appears that Januaria was married when she was about twelve years of age. There are examples of marriage at eleven, and, even, ten. See Fabretti, p. 586, and Orelli, 2653. l. 4. II · P̄C. De Rossi's note, in which he determines the year, is well worthy of attentive perusal.

(e.) To a son:—

39.

MIRAE · INNOCENTIAE AC SAPIENTIAE
 PVERO · MARCIANO QVI VIXIT ANN · IIII ET
 MENSES · IIII · DIES · II · QVIESCET IN PACE
 D · PRID · KAL · DEC · ARBETIONE ET LOLLIANO COSS ·
 [PARENTES FECERVNT

(*E coem. Priscillæ*; De Rossi, n. 125)

Miræ innocentæ ac sapientiæ puero, Marciano, qui vixit annos IV, et menses IV, dies II. Quiescet (quiescit) in pace. Depositus, pridie Kalendas Decembres, Arbetione et Lolliano Consulibus. Parentes fecerunt.

“To Marcianus, a boy of wonderful innocence and intelligence, who lived four years, and four months, (and) two days. He rests in peace. Buried on the day before the Calends of December, in the Consulship of Arbetio and Lollianus (*i.e.* November 30th, 354, A.D.). His parents made this.”

40.

CL · MAMERTINO ET FL NEVITTA · CONSS
DVLCISSIMO FILIO PETRIO QVI VIXIT · ANN XII
M · I · D · XV DEP PRID KAL · SEPT · IN PACE
EVTYCHES PATER · FECIT

(*E coem. Callisti; De Rossi, n. 153.*)

Claudio Mamertino et Flavio Nevitta Consulibus, dulcissimo filio Petrio, qui vixit annos XII, mensem I, dies XV. Depositus pridie Kalendas Septembres in pace. Eutyches pater fecit.

“In the Consulship of Claudius Mamertinus and Flavius Nevitta (*i.e.* 362, A.D.), to his very sweet son, Petrius, who lived twelve years, one month, and fifteen days. Buried the day before the Calends of September (*i.e.* August 31st), in peace. Eutyches, his father, made this.”

(*f.*) To a daughter:— 41.

TI · CL · MARCIANVS · ET
CORNELIA · HILARITAS
CORNELIAE · PAVLAE · PAR ·
FECR · QVAE · VIX · ANN · X · DIEB
VIII · DEC · X · KAL AVG · MAX · ET
VRB · COS ·

(*E coem. S. Hermetis; De Rossi, n. 6.*)

Tiberius Claudius Marcianus et Cornelia Hilaritas, Corneliæ Paulæ parentes fecerunt, quæ vixit annis (annos) X, diebus (dies) VIII. Decessit, X Kalendas Augustas, Maximo et Urbano Consulibus.

“Tiberius Claudius Marcianus and Cornelia Hilaritas, (her) parents, made (this) to Cornelia Paula, who lived ten years, eight days. She departed on the tenth day before the Calends of August, in the Consulship of Maximus and Urbanus,” (*i.e.* July 23rd, 234, A.D.)

1. 1. The use of the three names—*Tiberius Claudius Marcianus*—deserves special notice. There is no example of this in any Christian

epitaph after the third century. This characteristic, and the identity of the names of the deceased with those of the wife of the Emperor Elagabalus, who was contemporary, have suggested the suspicion that the family was of good rank. In Orelli, n. 4570, we have another Cornelia Paula of the date 211, A.D. This inscription is the earliest of those bearing dates that are accompanied by symbols. Those used here are the fish and the anchor. The fish, as is well known, was chosen, as the letters that form the Greek word for it, *scil.* ΙΧΘΥΣ, are the initials of Ἰησοῦς Χριστὸς Θεοῦ Υἱὸς Σωτήρ—Jesus Christ, Son of God, Saviour. Tertullian regarded it as a fit emblem of Him, whose children are “born of water” in baptism. The anchor is regarded as signifying “the close of a well-spent life, the conclusion of a successful voyage, when the anchor is cast;” or that hope, which “we have as an anchor of the soul, both sure and steadfast.” Both these symbols are mentioned by Clemens Alexandrinus, as suitable for representation on the seals of Christians.

42.

(See Plate I, 1.)

(*In Secret. S. Mariæ Transtib.*; De Rossi, n. 11.)

Κωσουλε Κλυδειω ἐδ Πατερνω νωνεις Νοβενβρειβους δειε Βενερες
 λουνα XXIII Λευκες φελειε Σεβηρε καρεσσεμε ποσουετε ἐδ εισπειρειτω
 σανκτω τουω μορτουα αννουωρωx VL ἐδ μησωρων XI δευρων X.

*Consule Claudio et Paterno, Nonis Novembribus, die Veneris,
 luna XXIV, Leuces filiæ Severæ carissimæ posuit et spiritu
 sancto tuo. Mortua annorum LV et mensium XI dierum X.*

“In the Consulship of Claudius and Paternus (*i.e.* 269, A.D.), on the Nones of November (*i.e.* November 5th), on Friday, the 24th day of the Moon, Leuce erected (this memorial) to her very dear daughter, and to thy holy spirit. She (died at the age) of fifty-five years, and eleven months, (and) ten days.”

(*E coemeterio Saturnini*; De Rossi, n. 11.)

This is the celebrated inscription that Lupi was the first to explain. Marini pointed out that the numerals, which he read ζL, were written ἀντιτρόφως, *i.e.* = Lζ = 56. De Rossi shows that those numerals were really VL, which, according to Marini's view, he takes for LV. He corrects the error of Lupi, as to the Consulships being the second of Claudius, and the third of Paternus, and also ascertained that Lupi's suggestion, that the word before αννουωρωx

may be *martura*, not *mortua*, must be rejected, as the letters are distinctly ΜΟΡΤΟΥΑ, *i.e.* *mortua*.

l. 4. Λευκες. In Muratori, p. 27, we have *Lucens* as the Latin form of this name, and in p. cclxvi, *Leuces*. Orelli, n. 1022, gives *Leuce*. l. 5. εἰσπείρω σανκτῶ τοῦο, *i.e.* *ispirito* (spiritui) *sancto tuo*. This use of *i* as a prefix is often found in Christian epitaphs. It is one of many indications of the lapse of Latin into Italian. The change of person—*tuo* for *ejus*—occurs in Classical authors. The points in this, as in some heathen inscriptions, are no indication of the intervals between words.

43.

SUCCESSAE FILIAE DVL
CISSIMAE PARENTES · Q · V · AN
NOS DVOS M · XI · D · IIBMINPACE
DPXVIIKALSEPTNIGRINIANO

(*In Mus. Lat.*; De Rossi, n. 110.)

Successæ, filia dulcissimæ, parentes, quæ vixit annos II, menses XI, dies II. Bene merenti in pace. Deposita, XV·III Kalendas Septembres, Nigriniano (consule).

"To Successa, (their) sweetest daughter, her parents (made this); who lived two years, eleven months, two days. To her, well-deserving, in peace. Buried on the eighteenth day before the Calends of September, in the Consulship of Nigrinianus," *i.e.* August 25th, 350, A.D.

44.

REVECCAE INNOCENTI QVAE VIXIT
ANNVM VNVM MENSEM VNVM
DIES XVII BENEMERENTI IN PACE
DEPOSITA VIII KAL · SEPTEMBRES
FLAVIO · CAESARIO · ET NONIO
ATTICO · VV · CC · CONSS
PARENTES BENEMERENTI FECERVNT

(*In Mus. Capitol.*; De Rossi, n. 450.)

Reveccæ (Rebeccæ) innocenti, quæ vixit annum, I mensem I, dies XVII. Bene merenti in pace. Deposita IX Kalendas Septembres Flavio Cæsario et Nonio Attico, Viris Clarissimis, Consulibus. Parentes bene merenti fecerunt.

"To the innocent Rebecca, who lived one year, one month, seventeen days. To her, well-deserving, in peace. Buried on the ninth day before

the Calends of September, in the Consulship of Flavius Cæsarius and Nonius Atticus, most distinguished men (*i.e.* August 24th, 397, A.D.) Her parents made this to her well-deserving."

45.

ΤΡΙΑΚΟΝΤΑΠΕΝΤΑΕΤΗΣΕΝΘΑΔΕΚΙΤΕΥΠΑΤΙΑ
ΟΥΓΑΤΗΡΑΝΤΩΝΙΟΥΚΩΣΤΑΝΤΙΝΟΠΟΛΙΤΙΣΣΑ
ΤΗΠΡΟΔΕΚΑΚΑΛΑΝΔΟΝ ΦΕΒΡΑΡΙΩΝΥΠΑΤΙΑΑΝΙΚΙΩ
ΒΑССΟΥΚΑΙΦΙΛΙΠΠΟΥΤΩΝΛΑΜΠΡΟΤΑΤΩΝ

(*In coemet. S. Pauli via Ostiensi; De Rossi, n. 583.*)

Τριακονταπενταετης ενθάδε κίτε (κείται) Ὑπατία θυγάτηρ Ἀντωνίου Κω(ν)σταντινοπολίτισσα τῇ πρὸ δέκα καλανδῶν Φεβραρίων ὑπατία Ἀνικίῳ (Ἀνικίου) Βάσσου καὶ Φιλίππου τῶν λαμπροτάτων.

"Here lies Hypatia, thirty-five years of age, daughter of Antonius, a native of Constantinople, on the tenth day before the Calends of February, in the Consulship of Anicius Bassus and Philippus, most distinguished (men)," *i.e.* January 2nd, 408, A.D.

(g.) To a brother:— 46.

ΙΟΥΙΑΝΟ ΚΑΡΙΣΣΙΜΟ
FECIT LAMPADIUS ET SOTERES FRA
TRES PIENTISSIMI MEROBAUDE

(*Pisauri, e coem. Rom.; De Rossi, n. 330.*)

Joviano carissimo fecit (fecerunt) Lampadius et Soteres fratres pientissimi, Merobaude.

"To dearest Jovianus. Lampadius and Soteres, his most affectionate brothers, have made (this), in the Consulship of Merobaudes [and Saturninus]," *i.e.* 383, A.D.

The lower portion of the stone has been broken off; it most probably had the letters ET SATVRNINO CONSS.

(h.) To a sister:— 47.

SVME SOROR CARMEN SOLA *tia*
TRISTA FRATRIS · QVI *sol*
VS GEMITV HEC TIBI VErba
DEDIT · QVAE TEGITVR *Tumu*
LO SI VIS COGNOSCERE *lect*
OR · SVBLIMES GESSit
SANGVINIS HAEC TITulos
MORIBVS · HEC CRistum

SEMPER COMITATA
 SVPERSTES · QVEM *post*
 FATA SIBI CREDIDit
 ESSE DVCEM ·
 DEPOSITA IN PACE
 CŌN FESTI ET Marciani

(*In atrio coemet. S. Laurentii in agro Verano; De Rossi, n. 841.*)

*Sume soror carmen solatia trista (tristia) fratris,
 Qui solus gemitu hec (hæc) tibi verba dedit.
 Quæ tegitur tumulo si vis cognoscere, lector,
 Sublimes gessit sanguinis hæc titulos.
 Moribus hec (hæc) Cristum (Christum) semper comitata su-
 Quem post fata sibi credidit esse ducem. [perstes,
 Deposita in pace Consulatu Festi et Marciani.*

"Sister, take these verses, the sad comfort of your brother, who, in lonely lamentation, has given these words to you. Reader, if you desire to know who is covered by this tomb, she bore names that told her high descent. She, when alive, always followed, in her conduct, Christ, who, she believed, would be her guide after death. Buried in peace, in the Consulship of Festus and Marcianus," *i.e.* 472, A.D.

v. 4. I have interpreted this verse as referring to such names as *Eugenia*. It is scarcely possible that it can mean *martyrdom*. There is no dated epitaph in which the deceased is called *Martyr*, or is said to have suffered such a death: and in those not dated, examples are extremely rare.

(i.) To a Foster-father:— 48.

PERPETVAM · SEDEM NVTRITOR POSSIDES IPSE
 HIC MERITVS FINEM MAGNIS DEFVNCTE PERICLIS
 HIC REQVIEM FELIX SVMIS COGENTIBVS ANNIS
 HIC POSITVS PAPANOSTROARCADIOIETFLRVFINO
 DEPOSITVSDOMINONOSTROARCADIOIETFLRVFINO
 VVCCSS NONAS NOBEMB

(*E vinea, via Salaria nova; De Rossi, n. 403.*)

*Perpetuam sedem, nutritor, possides ipse:
 Hic meritus finem magnis defuncte periclis:
 Hic requiem felix sumis cogentibus annis:
 Hic positus papas Antimio qui vixit annis*

septuaginta. Depositus Domino Nostro Arcadio II et Flavio Rufino, Viris Clarissimis, Nonas (Nonis) Nobembres (Novembribus).

“You yourself, who reared (us or me), now occupy a lasting resting-place; here you have reached the end that you deserved, of a course-fraught with great perils: here, in happiness, you take the repose that age compels. Here is laid Foster-father Antimio, who lived seventy years. Buried in the Consulship of our Lord Arcadius, for the second time, and Flavius Rufinus, most distinguished men, on the Nones of November,” *i.e.* November 5th, 392, A.D.

The history of this epitaph is very curious and instructive. De Rossi's comment on it, in which he gives an account of the controversy that it excited, is well worth reading. It is a good specimen of the slashing style of annotation, with which Bentley has made English scholars familiar.

The stone bearing the inscription was found near Rome, in the year 1787. Antonio Paoli first published it, with an engraving and a long dissertation, *Di S. Felice papa e martire*, in which he attempted *defendere la sua santità, ed il suo pontificato*, referring FELIX, in the third verse of the epitaph, to the Pope, known as “Felix the Second.” Such an attempt, of course, drew down on him the censure of men of superior learning, who knew, from unquestionable historical authority, that Felix the Second was not buried even near the place where the stone was found, and, besides, that his death occurred not in A.D. 392, the date on this stone, but in A.D. 365. *Marini published a short treatise on the subject, in which he completely refuted Paoli, and showed that the epitaph was neither of Felix the Second, nor of any other Pope, but of a foster-father (*papas*), whose name was *Antimio*, *i.e.* PAPAS ANTIMIO. Paoli, however, was not convinced of his error, but attempted to vindicate his views in ‘*Lettera in difesa dell’ epitaffio di S. Felice II.*’ Oderic and Tiraboschi then assailed him, sustaining Marini's interpretation, and Juvenati satirized him in severe hendecasyllables. Even then Paoli clung to his mistake, and published another letter in his defence, so absurdly erroneous, that De Rossi designates it as *stuporis plenam, quam eruditorum nemo vel uno verbo refutare dignatus est.*

The controversy relative to the interpretation of the epitaph here

* This learned Epigraphist arranged the inscriptions in the *Galleria delle Lapidi* in the Vatican.

died out, but, since then, it has been revived by Dr. Maitland and by *Bishop Kip. Neither of these writers seems to have been aware of the discussion which had taken place. Maitland's observations on it are:—"The date of this Consulate is 392, in which year no bishop of Rome died. Siricius was made pope in 385, and lived to 396; yet the reference to a perpetual †*sest*, added to the title *papa sanctissimus*, strongly indicates episcopal rank. This *Papa* may have been an anti-pope, there being a schism at that time in Rome." De Rossi derides his ignorance *totius controversiæ vel lippis ac tonsoribus notæ*, and ridicules his object in citing the epitaph. There is no doubt that Maitland was unacquainted with the literary history of the inscription, and that he misread and misinterpreted the words *papas Antimio*. But De Rossi's censures are too strong, and he seems to have misunderstood Maitland's object. Maitland was not the only one, besides Paoli, who was mistaken relative to this inscription. Fea—*haud sordidus auctor*—held the same opinion, that it was the epitaph of some bishop; and Maitland was evidently not ignorant of the fact, that *papa* was the common appellation of all bishops, whether in or out of the City, for he distinctly states this, and gives in illustration the application of the term to the Bishops of Carthage and Hippo.

The author of these verses was a reader of Virgil, but does not seem to have profited by the perusal. The first line was, probably, suggested by the opening of the seventh book of the *Æneid*, in which the grave of Caieta—*Æneia nutrix*—is mentioned. The words *magnis defuncte periculis* are taken from *Æn.*, vi., 83. See, also, ix., 98. The verses, that are found in ancient epitaphs, present many examples of violation of the ordinary rules of syntax and prosody. "In [Greece] and Italy, as in England, the Muse of the cemetery was an 'unlettered Muse.'" See Kenrick, "Roman Sepulchral Inscriptions," p. 21.

Northcote, "The Roman Catacombs," p. 136, observes:—"It is a very singular fact, that there are actually more instances of *alumni*

* His remarks are merely a reproduction of Maitland's.

† Maitland's reference here, seems to be to the use of *sedere* in the sense "to hold a bishopric," and we find such expressions as *sedit annos decem* denoting the time during which a person occupied the office of Bishop. This use of *sedere* is, however, not peculiar to *Episcopi*. In De Rossi, n. 879, an epitaph of a Presbyter, we find the words QVI SEDIT PBB.

among the sepulchral inscriptions of Christians, than among the infinitely more numerous sepulchral inscriptions of Pagans; showing clearly that this was an act of charity to which the early Christians were much addicted, and the *alumni*, when their foster-parents died, very properly and naturally recorded upon their tombs this act of charity, to which they were themselves so deeply indebted." I have not compared, by counting, the number of instances of such inscriptions, but I have reason to think, that the opposite opinion is true. Of all the dated Christian epitaphs of Rome, in number between 1300 and 1400. I have not noticed one of an *alumnus*, and this is the only example of a memorial to a foster-father.

