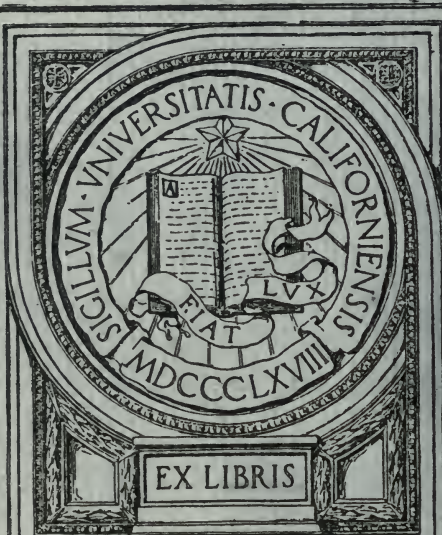


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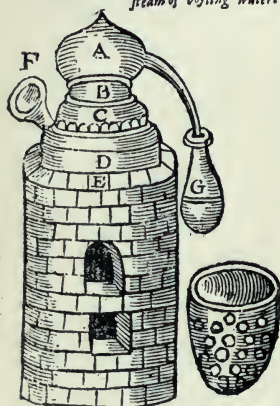
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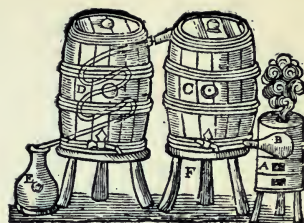


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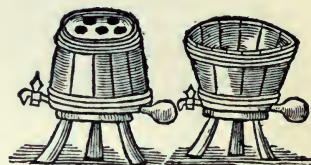
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placed in a brass
vessel made for that
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forated in many
places to receive
the vapour of the
water. This vessel
shall contain the
Alembick compas-
sed about with saw-
dust, not only that
it may the better
and longer retain
the heat of the va-
pours, but also lest
it should be broken
by the hard touch
of the brass ves-
sel.

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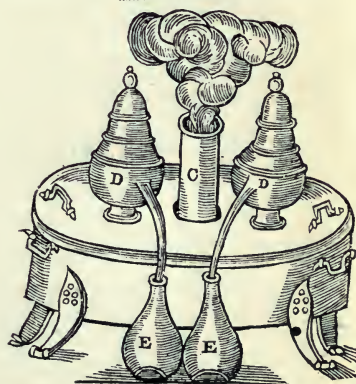
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AN ESSAY

ON THE

APPLICATION

OF

MATHEMATICAL ANALYSIS TO THE THEORIES OF
ELECTRICITY AND MAGNETISM.

BY

GEORGE GREEN.

Rollingban:
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1828,

Über

die Erhaltung der Kraft,

eine physikalische Abhandlung,

vorgelesen in der Sitzung der physikalischen Gesellschaft zu Berlin
am 23sten Juli 1847

VON

Dr. H. Helmholtz.

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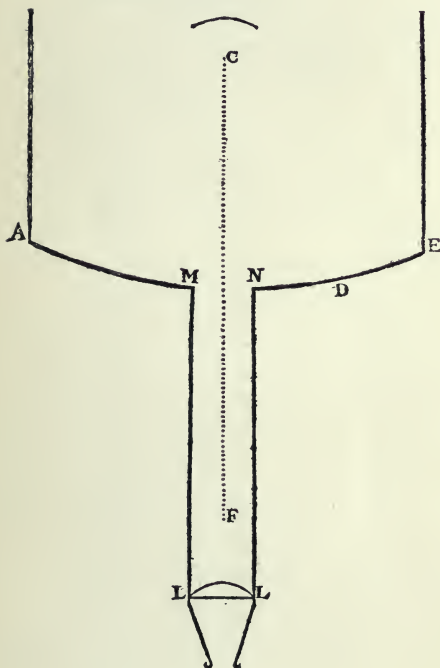
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Oxoniz, & Societatis Regiæ Socio.



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98 DIOPTRICÆ
est a : Similiterque radii qui intra lentem
ad β convergunt, refractione ad NLP à
 b divergunt, hoc est, radiantis AEB , di-
stantiâ datâ VE à lente remoti, imago à
lente $NKMP$ facta est $ae b$ quæ distin-
cta est oculo dato in o ; quoniam in
data distantia oe oculo debita ponitur:
sed & in angulo dato aob videtur ab
oculo o , distantia datâ oL , à lente re-
moto, & lentis craftities VL æqualis est
datæ rectæ, q. c. f.

Eadem constructio infervit, si oculus
presbyta detur: in eo enim casu, $ae b$ in-
finitè distat, & rectæ quæ prius erant aL ,
 bL , ducendæ sunt per L , positione datis o
 a , ob parallelæ, & centrum superficiei N
 LP (per *Corol. 6. Prop. XIV.*) triente re-
ctæ L , ab L distabit.

Quòd si visibile propositum longin-
quum sit, constructio adhuc simplicior
evadet: centrum enim superficiei anteri-
oris KVM (per *Corol. 1. Prop. XIV.*)
triente rectæ v à vertice v distabit.

Prop. XXIV.

[95]

distantiam ejusdem ab oculi centro, ita tangens semianguli visorii
imaginis primæ ex oculi centro, ad tangentem semianguli visorii
ejusdem imaginis primæ, ex vertice suæ emerſionis, vel semiangu-
li visorii imaginis secundæ, ex vertice suæ incidentiæ: & rursus
ut distantia imaginis secundæ, ex vertice suæ emerſionis, ad distanti-
am ejusdem à vertice suæ incidentiæ: ita tangens semianguli visorii
imaginis secundæ ex vertice suæ incidentiæ, ad tangentem semi-
anguli visorii imaginis secundæ ex vertice suæ emerſionis, vel
semianguli visorii imaginis tertie ex vertice suæ incidentiæ: & ita
progrediatur ad semiangulum visorium imaginis ultimæ ex vertice
suæ emerſionis, seu visibilis ex vertice suæ incidentiæ, qui semi-
angulus duplicatus dat angulum visibilis quæritur ex vertice suæ in-
cidentiæ. Demonstrationem videre licet in *Prop. 53 & 57* hu-
jus.

De Mechanica horum speculorum, & lentium, ab aliis frustra
tentata; ego in mechanicis minus versatus nihil dico: audeat
tamen alter, optice perfectionem in lentibus & speculis sphericis
frustra queri. Si vero cui placeat poterit præcipuis hujus tractatus
propositiones, sphericis applicare; erit non adeo perfectæ. Porro
enim sphaeræ (præterquam quod radios parallelos in unum pun-
ctum non congregat) locum imaginis præbet in una superficie
sphaerica, habente idem centrum cum portione; quæ superficies
non potest omnimodo concurrere cum alia superficie sphaerica: &
ita tamen concurrat requirer, saltem ad sensum, ut ex prædictis
satis apparet. Aliæ etiam sunt lentium sphaerarum imperfectiones,
a dictis emergentes: veluti, quod in telescopiis multum am-
plificantiis, pertinet ad imaginem ultimam, vix poterit ultra
duos vel tres gradus dilatare: ut computanti satis patebit; unde
provenit horrenda obscuritas. At contra, lentes hyperbolicas so-
lum obijciunt, quod nihil possit distinctissime videri, præter pun-
ctum visibilis, in axe machine existens: Sed hac infirmitas (si ita
appellare liceat) in ipso oculo est satis manifesta; non tamen na-
ture imputanda; quæ nihil frustra, sed omnia quam commodissi-
me peragit. Nihilominus, lentibus, & speculis conicis non con-
cessis; satis erit portionibus sphaericis uti loco sphaerideon, & co-
noideon parabolicarum, in catoptrica; quam hyperbolicarum in
dioptrica; cum quibus portiones sphaericæ minus conveniunt.

Hic inur ad astra.

Prop.

No. 8656 (page 439).

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ab Hagek.



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Apud heredes Andreæ Wecheli,
M D L X X V.

THADD. HAGECII
aquæ copiam; & lubricant ob visciditatem; &
maximè per vias vtrius transeunt. Quoniam
autem Angli quoque, Cerevisia suo modo parata
vuntur, quid de ea censuerit Bradus Lusitanus,
vir doctus, placuit huic loco subnectere. Is igitur
in libello de ratione victus in febribus ad Anglo-
sia hæc verba scriptum reliquit: Potus, quo
communiter Angli vuntur, multiplex est; nempe
vehemens, medius & imbecillior. Discriminè in-
ter hos penes vehementiam & imbecillitatem, cal-
factionem & refrigerationem, & penes substantiam
crassitatem & tenuitatem habetur. Apud Anglos
triplex semper paratur potus; nempe aquosus,
quem simpliciter Cerevisiam dicunt; medius,
quem trihapenninam; potens, quem duplicem
Cerevisiam nuncupant. Simplex eisdem effe-
ctus præstat, quos vinum aquosum: aperit liqui-
dem, refrigerat & distributionem adiuvat. Nec
decipiatur aliquis credens, ob eius amaritudinè
calfacere: partes enim, quæ Cerevisiam amaram
reddunt, pauca admodum sunt, si ad reliquas
conferas, quæ in ipsa refrigerant. Quod collige-
re ex ratione lupulorum poteris aut aquæ &
hordei portiones. Citò præterea amaritudo à
Cerevisia evanescit: reliquarum verò partiū fa-
culcas tamdiu permanet, donec in aliam trans-
mutetur substantiam. Potens Cerevisia, quæ du-
plicem dicunt, potenter calefacit; & aliquid ha-
bet vehementiæ, ut potens vinum. Trihapen-
nina, mediæ naturæ est; manifestè calefacit, in
nullo tamen vehemens est. Meruinit adhuc
Brudus

in Lobley aduersus pag 471
Cerevisia, à vtriusque Re-
sive Budæ Tritonice Angli
Britannica omni suavis-
sima & saluberrima, calidioribus
regionibus utilissima et cen-
sionissima in parandis ali-
mentis exactissima, et largissi-
ma observationibus, Angli-
tanno in naculo à C.D.I. Coys
plantantur puritissima acceperit

Rec. Aquæ fluxialis B Gal-
mæ 40 fortiorant hinc tam-
conclusionem per partem spiritus for-
tis d. in qua infundit et macta
et modum huius optimi Mal-
mæ utit triti: hinc crude-
redidit per ceram integram
in cupa aut paulo gelid: tam-
per se aspectu, liquore, vultu,
Britannica et Belgica voca-
tur, per se est in vobis

Cerevisia Martia vgo,
tant, maximè albus
sedulitatis, in am-
duntis perducant.

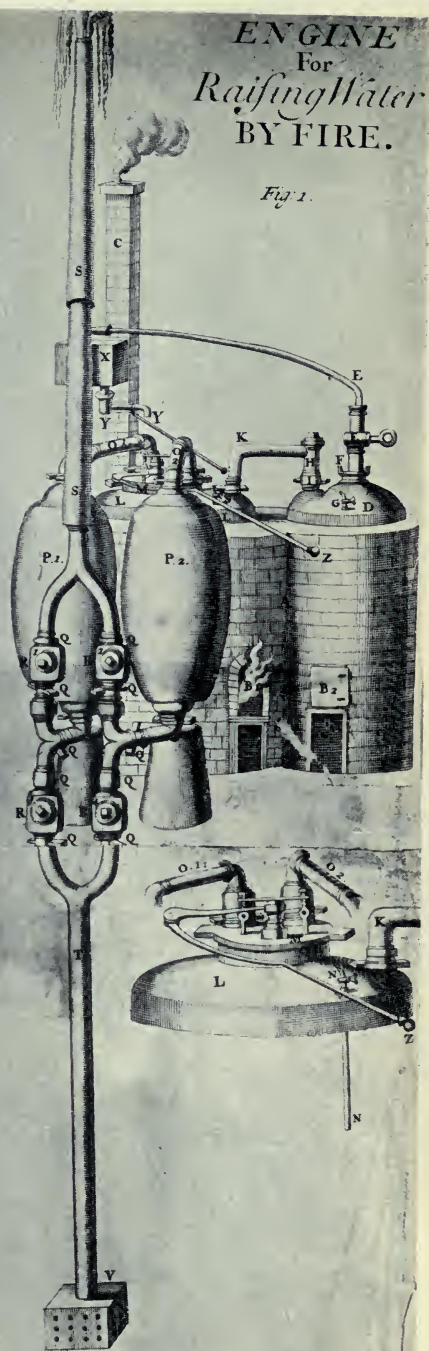
Rec. malte recentis molis,
et vicinis aut, triti Med-
xij. Anone modum
quidam, Pistor aut Fab-
ri, et Tritici tritonice, a-
tantumque Ag: q. s. imple-
bis tribus dolis Aquitan-
mæ, aut Bursopala filis
vobis vegetante Cerevisia
et in vobis tritonice.
Forsitan tertiam Aquæ
tam modo supradictis infun-
tantum vobis aquæ par-
Bursopala tertiam afferunt

Fig: 2.



ENGINE
For
Raising Water
BY FIRE.

Fig: 1.



The
ENGINE
Working in a
MINE.

B. Lens latin: I. Sturt / sculpt

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This work forms perhaps the best testimonial, against the attacks of Harrison and Mudge, to the scrupulous fairness of the Astronomer Royal in testing the new chronometers; though, as mentioned above, Harrison was kept out of the covenanted reward as long as possible for reasons which some have imputed to Dr. Maskelyne. The conditions under which they were examined agree on the whole with the Kew rules of the present day.
- An appendix contains 'Observations of Equal Altitudes of the Sun taken at Portsmouth, Jamaica, and Barbadoes, according to the Time of Mr. Harrison's Watch.'
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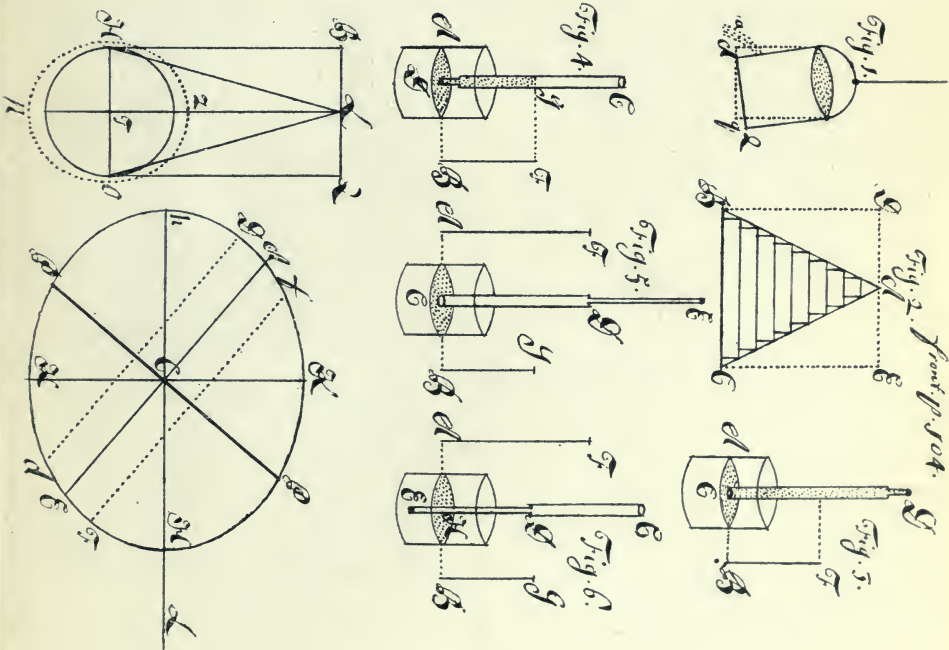
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But 1st of Motion in general.

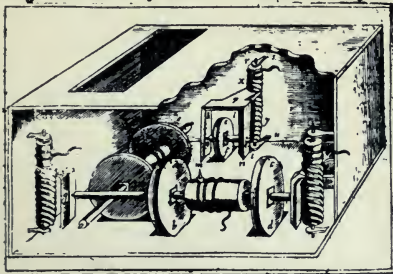
3. Motion is a continued passing out of one place into another, without continuing in any same place for any Time; that Effluvia of Motion, by which a Body moves through a certain Space in a certain Time is called Velocity, or Velocity of Motion. The greater the Force, & Time is impressed upon a Body to make it change its Place, the greater is its Motion. (For the Effect is always proportionable to its Cause) & that Time is called Momentum or Quantity of Motion.

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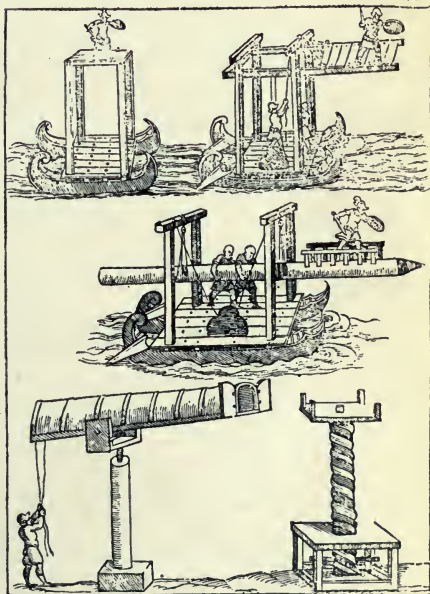
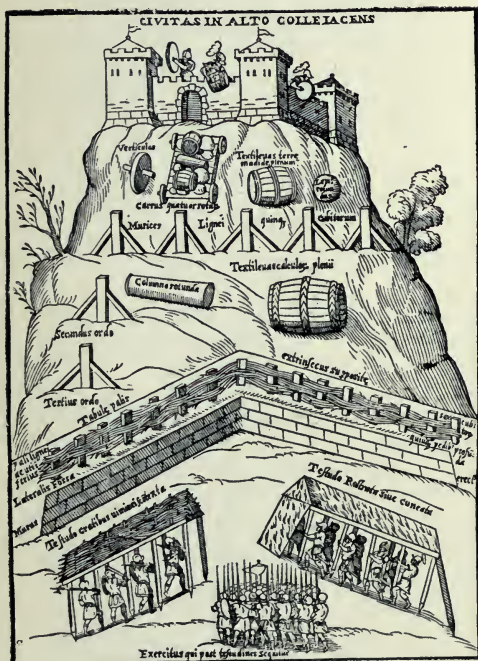
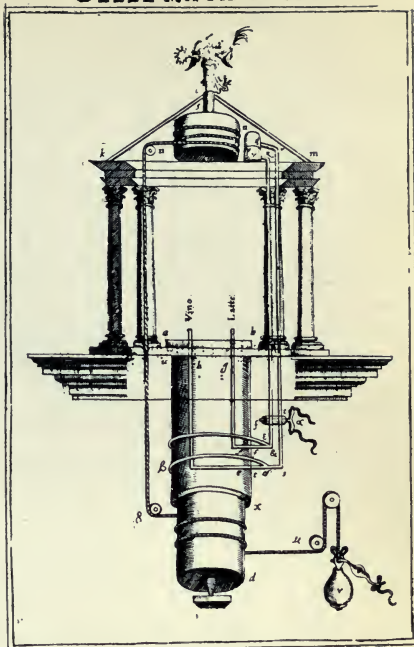
s, t, u, dentro questi si giri la vite x, y, e la lingua q, si cacci nel canale della detta vite. Quando dunque altri girerà la vite, x, y, s'alzerà, & abbasserà il rigolo



I, m, mediante la linguetta q. Accioche poi cìd' per se medesimo si faccia, auluppsi la corda intorno una parte della vite, la quale habba fiambeuoli auluppamenti, & allentamenti aggomitolati, misurati già spati, ne quali si muoue la cassa; e le medesime cose si facciano ne gli altri due rigoli, ne i quali sono le punte q, h. Bisogna però auerire che tre uiti siano al tutto eguali fra loro, e gli allentamenti parimente, accioche le tre uote tutte insieme difendano, perche in questo modo il viaggio della caffeta sarà facile, & insieme sicuro.

Egli è possibile in altro modo ancora fare, che la caffeta pigli le volte, non solo per vn rettangolo, parallelogrammo, ma per qual si voglia figura di linee diritte; Anzi egli si può fare ancora che si muoua a bisficia, e ciò con modo più facile, che non è quello, che di sopra habbiamo in-