(*To be continued.*)

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

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II.—*Exposition of Hamilton's System.*

It is unnecessary to remind those who are acquainted with the writings of Sir William Hamilton, that none of these contains the complete exposition of a system, that they are all fragmentary contributions to isolated departments of philosophy, or fragmentary discussions of isolated philosophical problems. It is therefore but just to mention that the following exposition is, so far as I am aware, the first attempt to cast his separate opinions into systematic connection. I have throughout adhered as strictly as possible to his own terminology and phraseology, and I have given no statement as his which is not authorized by a reference to some passage in his writings. As the *Lectures on Metaphysics* supply most of the passages referred to, I have, for brevity's sake, omitted the title of the Lectures; and, therefore, when the contrary is not expressed, it is to be understood that the figures within parentheses indicate the volume and page of that work, in which the authorities are to be found.

I have only to say further that, in order to aid the exposition, I

have throughout spoken in the person of Sir William, and that, therefore, from this point "I" refers not to the philosopher's exponent, but to the philosopher himself.

INTRODUCTION.

§ 1.—*Definition of Philosophy.*

It is perhaps impossible adequately to comprehend philosophy in a single definition; for from different points of view it may be regarded as either *theoretical*, i. e., in relation to man as an intelligence, or *practical*, i. e., in relation to man as a moral agent, either *objectively*, i. e., as a complement of truths, or *subjectively*, i. e., as a habit of the mind. I shall therefore content myself with attempting to make as precisely intelligible as the unprecise nature of the object matter permits, what philosophy is and what are the sciences properly comprehended within its sphere (I. pp. 49-51).

Philosophy then is a kind of knowledge, and of knowledge there are two kinds:

I. That which we obtain either (1) through sense, of what exists and occurs in the material world, or (2) through self-consciousness, of what exists and occurs in the world of thought. This is a knowledge merely *that things are*, and may therefore be called *historical* or *empirical* (I. pp. 53-6).

II. But we never know, and cannot even conceive, things out of connection with one another; we cannot realize the possibility of a phenomenon which is not the effect of some cause. Still the knowledge of the cause is not given in the knowledge of the effect; and therefore the necessity to think of every phenomenon, that it must have some cause, compels us to search what that cause is. When we have found its cause, we know *why* or *how* a thing is; and this knowledge is *philosophical* or *scientific* or *rational* (I. pp. 56-8).

Such is philosophical knowledge in its most extensive signification; and in this signification all the sciences, inasmuch as they are occupied in the investigation of causes, may be viewed as so many branches of philosophy (I. p. 61).

There is, however, one section of the sciences, to which by pre-eminence the name of philosophy is applied, and on these grounds:

I. Since philosophy is a knowledge, its primary problem must be to investigate and determine the conditions under which knowledge is realized, as these must form the conditions of philosophy itself.

II. As philosophy is a knowledge of causes, and as the mind is the principal concurrent cause in every act of knowledge, philosophy is bound to make the mind its first and paramount object of consideration (I. pp. 61-2).

Philosophy is, therefore, in its stricter meaning, confined to the sciences which constitute, or hold immediately of, the science of mind (I. p. 64).

§ 2.—*Division of Philosophy.*

As such, philosophy is threefold, for it is an answer to three questions.

I. What are the facts or phenomena to be observed? The department of philosophy, which answers this question, is commonly called *Psychology*, *Empirical Psychology*, or the *Inductive Philosophy of Mind*. We might call it *Phenomenal Psychology*.

II. What are the laws which regulate these facts, or under which these phenomena appear? The department which answers this question may be called the *Nomology of Mind* or *Nomological Psychology*.

III. What are the real results, not immediately manifested, which these facts or phenomena warrant us in drawing? The philosophical science which answers this, is usually called *Ontology*, or *Metaphysics proper*. It might be named *Inferential Psychology*.

Of these divisions of philosophy, the last two must evidently be founded on the first. With the first, therefore, it is necessary to begin (I. pp. 121-5).

FIRST DIVISION OF PHILOSOPHY.—PHENOMENAL PSYCHOLOGY.

Phenomenal Psychology is the science conversant about the phenomena or modifications or states of the mind (I. p. 129).

INTRODUCTION TO PHENOMENAL PSYCHOLOGY.—CONSCIOUSNESS.

§ 1. *General Nature of Consciousness.*

In order to discover the phenomena of the mind, it is necessary to know the characteristic by which they are distinguished from all others. This is *consciousness*, i.e., the knowledge that I, that the Ego exists in some determinate state. In this knowledge alone they are realized, and with this knowledge they disappear (I. pp. 182-3). The phenomena of the mind are thus merely special forms of the generic phenomenon, consciousness; and accordingly consciousness becomes naturally the first object of consideration (I. p. 189).

Though we may be fully aware of what it is, consciousness cannot

be defined; for it is itself the highest source of all comprehensibility and illustration. The notion of consciousness cannot therefore be resolved into any more simple, or brought under one more general. But consciousness may be analysed, and it is thus found, in its simplicity, to involve three things:—1, A recognising or knowing subject; 2, A recognised or known modification; 3, A recognition or knowledge by the subject of the modification (I. pp. 192-3). We may therefore lay it down as the most general characteristic of consciousness, that it is the recognition by the thinking subject of its own acts and affections (I. p. 201).

§ 2. *Special Conditions of Consciousness.*

So far, philosophers are agreed; but it is more difficult to determine the special characteristics of consciousness. I shall therefore state:—

I. Those which are too palpable to be called in question. These are, that consciousness—

1. Is an actual, not a potential, knowledge;
2. Is an immediate, not a mediate, knowledge;
3. Implies a discrimination (*a*) of self from not-self, (*b*) of the different states of self, (*c*) of the different parts and qualities of not-self;
4. Implies judgment, inasmuch as (*a*) discrimination is merely the denying one thing of another, and (*b*) the consciousness of any object involves an affirmation of its external, or internal, existence;
5. Implies memory, inasmuch as, (*a*) without it the mental states could not be retained in order to their discrimination, and (*b*) the notion of self arises from the recognised permanence and identity of the subject in contrast to the recognised succession and variety of its modifications (I. pp. 201-5).

II. It is not, however, so generally admitted that consciousness is not a special faculty coördinate with the other special faculties of knowledge, but the generic faculty which is coextensive with them all (I. p. 207).* On the contrary, it is maintained by Reid, Stewart, Roger Collard, and others—1, That consciousness is merely a special

*This is described by Hamilton as only "the first contested position," which he intends to maintain, with regard to consciousness (I. p. 206); but it leads him into a long digression (I. pp. 206-263), at the close of which there is no mention of any other contested positions. Did this digression cause him to forget his apparent intention to continue the subject from which he started? His editors give no indication that they have observed this seeming omission.—J. C. M.

faculty of knowledge; and consequently, 2, that its special object is the operations of the other faculties to the exclusion of the objects about which these operations are conversant. But neither of these positions is tenable, for—

1. Though I may feel without knowing, though I may perceive without imagining, and imagine without perceiving; though I may in general perform an operation of one of the special faculties without requiring to perform an operation of any other, I can perform an operation of none without being conscious of it. Consciousness cannot therefore be distinguished from the special faculties in the same way in which they are distinguished from one another; it is the necessary condition of them all.

2. Knowledge is a relation between an operation and its object. The object, in fact, determines the distinctive character of the act, and we could not be conscious of any one act as distinguished from others, were we unconscious of the object by which it is determined (I. pp. 207-231; *Discussions*, pp. 47-52).

§ 3. *Evidence and Authority of Consciousness.*

Consciousness is therefore the condition of all the mental phenomena; and accordingly it is mainly, if not solely, to consciousness, that we must resort for an acquaintance with these phenomena (I. p. 264.) According to the doctrine of phrenology indeed, an acquaintance with the various mental powers may be obtained by observation of the various parts of the brain, which that science maintains that it has discovered to be their several organs. But though the mind, in its lower energies and affections, is immediately dependent on the conditions of the nervous system, and, in general, the development of the brain in different species of animals is correspondent to their intelligence, still it is impossible to connect the mind or its faculties with particular parts of the nervous system (I. p. 404). For I have proved, by the most extensive induction, that the alleged physiological facts, on which phrenology professes to be based, such as its assertion of the correspondence between the development of the cerebellum and the function which it ascribes to it, are often not only unfounded, but at the very reverse of the truth (I. pp. 409 *et seq.*; *Discussions*, p. 647).

It is therefore by the investigation of consciousness that we are to discover the phenomena of the mind; and accordingly if our information regarding these phenomena is to be accepted as reliable, the deliverances of consciousness must be presumed to be trustworthy. Now

as there is no authority beyond consciousness by which its trustworthiness can be tested, no reason can be adduced, unless it be in the deliverances themselves of consciousness, to prove that they are untruthful, and consequently it would imply an utterly groundless presupposition to start with the assumption, that they are false, that we have been made so as inevitably to accept an illusion for a reality, that the Maker of us is a deceiver. The deliverances of consciousness therefore must be presumed true till they have been shown to be false; and false they can be shown to be only when they have been proved to be contradictory (I. pp. 399-400; *Discussions*, pp. 86-87; *Reid's Works*, pp. 745-7).

Does it not then seem that the deliverances of consciousness must be contradictory, since the most contradictory systems of philosophy equally profess to be founded upon them? By no means; for the antagonism of philosophical systems arises not from the falsity or vacillation of consciousness, but from philosophers resorting to it to obtain confirmation of their preconceived opinions rather than to form opinions yet unconceived, just as the variety of theological systems has been occasioned by theologians resorting to the Bible to discover not what they shall believe, but what they believe already (I. 266-7; *Reid's Works*, pp. 746-7). Since therefore the errors of philosophers have arisen from the want of any recognised principle in investigating consciousness, we must assume the hitherto unattempted task of discovering the rules by which we ought to be guided in such investigation. These are the three following:

1. That we admit nothing which is not either an original datum of consciousness or the legitimate consequence of such a datum;
2. That we embrace all the original data of consciousness and all their legitimate consequences;
3. That we exhibit each of these in its individual integrity, neither distorted nor mutilated, and in its relative place, whether of preeminence or subordination.

These maxims I would name severally the Laws of Parsimony, Integrity, and Harmony (I. pp. 267-9; *Reid's Works*, p. 747).

§ 4.—*Classification of the Phenomena of Consciousness.*

Proceeding then to investigate the phenomena of consciousness in accordance with these laws, we find that they are all capable of being analysed into three classes: 1. The phenomena of Knowledge or Cognition; 2. the Feelings or the phenomena of pleasure and pain;

3. the Conations or the phenomena of desire and will (I. pp. 183-4). This classification indeed has met with objections.

I. It has been argued that, as every mental phenomenon is possible only through consciousness and consciousness is an act of knowledge, knowledge must be the fundamental power of the mind, from which the others are derivative ; and that consequently the other two classes are not coordinate with knowledge. But this objection overlooks the fact that, though feelings and conations exist only in so far as they are known, yet they contain an element which was never involved in, and could therefore never have been evolved out of, mere knowledge (I., pp. 187-8).

II. By others it is maintained that all mental action is either in an inward, or in an outward direction, the former being immanent and cognitive, the latter transeunt and conative. Hence it is argued that, if we interpolate a third species of activity, its direction must be either immanent or transeunt, or both, or neither of these ; but on the first three suppositions there are still only two kinds of mental activity, and on the fourth there is merely an additional activity in no direction, which is no activity at all. In answer to this it may be said, 1. that, in place of two forms of mental activity, we may competently suppose three, ineunt, immanent, and transeunt ; 2. that directions are properly ascribed only to the movements of external things (II. pp. 421-5.)

Though these three classes of mental phenomena are thus distinguishable, they never actually exist apart ; every moment of our mental life is made up of some form of all the three (I. pp. 188-9.) Of the three, however, knowledge is first in order ; for on the one hand a being may be conceived capable of knowledge, yet devoid of feeling as well as of will or desire, while on the other hand we cannot conceive a being possessed of feeling or desire without the knowledge of any object on which his affections may be employed and without a consciousness of these affections (I. pp. 188-9 ; II. pp. 425-8).

The phenomena of knowledge come therefore first under consideration, and philosophy is principally and primarily the *Science of Knowledge* (*Reid's Works*, p. 808, note).

FIRST PART OF PHENOMENAL PSYCHOLOGY.—PHENOMENOLOGY OF THE COGNITIONS.

The phenomena of knowledge cannot but be conceived as effects, & the manifestations of a power of knowledge possessed by the mind and therefore the different kinds of knowledge may be viewed as the

manifestations of so many powers or faculties of knowledge. The faculties, into which the general cognitive faculty of the mind may thus be divided, appear to me to be six.

First Faculty.—The Presentative.

As we possess knowledge and have not possessed it always, we must have a faculty by which it has been at first acquired or presented to the mind. Such a faculty may therefore be called the *Acquisitive* or *Presentative*, and when directed to the nonego, is External Perception, when directed to the ego, Self-consciousness.

§1. *External Perception.*

External or Sensitive Perception, or *Perception* simply, when used in a less restricted sense, is the consciousness, in one's own body, either (1) of those *special* affections of which, as an *animated* organism, it is susceptible, or (2) of those *general* relations of extension, which, as a *material* organism, it possesses in common with all material things. Only the latter consciousness is *Perception proper*; the former is *Sensation proper* (*Reid's Works*, p. 876). This distinction it is necessary to explain, as well as a correlative distinction in the qualities of matter.

A. The distinction between perception and sensation, noticed long ago, has never been adequately understood, from never having been viewed as merely a special instance of a more general contrast between the phenomena of knowledge and the phenomena of feeling, but especially from the law, which governs their reciprocal relation, never having been enounced. The law is that, above a certain limit, knowledge and feeling, and therefore perception and sensation, though always coëxistent, are always in the inverse ratio of each other (II. pp. 93-99) This law is proved,

I. By comparing the several senses. For, in sight and hearing, especially in the former, as distinguished from taste and smell, the knowledge communicated evidently predominates over mere feeling, while in the two latter senses the pleasures and pains absorb the consciousness so entirely, that the information we receive from them is reduced to a minimum.

II. By comparing the several impressions of the same sense. The difference between these may be either in *degree* or in *kind*. 1. A certain *degree* of sensation is of course necessary to perception, and therefore it is not without any reserve true that the minimum of sen-

sation implies the maximum of perception ; but beyond a certain limit, the amount of information conveyed by an impression on any sense is in the inverse proportion of its intensity. 2. Different *kinds* of impressions on a sense are also subject to the same law ; figure, for example, affords to the eye less organic pleasure and pain than color, but more knowledge, while color furnishes less knowledge, but more pleasure and pain (II. 99-104).

In sensation proper, therefore, the organism may be considered as of the ego, as subjective ; in perception proper as of the nonego, as objective (*Reid's Works*, pp. 881-858, note). Accordingly, in mere sensation, I am conscious of my organism, not as a material object possessing the general properties of all matter, but only as the subject of a particular affection. Such sensation however affords the requisite condition of perception. For I cannot be conscious of any particular affection of my organism, except as distinguishable from others ; and I thus become conscious of sensible affections of my organism as distinct, that is, as *out of* one another. But the perception of such reciprocal outness of two or more sensations is the perception of extension. Accordingly any two sensations, felt as distinct, may thus occasion the perception of my own organism as extended (*Reid's Works*, pp. 861, note, and 882) ; but of bodies beyond my organism a perception is possible only in the consciousness of resistance to my locomotive energy (*Ibid*, p. 882).

B. Corresponding to this subjective distinction, an objective distinction may be drawn between the qualities of matter ; for some of these are objects of perception, others are merely the unperceived causes of sensation, while a third class are, in one phase, objects of perception, in another, the unperceived causes of sensation.

I. The first are the *primary qualities*, that is, those which are involved in, and may be evolved from, the essential conception of matter as *a substance occupying space*. This conception is two-fold, for in accordance with it, matter may be conceived either (1) as *filling space*, or (2) as *being contained in space*.

1. The attribute of filling space, or *solidity simple*, implies two properties :

(a.) Trinal extension, in length, breadth and thickness, or *solidity geometrical* ; and this again implies α . Divisibility or Number, β . Magnitude, γ . Figure :

(b.) The incapability of being compressed into an unextended sub-

stance, or *Solidity physical*. This may be called *Ultimate* or *Absolute Incompressibility*.

2. The attribute of being contained in space implies

(a.) *Mobility* or the possibility of motion and consequently of rest,

(b.) *Situation* or *position*.

II. The qualities of matter, which are partly objects of perception and partly causes of sensation, may be named *Secundo-Primary*. They suppose the primary, because they have a relation to motion in space, being all only various forms of resistance to our locomotive energy; but on the other side they are modes of pressure affecting our sentient organism. They may be divided either from a *physical* or from a *psychological* point of view.

1. *Physically* their divisions correspond to the different external sources of resistance, which are three.

(a.) *Coattraction* is either α . that of *Gravity*, originating the relative qualities of *heavy* and *light*, or β . that of *Cohesion*, originating the relative qualities of *hard* and *soft*, *solid* and *fluid*, *viscid* and *fiable*, *retractile* (elastic) and *irretractile* (inelastic) &c.

(b.) *Repulsion* gives rise to the counter qualities of α . the *relatively compressible* and *incompressible*, β . the *resilient* (elastic) and *irresilient* (inelastic).

(c.) *Inertia*, combined with *Magnitude* and *Cohesion*, comprises the counter qualities of the *relatively moveable* and *immoveable*.

2. *Psychologically* they are divisible in accordance (a.) with the *degrees* of resistance offered, (b.) with the mode in which the resistance may affect the sentient organism. The former is their objective or quasi-primary aspect, the latter their subjective or secondary; but I do not carry this distribution into detail.

III. The remaining class, which are called the *Secondary Qualities* of matter, are, in so far as they belong to bodies, merely the powers, which these are supposed to possess, of producing affections in our sentient organism. I use the expression *Secondary qualities*, however, for these subjective affections themselves; and in this sense their varieties depend principally on the differences of the different parts of our nervous apparatus (*Reid's Works*, Note D.)

With regard to perception in general then it will be observed, that in every act of perception I am conscious at once of myself as perceiving and of something which is not myself as perceived (I. p. 288; *Reid's Works*, p. 747, and *passim*). That this is the fact of which

we are conscious, is admitted even by those philosophers who refuse to recognise the fact in their systems (I. pp. 289—292; *Reid's Works*, pp. 747—8); still the testimony of consciousness in this instance has been rejected, and every alternative, which could possibly be suggested to explain perception without admitting it to be an immediate knowledge of a nonego, has been actually maintained by one philosopher or another (I., pp. 285—299; *Reid's Works*, pp. 816—9). The grounds, however, on which the testimony of consciousness is in this case rejected, are wholly incompetent, as indeed such rejection in any case must be suicidal to the philosophical system which is guilty of it (I. pp. 116—133); and we are consequently forced to admit as an ultimate and therefore inexplicable fact, that the knowledge of the external world is equally immediate with that of the internal.

§ 2. *Self-consciousness.*

With regard to this form of the Presentative Faculty all the most important questions have already been discussed in connection with consciousness in general (II., pp. 185—204).

Second Faculty—The Conservative.

As the knowledge we acquire is not immediately lost, we must possess a faculty, or rather a capacity, by which it is retained or conserved; and it is this power which, in ordinary language, is most prominently expressed by the word *Memory*. The fact of retention various attempts have been made to account for by physiological and other hypotheses; but it is most easily explained by the self-activity of the mind. For knowledge is acquired not by mere passive impressions on the mind, but by the mind spontaneously exerting its own power. Every act of knowledge is therefore an energy of the self-active power of a subject one and indivisible; and consequently a part of the ego would require to be detached or annihilated, if a cognition once existent were again extinguished. Hence the most difficult problem is not how a mental activity endures, but how it ever vanishes. This problem is solved by the consideration that, though a mental activity ceases to affect our consciousness, it does not on that account cease to exist. The mind possesses a certain amount of force which must be distributed in various degrees among its various activities. Of these the newer and fresher must necessarily be more vivid than the older; and consequently as the former crowd in upon the latter, these must fade into various degrees of obscurity just as, when our

attention is concentrated on one object, it is unavoidably withdrawn from others. No mental activity therefore, which has once been excited, is ever wholly lost, though the great proportion of our mental possessions exist beyond the sphere of consciousness (II. pp. 209--218).

The existence of latent states of mind, while it explains the phenomena of memory, is also proved on independent grounds. For

1. In external perception there is required in the object a certain amount of force, less than which is incapable of affecting the senses. This *minimum sensible*, however, is composed of parts which separately are incapable of awakening sensation. Every sensation, therefore, of which we are conscious, results from a combination of impressions of which we are unconscious.

2. It frequently happens that one state of consciousness follows immediately upon another, although their connection cannot be accounted for by any of the laws of association. This can be explained solely by the supposition that both states of consciousness have been connected with a state of mind which has acted as the intermediate link between them without rising into consciousness.

3. In the exercise of our acquired dexterities and habits we are conscious of performing a whole series of actions without being conscious of the individual steps of the series. This in like manner can be explained only by supposing that the separate volitions, which produce the different actions of the series, all actually take place, though with such rapidity that they are unable separately to affect the consciousness (I. pp. 349-61).

Third Faculty—The Reproductive.

As we not only retain our knowledge out of consciousness, but can bring it back into consciousness again, we must possess a faculty by which it is reproduced. This reproduction may take place with or without an act of will; and in the former case it is called *Reminiscence*, in the latter *Suggestion* (II. pp. 246-7).

But whether voluntary or involuntary, the resuscitation of past mental states is alike subject to law. The laws, in accordance with which one mental state is determined to succeed another, have all their ground in three subjective unities or wholes :

(1). The unity of thoughts, differing in *time* and *modification* in a co-identity of subject; (2). The unity of thoughts, differing in *time*, in a co-identity of *modification*; (3). The unity of thoughts, differing in *modification*, in a co-identity of *time* (*Reid's Works*, p. 912).

I. Of these the first affords a common principle of the possibility of mutual suggestion for all our mental movements, however different in character, however remote in the times of their occurrence. It may be called the *Law of Associability or Possible Co-Suggestion*, and stated as follows: *All thoughts of the same mental subject are associable or capable of suggesting each other.*

II. The second unity affords the first law of actual reproduction, which may be named the law of *Repetition or Direct Remembrance*, and stated as follows: *Thoughts co-identical in modification, but differing in time, tend to suggest each other.*

III. From the third unity arises the second law of actual reproduction, which I call the *Law of Redintegration, Indirect Remembrance or Reminiscence*, and which may be stated as follows: *Thoughts, once co-identical in time, are, however different as mental modes, again suggestive of each other, and that in the mutual order which they originally held (Reid's Works, pp. 912-3).*

Under these two general laws, by which the reproduction of mental states is actually determined, may be easily included, as special instances, the laws (1) of *Similarity*, comprehending the laws of *Analogy* and *Affinity*, (2) of *Contrast*, (3) of *Co-adjacency*, comprehending Cause and Effect, Whole and Parts, Substance and Attributes, Sign and Signified (*Ibid.*, pp. 913-6).

Moreover these two general laws are to be regarded as *abstract or primary* principles which are frequently crossed and superseded by a *secondary or concrete* principle. This principle, though scarcely deserving the name of a law, may be styled the *Law of Preference* and stated in the following form: *Thoughts are suggested, not merely by force of the general subjective relation subsisting between themselves; they are also suggested in proportion to the relation of interest (from whatever source) in which these stand to the individual mind.*

Fourth Faculty—The Representative.

But the knowledge thus recalled can be held up before the mind, and this act implies further a faculty of *Representation*, the *Imagination* of ordinary language (II., pp. 259—276).

Fifth Faculty—The Elaborative.

These four faculties however merely furnish the materials on which the mind operates by a higher faculty, of which the rudimentary function is comparison, and of which also conception, judgment, reasoning, abstraction, generalisation are only different acts.

Sixth Faculty—The Regulative.

The acts and processes, by which the mind acquires, retains, reproduces, represents and compares objects, are performed not at random, but in accordance with certain laws; and as these laws are presupposed in order to the possibility of mental action, they cannot be explained as the growth of such action, but must be viewed as native to the mind. The existence of such principles has been recognised by the most distinguished philosophers from the dawn of speculation to the present day (*Reid's Works*, pp. 770—803), even by some of those who profess to derive all our knowledge from experience (*ibid.*, pp. 743, 785). Now the power, which the mind possesses, of regulating its own activity by such laws, is that which I call the Regulative faculty and which is variously designated *Nōs*, *Intellectus*, *Reason*, *Common Sense*, &c., (II., pp. 347—350; *Reid's Works*, pp. 755—770). The native cognitions of this faculty are distinguished from derivative cognitions by the four essential characters, that they are 1. *incomprehensible*, 2. *simple*, 3. *necessary* and therefore *absolutely universal*, 4. *evident* and *certain*. Their most distinctive characteristic however is the third, inasmuch as they reveal themselves as principles by which the mind cannot choose but be controlled (*Reid's Works*, pp. 754—5; I., pp. 269—270; II., pp. 350—363).

In classifying these necessary judgments we may, with Kant, separate those that are *analytic* or *explicative* from those that are *synthetic* or *ampliative* (II., p. 526; *Discussions*, Appendix I. (A)).

A. The former result from the requirements of the three *logical* laws of Identity, Non-Contradiction and Excluded Middle. They do not amplify our knowledge, enouncing merely what is not-impossible: but they are not only necessary in thought; they are the irresistible assertions of a necessity in things.

B. The latter result from the law of the *relativity* of all human knowledge, with special reference to which, rather than to the condition of Non-Contradiction, I use the expression, the *Law of the Conditioned* (*Discussions*, p. 603). This condition, which requires that all that is thought be thought as relative and even as relatively or conditionally relative, is a law not of things, but merely of thought. For under it are found several pairs of contradictory propositions, while of the two contradictories composing each pair neither can be conceived possible, though, by the Law of Excluded Middle, one must be true. We thus obtain a distinctive test of those necessities

of thought which arise from the Law of the Conditioned ; and these are thus shown to be merely the irresistible recoil of the mind from either of two unthinkable contradictories. When from my inability to think a certain proposition I am driven back without choice upon its contradictory and find that there is no counter inability to think this, then the necessity to think it is *positive* and arises from a *power* of the mind. For example, I am unable to think that $2+2$ is not equal to 4, and I am consequently forced to the contradictory judgment that $2+2=4$. Now there is no repulse from this latter contradictory as inconceivable, similar to the repulse from the former. But in the case of the necessities now to be considered, when our inability to conceive one of two contradictories forces us back on the other, this we find ourselves equally unable to conceive with that. We must therefore regard the necessity which repels us from either contradictory as *negative*, as originating from an *impotence* of the mind ; and the Law of the Conditioned should not be viewed as valid beyond our own thought, of whose limitation it is the expression (II., pp. 366—9).

It would be manifestly out of place to attempt the classification of those contingent and derivative relations, which we frequently employ in the exercise of our cognitive faculties ; and therefore we limit ourselves to those relations which are necessary and original. These arise either (I.) from the *subject* and form the *relation of Knowledge*, or (II.) from the *object* and form the *relations of Existence*.

I. The former is the relation between subject and object, which requires that everything must be thought as belonging wholly to either or partly to both of these correlatives.

II. The latter are either (1) *intrinsic* or (2) *extrinsic*.

1. The *intrinsic*, which may also be called the *qualitative*, relation is that of *substance and quality*. For while qualities can be conceived as existing not in themselves, but only in a substance, substance itself can be conceived only as the inconceivable correlate of qualities ; so that, in different aspects, every substance is a quality, and every quality a substance (I., pp. 137—8, and 149 ; *Discussions*, p. 605).

2. The *extrinsic* may also be called *quantitative* and are three in number, as constituted by three species of quantity.

i. *Protensive quantity*, *Protension* or *Time* may be considered *firstly* in itself : and as such it is (*a*) positively inconceivable either *α* as absolute, *i.e.*, as absolutely beginning or ending, or *β* as infinite, *i.e.*, as unbeginning or unending, and also either *α* as an absolutely indi-

visible minimum or β as infinitely divisible; but it is (*b*) positively conceivable as relative, *i.e.*, as an indefinite past, present or future, and also as an indefinite mean between an absolute minimum and an infinite divisibility. *Secondly*, Time may be considered in relation to the things it contains: and these are either (*a*) coinclusive, when α if contemporaneous, they are identical apparently and in thought, β , if of different times, they appear different, but are thought identical; or (*b*) coexclusive, when they are mutually either prior, posterior, or contemporaneous. The impossibility of thinking as non-existent what has once been thought as existent in time affords the mental principle of causality.

ii. *Extensive quantity, Extension or Space* may likewise be considered *firstly* in itself: and as such it is (*a*) positively inconceivable α , as infinitely unbounded or absolutely bounded, β as infinitely divisible or absolutely indivisible; but it is (*b*) positively conceivable either as an indefinite whole or as an indefinite part. *Secondly*, it may be considered in the things which it contains: and these may be viewed (*a*) in relation to space, when the extension which they occupy is called their *place* and the change of their place gives their *motion*, or (*b*) in relation to each other, when, α if inclusive, they originate the relation of *containing* and *contained*, β if coexclusive, that of *situation*. The inability to conceive as nonexistent what has once been conceived as existent in space affords the *ultimate incompressibility* of matter; and the primary qualities are all, as has been shown, dependent on space.

iii. *Intensive quantity, Intension or Degree*, is thought as applying not, like Time and Space, to substances, but to what, in the strictest sense of the term, are called *qualities*. *Firstly* in itself it is (*a*) positively inconceivable α *absolutely*, either as least or greatest, β *infinitely*, as without limit either in increase or in diminution; but it is (*b*) positively conceivable as *relative*, as indefinitely high or higher, low or lower. *Secondly*, the things thought under it, (*a*) if of the same intension, are correlatively uniform, (*b*) if of different, are correlatively higher or lower (*Discussions*, pp. 601–633; compare also II., pp. 366–413.)

SECOND PART OF PHENOMENAL PSYCHOLOGY—PHENOMENOLOGY OF THE FEELINGS.

The feelings of pleasure and pain are phenomena that accompany all our conscious existence; but since we consciously exist only inasmuch as we consciously exert our various powers, it must be in

the conscious exercise of these powers that the phenomena of pleasure and pain arise. When the energy of a power is perfect, pleasure is the result; on the contrary, pain is felt when the energy is imperfect. Now an energy is perfect when it reaches the degree and duration of which the power is spontaneously capable, imperfect when it is strained beyond, or restrained within, that degree or duration. Pleasure is, therefore, a reflex of the spontaneous and unimpeded exertion of a power, of whose energy we are conscious; pain, a reflex of the overstrained or repressed exertion of such a power (II., pp. 435-440.)

With regard to the classification of our pleasures and pains, it is to be observed in general, that for every form of pleasure there are two of pain, one from restraint, the other from overstimulation. It is also to be noticed that both pleasure and pain may be either positive and absolute or negative and relative, the latter being pleasures and pains only by relation or contrast to a previous feeling (II., p. 442.) More specifically however the feelings may be divided into *Sensations* or those which accompany the exercise of bodily functions and *Sentiments* or those of a purely mental character. The former may be subdivided in accordance with the organs or senses through which they are received; the latter into *contemplative*, or those which accompany cognition, and *practical*, or those which accompany conation. Each of these classes, moreover, is capable of further subdivision corresponding to the distribution of our cognitive and conative powers (II., pp. 476-520).

THIRD PART OF PHENOMENAL PSYCHOLOGY—PHENOMENOLOGY OF THE CONATIONS.

The Conations are tendencies to action and are divisible into two classes according as the tendency is blind and fatal or deliberate and free. The former is *desire*, the latter *volition* (I., p. 185.)

I. The *desires* may be subdivided according to their objects, for they relate either (1) to Self-preservation, or (2) to the Enjoyment of Existence, or (3) to the Preservation of the Species, or (4) to our Tendency towards Development and Perfection, or (5) to the Moral Law (II., p. 517.)

II. *Will* is a free cause, a cause which is not also an effect, a power of absolute origination. (*Discussions*, p. 623). That it is so, is not only affirmed by an immediate testimony of our consciousness to the fact, (I. p. 33; *Reid's Works*, p. 624, note, and pp. 616-7, notes), but is indirectly implied in our consciousness at once of an uncompromis-

ing law of duty, and of our being the morally accountable authors of our actions (I. p. 33; *Discussions*, pp. 623-4). This fact is indeed positively inconceivable: for (1) not only does the Law of the *Conditioned in Time*, under the form of the Law of Causality, render impossible the conception of an absolute origination; but (2) while on the one hand the determination of the will by motives can be conceived only as a necessitation which would render moral accountability impossible, on the other hand a motiveless volition would be quite as worthless morally. (*Ibid.*) Still the Law of the Conditioned is a law not of things, but merely of thought; and as its necessity in thought arises not from a power, but from a powerlessness of the mind, it cannot subvert the positive testimony of consciousness to the fact that we are free (*Ibid.*)

SECOND DIVISION OF PHILOSOPHY.—NOMOLOGICAL PSYCHOLOGY.

This division of philosophy investigates the mental phenomena with the view of discovering not their contingent appearances, but their necessary and universal laws; and consequently, like the first division, it may be subdivided in accordance with the three-fold distribution of the mental phenomena.

FIRST PART OF NOMOLOGICAL PSYCHOLOGY.—NOMOLOGY OF THE COGNITIONS.

Of the laws by which the Cognitive faculties in general are regulated we have no one science, though for such a science the name *Gnoseology* or *Gnostology* would not be unsuitable. Of the laws of Perception the science, if it existed, might be called *Aesthetic*, had that name not been already usurped by another. The science of the laws of Memory has been elaborated in numerous treatises under the name of *Mnemonic*; but it might equally well be called *Anamnestic* or the art of Recollection. Neither the laws of the Representative, nor those of the Regulative faculty have been reduced to scientific system, though on the latter of these we have several treatises under the name of *Noologies*. The only cognitive faculty, whose laws constitute the object-matter of a separate science, is the Elaborative,—the Understanding Special, the faculty of Relations or of Thought Proper. This nomology has been generally called LOGIC, but its best name would have been DIANOETIC. To the same head might be referred *Universal* or *Philosophical Grammar*, that is, the science conversant with the laws of Language as the instrument of thought (I. pp. 122-3).