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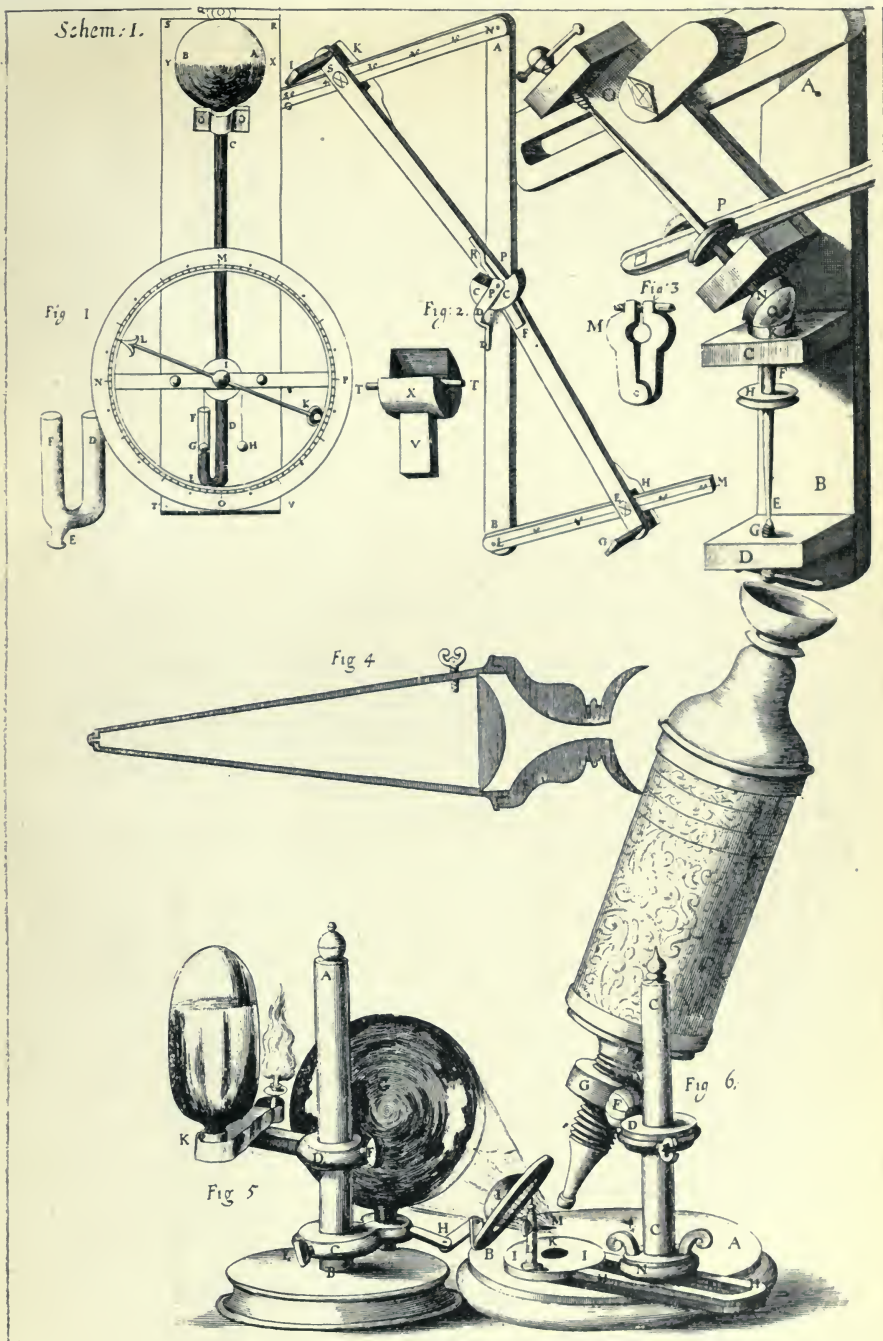
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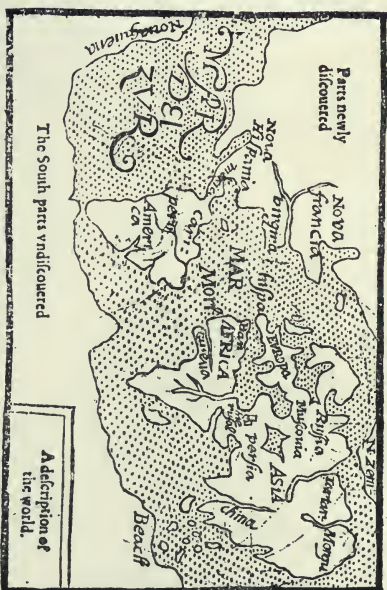


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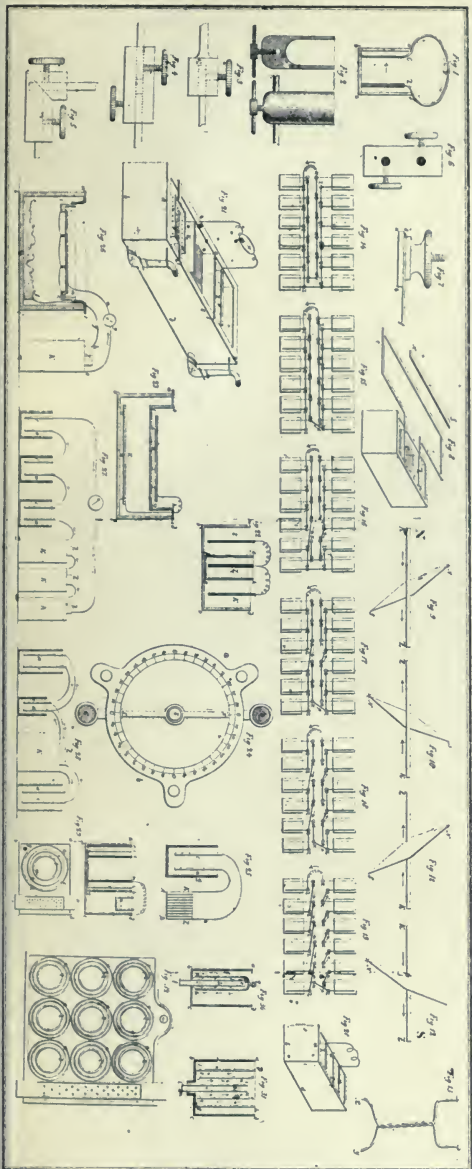
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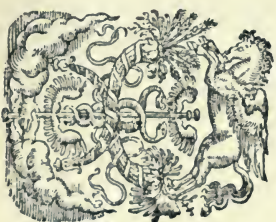
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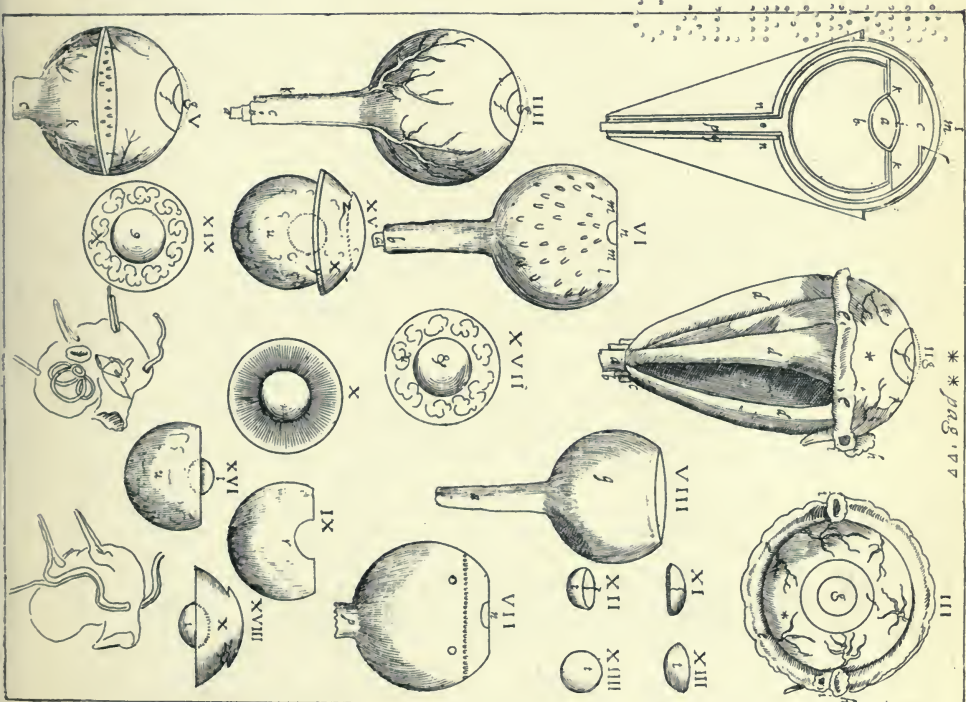


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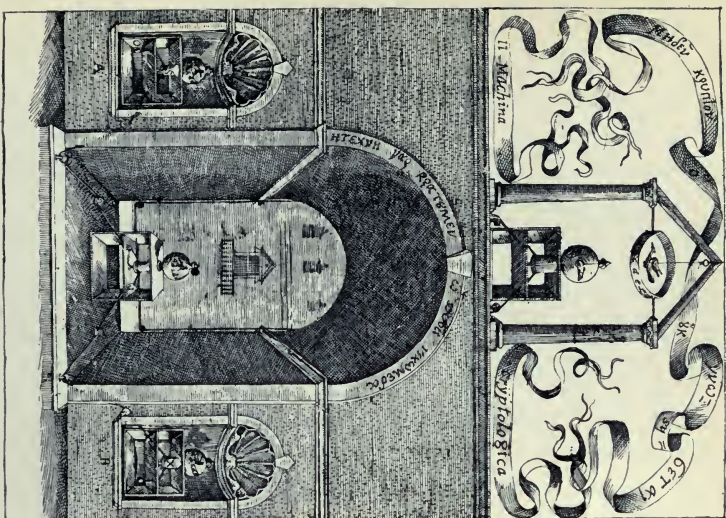
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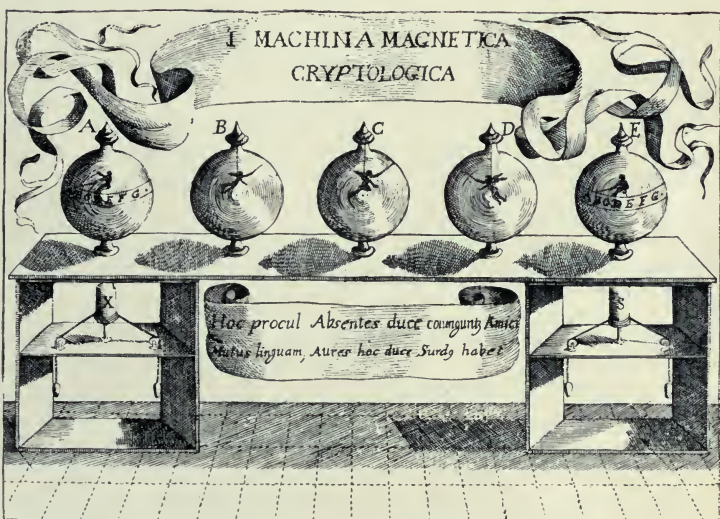


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B b

valla

valla A, & E, primum videlicet & vltimum, in conchibus quibuscunque ductis, ea ratione, qua in precedentibus docuimus, instructa; horum vero cylindrica arte constituantur, ut utroque vna & eadem chorda circumagatur; Ut si cylin-



dus S, vni cum magne circumducatur, circumducatur & eodem tempore cylindrus X cum magne suo; & e contra; Chorda vero per occultos parietum muros deducta, ne mysterium pateat, ad vtrumque cylindrum deueniat. Quod si itaque quatuor constitutus in Camera A loqui vellet amico constituto in Camera

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den ist/ was da überbleibt/ setze von
den ins Creüz/ wo sber dann bey-
de Probzalen oben vnd vnden ins
Creüz einandern gleich / schließ
ich du habist recht getheilt. Als/ ich
wil das letzte Exempel diser Spe-
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diosè demonstranda, Et usui ac-
commodanda.*

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72

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Radix Cubica.

$$\begin{array}{r} 9 \quad 7 \quad 9 \\ 2 \quad 7 \end{array}$$

Triplum Radicis, vel Numerus primus.
Radix ducta in Triplum, id est, Divisor.

$$\begin{array}{r} \dots\dots\dots 1 \quad 2 \quad 5 \\ \dots\dots\dots 2 \quad 2 \quad 5 \\ 1 \quad 3 \quad 5 \end{array}$$