SECOND PART OF NOMOLOGICAL PSYCHOLOGY.—NOMOLOGY OF THE FEELINGS.

The laws, which govern our capacities of enjoyment, in relation to the end which these propose, namely the *Pleasurable*, has been denominated, especially on the Continent, Aesthetic; but the term *Apolaustic* would have been more appropriate (I. pp. 123-4.)

THIRD PART OF NOMOLOGICAL PSYCHOLOGY.—NOMOLOGY OF THE CONATIONS.

The Nomology of our Conative powers, to which the name of Practical Philosophy may most properly be applied, is the science of the laws regulative of our Will and Desires in relation to their end, namely the *Good*. Contemplating man as an individual, this science is called *Ethics*; contemplating him as a member of society, it is called *Politics*: and these two branches admit of further subdivision (I. p. 124).

THIRD DIVISION OF PHILOSOPHY—INFERENTIAL PSYCHOLOGY

Of existence in itself or existences in themselves we know and can know nothing immediately, for we can know things only as they appear to us, that is, not as *substances*, but as *phenomena*, not *absolutely*, but *in relation* to us and to our faculties. Moreover all that is thus capable of being known relatively is not necessarily relative to us: for (1) we can know only those properties of things which we have faculties of knowing and there may be properties knowable by other limited intelligences, to which we have no faculties adapted; and (2) even those properties which we do know are known *not* in their native purity, but only as they are modified by our faculties (I., pp. 140-8.)

Since then we know nothing but phenomena, the existence of substances, which these manifest to us, can be merely an inference from them (I., pp. 125, 138). Yet such inferences with regard to facts unknown in themselves may be rendered perfectly legitimate as necessary to explain known phenomena (I., p. 125). Of such inferences we may take as examples those which relate to (1) the Mind of Man, (2) the Universe we live in, (3) its Creator.

1. The *Mind* of Man, as already proved, possesses a power of self-determination; but the material universe is subject to an irresistible causation. The mind, therefore, cannot be explained as the result of material organisation, and its existence is consequently independent of the material organism with which it is associated (I., p. 29). That

it must outlive its organism is proved by the fact that we are moral agents and that there is a Moral Governor of the Universe who will ultimately bring goodness and felicity into accordance (I., p. 32).

2. The *Universe* is governed not merely by physical, but also by moral laws, since man is treated as responsible for his actions (I. pp. 32-3. Hence also there must be

3. A *Deity*, that is, an *Intelligent Creator and Moral Governor* of the Universe (I., pp. 26-8). The existence of a Deity is an inference from a certain kind of effects to a certain kind of cause (I., p. 26). The effect to be explained is the universe, including, of course, man. Now as we can know nothing of the absolute order of things, it is only in so far as that order is manifested in our experience that we can form any conclusion regarding what it is in itself (I., pp. 30-31). There are then two facts established within the range of our experience: (1) that intelligence, so far as we know anything of it, intelligence in ourselves is not the result of material organisation; (2) that we are governed as agents morally accountable for their actions. In the absolute order of things, therefore, we must conclude that intelligence precedes physical force, and that morality is a principle of government; in other words, that the Creator of the Universe is intelligent and its Governor moral (I., pp. 26-32).

Should these inferences ever be redargued, "the final recompense of our scientific curiosity would be wailing, deeper than Cassandra's, for the ignorance that saved us from despair" (I., p. 38).

MOLLUSCOUS ANIMALS.

BY REV. WILLIAM HINCKS, F.L.S., ETC.,
PROFESSOR OF NATURAL HISTORY, UNIVERSITY COLLEGE, TORONTO.

THE division of the Animal kingdom indicated in the title, was made by the author of this paper the subject of several discourses addressed to the Canadian Institute during its last session, but which not having been intended for printing, were not committed to writing. A request from the Society that these communications might appear

in the Journal has led to their substance being put together in the present form. What is here offered is but the introduction to inquiries respecting the true arrangement and affinities of the principal groups which have engaged the author's attention, and the results of which, if opportunity is allowed, he hopes to bring before the public in one or two following papers.

MOLLUSCA, (soft bodied animals) is one of the four sub-kingdoms or great branches of the Animal kingdom established by Cuvier, and adopted by most modern naturalists, many of them, however, recognizing a fifth sub-kingdom, named **PROTOZOA**: We will first consider the characteristics and the true limits of Mollusca; then its relations to the other sub-kingdoms, and afterwards the classes into which it is properly divided, with their sub-divisions. The treatment of the subject is in harmony with the views, already defended by the author respecting the classification of organised beings, but so far is he from being conscious of any straining of facts to produce this harmony, that it is to him only an additional illustration of a great universal law, presenting itself at once to the view of the careful observer.

Mollusca are unsegmented animals of a sac-like figure, the viscera being enclosed in a common envelope called the mantle; with a nervous system of one or several ganglia, when more than one, unsymmetrically disposed; and with motory apparatus formed by various modifications of the parts of a single central foot.

When we consider that both Vertebrate and Articulate animals are segmented internally or externally and have their nervous ganglia, so far as developed, doubly serial, belonging to the several segments: that Radiate animals consist of a set of merosomes in each of which the same functions are performed, whirled round a common axis, in which a common alimentary sac or canal is placed, and with equal provision of nervous power for each merosome; whilst Protozoa have a sarcode body, with no distinct nervous system, and the lowest differentiation of functions, but without either serial segmentation or any tendency to the assemblage of distinct approximately equal merosomes to form a common body belonging to a distinct animal. we shall see that the definition given above, whilst applicable to the whole Molluscan series, abundantly distinguishes it from all other animals.

Respecting the true limits of the sub-kingdom Mollusca, there may be three points which claim some passing notice, though only one of

these remains a subject of discussion among naturalists of the present day. 1. Linnæus, in conformity with views prevailing in his time, placed the barnacles and acorn shells among the Mollusca, in his division Multivalve shells: even Cuvier allowed them, though as a separate order, to retain this connexion, and if La Marck made them a class, the gain was not great as they were but a class of Invertebrate animals—a confused ill-defined assemblage, in which the grand distinctions of Articulate, Molluscos and Radiate animals are neglected. Few modern naturalists hesitate about placing Cirrhopoda, the barnacles, &c., as a division of the class Crustacea among Articulate animals. Their belonging to the Articulate sub-kingdom is no longer questionable.

2. There is a group of minute animals, in outward appearance much resembling Hydroid polypes, of which they were considered as a section, which, on a careful examination of their structure, are found to constitute a low form of Molluscos animals, and under the name of Polyzoa, or Bryozoa, are accounted a class or sub-class of Mollusca. We may have to consider as we proceed, their precise position and rank, but it is no longer disputed that they belong to the series which forms our present subject.

3. A question has of late been raised, and is still in controversy among the most eminent living naturalists, whether the great series of animals which fall under the definition I have proposed, and which are generally spoken of as Mollusca, should continue to be regarded as one sub-kingdom or branch, or ought to be divided into two portions, each claiming that rank. It is maintained by some that such a division is rendered necessary by sufficiently important distinctions, and it is proposed to retain the name Mollusca for the higher division, and to call the other Molluscoida.

It must, of course, be remembered that in every great division we have to expect, with uniformity of general structural plan, both various adaptations to different modes of life, and all possible grades of development from the highest to the lowest which are reconcileable to the common plan. So long then as we can trace the common plan we ought to be so far from separating its lower from its higher grades that the extent of variations of this kind should assist us the better to appreciate the importance of the general characters, and impress the common relationship more strongly on our minds. A Polyzoan and, a Gasteropod, may be pretty widely separated, but I confess I cannot

understand the perceptions on these subjects of the man who fancies them separated by the same kind of distinctions as either of them and any Articulate. It is true we must not expect that all our groups, even those which we place in equal rank, should have equally important and well-marked characters; but we surely ought to be able to distinguish between difference of general plan and difference in the mode of carrying it out, or in the grade of development. I cannot but think that the eminent naturalists who insist on the separation we are considering, do really perceive and admit, as indeed the name they have employed conveys, the peculiarly close relationship of *Mollusca* and *Molluscoida*, but they fancy the distinction may assist the student and they do not attach the kind of importance which we do to the grand differences of plan amongst organised beings. They are probably of those who regard all classification as a mere human contrivance intended to aid our judgment and memory, but having no connection with the realities of nature; whilst to us, it is an attempt at the true interpretation of the Divine plan and not a record merely, but an embodiment of the knowledge gained of the real relations of organised beings. To us it appears that the five sub-kingdoms express the great fact that five distinct plans of structure are manifest in the animal kingdom, and unless we were brought to perceive another plan as distinct as any of these, which, we believe, no one will pretend to have found, we could admit no alteration in the general outline of the animal kingdom which has been so clearly marked out. I might add that no clear definitions of the proposed separate sub-kingdoms have been laid down, and that it is even left doubtful where the line should be drawn. I do not think, however, that further discussion of this point can be needed. We will proceed to speak of the relations of the *Mollusca* with the other sub-kingdoms; and here it is obvious that, whilst a gradation is observable from highest to lowest, relations of some parts of each to parts of the others are equally manifest. It is also to be noticed that in each sub-kingdom there is a gradation from the highest condition which the common type allows to the lowest that is at all consistent with it. Thus, for example, the lowest vertebrates are considerably inferior to the greater number of Articulates, Mollusks and even many Radiates; and these are members of even the highest class of Articulates which, though their type is sufficiently perceived, are in actual development scarcely raised above Protozoa. There can be no doubt of *Vertebrata* occupy-

ing the highest position in the animal kingdom, since both the average elevation of its members is far above that of the other sub-kingdoms, and its type admits, when most fully developed, of an incomparably higher condition than any of the others. It is equally certain that Protozoa must have assigned to them the lowest position as representing only the rudimentary or embryonic condition of all other animals.

Hence the unwillingness manifested by some to admit this sub-kingdom, the supposition being adopted that all its members may be only degraded forms of some of the others. Since, however, many of them are known to pass through a definite series of changes constituting a life history, whilst retaining all through the characteristics of the supposed sub-kingdom, and displaying no trace of the peculiar type of any of the higher ones; since, even in their great simplicity of structure they can be thrown into well-distinguished classes; and since analogy with what is found in each of the other sub-kingdoms would create an expectation of meeting with an Embryonic type, as well as those representing different tendencies of developement, the balance of probability is, on the whole, greatly in favour of the fifth sub-kingdom. The proper order of the remaining three great branches of the animal kingdom is not very difficult of determination, although some writers of very high authority may have fallen into error respecting it. We often find Mollusca placed next to Vertebrata, and we find it not unfrequently asserted that Articulata and Mollusca stand in equal relation to the higher branch and should be placed one on each side below it. Without doubt the cartilaginous brain case of the highest class of Mollusks suggests a comparison with Vertebrates, sufficient at least to afford another proof of these being the highest in the Molluscan series, but if we inquire concerning the general characteristics of the sub-kingdoms, we must perceive that the segmented structure of Articulata, their general higher development of the nervous system, and the prevailing predominance in them of muscular energy raise them above Mollusca, which are generally sluggish, and in which the nutritive system is evidently the most developed. We may then assume the true order of the greatest divisions of the animal kingdom to be, 1st, Vertebrata; 2nd, Articulata; 3rd, Mollusca; 4th, Radiata; 5th, Protozoa. To the first belong the highest power—the greatest development of the brain and of the organs of sense; to the second, the greatest degree of muscular development and its result activity. To the third, peculiar development of the nutritive system, with diminish-

ed tendencies to violence or to motory efforts. The 4th exhibits a lower modification of the nutritive system tending towards the vegetative or absorbent mode of obtaining food, whilst the fifth represents the lowest or embryonic condition of life. If we assume these characteristics of the greater divisions of the animal kingdom, to be repeated under each of them, always in consistency with the special type of each, and to be again repeated under each subdivision as far as divisions are required, we shall have a scheme of classification expressing a general system prevailing throughout nature, and which would produce at once the differences, the affinities, and the analogies which are actually observable. This general idea has in fact been attained by observing how in all parts of the animal kingdom, the best arrangements proposed, those which put the objects together in the most intelligible and satisfactory order, almost constantly present the same number of divisions of any given rank, analogies between corresponding divisions in different groups continually striking the mind, and when once the general idea had been obtained, its power in suggesting improvements and removing difficulties, proving so remarkable as most strongly to confirm the truth of the principle and encourage its extended application. In what follows I shall explain its application to the Molluscos sub-kingdom confining myself at present to the consideration of its classes and sub-classes not without hope of illustrating on a future occasion the orders, families, and sub-families.

The following important groups laying claim to the rank of classes, have been pointed out amongst the Mollusca, proper attention to which may probably lead us to a right conclusion as to those which it is proper to admit: 1st, Cephalopoda, the Nautilus, cuttle-fish and Ammonite tribe; 2nd, Pteropoda, so called from their wing-like organs of motion, reduced by some under Gasteropoda, by others placed in a lower position, but in my view properly occupying the position usually assigned to them; 3rd, Heteropoda of Cuvier a small anomalous group, now generally, and I think justly, regarded as an order of the following class; 4th, Gasteropoda, the crawling Mollusca generally, with a few swimmers evidently resembling them in structure constituting the most numerous and the most typical division of the sub-kingdom; 5th, Lamellibranchiata, sometimes called Conchifera, Mollusks generally covered by a pair of shells; 6th, Brachiopoda of Cuvier, often and perhaps better called Palliobranchiata to mark the distinction in the mode of aeration from the preceding group; 7th

Tunicata ; 8th, Polyzoa often spoken of by a name given soon after the original one, Bryozoa.

Before I examine more particularly the pretensions of these supposed classes, it may be useful to explain the meaning and use of sub-classes in the arrangement of the animal kingdom. It is as a matter of fact, not unfrequently found, that where the structure corresponds in the main, and essentially conforms to the same type, there may be distinguished two or more grades of development, in each of which analogous secondary groups occur, so that they resemble classes differing more in degree than in kind, and bound together by a strong and well-marked resemblance, though each having its own secondary divisions. In such cases, the numerous objects all formed on a common plan, are accounted as one class, whilst the different grades of development mark sub-classes. In illustration we may refer to Owen's view of the classification of Mammalia where the great divisions founded on the character of the brain, which, though strongly objected to by some, are probably good, may be accounted as sub-classes, and under each of them great families corresponding in number and analogous in structure and habits may be pointed out. Again in the Classification of Birds, the great division of Perching birds is clearly one sub-class, whilst the remainder of the received orders form another, and the secondary divisions of the perchers correspond with the other orders. The same might be shown in the case of Fishes, and there are other well established examples. Now no one can well doubt that the class Cephalopoda exhibits the highest development and the greatest perfection of the organs of sense among the Mollusca. It is scarcely less certain that the Pteropoda excell all other Mollusca in activity and muscular power, and form, though a small, a very distinct class corresponding in position with the Articulata among the Sub-kingdoms. Cuvier's Heteropoda being disposed of in the manner already indicated, we come to Gasteropoda, the special nutritive type, corresponding with Mollusca among the sub-kingdoms and thus as being peculiarly typical, the most numerous and varied of all the classes.

It seems highly probable that all the remaining Mollusca, which are without a distinct head, constitute two classes, according as they have the mantle split open, its portions being covered by a pair of shells meeting in a hinge ; or forming an undivided sac, with incurrent and excurrent openings, and its surface either of leathery or horny consistency. In each case we have two sub-classes, distinguished by

the mode of aeration and of introducing the water-currents by which both air and nutriment are supplied to the creature. The 4th class, *Conchifera*, representing the type of vegetative or absorbent nutrition, has as its two sub-classes *Lamellibranchiata* and *Palliobranchiata*, in the former of which the aeration is effected by distinct lamellae or folds in which the blood-vessels are distributed, and the edges of the mantle are more or less separated with usually a large foot which can be protruded beyond the bivalve shell; in the latter the aeration is accomplished in the mantle itself, in which the vessels are distributed, and instead of the currents being produced chiefly by marginal fringes or cilia around the incurrent orifice where the mantle is united to form tubes, a singular development, apparently homologous with the foot, of two, generally spiral, ciliated arms serves to draw in the water required both for nutriment and aeration causing it to pass over the mantle and through the alimentary canal. There is unquestionably a striking analogy between the arms of *Palliobranchiata* and the ciliated border of *Polyzoa*, the cases in which the latter assumes the horse-shoe form establishing their common nature, and it may justly be inferred that this is the lowest form of the contrivance for introducing water containing both air and food, which consists of minute animalcules and decaying animal and vegetable matters, into the system of acephalous Mollusks, but that it does not indicate the closest relationship between *Palliobranchiata* and *Polyzoa* may be concluded from the seemingly superior importance of the points in which they differ, and which connect them respectively with two well-marked classes.