Cubus quotientis, (5).
Quadr. de Quotient. (25.)
in numer. primum (9)
Quotiens (5) ductus in divisorum (27)

$$1 \quad 5 \quad 8 \quad 7 \quad 5$$

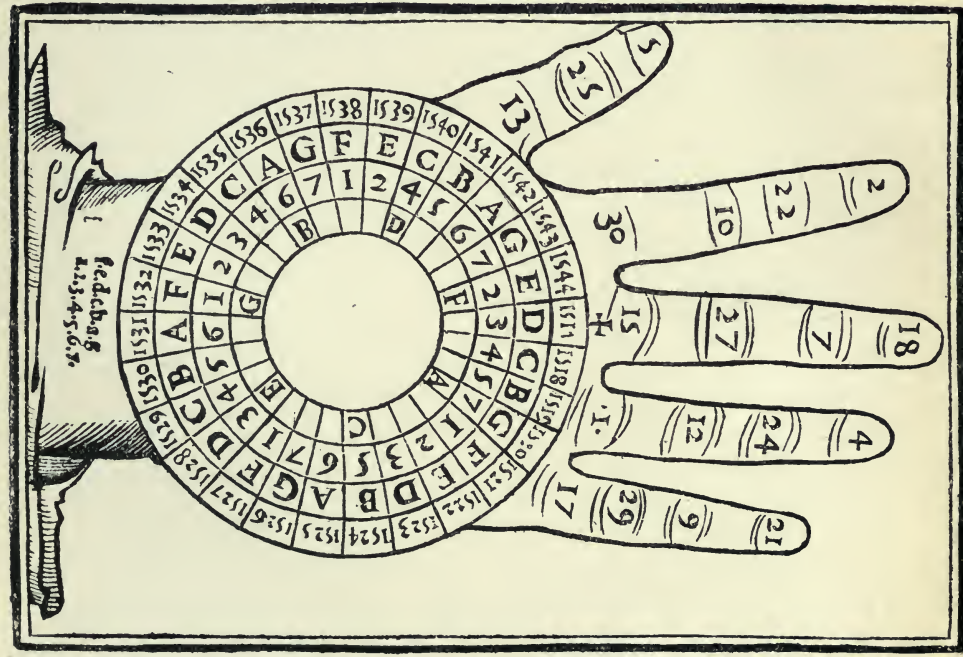
Numerus addit. subtrah. Notatus punctis, queritur ex Tabula, Rad. Cubica de 42. Hic numerus non exat Sumo proxim3 26 cū Radice scribenda sub puncto. Ablatis 27 à 42 restant 15. Triplum Radicis inventa 3, est 9. scribenda sub 7, caractere scilicet proximo sequenti puncto. Eadem radix 3, ducta in hoc triplum 9, facit 27, Divisoro ponendū loco sequenti: Ducatur linea. Quoties 27 in 158, vel 2 in 15? Invenio 3, quæ altera est radix ponendo sub altero puncto. Cubus de 5 est 125, supponendus ipsi puncto ante invento Quotienti. Quadratum Quotientis rursusdem est 25, hoc ductum in Numerum primum vel triplum 9, facit 225, scribenda loco sequenti. Insuper Quotiens 5 multiplicatus in Divisoro 27

$$\begin{array}{r} D \quad 4 \end{array}$$

No. 10569 (*page 526*).

Two early works on Arithmetic.

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 compolto per magistro Fracẽco dala zdio Ve
 ronẽsdquale inũegna afare molte rafone
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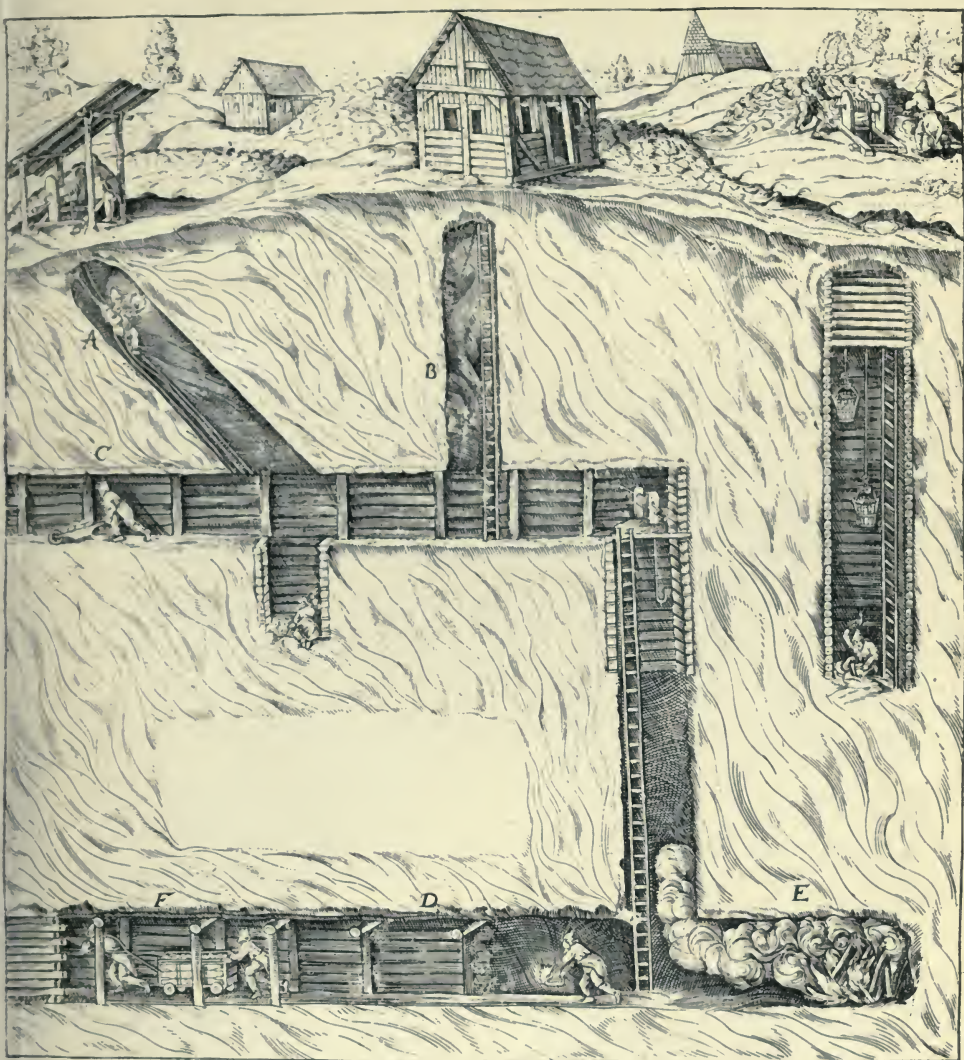
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The work is a highly interesting storehouse (once of great popularity, and now rare in all its editions) of a multitude of mathematical, astronomical, and physical problems. It was based on the work of BACHET DE MÉZIRIAC (v. Nos. 204 and 5901, ante), and included, besides numerous original problems by the author, some taken from Cardan; and in its turn formed the foundation of the works of Mydorgue, Ozanam, Montucla, and Hutton.

Among the more interesting problems are, besides the one mentioned above by M. Libri: 'How to make an instrument that helps to hear' (the speaking tube, the invention of which is ascribed to Sir Samuel Morland in 1671), 'a lampe which goeth not out, though one carries it in one's pocket', several magnetical problems, including 'a secrecie in the Magnes, for discovering things farre remote', 'of the Thermometer', 'how to weigh the lightnesse of the ayre', 'of longitude and latitude', 'how to make a clocke with one wheele', 'how to make a perpetuall motion', etc. etc. etc.

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- 11281 **MAGINI** (Giovanni Antonio; *Univ. Bologna*) De ASTROLOGICA RATIONE, ac Usu DIERUM CRITICORUM seu DECRETORIORUM, ac præterea de cognoscendis ac medendis Morbis ex CORPORUM CÆLESTIUM COGNITIONE. Opus II Libris distinctum, quorum I. complectitur Commentarium in Claudii Galeni Librum III. de Diebus Decretoriis, alter agit de Legitimo Astrologiæ in Medicina Usu; huius additur de Anni Temporis Mensura in Directionibus; et de Directionibus ipsis ex VALENTINI NABODEI scriptis, editio princeps; with astrological diagrams, sm. 4to. sewn (RARE), £1. 1s Venetiis, 1607

'Ouvrage où l'auteur découvre sa faiblesse pour l'astrologie.'—*Biog. Gén.* It is recorded that he was extremely successful in his astrological predictions, which should make this work of great value to British neo-astrologers in the Twentieth Century.

- 11282 — BREVE INSTRUZIONE sopra l'APPARENZE et MIRABILI EFFETTI dello SPECCHIO CONCAVO SPERICO, prima edizione; with numerous diagrams, and printer's device on title and at end, sm. 4to. sewn (RARE), £1. 5s Bologna, 1611

'In this rare work Magini speaks of the rarity of concave mirrors in his time, and mentions several made by himself. . . The mirrors made by him were of a quite extraordinary size, measuring 5 feet in their circumference. They were employed for various uses and especially to ascertain the different heat of the sun during the various seasons. Magini speaks also of the camera obscura as having been described before Porta by Ansonio, in his theory of the Concave Mirror, published by Magini himself.'—*Libri Catalogus.*

'Opuscolo raro e pregiato.'—*Riccardi.*

- 11283 — EPHEMERIDES CÆLESTIUM MOTUUM, ab A. D. 1581 usque ad 1620 [cum Supplemento ad Annum 1630], secundum COPERNICI Hypotheses, Prutenicosque Canones, atque juxta Gregorianam Anni Correctionem accuratissimè supputatæ, ad Long. Gr. 32° 30' sub qua inclytæ Urbs Venetiarum sita est, addita est eiusdem in Stadium Animadversio . . . item Tractatus IV absolutissimi, nempe ISAGOGÆ in Judicariam Astrologiam, de Usu Ephemeridum, de Annui Revolutionibus, et de Stellis Fixis; with portrait et. 27 on rev. of title, woodcuts, and diagrams, 3 vols. 4to. old limp vellum (RARE), £1. 15s Venetiis D. Zenarius 1582 [1616]

- 11284 — EPHEMERIDES CÆLESTIUM MOTUUM, ab A. D. 1611 usque ad 1630, juxta COPERNICI OBSERVATIONES accuratissimè supputatæ, correctæ et auctæ, ad Longitudinem inclytæ Venetiarum Urbis, eiusdem Tractatus II, nempe, ISAGOGÆ in ASTROLOGIAM, et de USU EPHEMERIDUM denuo correcti, et insigniter amplificati, atque COMPENDIUM DIRECTIONUM . . . pro DIRECTIONIBUS . . . additum est SUPPLEMENTUM ISAGOGICARUM EPHEMERIDUM . . . Astrologiæ circa Agriculturam et Navigatoriam Observationes, et Præcepta de Mutatione Aëris Libellus; with woodcuts and diagrams, thick 4to. old limp vellum, £1. 1s ibidem, apud eundem, 1612

This work was unknown to Lalande.

- 11285 — CONTINUATIO EPHEMERIDUM CÆLESTIUM MOTUUM, ab A. D. 1610 usque ad Annum 1630 juxta COPERNICI Observationes accuratissimè supputatarum, ad Long. inclytæ Venetiarum Urbis. Addita sunt: Reductio facilis Motus Solis . . . De Introitu Solis in Singulorum Signorum Initiis . . . Astrologiæ circa Agriculturam et Navigatoriam Observationes et Præcepta, de Mutatione Aëris Libellus; with diagrams, 2 vols. 4to. in 1, old limp vellum, £1. 1s ib., 1607

- 11286 — EFEMERIDE dei MOTI CÆLESTI per Anni xx, da 1581 a 1600, secondo i Fundamenti del COPERNICO, et TAVOLE PRUTENICHE, accomodate alla Riforma dell' Anno di N. S. Gregorio XIII, alla Lunghezza di gr. 32.30' dell' inclita Città di Vinegia, con IV copiosissimi Trattati, il I. introdottorio alla Astrologia, il II. dell' Uso dell' EFEMERIDE, il III. delle Revolutioni, et il IV. delle Stelle Fisse; with woodcut portrait et. 27 on rev. of title, and diagrams, thick 4to. old limp vellum, 15s ibidem, 1583

A copious account of Magini's *Ephem. rides* will be found in Delambre's *Histoire de l'astronomie du moyen âge*. Kepler, who referred to Magini as 'summus in professione mathematica vir', invited him to help in the compilation of new astronomical tables (afterwards known as the Rudolphine Tables). According to *Biogr. Gén.*, this was done by Copernicus—a palpable error, as Copernicus died 12 years before Magini's birth.

- 11287 — NOVE CÆLESTIUM ORBIUM THEORICÆ congruentes cum Observationibus N. COPERNICI, editio princeps; with engraved title, and numerous woodcuts and diagrams, 4to. old limp vellum (back of binding damaged, and some ll. soiled, otherwise a large and sound copy), 18s 6d ib., 1589

- 11288 — TABULÆ SECUNDORUM MOBILIIUM CÆLESTIUM, ex quibus omnium Syderum Aequales et Apparentes Motus ad quævis Tempora præterita, presentia ac futura mira Promptitudine colliguntur, congruentius cum Observationibus Copernici, et Canonibus Prutenicis, atque ad novam Anni Gregoriani Rationem accomodate, secundum Long. inclytæ Venetiarum Urbis; with diagrams and folding table, 4to. old vellum (title and a few ll. slightly mended and some others browned), £1. 1s ib., D. Zenarius, 1585

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According to the same authority, the above and the *Novæ cœlestium orbium theoricæ*, published in 1608, were the only two works in which the author follows wholly the Copernican system. In all the works published between 1585 and 1608 he adopted a curiously involved system of his own, probably inspired by a fear of the Inquisition, with which not many years afterwards Galileo got into difficulties.

- 11289 **MALAISE** (Constantin) Sur les SILEX OUVRÉS de SPIENNES, avec NOTICE ADDITIONNELLE; with 3 plates (2 folding), 8vo. (pp. 18), sewn, with author's inser., 2s 6d Bruxelles, 1866-8

- 11290 **MALLARD** (Ernest, de l'Ecole des Mines) REVUE des PRINCIPAUX TRAVAUX publiés sur la MINÉRALOGIE pendant 1877 et 1878, 8vo. sewn, 2s 6d 1879

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- 11298 **MAILLET (Benoît de) TELLIAMED: or Discourses between an INDIAN PHILOSOPHER and a FRENCH MISSIONARY, on the DIMINUTION of the SEA, the FORMATION of the EARTH, the ORIGIN of MEN and ANIMALS, and other Curious Subjects, relating to Natural History and Philosophy, translated, 8vo. old calf, with MS. Note by Henry Reeve, editor of the 'Greville Memoirs' (see below) and his bookplate (rare), 15s 1750**

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This edition was unknown to Mr. R. Brown (History of Accounting), who only mentions the edition of 1632 of *Scrittura Mercantile*, and that of 1700 of *Scrittura Tutelare*. The *Cambio Reale* was apparently quite unknown to him.

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- 11307 ——— TRAITÉ Physique et Historique de l'AURORE BORÉALE, première édition; with 15 copperplates, 4to. contemporary calf gilt (back slightly wormed), 10s 6d Imprimerie Royale, 1733

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This rare work was quite unknown to Professor de Morgan, nor is it mentioned by Poggendorff, Graesse, or Brunet. There was no copy in the Libri Library.

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1870

Pp. 88-169 contain Ocean Meteorology, and pp. 170-180 Phosphorescence of the Sea.

- 11348 **MANGINUS** (Carolus Antonius, *philosophic doctor*) TABULÆ PRIMI MOBILIS, quibus Nova Dirigendi Ars, et præcipue Circuli Positionis Inventio, non minus facilis, quam exacta ostenditur: cui accedit Compendium de Directionibus juxta aliorum Methodum per easdem Tabulas absolvendis; with engraved title, 12mo. old limp vellum (slightly damaged, and some ll. browned); RARE, £1. 1s
Bononie, 1626

Nothing seems to be known of the author or his work, which was unknown to Riccardi, Houzeau and Lancaster, and Poggendorff, and is not mentioned in Brunet and Graesse.

- 11349 **MANN** (Charles Riborg, *Univ. Chicago*) MANUAL of ADVANCED OPTICS, with 40 illustrations, 8vo. cl., 4s 6d
Chicago, 1902

The first text-book containing the methods of measurement which are based on the interference of light waves.

- 561 HENRY SOTHERAN & CO., 140, STRAND, W.C., AND 43, PICCADILLY, W.
- 11351 **MANN (Isaac John; M.I.C.E.)** RIVER BARS: Notes on the Causes of their Formation, and on their Treatment by 'Induced Tidal Scour', with Description of the successful Reduction by this Method of the BAR at DUBLIN, with 23 illustrations (including folding plates), sq. 8vo. cl., 3s 6d (p. 7s 6d) 1881
- 11352 **MANN (James), and James AYSCOUGH; opticians:** DESCRIPTION of the COMPOUND (commonly call'd the REFLECTING or DOUBLE) MICROSCOPE, with great Improvements, with folding copperplate (pp. 15): DESCRIPTION of the SOLAR, or CAMERA-OBSCURA MICROSCOPE, with folding copperplate (pp. 3), 8vo. sewn (scarce), 10s 6d [c. 1750] 1886
- The chief improvements claimed are an improved objective with an increased magnifying power, and a movable stage. The microscope also contained a parabolic condenser for dark-ground illumination, for which it is claimed that this microscope was the first to use it 'underneath the middle of the stage'.
- 11353 **MANN (William, patentee, Brixton)** DESCRIPTION of a NEW METHOD of PROPELLING LOCOMOTIVE MACHINES, and of communicating Power and Motion to all other Kinds of Machinery, with folding front. of Mann's Patent Locomotive Air Carriage, 8vo. (pp. 56), sewn (scarce), 10s 6d 1830
- 'Presented by the Author to George Ren[nie, F.R.S.], 6th Octob[er] 18 —.'—*Inscr. on title.*
The carriage described was constructed to be driven by compressed air, 'which at a density of 32 atmospheres is sufficient to propel it 14 miles . . . and at 64 atmospheres 3½ miles. The average cost of the power will be about a penny per mile.'
- 11354 **MANNHEIM (Amédée, Colonel d'Artillerie)** COURS DE GÉOMÉTRIE DESCRIPTIVE de l'École Polytechnique, comprenant les ÉLÉMENTS de la GÉOMÉTRIE CINÉMATIQUE, 2^e [dernière] Edition; with 256 diagrams, roy. 8vo. hf. calf gilt, uncut, t. e. g., with Prof. Lloyd Tanner's bookplate, 10s 6d (p. f. 17 nett sewn) 1886
- 11355 **MANNING (James Alexander)** THE UTILIZATION OF SEWAGE: a REPLY to BARON LIEBIG'S LETTER to LORD ROBERT MONTAGU, 8vo. (pp. 32), sewn, 1s 6d [1864]
- 11356 **MANNINGHAM (Henry)** COMPLETE TREATISE of MINES, extracted from the *Mémoires d'Artillerie*, with Professor BELIDOR'S DISSERTATION on the Force and Physical Effects of Gunpowder, with 21 folding copperplates, roy. 8vo. unbound, 6s 6d 1752
- The 'mining' treated in the above work is the less useful art of military undermining.
- 11357 **MANSELL (Major J. H., R.A.)** INVESTIGATION of the LAW of BURNING of MODIFIED CORDITE, with 7 illustrations, roy. 4to. (pp. 20), sewn, 1s 6d 1907
- 11358 **MANSERGH (James, F.G.S.)** LECTURES on WATER SUPPLY, PROSPECTING for WATER, and WELL-SINKING and BORING, with 23 plates (20 folding and linen-mounted), besides woodcuts, roy. 8vo. hf. calf, 4s Chatham, 1882
- 11359 **MANSFIELD (Charles Blachford)** BENZOLE: its NATURE and UTILITY, with 3 woodcuts, 8vo. (pp. 47), cl. (scarce), 10s 6d 1849
- 'Nevil Story Maskelyne (F.R.S.) from his friend C. B. M.'—*Inscr. on title.* The work is important for containing the author's discovery of a method of extracting benzol from coal-tar, which 'laid the necessary foundation for the development of the aniline industry.'—*Prof. E. v. Meyer.* The work also describes 'some of the most important applications of benzol, among others the production of a light of peculiar brilliancy by charging air with its vapour.'—*D.N.B.* Added are some proof sheets of a Lecture on the subject by the author.
- 11360 ——— RESEARCHES on COAL TAR, Part I, 8vo. (pp. 24), sewn, 3s 6d [1849]
- 11361 ——— A THEORY of SALTS: a Treatise on the Constitution of Bi-Polar (Two-Membered) Chemical Compounds [edited with Preface (pp. 25) by M. H. NEVIL STORY MASKELYNE, F.R.S.], with 2 folding plates, thick cr. 8vo. cl., uncut (scarce), 10s 6d 1865
- 'His most important contribution to theoretical chemistry.'—*D. N. E.*
'Mansfield wrote this book to defend the principle, that the facts of voltaic decomposition afforded the true indication, if properly interpreted, of the nature of the saline structure and of the atomicity of the elements that built it up; and he held that this structure or form of constitution is only one, but a most important one, among the types of constitution on which chemical compounds can be moulded.'—*Editor's preface*, which also contains an interesting biographical sketch.
The author died a martyr to science at the early age of 35, from injuries received by carrying a blazing naphtha still into the street, in an attempt to save the premises.
- 11362 **MANTELL (Gideon Algernon, F.R.S.)** GEOLOGICAL EXCURSIONS round the ISLE of WIGHT, and along the adjacent Coast of Dorsetshire; 3rd Edition, with 19 plates, 43 woodcuts, and coloured geological map, post 8vo. cl. (o.p.), 3s 6d 1854
- 'In the infancy of geological science he placed before the world the means by which others could write a thesis or found a system.'
- 11363 ——— The GEOLOGY of the SOUTH-EAST of ENGLAND, with 6 lithographs, numerous woodcuts, and coloured map, post 8vo. hf. calf (scarce), 6s 6d 1833
- 11364 ——— The MEDALS of CREATION; or FIRST LESSONS in GEOLOGY, and in the Study of Organic Remains, with 6 plates (3 coloured), and 167 woodcuts by Sir George Scharf and J. W. Whymper, etc., 2 vols. cr. 8vo. cl., 5s 1844
- 11365 ——— PETRIFICATIONS and their TEACHINGS; or a Handbook to the Gallery of Organic Remains of the BRITISH MUSEUM, with front. and 115 woodcuts, cr. 8vo. cl., 3s 1851
- 11366 ——— PICTORIAL ATLAS of FOSSIL REMAINS, consisting of Coloured Illustrations selected from Parkinson's 'Organic Remains of a Former World', and Artis's 'Antediluvian Phytology', with Descriptions, with 74 COLOURED PLATES, containing nearly 900 figures, 4to. cl., 12s 6d (p. £2. 5s) 1850
- 11367 ——— SKETCH of the GEOLOGY of SURREY (from Brayley's Topographical History of Surrey), with 3 plates (1 coloured), 4to. (pp. 48), unbound, with inscr. to WILLIAM BENJAMIN CARPENTER, F.R.S., from E. W. Brayley, 5s Dorking, 1840
- 11368 ——— The WONDERS of GEOLOGY: or a Familiar Exposition of Geological Phenomena, 6th Edition, with 7 plates (3 coloured), and 198 woodcuts, 2 vols. cr. 8vo. cl., 5s 1848
- 'Mantell was not only a popular lecturer and writer, but also the first to demonstrate the fresh-water origin of the Wealden strata, and by his researches among them [largely during the building of the Brighton Railway, especially in Tilgate Forest at the Balcombe Tunnel and Cutting] to discover four out of the five genera of Dinosaurs known at the time of his death.'—*Prof. T. G. Bonney.*