The fifth and last class, *Tunicata* represents the lowest development of the Molluscan type, and is characterized by the sacciform mantle and the aeration being effected either simply by the water passing over the interior of the sac in a perpetually renewed flow, or in the higher forms by means of a fenestrated special organ over which the vascular system is distributed, within and around which the water is made to pass. In the lower sub-class, *Polyzoa*, the external surface is firm and translucent and the incurrent opening is enlarged, (as if by a protrusion of the branchial sac of the Ascidioid *Tunicata*), with a border of minute rays which are finely ciliated, and it is even probable that here the aerating process is chiefly carried on. In the higher sub-class, *Tunicata* proper, the outer covering is very generally flexible, sometimes soft and transparent, the branchial sac is included,

and its openings surrounded with minute cilia, the incurrent and excurrent tubes instead of issuing from a common opening in a case covered by a hard envelope as in Polyzoa have sometimes separate remote outlets in the mantle. A low condition of the nervous system is found throughout this class, and indeed in the preceding, especially in the lowest sub-class. In that which we are now speaking of the union of many individuals in clusters having a common vitality is frequent, among the Polyzoa all but universal. This is accompanied by gemmation as an auxiliary means of extending the species, and in some instances we have also the phenomenon of alternate generations, a certain proof of the low position of the organisms in which it is observed.

On the whole it appears that the real number of classes in the Molluscous series corresponds with that of the sub-kingdoms themselves, whilst these classes show in their peculiar habits and structure, analogies with the several sub-kingdoms according to their order. There are manifest common characters but these are modified to suit different modes of life and grades of development so as to unite uniformity of general plan, with that variety in its adaptation to particular conditions which may arise from the modification of organs and principles common to all animal life, and which mainly consists in the predominance in each case of some one of a definite set of tendencies of development some one of which must in each case prevail over the others.

CANADIAN INSTITUTE.

ANNUAL REPORT OF THE COUNCIL FOR THE YEAR 1865-66, FROM
1ST DECEMBER, 1865, TO 30TH NOVEMBER, 1866, INCLUSIVE.

The Council of the Canadian Institute have the honor to present the following report of the proceedings of the Society for the past year :

I. MEMBERSHIP.

The present state of the membership is as follows:—

Members at commencement of Session, December, 1865	396
New Members elected during the Session, 1865-66	13
Total	409

Deduct deaths.....	7
Withdrawn.....	8
Left the Province.....	4
Non-Payment.....	6
	— 25
Total, 30th November, 1866.....	384
Composed of Honorary Members.....	4
Life Members.....	80
Corresponding Members.....	5
Junior Members.....	1
Ordinary Members.....	344
	—
Total.....	384

II. COMMUNICATIONS.

The following list of Papers, read at the ordinary meetings held during the Session, will be found to contain valuable communications, including some of general interest.

2ND DECEMBER, 1865.

Rev. Prof. W. Hincks, F.L.S., &c.: "On Chorisis as a means of explaining certain phenomena of Plants."

Rev. J. McCaul, LL.D.: "On ancient Factions at Rome and Constantinople."

Prof. Croft, D.C.L.: "Exhibited Pharaohs Serpents and exp'ined their construction and composition."

16TH DECEMBER, 1865.

Prof. J. B. Cherriman, M.A.: "On recent experiments in aerial Navigation."

A. M. Rosebrugh, M.D.: "Exhibited a Series of Micographic Photographs, and enlarged Photographs of Micographic objects, executed by Mr. Hollingworth and presented by him to the Institute. He explained the nature of the process and the construction of the camera. He also exhibited some enlarged photographs of micographic objects projected by the Magic Lantern."

6TH JANUARY, 1866.

Prof. E. J. Chapman, Ph. D.: "Remarks on some minerals from Lake Superior."

Rev. Prof. Hincks, F.L.S., &c.: "Remarks on some Canadian Birds, with exhibition of Specimens."

13TH JANUARY, 1866.

Rev. Prof. Hincks, F.L.S., &c.: "Exhibited a specimen of the Pintailed Grouse shot near Sault St. Marie, and made some observations thereon."

Prof. D. Wilson, LL.D., read a paper entitled: "Notes of a visit to Mal Bay on the St. Lawrence, exhibited some illustrative sketches and made some observations, Geological and Historical thereon."

27TH JANUARY, 1866.

U. Ogden, M.D.: "On the Propagation and Prevention of Cholera."

3RD FEBRUARY, 1866.

A. M. Rosebrugh, M.D.: "On some of the Optical defects of the eye; and their treatment with the Scientific use of Spectacles."

¶ H. Wilson, Esq. : " Exhibited two medals, viz : one of the Church of St. Paul, Rome, and one of St. Peter and St. Paul, Philadelphia."

10TH FEBRUARY, 1866.

Rev. Prof. Hincks, F.L.S., &c. : " Some thoughts on Classification in relation to organized beings."

17TH FEBRUARY, 1866.

Rev. H. Scadding, D.D. : " Received Misprints; or, Traditional Errors in Typography."

24TH FEBRUARY, 1866.

Prof. D. Wilson, LL.D. : " Alphabetical History."

3RD MARCH, 1866.

Rev. J. McCaul, LL.D. : " Municipal Electioneering in Ancient Italy."

10TH MARCH, 1866.

W. H. Cumming, Esq., M.D. : " The Amoy Colloquial."

17TH MARCH, 1866.

Prof. D. Wilson, LL.D. : " On a Peculiar Class of Devices occurring on certain Rocks and standing Stones in Britain."

Prof. E. J. Chapman, Ph. D. : " On some Canadian Illustrations of Geological Phenomena."

24TH MARCH, 1866.

Rev. Prof. W. Hincks, F.L.S., &c. : " Notes on some practically interesting questions in economical science, bearing on the prosperity of a country situated like ours."

7TH APRIL, 1866.

W. H. Cumming, Esq., M.D. : " The Density of the Population of China, with the check to its indefinite increase."

14TH APRIL, 1866.

Prof. D. Wilson, LL.D. : " On the origin of certain peculiar skull forms from premature ossification of sutures."

III. Report of the Editing Committee none.. 4

IV. Curator's Report none.. 5

V. Librarian's Report none.. 6

VI. Report of Medical Section none.. 7

VIII. Entomological Society's Report none.. 9

STATEMENT OF THE CANADIAN INSTITUTE GENERAL ACCOUNT
FOR THE YEAR 1865-66, FROM THE 1ST DECEMBER, 1865, TO
THE 30TH NOVEMBER, 1866.

DR.

Cash balance last year	\$294 22
" received from Members	577 00
" for Rent, Taxes, &c	16 20
" for sale of Journal	12 00
" " of old Gaspipe	1 50
" Parliamentary Grant, 1866	750 00
" Due by Members	1701 25

	Old Series.....	\$114 25	
" Due by Journal	New Series.....	48 25	183 75
	Mr. Edwards, for Paris Exhibition.	26 25	
" Due by Interest on Securities.....			186 00
			<u>\$3721 92</u>

CR.

Cash paid for Journal, 1865	\$422 25	
" " " 1866	265 86	
		<u>688 11</u>
" paid for Library and Museum.....	107 30	
" " account of Sundries (Institute)	749 93	
" due on account of Journal.....	322 40	
" due on account of Sundries	70 00	
Estimated Balance.....	1784 18	
		<u>\$3721 92</u>

Treasurer in account with the Canadian Institute for the year 1865-66, from the 1st December, 1865, to the 30th November, 1866.

DR.

Cash balance last year.....	\$294 22
" received from Members	577 00
" " for Rent, Taxes, &c	16 20
" " for sale of Journal	12 00
" " for sale of old Gaspipie.....	1 50
" " Parliamentary Grant	750 00
Securities	3100 00
	<u>\$4750 92</u>

CR.

Cash paid on account of Journal, 1865.....	\$422 25	
" " " " 1866.....	265 86	
		<u>688 11</u>
" " for Library and Museum.....	107 30	
" " for Sundries (Institute).....	749 93	
Securities.....	3100 00	
Balance in hand	105 58	
		<u>\$4750 92</u>

G. H. WILSON, }
W. J. MACDONELL, } *Auditors.*

APPENDIX.

* Thus marked not bound.

DONATIONS OF BOOKS, &c., RECEIVED SINCE THE LAST ANNUAL REPORT.

FROM HON. J. M. BROAD. 3, WASHINGTON, D. C., U. S.

Diplomatic Correspondence, 1861. Department of State.....	1
Diplomatic Correspondence, 1862. Department of State.—Parts 1 and 2....	2
Diplomatic Correspondence, 1863. Department of State.—Parts 1 and 2....	2
Diplomatic Correspondence, 1864. Department of State.—Parts 1, 2, 3 and 4.	4

FROM NOVA SCOTIA INSTITUTE, HALIFAX.

Journal and Proceedings of the House of Assembly of the Province of Nova Scotia. 2nd Session. 23rd General Assembly Session 1865. 28th Victoria.	1
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FROM THE OFFICE OF ROUTINE AND RECORD, CANADA.

Statutes of Canada 1865. 2nd Session, 29th Victoria, 1865.....	1
Statutes of Canada 1866. 2nd Session, 29th and 30th Victoria, 1866.....	1

FROM THE ROYAL IRISH ACADEMY, DUBLIN.

Proceedings of the Royal Irish Academy, Vol. 7—1857—1861.....	1
Proceedings of the Royal Irish Academy, Vol. 8—1861—1864.....	1

FROM THE SECRETARY TO THE GOVERNMENT OF INDIA.

Bombay Magnetical and Meteorological Observations 1863.....	1
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FROM SMITHSONIAN INSTITUTE, WASHINGTON, D. C., U. S.

Jahrbücher des Vereins für Naturkunde &c. Wiesbaden, Germany, 1862—1863. *1	
Meteorologische Waarnemingen in Nederland en zijne Bezittingen, &c., 1864..	i
Acta universitatis Lundensis, 1864. Mathematik och Naturvetenskap Lund, 1864—5	*1
Philosophi, Språkvetenskap och Historia	*1

FROM L. HEYDEN, ESQ. JUNIOR, TORONTO.

Pœceta Hibernia, the 1st Booke of the Warres in Ireland, 1599, by Thomas Stafford, Vols. 1 and 2.....	2
Views of Society and Manners in America, in a Series of Letters from that Country to a friend in England. Years 1818—19 and 20, by an English-woman, London, 1821.....	1

FROM THE PROVINCIAL SECRETARY OF CANADA.

Geological Survey of Canada Report of Progress from its commencement to 1868. Atlas of Maps and Sections, with an Introduction and Appendix, Montreal, 1865.....	1
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FROM SUPERINTENDENT OF EDUCATION LOWER CANADA.

Etudes Philologiques Sur Quelques Langues Sauvages de L'Amerique. Par N. O., ancien missionnaire	*1
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DONATION OF PAMPHLETS, SHEETS, &c.

FROM THE AUTHOR.

The Annual Address of the President of the Royal Society, General Sabine, R. A 30th November, 1865.....	1
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FROM THE NATURAL HISTORY SOCIETY OF NEW BRUNSWICK.

Preliminary Report of the Geology of New Brunswick, by H. Y. Huid, M. A. 1

FROM THE ROYAL IRISH ACADEMY, DUBLIN.

Transactions, Vol. 24 Antiquities. Part II., 1864.....	1
“ “ III., 1864.....	1
“ “ IV., 1865.....	1
Science “ IV., 1864.....	1
“ “ IV., 1865.....	1
Polite Literature “ II., 1865.....	1
Proceedings of do Literature, Vol. IX. Part I., 1864.....	1

FROM THE SMITHSONIAN INSTITUTE, WASHINGTON, D. C., U. S.

Researches on Solar Physics, by Warren De La Rue, Esq., Ph. D., F.R.S., Pres. R.A.S.; Balfour Stewart, Esq., M.A., F.R.S., Superintendent of Kew Observatory; and Ben Lowry, Esq., Observer and Computer to the Kew Observatory.....	1
Fünfzigster Jahresbericht der Naturforschenden Gesellschaft in Emden, 1864 Von Herman Meier, Sekretar	1
Erster Jahresbericht des naturwissenschaftlichen Vereines zu Bremen	1
Observatory. 1st Series on the Nature of Sun Spots.....	1
Zweiter Jahresbericht des Vereines für Erdkunde zu Dresden	1
Erster “ “ “ “ “	1
Mittheilungen der Kaeserlich-Königlichen Geographischen Gesellschaft, &c. Wien, 1864.....	1

DONATIONS, PAMPHLETS. SHEE, &c.

Nyt magazin for Naturvidenskabernes udgives af den physiographiske Forening i Christiania ved M. Sars og Th. Kjerulf, Trettinde, 1864.....	1
Do Fjortende Binds forste Hefte, 1865.	1
Foreningen for Norske Fortids mindesmerkers Bevaring, 1864.....	1
Gaver til det Kongl Norske universitets Bibliothek i Christiania, 1863.....	1
Det Kongelige Norske Frederiks universitets aarsberetning for aaret, 1863... 1	1
Norske Fornlevninger, en oplysende Fortegnelse over Norges. Fortidslevninger, aeldre end reformationen og henforte til Hver Sit Sted. af N. Nicolaysen Fjerde Hefte, 1865.	1
Gaver til det Kgl. Norske universitet i Christiania, 1862.....	1
Norges Ferskvandskrebdyr. Forste afsnit. Branchiopoda i cladocera etenopoda, &c., af Georg Ossian Sars	1
Norske Bygninger fra fortiden (Norwegian buildings from former times), 1864	1

FROM MCGILL COLLEGE, MONTREAL.

Calendar of Session of 1866-7.....	1
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FROM THE CHICAGO HISTORICAL SOCIETY.

Intramural Interments in Populous Cities, by J. H. Rauch, M. D.	1
7th and 8th Annual Report of the Chicago Trade and Commerce, 31 March 1865. 31 March, 1866.....	2

8th Annual Report of the Eye and Ear Infirmary of Chicago, 1, May, 1866...	2
5th " " of the Board of Public Works—ending March 31st—1866.	1
12th " " of the Board of Education, Sept. 1st 1865, to Aug. 31st 1866	1
School law of 1865—An act to establish and maintain a system of Free Schools in the State of Illinois—Feb. 16th, 1865	1
Ninth Biennial Report of the Trustees, Superintendent and Treasurer of the Illinois State Hospital for the Insane at Jacksonville—Dec., 1864.....	1
Inaugural address of Richard J. Oglesby, Governor of Illinois, to the General Assembly—Jan. 16th, 1865.....	1
Tenth Biennial Report of the Illinois Institution, for the Education of the Deaf and Dumb, by the Directors and Principal, for the years 1863 and 1864	1
Report of the Illinois State Penitentiary. By the Commissioners for the years 1863 and 1864.....	1
Eighth Biennial Report of the Illinois Institution for the Education of the Blind located at Jacksonville, for the years 1863 and 1864.....	1
Report of Col. T. P. Robb, Illinois State Sanitary Commissioner, on the Sanitary Condition of Illinois Troops and field and General Hospitals in the armies and departments of the Ohio, Tennessee, Cumberland, and division of West Mississippi	1
Message of His Excellency Richard Yates, Governor of Illinois, to the General Assembly—Jan. 2nd, 1865	1
Report of the Adjutant General of the State of Illinois—1st Jan., 1865 .. .	1

DONATIONS OF PAMPHLETS, SHEETS, &c.

FROM BUREAU OF AGRICULTURE AND STATISTICS.

An Act respecting the preservation of the Public Health, 22 Victoria, Cap. 38.	1
The Irish Position in British and in Republican North America—A letter to the Editors of the Irish Press, irrespective of Party, by the Hon. Thomas D'Arcy McGe —2nd Edition.....	1
Memorandum on Cholera.....	2

FROM HON. MR. CAMPBELL.

Geological Survey of Canada.—Reports of Mr. A. Michael and Dr. T. Sterry Hunt, on the Gold Regions of Canada.....	2
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UNKNOWN.

Biographical Sketch of Hon. Robert Charles Wilkins.....	1
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FROM THE UNIVERSITY OF CHRISTIANIA.

Meteorologische Beobachtungen aufgezeichnet auf Christiania Observatorium.	
I. Band Letzte Lieferung 1837-63	1
Fiske—Udklaeknings apparater fra Norge, &c.....	1
Meteorologiske Jagttagelser paa Christiania Observatorium 1864.....	1
Meteorologiske Beobachtungen aufgezeichnet auf Christiania's Observatorium.	
III and IV Lieferung 1848-1855	1
Veiviser ved Geologiske Excursioner i Christiania omegn med et Farvetrykt Kart og flere Tracnit af Lector Theodor Kjerulf	1

Generalberetning fra Gaustad Sindsygeasyl for aaret 1864.....	1
Beretning om Bodsfaengflets Virksomhed i aaret 1864	1
Beretning om Fiseri udstilligen i nalefuud 1864	1
Beretning om Ladegaardoens Hovedgaard for 1862 og 1863.....	1
Om de i Norge Forekommende Fossile Dyrelevninger fra Quartaerperioden et Bidrag til vor Faunas Historie af Dr. phil et med Michael zars.....	1

DONATIONS, PAMPHLETS, &c.

FROM PROFESSOR ALEXANDER WINCHELL, A.M., PROFESSOR IN THE UNIVERSITY OF MICHIGAN, &c.

The Grand Traverse Region—Report of the Geological and Industrial resources of the Counties of Aurtim, Grand Traverse, Benzie and Leelanaw in the Lower Provinces of Michigan, Ann Arbor, 1866.....	1
A plea for Science: an address delivered in Morrison Chapel, Kentucky University, commencement day June 25th, 1866, by Alex. Winchell, Esq., M.A., Professor in the University of Michigan	1

FROM THE GEOLOGICAL SURVEY OF INDIA, DR. OLDHAM SUPERINTENDENT PER MR. ALLEN, LONDON.

Annual Report of the Geological Survey of India and the Museum of Geology, Calcutta, 9th year 1864-65	1
Catalogue of the organic remains belonging to the Echinodermata in the Museum of the Geological Survey of India, Calcutta, 1865	1
Memoirs of the Geological Survey of India. Stoluka F. Section across the N Western Himalayas from the Sutley to the Indies, with descriptions of the Fossils	1
Mallet, F. R., the Gypsum of Lower Spiti, with a list of minerals collected in the Himalaya	1
Palaeontologia India, being figures and descriptions of the organic remains procured during the progress of the Geological Survey of India. 4. 1. on vertebrate Fossils from the Panchet rocks, near Raningunj, Bengal, by Thos. Huxley, F.R.S., Prof. Natural History School of Mines, London....	1
do do do do 3. 6. 9. The Fossil Cephalopoda of the Cretaceous Rocks of Southern India, (Ammonitida) by Ferdinand Stoliczka Ph. D. Geological Survey of India.....	1
Medlicott A. B. on the coal of Assam, with Geological notes on the adjoining districts to the South	1

FROM THE CONNECTICUT ACADEMY OF ARTS AND SCIENCES.

Transactions of Vol. 1, No. 1	1
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FROM PROFESSOR J. W. DAWSON, LL.D., &c.,

On the conditions of the deposition of coal, more especially as illustrated by the coal formation of Nova Scotia and New Brunswick.....	1
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BOOKS BOUGHT.

Carlyle's Frederick the Great, Vol. IV.....	1
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EXCHANGE FOR JOURNAL.

Journal of the Society of Arts, London, 1866, 2 copies.....	1
Journal of Education, Upper Canada, 1866, 2 copies	1

Journal of Franklin Institute, Philadelphia, 1866	1
The Artizan, London, England, 1866	1
Silliman's Journal, 1866	1
Proceedings of Antiquarian Society, Boston, 1866	1
Transactions of the Academy of Sciences, St. Louis, 1866	1
Proceedings of the Academy of Natural Sciences, Philadelphia, 1866	1
Historical Recollections of the Essex Institute, and proceedings of Historical Recollections, 1866	1
Annales des Mines	1
Proceedings of Boston Natural Historical Society, 1866	1
Journal of the Board of Arts and Manufactures, Toronto, 1866	1
Annals Lyceum of Natural History, New York, 1866	1
Transactions of the Royal Society of Edinburgh	1
Journal of the Royal Geological Society of Ireland	1
Transactions of the Royal Irish Academy, and proceedings of 1864 and 1865	1
Publications from the Chicago Historical Society	1
Publications from the University of Michigan	1
Publications from the Geological Survey of India	1
DONATIONS FOR THE MUSEUM, FROM 1ST DEC. 1865 to 30TH NOV. 1866.	

By S. THOMPSON, Esq.

Gypsum found in Situ when sinking a well on Lot 8, 2nd Concession, Town- ship of St. Vincent, County of Grey, Georgian Bay	1
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By MR. HOLLINGWORTH, ARTIST.

Specimens of Micrographic photographs	1
Specimens of enlarged photographs of Micrographic objects	11

By DR. STRATFORD, NEW ZEALAND.

Titiferous Iron Sand from the West Coast of North New Zealand, 160 miles long	1
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[An apology is required for the late publication of the following Proceedings and Report. The present volume extends over a much longer time than usual, a consequence of which our materials have exceeded our available space, and we have delayed what seemed least immediately required.]

CANADIAN INSTITUTE.

SESSION—1865-66.

TENTH ORDINARY MEETING—3rd March, 1866.

Dr J. N. AGNEW, Vice-President, in the Chair.

The following donations for the Library, received since last meeting, were
announced by Secretary.

From the Royal Irish Academy	
Proceedings of Vol. VII. 1857-1861, bound in cloth	1
" " VIII. 1861-1864 " 	1
" " IX., Part I., pamphlet	1
VOL. XI.	X

Transactions of do. Vol. XXIV., Antiquities, Part 2, 1864	1
“ “ “ “ 3, 1864	1
“ “ “ “ 4, 1865	1
“ “ “ Science, Part 4, 1864	1
“ “ “ “ “ 6, 1865	1
“ “ “ Polite Literature, Part 2, 1865	1

II. A Paper was read by Rev. Dr. McCaul, entitled: “Municipal Electioneering in Ancient Italy.”

ELEVENTH ORDINARY MEETING—10th March, 1866.

Prof G. T. KINGSTON, M.A., in the Chair.

I. Commissary-General Weir proposed at last meeting was elected a member.

II. *The following donations for the Library were received since last meeting.*

From Dr. Rosebrugh:

Optical defects of the eye..... 1

From the Government of the East Indies:

Bombay Magnetical and Meteorological Observations, 1863..... 1

III. A Paper was read by Dr. Cumming, entitled: “The Amoy Colloquial.”

TWELFTH ORDINARY MEETING—17th March, 1866.

Dr. J. N. AGNEW, Vice-President, in the Chair.

I. Dr. J. Pollock proposed at the last meeting was elected a member.

II. A Paper was read by Dr. Chapman, entitled: “Some Canadian Illustrations of Geological Phenomena,” and Dr. Wilson a paper “On a peculiar class of Devices occurring on certain Rocks and Standing Stones in Britain.”

THIRTEENTH ORDINARY MEETING—24th March, 1866.

D. J. N. AGNEW, Vice-President, in the Chair.

I. A Paper was read by Rev. Prof. W. Hincks, F.L.S., entitled: “Notes on some practically interesting questions in economical science, bearing on the prosperity of a community situated like ours.”

FOURTEENTH ORDINARY MEETING—7th April, 1866.

Dr. J. N. Agnew, Vice-President, in the Chair.

I. *The following donations were announced since last meeting.*

For the Museum:

From S. Thompson, Esq, Specimen of Gypsum from County of Grey..... 1

For the Library, from Royal Society of Edinburgh:

Proceedings of, for 1864-65

Transactions of, for 1864-65..... 1

II. A paper was read by Dr. Cumming entitled: “The Density of the population in China, with the check to its indefinite increase.”

III. Mr. Macdonald and G. H. Wilson were appointed auditors.

FIFTEENTH ORDINARY MEETING—14th April, 1866.

Dr. J. N. AGNEW, Vice-President, in the Chair.

A paper was read by Dr. Daniel Wilson: "On the origin of certain peculiar skull forms from premature ossification of the sutures."

EXTRACT—MINUTES OF CANADIAN INSTITUTE—SESSION 1866-67.

FIRST ORDINARY MEETING—1st December, 1866.

Vice-President, J. N. Agnew, M.D., in the Chair.

I. The list of Donations of Books and Pamphlets received since the last meeting was laid on the table—Books, 10 Vols.—Pamphlets, 53.

II. A paper was read by Prof. D. Wilson—"Literary Forgeries."

SECOND ORDINARY MEETING—5th December, 1866.

Vice President, G. T. KINGSTON, M.A., in the Chair.

The nomination of officers and council took place for year 1866-67.

ANNUAL GENERAL MEETING—15th December, 1866.

Vice-President, G. T. KINGSTON, M.A., in the Chair.

I. The following Gentlemen duly proposed at the last meeting for membership were balloted for and declared duly elected, viz.:

DR. CONSTANTINES ES.

DR. FULTON.

R. BAIGNET, Esq., Artist, Toronto.

J BROWN, Esq., M.D., Toronto.

II. The list of office-bearers and council is as follows:—

President,	Prof. H. CROFT, D.C.L.
1st Vice-President,	Prof. J. B. CHERRIMAN, M.A.
2nd Vice-President,	Dr. J. AGNEW.
3rd Vice-President,	J. THORBURN, Esq., M.D.
Treasurer,	S. SPREULL, Esq.
Recording Secretary,	W. M. CLARK, Esq.
Corresponding do	LAURENCE HEYDEN, JUN., Esq.
Librarian,	REV. H. SCADDING, D.D.
Curator,	W. B. McMURRICH, Esq., M.A.
Council,	Prof. G. T. KINGSTON, M.A.
Do	Prof. J. H. SANGSTER, Esq., M.D.
Do	Prof. W. H. CUMMING, Esq., M.D.
Do	Prof. D. WILSON, LL.D.
Do	Prof. E. J. CHAPMAN, Ph. D.
Do	C. B. HALL, Esq., M.D.

Prof. HYNCKS is also a member of Council, *ex-officio* as general editor of the Journal.

III. The Annual Report of the Council was read by the Treasurer.

The Report was unanimously adopted.

THIRD ORDINARY MEETING—12th January, 1867.

President, Prof. H. CROFT, D.C.L., in the Chair.

I. The ballot having been taken for Dr. J. King and Dr. Newcombe, proposed for membership at the last meeting, they were declared duly elected.

II. The Canadian Institute and the Medical Section to meet alternately on Saturday nights.

III. The annual address was read by the President.

IV. *The following donations for the Library were announced having been received since last meeting of the Institute.*

Donor—L. Heyden, Esq., Jun., of Toronto:

Consuetudines Kancie Sandys, F.S.A., 1851	1
Ashe's Travels in America, Vols. 1, 2, and 3 in one.....	1
Rochefoucault's Travels in America, years 1795-96 and 1707, Vols. 1, 2, 3, 4. .	4

Donors—Manchester Literary and Philosophical Society.

Memoirs of, Vol. II., 1865.....	1
Proceedings of, Vol. III., Session 1863-64, and 1862-63.....	1
Proceedings of Vol. IV., Ses. 1864 and 1865.....	2

From Smithsonian Institute:

Meteorologiske Jarboke, &c.....	1
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From Royal Geological Society of Ireland:

Journal of Vol. 1, 2, 1865-6	2
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From Royal Irish Academy:

Transactions of Vol. XXIV, Antiquities, part 5	1
“ “ “ part 6	1
“ “ “ part 7	1
“ “ Science, part 5	1
“ “ Polite Literature, part 3	1

From Linnean Society:

Journal of, Vol. IX, Zoology, No. 33, 1866	1
“ “ Botany, No. 35, 1865	1
“ “ “ No. 86, 1865	1
“ “ “ No. 37, 1865	1
“ the proceedings of Vol. 8, Nos. 31 and 32.. ..	1
List of the Linnean Society, 1865.....	1

FOURTH ORDINARY MEETING—26th January, 1867.

President, Professor H. CROFT, D.C.L., in the Chair.

I. Mr. W. C. Adams and Dr. N. O. Walker, M.R.C.S.E., proposed at the last meeting, were balloted for and declared duly elected.

II. Specimens of animal remains, &c from the Dordogne cave, were exhibited by Dr. Thorburn, and were described Geologically by Dr. Chapman, and Ethnologically by Professor D. Wilson.

FIFTH ORDINARY MEETING—9th February, 1867.

Vice-President J. N. AGNEW, Esq., M.D., in the Chair.

I. G. P. DeGrassi, M.B., and J. S. Scott, dentist, Cobourg, were elected members.

II. A paper was read by Dr. Tempest for Dr. Oronhitbeka, "on nitrous oxide as anæsthetic."

SIXTH ORDINARY MEETING—23rd February, 1867.

President Professor H. CROFT, D.C.L., in the Chair.

I. Dr. Carlyle and Mr. Vandersmissen, proposed as members at last meeting, were balloted for and declared duly elected.

II. A paper was read by the Rev. Dr. McCaul—Subject, "Boys' and Girls' Homes among the Ancients."

SEVENTH ORDINARY MEETING—9th March, 1867.

President Professor H. CROFT, D.C.L., in the Chair.

I. A paper was read by Dr. C. B. Hall, "On Consumption."

EIGHTH ORDINARY MEETING—23rd March, 1867.

President Professor H. CROFT, D.C.L., in the Chair.

I. S. P. May, Esq., M.D., was elected a member of the Institute.

II. A paper was read by Dr. C. B. Hall, "On some chemical changes in the Human System."

NINTH ORDINARY MEETING—8th April, 1867.

President Professor H. CROFT, D.C.L., in the Chair.

I. The following donations were announced as having been received since last meeting.—

For the Library, from Hon. J. M. Broadhead, Washington, Patent Office Reports for 1864-65, Pts. 1 and 2, Vol. 2.

II. Dr. O. S. Winstanley, proposed at the last meeting, was balloted for and declared duly elected.

III. A paper was read by Professor Chapman, Ph. D., entitled, "Journey to the Rocky Mountains of Colorado, with remarks on the assaying of Gold and Silver ores."

TENTH ORDINARY MEETING—27th April, 1867.

President Professor H. CROFT, D.C.L., in the Chair.

I. E. B. Shuttleworth and John Ridout, Esqrs., proposed at last meeting, were balloted for and declared duly elected.

II. A paper in continuation of Remarks on Molluscous Animals was read by Rev. Professor Hincks—and also one by Professor D. Wilson, entitled, "Notes on the North Shore of Lake Superior and the Nejejon River."

GENERAL METEOROLOGICAL

Provincial Magnetical Observ

LATITUDE, 43° 39' 4" North; LONGITUDE 5h. 17m. 33s. West.—Elevation above

	JAN.	FEB.	MAR.	APR.	MAY.	JUNE.	JULY.
Mean Temperature.....	20.73	22.51	27.55	43 86	48.30	60 18	70.43
Difference from average (27 years)...	- 2.56	- 0.44	- 2.37	+ 2.67	- 3.28	- 1.23	+ 3.32
Thermic anomaly (Lat. 40° 40')	-12.07	-12.19	-12.55	- 6.34	- 9.80	- 4.42	+ 1.73
Highest temperature	44.0	45.0	45.8	71.0	73.4	90.5	94.0
Lowest temperature	-14.0	- 8.0	7.5	28.5	33.4	40.0	47.8
Monthly and annual range	58.0	53.0	38.3	42.5	40.0	50.5	46.2
Mean maximum temperature	26.32	33.61	33.0	52.87	57.55	69.47	79.60
Mean minimum temperature	12.70	18.12	21.65	36.01	39.79	51.41	60.64
Mean daily range	13.62	15.49	11.35	16.86	17.76	18.06	18.96
Greatest daily range	40.8	38.1	21.6	36.2	31.8	28.0	35.0
Mean Height of the barometer	29.7184	29.7069	29.6666	29.6094	29.4845	29.5205	29.6050
Difference from average (27 years)...	+ .0686	+ .0811	+ .0749	+ .0096	- .0928	- .0494	+ .0071
Highest barometer	30.940	30.364	30.089	29.972	29.866	29.907	29.915
Lowest barometer	29.110	29.126	29.043	28.927	28.919	28.967	29.395
Monthly and annual ranges.....	1.830	1.238	1.046	1.045	0.947	0.940	0.610
Mean humidity of the air.....	83	81	77	65	62	72	72
Mean elasticity of aqueous vapour.....	.101	.108	.124	.195	.212	.381	.535
Mean of cloudiness	0.76	0.82	0.65	0.58	0.54	0.54	0.60
Difference from average (14 years)...	+ .04	+ .10	+ .03	- .01	+ .01	+ .02	+ .62
Resultant direction of the wind.....	N 75 W	S 80 W	N 73 W	N 42 W	N 46 W	S 15 W	S 79 W
Resultant velocity of the wind	2.98	5.14	6.84	3.34	4.49	0.71	0.94
Mean velocity (miles per hour)	9.34	9.40	11.51	7.95	9.26	5.09	4.17
Difference from average (19 years)...	+1.18	+1.01	+2.68	-0.12	+2.59	-0.10	-0.73
Total amount of rain	0.522	0.830	1.915	1.675	2.820	2.720	5.399
Difference from average (26-27 yrs.)...	-0.744	-0.156	+0.286	-0.787	-0.402	-0.109	+1.882
Number of days rain	4	8	8	7	13	15	16
Total amount of snow.....	10.3	16.9	7.2	Inapp.	- 0.08	...	...
Difference from average (24 years)...	- 4.63	- 1.05	- 2.23	- 2.29	...	...	...
Number of days snow.....	19	12	18	2	...	...	...
Number of fair days	11	14	9	21	18	15	15
Number of auroras observed	3	3	8	1	7	1	3
Possible to see aurora (No. of nights)	11	11	14	18	24	19	25
Number of thunderstorms	0	0	1	1	2	8	7

REGISTER FOR THE YEAR 1866.

atory, Toronto, Canada West.

Lake Ontario, 108 feet; approximate Elevation above the Sea, 342 feet.