- 11370 **MANSION** (Paul, *Univ. Ghent*) THÉORIE des EQUATIONS aux DÉRIVÉES PARTIELLES du PREMIER ORDRE; 8vo. sewn, with auto. and MS. corrections by Prof. H. W. Lloyd Tanner, *F.R.S.* (scarce), 4s 6d 1875
- 11371 **MANUFACTUREN** (Die) und FABRICKEN DEUTSCHLANDS nach ihrer heutigen Lage betrachtet und mit allgemeinen Vorschlägen zu ihren vorzüglichsten Verbesserungs-Mitteln begleitet, von dem Verfasser des Lehrbegriffs sämtlicher ökonomischen und Cameralwissenschaften, 2 vols. 8vo. old hf. calf (binding damaged), 6s Frankfurt am Mayn, 1780
- 11372 **MANUSCRIPT** (Astronomical), neatly written on 430 pp., with diagrams, marked 'Optics Vol. 4. From Feb. 12, 1755 to July 1, 1756', and consisting of remarks on astronomical observations, details as to the construction and use of telescopes, etc., 4to. parchment, £1. 5s 1755-6
- 11373 — (Mathematical), in ITALIAN, neatly and evenly written on 150 pp., with diagrams, roy. 4to. parchment (slightly water-stained), £3. 3s Sec. XV.
Mathematical manuscripts of such an early period as the above (late XVth Century) are of rare occurrence. The above MS. is preceded by 3 pp. of a family chronicle by former owners, extending from 1433 to 1599.
- 11374 — : ANOTHER MANUSCRIPT, very neatly written on over 300 pp. of writing paper, with several hundred well-executed diagrams and other illustrations, sm. 4to. contemporary English calf (IN EXCELLENT PRESERVATION), £2. 15s [c. 1710]
This manuscript is divided into the following chapters: Principles of Geometrie: Practical Geometrie: Geometrical Arithmetick: Trigonometry, or the Doctrine of Plain Triangles: Treatise of Regular Fortification: Of Irregular Fortification: Navigation: The Doctrine of Plain Right-angled Triangles, applied in Problems of Mercator's Sailing: OF DIALLING.
The last chapter treats of: The Way of making an Horizontal Dial geometrically: A South Vertical Dial: An East Dial: A West Dial: An Erect Declining Dial: An Equinoctial Dial: The Polar Dial.
- 11375 — : A MANUSCRIPT entitled: ELEMEN [sic] de MATHÉMATIQUE; very neatly written on 461 pages, 4to. old calf (back damaged), £1. 1s Sec. XVIII.
This MS. bears the book-label 'Tixall Library', probably that of Sir Thomas Hugh Clifford, Constable of Tixall Hall, Staffordshire, the botanist, antiquary, and benefactor of French émigrés.
- 11376 — : A MANUSCRIPT, very neatly written on 486 pp., including ASTRONOMY, ARITHMETIC, GEOMETRY, TRIGONOMETRY, MENSURATION, PERSPECTIVE, MECHANICS, FORTIFICATION, GUNNERY, DIALLING, and NAVIGATION, with numerous exceedingly well-executed original drawings in sepia (those of fortification COLOURED), besides diagrams, thick folio, old calf (binding badly damaged), £1. 15s [c. 1760]
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- 11377 — : A SIMILAR MANUSCRIPT, very neatly and clearly written on 568 pp. of strong drawing paper, each page ruled with red ink, with many hundred illustrations, including numerous very pretty drawings in sepia, roy. folio, contemporary English calf gilt (binding slightly damaged and a few water-stains, otherwise in SPLENDID CONDITION), £2. 2s [c. 1756]
The subjects contained in this manuscript are: Arithmetick: Logarithmical Arithmetick: Geometry: Practical Geometry: Mensuration of Superficies: Cask Gauging: Plain Trigonometry: Spherical Geometry: Spherical Trigonometry: Heights and Distances: Geography and the Use of the Terrestrial Globe: The Construction of Maps and Charts: Navigation: Astronomy (including DIALLING): The Gregorian Kalendar [sic]: Of the Shifting of the Tides: Remarkable Observations and Accidents, etc., on board H.M.S. Britannia, Capt. F. R.: Surveying: Perspective: Fortification: Propositions of Motion applied to Mechanical Powers: Gunnery.
It has as frontispiece 'A Plan and Elevation of the Royal Academy in his Majesty's Dock Yard Portsmouth.'
- 11378 **MANUSCRIPTS** (Old English): I. THE METHOD OF DELINEATING upon an HORIZONTAL and PERPENDICULAR PLANE by the PANTOGRAPHICALL INSTRUMENT, 3 pages, with 4 diagrams: II. THE DESCRIPTION of y^e INSTRUMENT, 3 pages, with illustrations and leaf of drawings: III. A DESCRIPTION of the GRAPHICALL COMPASSE as it is used in Epipedography, 1 page, with illustration: IV. TO MAKE the WATER for the WEATHER GLASSE, 2 pages, with illustration—4to., 10s 6d Sec. XVII.
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A rare and very interesting work, and one of the earliest containing copious descriptions and illustrations of contemporary methods of grinding and polishing glass for telescopes. An inscription beneath the portrait states that the author was 'il primo che sin hora habbia perfettamente praticato il fabricare occhiali.'
- 11380 **MANZONI** (Domenico) LA BRIEVE RISOLUZIONE di ARITMETICA universale, in qual si voglia Negotio, dove interviene Numero, Peso, e Misura, con laquale si perviene all' Intelligëtia della Valuta di qualunque Cosa apprettiata à Lire e Soldi di Moneta; with title within woodcut border, and fine and large woodcut initials, 12mo. contemporary limp vellum (binding damaged, also water-stained, and a few holes in last l.); VERY RARE, £2. 2s [col.:] Vinegia, al Poggio delle Gride in Rialto, 1553
An extremely rare work, described in the Supplement to Riccardi, who only knew one copy in the possession of Andrea Tessier. There was no copy in the Libri Library, nor was it known to Prof. de Morgan or Pogendorff, who do not even mention the author's name.
- 11381 **MARCHAL** (—, *ingénieur des constructions navales*) Les NAVIRES de GUERRE les PLUS RÉCENTS; with 30 woodcuts, 8vo. (pp. 127), hf. calf, 2s 6d 1876
- 11382 **MARCHETTI** (Alessandro, *da Pontormo*): PROBLEMATI VI à Leidensi quodam Geometra CHRISTOPHORO SADLERIO missa; ab hoc verò Germanis, Italisque Mathematicis proposita: resoluta ab A. M.; accesserunt bina eiusdem Auctoris THEOREMATI GEOMETRICA; with diagrams, 18mo. (pp. 48), sewn (rare), 7s 6d Pisis, 1675

- 11384 **MAQUENNE** (Léon) Les SUCRES et leurs principaux DÉRIVÉS, 8vo. (pp. 1032), *cl.*, 7s 6d
(p. F. 16. nett) 1900

This valuable work consists of a *résumé* of all the scientific researches on sugar which had hitherto been dispersed throughout the scientific journals of the various nations.

MARAT SAVANT :

- 11385 [**MARAT** (Jean Paul), *Docteur en Médecine et Médecin des Gardes-du-Corps de Monseigneur le Comte d'Artois*; *M.D. of St. Andrews*; *killed by Charlotte Corday*] MÉMOIRE sur l'ELECTRICITÉ MÉDICALE, couronné le 6 Août 1783, par l'Académie Royale des Sciences, Belles-Lettres et Arts de Rouen, 8vo. *sewn* (RARE), 15s 1784

This work has the merit of being one of the first to treat soberly the subject of electro-therapeutics at a time when electricity was thought to be a panacea for every known disease, and when generally far more harm (referred to on p. 100) than good was done by the electrical enthusiasts.

- 11386 [—] NOTIONS ÉLÉMENTAIRES d'OPTIQUE; with 2 copperplates, 8vo. boards, *uncut* (slightly water-stained); RARE, £1. 1s Didot, 1784

Though now chiefly known as one of the most hideous monsters of the Terror, and as the author of *L'Ami du Peuple*, the revolutionary journal, Marat was previously the author of works of no small scientific value. He was one of the first to attack Newton's emission theory of light—a heresy which prevented his election to the French Academy. He translated Newton's *Opticks* into French (*q. v. post*).

The above work gives the author's own theory—a curious variety of the corpuscular one.

- [—] OPTIQUE de NEWTON, Traduction Nouvelle, faite par M*** (1787)—v. NEWTON, *post*.
11387 — RECHERCHES PHYSIQUES sur l'ELECTRICITÉ; with 5 folding plates, 8vo. *sewn* (VERY RARE), £1. 15s 1782

This, like the rest of the author's works, is full of original ideas and experiments. Pp. 345-53 contain an interesting chapter, 'Des Phénomènes électriques relatifs à l'Ebranlement de la Lumière,' in which he attempts an explanation of the phenomena.

- 11388 — PHYSISCHE UNTERSUCHUNGEN über die ELEKTRICITÄT, übersetzt, mit Anmerkungen, von C. E. WEIGEL; with 5 folding plates, 8vo. boards, with *auto.* of C. G. Eschenbach (Prof. Chemistry, Univ. Leipzig, 1753-1831), 12s 6d Leipzig, 1784

- 11389 — RECHERCHES PHYSIQUES sur le FEU; with 7 folding plates, 8vo. *sewn* (RARE), £1. 5s 1780

- 11390 — ANOTHER COPY, boards, *uncut*; or, *hf. cl.* (both nice clean copies), £1. 8s 6d

In this work the author attempts to give, by his theory of a *fluide igné*, a mechanical explanation of the phenomena of heat.

Marat stayed many months in England, and some time, as a teacher of French, in Edinburgh, where he published in 1774 a revolutionary pamphlet 'The Chains of Slavery.' On the recommendation of certain Edinburgh physicians he received the degree of M.D. from St. Andrews University. According to Chambers's *Encyclopædia*, he was already dying of 'a loathsome skin disease,' contracted while hiding in the sewers of Paris from Lafayette's police, when he received his death-blow from Charlotte Corday. The last two works contain the *Privilège* from Louis XVI. to his 'bien aimé, le sieur Marat', who afterwards was the most ruthless promoter of his murder.

All his scientific works are now VERY RARE.

- 11391 — PHYSISCHE UNTERSUCHUNGEN über das FEUER, übersetzt, mit Anmerkungen, von CHRISTIAN EHRENFRIED WEIGEL, 8vo. *sewn*, 6s 6d Leipzig, 1782

- 11392 **MARAVIGNA** (C.) TAVOLE SINOTTICHE dell' ETNA, che comprendono la Topografia, la Descrizione de' Fenomeni, la Storia delle Eruzioni e la Mineralogia di questo Vulcano, Edizione 2da, accresciuta, folio folded to 8vo. *unbound*, 3s 6d Parigi, 1838

- 11393 **MARCELLI** (Hercule, *da Matelica*) OPERA nuovamente composta, nella quale si contengono 8 MODI di TARIFFE sopra delli dui nobilissimi Metalli, cioè, ORO et ARGENTO; de diverse BONTÀ, ovvero FINEZZE, cõ li loro limitati PREGI, secondo il COSTUME di VINETIA; with *woodcut title, device at end, woodcuts, and numerous pretty woodcut initials*, 12mo. *old hf. vellum* (some *ll. water-stained, and one slightly defective*); VERY RARE, £2. 5s

[*col. :*] *Venetia, per Francesco Marcolini, 1556*

A very rare work, known to Riccardi (who is unable to give a collation or full description) only by repute, and unknown to Poggenorff, Brunet, Graesse, and other bibliographers. There was no copy in the Libri Library.

- 11394 **MARCET** (Alexander John Gaspard, M.D., F.R.S.; *husband of Mrs. Jane Marcet*) CHEMICAL ACCOUNT of an ALUMINOUS CHALYBEATE SPRING in the ISLE of WIGHT, 4to. (pp. 36), *sewn, with author's inser.*, 3s 1811

- 11395 **MARCET** (François) REMARQUES sur un MÉMOIRE de M. CHARLES MARTINS relatif à l'ACCROISSEMENT NOCTURNE de la TEMPÉRATURE avec la HAUTEUR dans les Couches Inférieures de l'Atmosphère, avec Note sur les Effets du Rayonnement Nocturne au-dessus des Grandes Surfaces d'Eau, 8vo. (pp. 21), *sewn, with inser. to Sir E. Frankland, F.R.S.*, 2s 6d 1861

- 11396 [**MARCET** (Jane)] CONVERSATIONS on CHEMISTRY; in which the Elements of that Science are familiarly explained and illustrated by Experiments; 4th Edition, considerably enlarged, with 14 plates, 2 vols. fcap. 8vo. *contemporary hf. morocco gilt*, 10s 6d 1813

- 11397 — SIXTEENTH EDITION, revised and corrected, with 18 plates, 2 vols. fcap. 8vo. *cl.*, 5s 1853

This work will always retain a peculiar interest for having initiated Faraday, when a bookseller's errand-boy, into chemical knowledge. He acknowledged this fact in 1858 in an interesting letter to M. de la Rive (*cf. Dr. Bence Jones's Life and Letters of Faraday*).

- 11398 — CONVERSATIONS on NATURAL PHILOSOPHY; in which the Elements of that Science are familiarly explained, and adapted to the Comprehension of Young Pupils, 13th Edition, with 24 plates, thick post 8vo. *cl.*, 3s 1858

- 11399 **MARCET** (William, M.D., F.R.S.) CHEMICAL INQUIRY into the PHENOMENA of HUMAN RESPIRATION, with 2 plates, roy. 4to. (pp. 31), *sewn, with inser. to Edward Whymper*, 2s 6d 1890

- 11400 — On the COMPOSITION of FOOD, and how it is ADULTERATED, with practical Directions for its Analysis, with numerous woodcuts, and folding table, 8vo. *cl.*, 3s 6d 1856

- 11401 — CONTRIBUTION to the HISTORY of the RESPIRATION of MAN, with Supplementary Considerations of the Methods of Inquiry and Analytical Results; with numerous plates, charts, and diagrams, impl. 8vo. *cl.*, with *auto. and MS. notes by Edward Whymper*, 5s (p. 12s 6d) 1897

- 11403 **MARCHAND** (Richard Felix, *Univ. Halle*) LEHRBUCH der PHYSIOLOGISCHEN CHEMIE; one vol. in 3 parts 8vo. *sewn*, 2s 6d *Berlin*, 1842-4
- 11404 —, und Karl Johann August Theodor **SCHEERER**: Ueber das CHEMISCHE ÄQUIVALENT des MAGNESIUMS; with folding plate, 8vo. (pp. 27), *sewn*, with *inscr. to Sir Charles Lyell, F.R.S.*, 4s 6d [*Leipzig*, 1850]
- Important in connexion with the determination of the atomic weight of magnesium. The pamphlet is preceded by an interesting historical sketch on the subject.
- 11405 **MARCHIS** (L.; *de la Sorbonne*) LECONS sur la PRODUCTION et l'UTILISATION des GAZ PAUVRES; lithographed on 354 pp., with 2 plates and 130 other illustrations, 4to. cl. (o. p.), 8s 6d [1906]
- 11406 **MARCI** (Adolph Frederik, *boekhouder*) Het VERMAAKELYK REEKEN-KONSTIG SPEL van de QUADRATA MAGICA, of zo genaamde Toover-Vierkanten van 12 maal 12 Perken, op het Jaar-Getal 1743, nevens Appendix, bevattende verscheide Voorstellen, zo uit de Cyffer-Meet-als Stel-Konst, enz.; with 4 plates, and 3 folding tables, 4to. *sound copy in old hf. calf*, *uncut*, 15s *Amsterdam*, 1744

A rare work on magic squares, unknown to Poggendorff, Graesse, Ebert, and other bibliographers.

- 11407 **MARCKWALD** (Willy, *Univ. Berlin*) Über BEQUERELSTRAHLEN und RADIO-AKTIVE SUBSTANZEN; with illustrations, roy. 8vo. *sewn*, 1s 6d *Berlin*, 1904
- 11408 — Ueber die BEZIEHUNGEN zwischen dem SIEDEPUNKTE und der ZUSAMMENSETZUNG CHEMISCHER VERBINDUNGEN welche bisher erkannt worden sind, roy. 8vo. (pp. 55), *sewn*, 3s *ibid.*, 1888

This essay was awarded the prize by the Philosophical Faculty of the University of Berlin. The author is the discoverer of 'phototropy.'

- 11409 **MARCUCCI** (Lorenzo) SAGGIO ANALITICO-CHEMICO sopra i COLORI MINERALI, e Mezzi di procurarsi gli ARTEFATTI, gli SMALTI, e le VERNICI, ed Osservazioni sopra la Pratica del dipingere ad Olio, ecc., col Note di PIETRO PALMAROLI, 2^a Edizione, aumentata; with folding plate, 8vo. *sewn*, *uncut*, 6s *Roma*, 1816
- 11410 **MARCUCE** (Adolf, *Univ. Berlin*) BEMERKUNGEN zu dem BERICHT der Herren SCHNAUDER und Dr. HECKER über die am PHOTOGRAPHISCHEN ZENITHTELESKOP erhaltenen RESULTATE, 4to. (pp. 11), *sewn*, 2s [*Berlin*, 1896]
- 11411 — ERGEBNISSE der POLHÖHENBESTIMMUNGEN in BERLIN, ausgeführt 1889-91, am Universal-Transit der königlichen Sternwarte, roy. 4to. (pp. 29), *sewn*, 3s *ibidem*, 1902
- 11412 **MARÉCHAL** (Henri) Les TRAMWAYS ÉLECTRIQUES: Dispositions générales, Voie, Tramway à Conducteurs Aériens, Souterrains etc. etc., Production et Transformation de l'Électricité, Exploitation, Dépenses, 2^e [dernière] Édition, refondue; with 188 illustrations, 8vo. cl., 4s (p. F. 10 *net*) 1902
- 11413 **MARESTIER** (Jean Baptiste, *ingénieur de la Marine royale*) MÉMOIRE sur les BATEAUX à VAPEUR des ÉTATS-UNIS d'AMÉRIQUE, avec Appendice sur diverses Machines relatives à la Marine, précédé du RAPPORT fait à l'Institut sur ce Mémoire, par MM. SANÉ, BIOT, POISSON, et C. DUPIN; roy. 4to. cl. (*damaged and name torn off title, also wanting Atlas*), 6s 6d *Imprimerie Royale*, 1824
- 11414 — ANOTHER COPY (*Atlas wanting*), *hf. calf* (*rubbed*), with *auto. of George Rennie, C.E.*, *F.R.S.*, 7s 6d

'Chargé de faire l'application des principes qu'il avait émis dans cet ouvrage, il construisit le premier bâtiment à vapeur et le premier appareil à basse pression que la marine française ait possédé.'—*Biogr. Gén.*

- 11415 **MARETT** (P. R.) YACHTS and YACHT BUILDING: a Treatise on the Construction of Yachts, and other Matters relating to Yachting, with 10 folding plates, and 2 tables, 8vo. cl., 6s 1856
- 11416 **MAREY** (Étienne Jules; *de l'Institut*) ANIMAL MECHANISM: a Treatise on Terrestrial and AERIAL LOCOMOTION, with 117 woodcuts, cr. 8vo. cl., 2s 6d (p. 5s) 1874
- Describing some very ingenious apparatus of the author's invention to ascertain the mode of flight of birds and insects.
- 11417 — Le MOUVEMENT; with 3 plates and 214 illustrations, cr. 8vo. *buckram* (o. p.), 5s 1894
- 11418 — MOVEMENT; translated by ERIC PRITCHARD, with 204 illustrations, post 8vo. cl., 3s 6d (p. 7s 6d) 1895

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$$\begin{array}{r} \text{Fact } \frac{1}{2} \\ 3 \frac{11}{12} \text{ by } 5 \\ \hline 7 \end{array} \quad \begin{array}{r} 6 \frac{3}{7} \\ 8 \\ \hline 4 \frac{1}{2} \text{ by } 3 \frac{1}{2} \\ \hline 2 \frac{1}{2} \end{array} \quad \begin{array}{r} \text{Fact } 15 \frac{1}{2} \end{array}$$

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$$\begin{array}{r} \frac{1}{2} \text{ by } 9 \\ \hline 1 \frac{1}{2} \\ \text{Fact } 7 \frac{1}{2} \end{array} \quad \begin{array}{r} \frac{1}{2} \text{ by } \frac{1}{2} \\ \hline \frac{1 \times 1}{2 \times 2} \\ \text{Fact } \frac{1}{4} \end{array} \quad \begin{array}{r} 4 \frac{1}{2} \text{ by } 3 \frac{1}{2} \\ \hline 13 \frac{1}{2} \\ 2 \frac{1}{2} \\ \hline \text{Fact } 15 \frac{1}{2} \end{array}$$

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The author was a well-known crank, who in turn offered for sale his supposed discovery of constructing the trineines of the ancients to the French government, and his revision of the Old Testament, after a novel method of his own, to the British government for the paltry sum of £20,000. He also pretended to have discovered the authentic text of St. Jerome's commentary on the Book of Job, supposed to have been lost, for which he refused an offer of 10,000 florins.