AUG.	SEPT.	OCT.	NOV.	DEC.	Year 1866.	Year 1865.	Year 1864.	Year 1863.	Year 1862.	Year 1861.	Year 1860.
60.80 - 5.17 - 7.70	55.22 - 2.77 - 6.28	49.09 + 3.86 - 4.71	38.36 + 1.48 - 4.84	25.06 - 1.15 - 10.94	43.51 - 0.67 - 7.49	44.02 + 0.71 - 6.08	44.70 + 0.52 - 6.30	44.57 + 0.39 - 6.43	44.35 + 0.17 - 6.65	44.22 + 0.04 - 6.78	44.32 + 0.14 - 6.68
77.0 42.4 34.0	80.0 34.4 45.6	71.0 31.8 39.2	54.2 21.8 32.4	61.0 - 5.0 56.0	91.0 - 14.9 108.0	90.5 - 10.0 100.5	94.0 - 15.0 109.0	88.0 - 19.8 107.8	95.5 - 5.2 100.7	87.8 - 20.8 108.6	88.0 - 8.5 96.5
69.64 52.72 16.92 27.1	64.00 48.73 15.27 24.5	57.56 43.83 13.73 24.8	43.83 33.17 10.66 24.2	31.20 20.01 11.16 33.8	...	...	...	...	...	...	...
29.5605 - .0626	29.6207 - .0397	29.7061 + .0022	29.6122 - .0005	29.6170 - .0089	29.6216 + .0041	29.6330 + .0155	29.5596 - .0579	29.6536 + .0361	29.6248 + .0073	29.6008 - .0167	29.5923 - .0252
29.977 29.258 0.719	29.936 29.142 0.794	30.210 29.082 1.128	30.372 28.855 1.517	30.313 28.807 1.506	30.910 28.807 2.133	30.354 28.767 1.647	30.327 28.671 1.656	30.502 28.704 1.798	30.469 28.805 1.661	30.330 28.644 1.686	30.267 28.838 1.429
73	78	75	80	79	75	75	76	77	77	78	77
.390	.349	.272	.192	.118	.284	.259	.263	.266	.262	.262	.260
0.56 - .09	0.57 + .07	0.50 - .12	0.72 - .02	0.63 - .11	0.61 .00	0.61 .00	0.65 + .04	0.61 .00	0.63 + .02	0.62 + .01	0.60 - .01
N 59 W 2.58 5.16 - 0.01	N 33 W 1.45 4.63 - 0.79	N 30 W 0.84 5.53 - 0.48	N 83 W 3.03 4.96 - 0.49	E 89 W 4.98 9.91 + 1.56	N 73 W 2.83 7.41 + 0.52	N 66 W 1.98 6.78 - 0.11	N 76 W 2.49 7.40 + 0.51	N 41 W 1.34 7.13 + 0.24	N 48 W 2.03 7.03 + 0.44	N 56 W 2.11 7.47 + 0.58	N 60 W 3.32 8.55 + 1.66
4.457 + 1.412 14	5.657 + 1.902 15	2.470 - 0.064 11	2.963 - 0.095 13	2.790 + 1.101 7	34.209 - 4.226 126	26.599 - 3.334 111	29.486 - 0.497 132	26.483 - 3.500 130	25.529 - 4.454 118	26.995 - 2.988 136	25.434 - 6.549 130
...	...	Inapp. - 0.87 1	2.2 - 0.80 4	15.5 + 1.17 13	51.1 - 10.78 69	63.3 + 0.42 68	74.6 + 11.72 70	62.9 + 6.02 74	85.4 + 22.52 72	74.8 + 11.72 76	45.6 - 17.28 75
17	15	19	13	13	180	201	180	181	189	185	174
4	3	8	2	1	44	55	34	44	48	43	58
17	19	22	11	18	209	201	158	182	176	180	190
1	3	1	0	0	24	17	26	24	24	27	30

MEAN METEOROLOGICAL RESULTS

TEMPERATURE.

	1866.	Average of 27 years.	Extremes.	
Mean temperature of the year	43.51	44.18	46.36 in '46.	42.16 in '56.
Warmest month	July.	July.	July, 1854.	Aug. 1860.
Mean Temperature of the warmest month ...	70.43	67.04	72.47	64.46
Coldest month.....	January.	February.	Jan. 1857.	Feb. 1848.
Mean temperature of the coldest month	20.78	22.95	12.75	26.60
Difference between the temperatures of the warmest and the coldest months	49.70	44.00	—	—
Mean of deviations of monthly means from their respective averages of 27 years, signs of deviation being disregarded	2.51	2.35	3.62 in 1843.	1.38 in '61.
Months of greatest deviation, without re- gard to sign	August.	January.	Jan. 1857.	—
Corresponding magnitude of deviation	5.2	3.8	10.5	—
Warmest day	July 13.	—	July 12, '45.	July 31, '41.
Mean temperature of the warmest day	81.10	77.55	82.32	72.75
Coldest day	Jan. 7.	—	{ Feb. 6, '55 } { Jan. 22, '57 }	Dec. 22, '42.
Mean temperature of the coldest day.....	— 9.48	— 1.23	— 14.38	9.57
Date of the highest temperature	July 13.	—	Aug. 24, '54.	Aug. 19, '10.
Highest temperature	91.0	90.7	99.2	82.4
Date of lowest temperature	Jan. 8.	—	Jan. 26, '59.	Jan. 2, '42.
Lowest temperature	— 14.0	— 12.3	— 26.5	1.9
Range of the year	103.0	103.0	118.2	87.0

BAROMETER.

	1866.	Average of 26 years.	Extremes.	
Mean pressure of the year	29.6216	29.6175	{ 29.6670 in 1849.	29.5602 in 1864.
Month of highest mean pressure	January.	September	Jan. 1819.	June, 1861.
Highest mean monthly pressure	29.7184	29.6604	29.8046	29.6525
Month of lowest mean pressure	May.	June.	March, 1859.	Nov. 1843.
Lowest mean monthly pressure	29.4845	29.5639	29.4143	29.5886
		Average of 27 years.		
Date of highest pressure in the year	{ Jan. 8, } 8 a.m.	—	Jan. 8, 1866.	Oct. 22, 1815.
Highest pressure	30.940	30.385	30.940	30.242
Date of lowest pressure in the year.....	{ Dec. 23, } 11 p.m.	—	Mar. 19, 1859	Mar. 17, 1845.
Lowest pressure	28.807	28.657	28.286	28.939
Range of the year	2.133	1.69	{ 2.133 in 1866.	1.303 in 1845.

RELATIVE HUMIDITY.

	1866.	Average of 20 years.	Extremes.	
Mean humidity of the year.....	75	78	82 in 1851.	73 in 1858.
Month of greatest humidity	January.	January.	Jan. 1857.	Dec. 1858.
Greatest mean monthly humidity	83	83	89	81
Month of least humidity	May.	May.	Feb. 1843.	April, 1849.
Least mean monthly humidity.....	62	72	58	76

EXTENT OF SKY CLOUDED.

	1866.	Average of 14 years.	Extremes.	
Mean cloudiness of the year	0.61	0.61	0.65	0.57
Most cloudy month	February.	Novemb'r.	—	—
Greatest monthly mean of cloudiness.....	0.82	0.74	0.85	0.73
Least cloudy month	July, Oct.	August.	—	—
Lowest monthly mean of cloudiness	0.50	0.47	0.30	0.50

WIND.

	1866.	Result of 19 years.	Extremes.	
Resultant direction	N 73° W	N 61° W	—	—
Mean resultant velocity in miles	2.83	1.89	—	—
Mean velocity, without regard to direction ...	7.41	6.89	8.55 in 1860.	5.10 in 1853.
Month of greatest mean velocity	March.	March.	March, 1860.	Jan. 1848.
Greatest monthly mean velocity	11.51	8.83	12.41	5.82
Month of least mean velocity.....	July.	July.	Aug. 1852.	Sept. 1860.
Least monthly mean velocity.....	4.17	4.95	3.30	5.79
Day of greatest mean velocity	March 25.	—	Mar. 19, 1859.	Dec. 2, 1848.
Greatest daily mean velocity.....	25.18	23.05	31.16	15.30
Day of least mean velocity	Sept. 29.	—	—	—
Least daily mean velocity	0.20	—	—	—
Hour of greatest absolute velocity	{ April 28,	—	Dec. 27, '61,	Mar. 14, '53,
Greatest velocity	{ 8 to 9 p.m.	40.02	9 to 10 a.m.	11 a.m to n'n
	33.5		46.0	25.6

RAIN.

	1866.	Average of 27 years.	Extremes.	
Total depth of rain in inches.....	34 209	29.983	{ 43.355 in 1843.	21.505 in 1856.
Number of days in which rain fell	126	109	130 in 1861.	80 in 1841.
Month in which the greatest depth of rain fell	Septemb'r	Septemb'r	Sept. 1843.	Sept. 1848.
Greatest depth of rain in one month	5.657	3.755	9.760	3.115
Month in which days of rain were most frequent	July.	October.	Oct. 1864.	May, 1841.
Greatest number of rainy days in one month	16	13	22	11
Day in which the greatest amount of rain fell	July 17.	—	Sept. 14, '43.	Sept. 14, '48.
Greatest amount of rain in one day.....	2.345	2.083	3.455	1.00
Hour of heaviest rain	July 17, 4 to 5 p.m.	—	—	—
Greatest amount of rain in one hour	1.355	—	—	—

SNOW.

	1866.	Average of 27 years.	Extremes.	
Total depth in the year in inches.....	52.1	62.9	{ 99.0 in 1855.	38.4 in 1851.
Number of days in which snow fell.....	69	59	87 in 1859.	33 in 1848.
Month in which the greatest depth of snow fell	February.	February.	Feb. 1846.	Dec. 1851.
Greatest depth of snow in one month	16.9	18.0	'46.1	10.7
Month in which the days of snow were most frequent	January.	January. Decemb'r.	Dec. 1859. Jan. 1861.	Feb. 1848.
Greatest number of days of snow in one month	19	13	23	8
Day in which the greatest amount of snow fell	Dec. 16.	—	Feb 5, 1863.	Jan. 10, 1857.
Greatest fall of snow in one day	6.0	8.2	16.0	5.5

MONTHLY METEOROLOGICAL REGISTER, AT THE PROVINCIAL MAGNETICAL OBSERVATORY, TORONTO, CANADA WEST,—OCTOBER, 1866.

Table with columns: Barom. at temp. of 32°, Temp. of the Air, Excess of Vapour, Humidity of Air, Direction of Wind, Re-sultant Direc-tion, Velocity of Wind, Rain in Inches, Snow in Inches. Rows include dates from 1 to 31 and monthly totals.

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR OCTOBER, 1866.

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 0 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 30.210 at 8 a.m. on 5th. } Monthly range=
 Lowest Barometer 29.032 at 7 a.m. on 22nd. } 1.128 inches.
 Maximum Temperature 71° 0 on 2nd and 8th. } Monthly range=
 Minimum Temperature 31° 8 on 24th. } 39° 2
 Mean Maximum Temperature 57° 56 } Mean daily range=18° 73
 Mean Minimum Temperature 43° 83 }
 Greatest daily range 24° 8 from a.m. to p.m. of 2nd.
 Least daily range 3° 6 from a.m. to p.m. of 10th.
 Warmest day 8th. Mean Temperature 59° 53 } Difference=25° 06
 Coldest day 31st. Mean Temperature 31° 47 }
 Maximum { Solar 110° 0 on 8th } Monthly range=
 Radiation. { Terrestrial 20° 0 on 24th } 96° 0
 Aurora observed on 8 nights, viz.—3rd, 4th, 5th, 9th, 11th, 13th, 30th, and 31st.
 Possible to see Aurora on 22 nights; impossible on 0 nights.
 Snowing on 1 day; depth inapp.; duration of fall 0.2 hours.
 Raining on 11 days; depth 2.470 inches; duration of fall 59.5 hours.
 Mean of cloudiness=0.60; most cloudy hour observed, 4 p.m.; mean=0.57; least
 cloudy hour observed, 12 p.m.; mean=0.4.

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

North. South. East. West.
 1536.60 996.03 1150.63 1477.42

Resultant Direction, N. 30° W.; Resultant Velocity, 0.84 miles per hour.

Mean Velocity, 5.53 miles per hour.

Maximum Velocity, 25.4 miles, from 7 to 8 a.m. of 22nd.

Most windy day, 22nd—Mean velocity 14.75 miles per hour.

Least windy day, 1st—Mean velocity 0.76 miles per hour.

Most windy hour, 9 a.m.—Mean velocity 7.80 miles per hour.

Least windy hour, 10 p.m.—Mean velocity 3.43 miles per hour.

Fog recorded on the 1, 2, 7, 8, 9, 17, 18, 19, and 29th days.—Thunder storm on 9th.—

Solar halo on 11th.—Rainbow, a.m. of 21st.—Rainbow, a.m. of 22nd.

October, 1866, was very warm. The mean temperature showing an excess above the average never before reached except in October, 1854.

COMPARATIVE TABLE FOR OCTOBER.

YEAR.	TEMPERATURE.			RAIN.		SNOW.		WIND.	
	Mean.	Excess above Avg.	Range observed.	No. of days.	Inches.	No. of days.	Inches.	Direction.	Resultant Velocity.
1840	44.4	-1.2	23.9	13	1.866	3	...	...	...
1841	41.6	-4.0	58.3	6	1.366	2	...	...	0.41 lbs
1842	45.1	-0.5	68.5	8	5.176	0	...	...	0.35 "
1843	41.8	-3.8	65.7	12	3.790	4	...	...	0.54 "
1844	43.3	-2.3	69.6	7	Imp	4	12.0	...	0.43 "
1845	46.4	+0.8	62.7	11	1.766	1	...	...	0.26 "
1846	44.6	-1.0	69.7	14	4.186	2	...	...	0.44 "
1847	44.0	-1.6	65.0	13	4.390	2	...	...	0.19 "
1848	46.3	+0.7	62.2	11	1.556	1	...	N 54 W	1.24
1849	45.3	-0.3	63.2	13	5.966	0	...	N 12 W	1.27
1850	45.4	-0.2	66.6	10	2.085	0	...	N 66 W	1.10
1851	47.4	+1.8	66.1	10	1.056	0	0.3	S 72 W	1.06
1852	48.0	+2.4	70.7	12	5.280	0	...	N 5 E	1.14
1853	44.4	-1.2	64.7	10	0.876	2	...	S 88 W	1.74
1854	40.5	+3.9	74.2	15	1.496	3	...	N 45 W	1.52
1855	45.4	-0.2	64.3	14	2.455	5	...	N 82 W	4.91
1856	45.3	-0.3	70.1	10	0.876	2	...	N 76 W	2.15
1857	45.4	-0.2	63.5	10	1.040	2	0.1	N 19 W	2.93
1858	48.8	+3.2	76.3	17	1.797	1	...	N 34 W	0.36
1859	43.0	-2.6	68.4	11	0.946	4	...	N 68 W	5.04
1860	47.3	+1.7	63.7	15	1.618	1	...	N 9 W	2.00
1861	45.7	+3.1	64.5	15	1.993	1	...	N 61 W	1.06
1862	48.7	+3.1	76.0	19	2.684	2	0.5	N 78 W	2.89
1863	45.9	+0.3	63.4	16	2.522	0	...	S 71 W	0.48
1864	45.2	-0.4	64.8	22	3.321	1	...	N 60 W	3.17
1865	44.5	-1.1	66.6	17	2.705	3	4.5	N 36 W	3.55
1866	49.1	+3.4	70.2	11	2.470	1	...	N 30 W	0.84
Results to 1861	45.65	...	66.67	12.6	2.530	1.8	0.78	N 60 W	1.74
Exc. for 1866.	+3.44	...	+3.53	1.6	-0.50	0.9	0.78	...	...
1866.			-3.38						0.61

MONTHLY METEOROLOGICAL REGISTER, AT THE PROVINCIAL MAGNETICAL OBSERVATORY, TORONTO, CANADA WEST.—NOVEMBER, 1866.
 Latitude—43 deg. 30.5 min. North. Longitude—5 h. 17 m. 33 s. West. Elevation above Lake Ontario, 108 feet.

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Day	Barom. at temp. of 32°.				Temp. of the Air.			Excess of mean above Normal.	Tons of Vapour.			Humidity of Air.			Direction of Wind.			Result. Direc-tion.	Velocity of Wind.				Rain in inches.	Snow in inches.	
	6 A.M.	2 P.M.	10 P.M.	(10 P.M. Mean.)	6 A.M.	10 P.M.	Mean		6 A.M.	10 P.M.	Mean	6 A.M.	10 P.M.	Mean	6 A.M.	2 P.M.	10 P.M.		6 A.M.	2 P.M.	10 P.M.	Re-sult.			10 P.M.	Re-sult.	10 P.M.
1	29.691	29.488	29.355	29.492	37.1	41.0	45.8	+2.83	166	200	216	105	75	67	68	S	S	S	55	18.0	10.8	10.83	14.15		
2	29.696	29.714	29.833	29.743	41.4	35.3	37.30	-2.97	204	162	164	161	88	58	73	W	N	W	N	12.8	8.4	5.52	5.76	inap.	
3	29.701	29.723	29.841	29.754	40.9	34.8	34.03	-5.97	157	138	129	140	90	57	73	Cal.	W	S	N	0.0	7.8	3.08	3.51	inap.	
4	29.707	29.755	29.873	29.775	32.7	34.6		-1.43	114				70	67	75	N	N	N	3.0	10.0	4.50	4.50			
5	29.711	29.759	29.877	29.779	31.5	33.5	28.02	-10.87	110	114	126	117	88	58	84	N	N	N	N	1.0	3.0	1.41	1.55		
6	29.715	29.763	29.881	29.783	42.1	34.8	33.85	-6.32	110	161	144	140	87	50	73	Cal.	S	S	S	0.0	7.0	2.63	2.70		
7	29.719	29.767	29.885	29.787	50.4	38.6	30.88	-6.88	160	177	166	163	81	48	67	S	S	S	S	5.0	0.2	3.82	4.00		
8	29.723	29.771	29.889	29.791	51.0	45.0	43.58	+4.90	166	241	230	210	91	57	77	Cal.	S	S	Cal.	0.0	8.0	3.76	3.65		
9	29.727	29.775	29.893	29.793	60.4	41.4	43.67	+5.27	176	238	241	236	79	78	92	Cal.	S	S	S	10.0	6.0	4.33	5.88		
10	29.731	29.779	29.897	29.797	67.5	47.5	42.16	+4.07	186	216	226	200	69	65	78	N	W	W	S	4.8	7.5	4.31	7.01	230	
11	29.735	29.783	29.901	29.799	66.4	49.0		-2.90	265				92	76	82	S	W	W	S	16.0	19.0	10.39	10.39	inap.	
12	29.739	29.787	29.905	29.803	41.3	41.3	37.43	+1.20	171	157	162	167	86	53	72	Cal.	W	W	N	0.0	11.0	5.12	5.82		
13	29.743	29.791	29.909	29.807	41.4	43.8	40.70	+1.62	144	199	214	185	81	73	81	N	W	N	W	2.0	7.0	5.61	5.52		
14	29.747	29.795	29.913	29.811	42.5	46.8	45.25	+8.35	253	207	205	244	97	62	92	E	E	E	S	8.8	11.0	6.17	6.44	275	
15	29.751	29.799	29.917	29.815	42.8	42.8	43.17	+0.67	250	283	260	255	90	67	90	S	S	S	W	3.5	13.0	4.61	7.69	875	
16	29.755	29.803	29.917	29.817	37.0	39.0	38.27	+2.07	208	262	190	198	81	80	77	S	W	W	N	21.5	26.0	12.01	14.93	1512	465
17	29.759	29.807	29.921	29.817	36.3	36.3	39.33	+3.53	168	173	194	180	78	63	70	S	W	W	N	8.0	10.2	7.5	7.60	817	823
18	29.763	29.811	29.925	29.821	41.0	42.7		-2.18	221				85	72	82	W	W	W	S	8.5	2.0	0.0	2.64	3.46	80
19	29.767	29.815	29.929	29.825	43.5	43.5	43.00	+8.82	253	259	259	255	93	82	84	S	W	N	S	3.1	6.0	11.4	4.50	6.75	320
20	29.771	29.819	29.933	29.829	40.9	37.4	39.70	+4.93	263	198	199	210	87	80	88	N	W	W	N	16.8	23.0	13.51	17.89	18.29	955
21	29.775	29.823	29.937	29.833	33.8	32.7	31.02	-2.47	173	157	147	146	89	85	88	N	W	N	N	13.5	13.5	3.5	8.91	9.96	
22	29.779	29.827	29.941	29.837	28.4	24.0	27.60	-0.58	121	134	130	129	82	80	90	N	N	N	N	12.8	3.8	8.98	9.91		2.0
23	29.783	29.831	29.945	29.841	23.0	27.0	27.43	-0.23	125	143	129	130	81	79	88	N	W	W	W	10.4	1.0	4.2	3.98	4.71	
24	29.787	29.835	29.949	29.845	27.0	30.7	32.00	+6.27	120	151	163	126	88	88	92	W	W	W	N	2.5	16.5	7.78	8.22		0.2
25	29.791	29.839	29.953	29.849	21.0	28.8		-0.09	120				84	81	86	N	W	W	N	0.8	0.0	4.0	2.07	2.42	
26	29.795	29.843	29.957	29.853	33.8	41.4	40.73	+5.33	169	169	204	189	85	75	80	W	W	W	N	8.0	4.0	2.0	2.07	2.42	
27	29.799	29.847	29.961	29.857	41.0	46.1	44.10	+11.02	227	210	259	236	88	69	84	S	S	S	S	3.0	6.6	1.0	3.17	3.21	
28	29.803	29.851	29.965	29.861	50.0	49.0	48.23	+16.37	293	345	337	324	94	96	106	S	S	S	S	4.8	2.0	2.84	3.25	660	
29	29.807	29.855	29.969	29.865	45.7	44.3	41.74	+6.62	238	268	267	262	97	92	98	S	S	S	W	2.2	3.0	0.5	1.19	2.78	520
30	29.811	29.859	29.973	29.869	37.1	37.1	33.4	+43.25	262	268	263	267	98	85	94	W	W	W	N	5.5	6.4	4.29	5.03	609	
31	29.815	29.863	29.977	29.873	33.4	33.4	35.25	+4.17	174	126	133	154	78	62	85	W	W	W	N	11.5	18.4	18.61	15.49	16.91	
Mean	29.759	29.795	29.902	29.782	35.32	41.89	34.95	+2.21	187	166	197	192	87	72	80					6.02	8.00	6.23	6.96	2.963	2.2

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR NOVEMBER, 1866.

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

Highest Barometer 30.372 at 10 a.m. on 5th } Monthly range = 1.617 inches.
 Lowest Barometer 28.855 at 8 a.m. on 16th }
 { Maximum Temperature 51°2 on 8th } Monthly range = 32°4
 { Minimum Temperature 21°8 on 25th }
 { Mean maximum Temperature 43°83 } Mean daily range = 10°66
 { Mean minimum Temperature 33°17 }
 { Greatest daily range 24°2 from a.m. to p.m. of 8th.
 { Least daily range 2°2 from a.m. to p.m. of 20th.
 Warmest day 29th } Mean temperature 48°25 } Difference = 20°82
 Coldest day 23rd } Mean temperature 27°43 }
 Maximum { Solar 93°5 on 7th } Monthly range = 82°5
 Radiation. { Terrestrial 11°0 on 6th }

Aurora observed on 2 nights, viz:—2nd and 3rd.
 Possible to see Aurora on 11 nights; impossible on 19 nights.
 Snowing on 4 days; depth 2.2 inches; duration of fall 18.6 hours.
 Hail on 13 days; depth 2.963 inches; duration of fall 81.7 hours.
 Mean of cloudiness = 0.72.
 Most cloudy hour observed, 4 p.m.; mean = 0.80; least cloudy hour observed, 6 a.m.; mean = 0.65.

Sums of the components of the Atmospheric Current, expressed in miles.
 North. South. East. West.
 1341.20 1277.83 764.86 2974.09

Resultant direction N. 89° W.; Resultant velocity 3.06 miles per hour.
 Mean velocity 0.99 miles per hour.
 Maximum velocity 30.0 miles, from 1 to 2 p.m. of 16th. } Difference = 16.71 miles.
 Most windy day 20th. } Mean velocity, 18.29 miles per hour. } ditto
 Least windy day 5th. } Mean velocity, 1.53 ditto }
 Most windy hour 11 a.m. } Mean velocity, 9.61 ditto }
 Least windy hour 7 a.m. } Mean velocity, 5.63 ditto }

26th. Solar halo during forenoon, Lunar halo a.m.
 27th. Morning foggy, Solar halo 1 p.m.

COMPARATIVE TABLE FOR NOVEMBER.

Year	TEMPERATURE.				RAIN.		SNOW.		WIND.	
	Mean.	Excess above average	Abs. & rel. Min. & Max.	Range.	No. of days.	Inches.	No. of days.	Inches.	Resultant Direction.	Mean Force or Velocity.
1840	35.9	-0.8	34.4	20.6	53.8	1.226	8	...	...	0.91 lbs.
1841	35.0	-1.7	33.2	7.6	55.6	2.450	5	...	...	1.22
1842	33.8	-3.4	30.6	7.6	43.6	5.310	10	...	...	0.59
1843	33.5	-3.2	31.2	14.4	26.8	4.768	7	1.2	...	0.48
1844	34.9	-1.8	49.8	12.0	37.8	imp.	4	8.0	...	0.63
1845	26.8	+0.1	58.8	7.6	51.2	7.103	7	5.0	...	0.64
1846	41.3	+4.6	35.6	18.2	37.3	12.580	2	0.4	...	0.36
1847	38.6	+1.9	38.2	7.8	50.4	3.165	3	inap.	N 81° W	1.81
1848	34.5	+2.2	49.3	16.5	32.8	9.202	3	1.4	N 36° W	1.55
1849	42.6	+5.9	58.7	28.4	28.3	2.815	10	2.0	N 42° W	1.43
1850	38.8	+2.1	62.3	18.1	44.2	7.955	1	inap.	N 56° W	1.53
1851	32.9	-3.8	50.1	16.6	33.6	3.885	6	6.7	N 59° W	1.23
1852	36.0	+0.7	50.4	18.7	31.7	7.775	3	2.0	N 9° W	0.55
1853	38.7	+2.0	54.1	14.4	39.7	2.425	6	2.7	N 9° W	0.55
1854	36.8	+0.1	54.9	16.1	39.3	1.116	4	1.3	W	3.44
1855	38.6	+1.9	54.1	18.7	35.4	4.590	6	3.0	N 66° W	3.13
1856	37.4	+0.2	56.4	22.8	33.6	1.375	9	0.5	S 85° W	2.05
1857	33.5	-3.2	57.8	-2.3	60.1	3.235	9	6.9	S 61° W	5.45
1858	34.2	-2.6	52.0	20.6	31.5	3.879	13	4.0	N 25° W	3.14
1859	38.9	+2.2	61.0	24.1	36.9	12.513	9	1.6	N 81° W	3.39
1860	37.0	+1.2	62.7	14.0	48.7	2.669	8	0.9	S 80° W	4.95
1861	37.1	+0.4	61.5	25.1	20.4	4.294	8	3.2	N 46° W	1.94
1862	35.6	-1.1	58.0	17.2	40.8	11.205	11	5.3	N 46° W	3.00
1863	35.6	-1.1	57.6	19.4	38.2	3.056	6	0.1	N 88° W	3.50
1864	36.9	+0.2	56.5	21.9	34.6	11.375	8	4.5	S 72° W	3.82
1865	38.0	+1.3	55.8	24.4	31.4	0.978	7	1.1	N 79° W	2.98
1866	38.4	+1.7	54.0	21.9	32.1	2.963	4	2.2	N 89° W	3.06
Result to 1866.	36.75	...	55.48	16.19	39.29	10.2	3.148	6.2	N 78° W	2.43
Excess for 1866.	+1.61	...	1.48	+6.71	-6.19	-2.8	0.182	2.2	.....	0.51

MONTHLY METEOROLOGICAL REGISTER, AT THE PROVINCIAL MAGNETICAL OBSERVATORY, TORONTO, CANADA WEST,—DECEMBER, 1896. Latitude—43 deg. 39.4 min. North. Longitude—5 h. 17.33 min. West. Elevation above Lake Ontario, 108 feet.

Table with columns: Day, Barom. at temp. of 32°, Temp. of the Air (6 A.M., 10 P.M., Mean, 3 A.M., 2 P.M., 10 P.M., M.B.N., above Norms), Excess of vapour (6, 2, 10 A.M., P.M., M.N.), Humidity of Air (6, 2, 10 A.M., P.M., M.N.), Direction of Wind (0 A.M., 2 P.M., 10 P.M.), Result Direction, Velocity of Wind (6, 2, 10 A.M., P.M., M.B.N., M.F.N.), Rain in inches, Snow in inches.

REMARKS ON TORONTO METEOROLOGICAL REGISTER FOR DECEMBER, 1866.

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

Highest Barometer 30.313 at 10 a.m. on 20th. } Monthly range = 1.566 inches.
 Lowest Barometer 29.807 at 11 p.m. on 23rd }
 Mean temperature 51° 0 on 8th. } Monthly range = 56° 0
 Minimum temperature 5° 0 on 20th. }
 Maximum temperature 31° 20 } Mean daily range = 11° 10
 Mean maximum temperature 33° 8 from a.m. to p.m. of 21st.
 Mean minimum temperature 23° 6 from a.m. to p.m. of 24th.
 (Greatest daily range 26° 6)
 Warmest day 8th Mean Temperature 45° 20 } Difference = 41° 32
 Coldest day 20th Mean Temperature 1° 88 }
 Maximum Solar Radiation 87° 5 on 7th } Monthly range = 97° 5
 Terrestrial Radiation —10° 0 on 20th }
 Aurora observed on 1 night, viz.:—on 2nd.
 Possible to see Aurora on 18 nights; impossible on 13 nights.
 Snowing on 13 days; depth 15.5 inches; duration of fall 59.7 hours.
 Raining on 7 days; depth 2.790 inches; duration of fall, 46.2 hours.
 Mean of cloudiness = 0.63; Most cloudy hour observed, 2 p.m.; mean = 0.72; least cloudy hour observed, 6 a.m.; mean = 0.53.

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

North.	South.	East.	West.
1812.15	1942.50	977.79	4683.10

Resultant direction, S. 83° W.; Resultant Velocity, 4.98 miles per hour.
 Mean velocity 9.91 miles per hour.
 Maximum velocity 33.7 miles; from 5 to 9 p.m. of 27th.
 Most windy day 27th—Mean velocity 23.05 miles per hour.
 Least windy day 31st—Mean velocity 1.87 miles per hour.
 Most windy hour, noon.—Mean velocity, 11.53 miles per hour.
 Least windy hour, 6 a.m.—Mean velocity, 8.86 miles per hour.

3rd, Solar halo at noon.—7th, Ground fog.—15th, Lunar halo.—16th, Very stormy snow and drift.—21, Lunar corona.—23, Stormy day, very dense fog during the day.

COMPARATIVE TABLE FOR DECEMBER.

YEAR.	TEMPERATURE.				RAIN.	SNOW.	WIND.			
	Mean.	Excess above Average	Maximum observed.	Minimum observed.				No. of days.	Inches.	Inches.	Resultant.	M. Force or Velocity
1840	24.3	-1.0	41.0	-4.4	Inap.	18	...	...	...	1.53 lbs
1841	23.7	+2.5	45.5	2.4	0.600	5	...	...	...	0.61 "
1842	24.7	+1.5	40.3	3.8	0.880	17	...	...	...	0.53 "
1843	30.0	+3.8	41.1	0.7	1.040	8	8.1	...	...	0.40 "
1844	28.2	+2.0	43.0	2.7	Imp.	6	4.2	...	...	0.70 "
1845	21.1	+5.1	37.0	4.0	Inap.	12	4.7	...	...	0.37 "
1846	27.5	+1.3	43.2	3.7	1.215	5	6.0	...	...	0.55 "
1847	30.1	+3.9	50.0	6.6	1.185	8	6.5	...	...	0.37 "
1848	29.1	+2.9	49.1	0.6	2.750	7	16.5	8.83 W	1.12	5.44 ms
1849	26.5	+0.3	41.3	-5.2	0.840	12	9.6	N 82 W	2.56	6.23 "
1850	21.7	-4.5	45.3	9.7	0.190	18	20.5	N 44 W	2.93	7.40 "
1851	21.5	-4.7	43.8	-10.5	1.075	15	10.7	N 82 W	4.00	7.37 "
1852	31.9	+5.7	51.0	13.9	3.905	10	20.1	S 69 W	1.08	6.54 "
1853	25.3	+0.9	42.2	5.2	0.625	13	22.3	N 35 W	2.39	4.98 "
1854	21.9	-4.3	41.8	-5.9	0.590	12	17.2	N 44 W	4.30	8.50 "
1855	26.8	+0.6	45.9	5.1	1.845	10	29.5	S 88 W	5.29	11.38 "
1856	22.9	-3.3	41.2	-9.1	1.790	20	16.3	S 87 W	4.62	11.56 "
1857	31.9	+5.7	45.6	5.7	3.205	14	9.0	N 89 W	2.60	6.84 "
1858	27.4	+1.9	43.0	5.0	1.657	18	10.4	N 78 W	1.66	9.36 "
1859	17.9	-8.8	54.8	-3.3	1.035	23	37.4	N 53 W	4.29	10.77 "
1860	24.0	+2.2	33.5	-7.0	1.862	8	18.5	N 62 W	4.66	10.14 "
1861	31.1	+4.9	55.1	5.7	0.560	8	6.8	N 72 W	3.56	7.96 "
1862	23.8	+0.6	50.0	-2.8	1.945	5	10.4	N 73 W	3.17	7.58 "
1863	27.0	+2.8	51.5	-1.0	2.960	17	7.1	N 41 W	1.61	9.40 "
1864	24.7	-1.5	46.8	-2.3	2.045	18	27.1	S 82 W	4.94	9.98 "
1865	27.7	+1.5	50.4	5.7	1.727	7	6.2	S 81 W	3.07	7.33 "
1866	25.1	-1.1	50.4	-4.3	2.790	13	15.5	S 88 W	4.98	9.91 "
Results to 1864.	26.20	...	45.70	-0.78	1.641	131	14.60	N 71 W	2.97	8.32
Exo. 1866.	-1.14	...	+4.64	-3.62	+1.149	0	+0.81	...	...	+1.59