Following an invitation to Sweden by the learned and eccentric Queen Christina, Meibom caused the musical instruments of the ancients to be made from instructions contained in the above work in order to revive the ancient Greek music before the Swedish court. As he further insisted on improving the performance by the accompaniment of his own harsh voice, the attempt caused great merriment. He considered himself insulted, and in a fit of rage boxed the ears of the Queen's physician, which at once put a stop to the revival of 'classic' music, and to his further stay in Sweden.

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The above first edition of the *Doctrina*, the only independent scientific work published by Luther's fellow-labourer in the Reformation, is excessively rare, and was unknown to Graesse, Poggendorff, and Kästner. The former quotes the editions of 1555, 1559, and 1587, while the other two only knew an edition of 1581. The work is not mentioned at all by Brunet and Ebert.

According to Kästner, the first book of the *Doctrina* contains a more lucid exposition of astronomy than is to be found in many treatises published during the XVIII. Century.

Melanchthon also wrote prefaces to Arati *Phænomena*, 1521, Purbachii *Theorica*, 1534 [v. No. 3562, ante], Schoneri *Tabulæ Astronomicæ*, 1536, Alfragani *Rudimenta Astronomicæ*, 1537, Joannis de Sacro Bosco *Libellus de Sphæra* [v. No. 4174, ante], and Stifel's *Arithmetica Integra*, 1544 [q. v. post], wrote a commentary on Ptolemy's *de Predictionibus Astronomicis*, 1533, and described some eclipses in Bonincontri de *Rebus Cælestibus*, 1540.

'Il admettait cinq facultés de l'âme: *potentiam vegetativam, sentientem, appetitivam, locomotivam et rationalem*. La révélation divine était pour lui l'un des *critéria* de la certitude. Dans ses *Initia Doctrinæ Physicæ*, il n'admettait pas l'opinion d'Aristarque, démontrée depuis par Kopernick: 'C'est, dit-il, une doctrine contraire à la Bible, et qu'on peut d'ailleurs refuter par la physique, que la Terre et les planètes tournent autour du Soleil.' . . . Il était convaincu avec Platon 'que les étoiles ont été créées pour les yeux de l'homme.'—Dr. F. Hoefler.

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Both the above copies contain the large folding map, 'The Silurian Region and adjacent Counties of England and Wales geologically illustrated', which is often missing.

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The above copy originally belonged to George Rennie, C.E., F.R.S.

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as to the *first application* of the gas, as an *economical substitute* for oils and tallow, in the production of light for public and private purposes. This is what I have claimed, and for which I have been honoured with the Royal Society's gold medal; disgraced, I should rather say, if I have *no claim* to the merit thus imputed to me.

But how has this committee stripped me of my claim? Did the German *Diller*, by his philosophical fire-works at the Lyceum, by "his large lustrés of little flames in the centre of the room," exhibited for the amusement of the curious and ignorant, make the application of gas to purposes of public and private *utility*; guarding, as I am informed he did, at the same time, his mode of proceeding, with all the mercenary caution of a juggler? Can the Gas-Committee set this puppet-

In Parliament.

REMARKS

UPON THE

BILL

FOR

INCORPORATING

THE

GAS LIGHT

AND

COKE COMPANY.

LONDON:

Printed by GEORGE SIDNEY, Northumberland-street, Strand.

1809.

A
LETTER,
TO A
MEMBER OF PARLIAMENT,
FROM
Mr. William Murdock,
IN
VINDICATION
OF HIS
CHARACTER AND CLAIMS,
IN
REPLY
TO A
RECENT PUBLICATION,
BY THE
Committee
FOR
CONDUCTING THROUGH PARLIAMENT
A BILL
FOR INCORPORATING A
GAS-LIGHT & COKE COMPANY.

LONDON:

PRINTED BY GALABIN AND MARCHANT, INGRAM-COURT,
FENCIBLE-STREET.
1809.

An account of the application of the Gas from Coal to economical purposes, by Mr. WILLIAM MURDOCK, read before the Royal Society, on the 25th February, 1808, and printed in the Philosophical Transactions for that year.

The facts and results intended to be communicated in this paper, are founded upon observations made during the present winter at the Cotton Manufactory of Messrs. Philips and Lee at Manchester, where the light obtained by the combustion of the Gas from Coal is used upon a very large scale; the Apparatus for its production and application having been prepared by me at the Works of Messrs. Boulton, Watt, and Co. at Soho.

The whole of the rooms of this Cotton Mill which I believe, the most extensive in the united Kingdom, as well as its counting houses and store rooms; and the adjacent dwelling house of Mr. Lee, are lighted with the Gas from Coal. The total quantity of light used during the hours of burning, has been ascertained by a comparison of shadows, to be about equal to the light which 2500 mould candles, of six in the pound, would give; each of the candles with which the comparison was made, consuming at the rate of $\frac{1}{10}$ of an ounce, (175 grs.) of tallow per hour.

The quantity of light is necessarily liable to some variation, from the difficulty of adjusting all the flames so as to be perfectly equal at all times. But the admirable precision and exactness with which the business of this Mill is conducted, afforded as excellent an opportunity of making the comparative trials I had in view, as is perhaps likely to be ever obtained in general practice. And the experiments being made upon so large a scale, and for a considerable period of time, may I think be assumed as a sufficiently accurate standard for determining the advan-

Nos. 12294-7 (page 612).

The invention of gas lighting.

RABDOLOGIÆ,
SEV NVMERATIONIS
PER VIRGULAS
LIBRI DVO:

Cum APPENDICE de expeditif-
fimo MULTIPLICATIONIS
PROMPTUARIO.

Quibus accessit & ARITHMETICÆ
LOCALIS LIBER VNVS.

*Authore & Inventore IOANNE
NEPERO, Barone MER-
CHISTONII, &C.
SCOTO.*



EDINBURGI,
Excudebat *Andreas Hart*, 1617.

CAPYT PRIMVM.

4^a Facies quarte virgula

	1	2			
1	2	7	6	9	
2	4	9	5		
3	6	5	8	7	
4	8	7	4		
5	10	0	5		
6	12	7	8		
7	14	7	1		
8	16	9	1		
9	18	8	7		
		8	7		

4^e. Facies saxe virgula

	1	3			
	1	3	7	4	5
2	6	9	8	4	
3	9	5	2	7	
4	2	8	0	3	
5	5	0	0		
6	8	3	7		
7	2	4	8	1	
8	2	9	1	5	
9	2	8	9		

4^a Facies septimae virgula

	2	4			
1	4	2	5	4	
2	8	7	9	0	
3	1	9	5	5	
4	1	6	8	0	
5	2	0	4	5	
6	2	4	5	0	
7	2	8	7	5	
8	3	2	9	0	
9	3	6	8	5	

4^a. *Facies octava viridis.*

	2	3			
	2	3	9	7	5
	4	6	9	5	8
	6	9	6	7	4
	8	1	2	7	9
	1	0	1	5	3
	1	2	1	8	5
	1	4	2	1	2
	1	6	2	4	1
	1	8	2	7	7

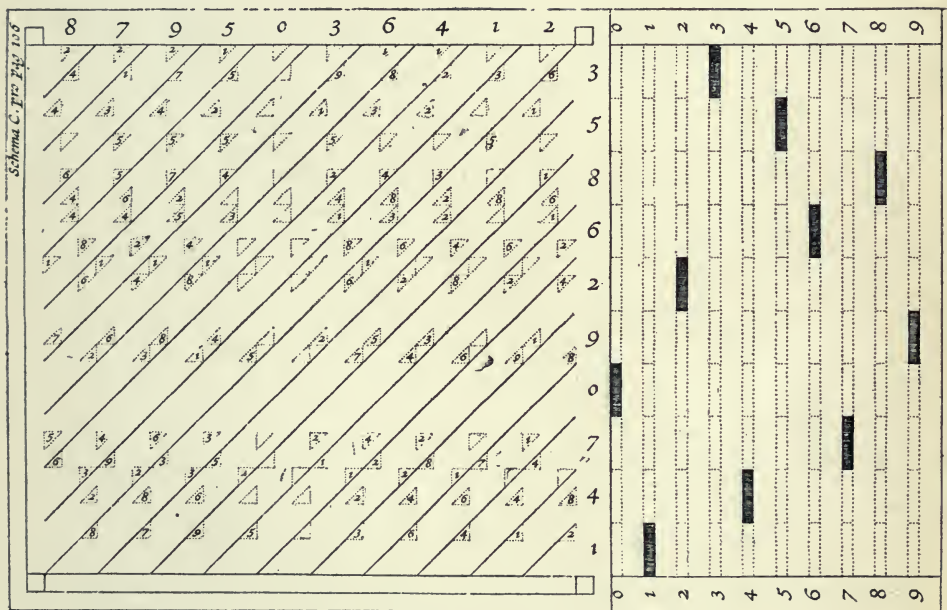
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4

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4



Nos. 12339-41 (*page* 614).

Counting by rods ('Napier's Bones').

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Venetiis, 1580
The author was professor of mathematics in the University of Cologne, and according to *Allgemeine Deutsche Biographie*, an adept in astrology, who had found a new method of casting the horoscope.
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- An invaluable work to the amateur astronomer, including a good bibliography of the best astronomical works, ancient and modern.
- 12473 — The PROBLEMS of ASTRONOMY, 8vo. (pp. 10), sewn, 1s Washington, 1898
- 12474 — On the RECURRENCE of SOLAR ECLIPSES, with Tables of Eclipses from B.C. 700 to A.D. 2300, 4to. (pp. 55), sewn, 2s 6d ib., 1879
- A very interesting memoir.—G. F. Chambers, F.R.A.S.
- 12475 — The REMINISCENCES of an ASTRONOMER, with portrait, 8vo. cl., 4s (p. 10s 6d) 1903
- 12476 — RESEARCHES on the MOTION of the MOON, made at the United States Naval Observatory, Washington: Part I: REDUCTION and DISCUSSION of OBSERVATIONS of the MOON before 1750, 4to. sewn, 6s Washington, 1878
- Investigating the errors of Hansen's Lunar Tables (*q. v. ante*) as compared with observations before 1750.
- 'Newcomb further showed that small residual irregularities are still found in the moon's movements, inexplicable either by any known gravitational influence, or by any uniform value that could be assigned to secular acceleration.'—Miss Agnes M. Clerke.
- 12477 — La THÉORIE du MOUVEMENT de la LUNE: son Histoire et son État actuel, impl. Svo. (pp. 9), sewn, with author's inser., 1s 6d Roma, 1909
- 12478 — SIMON NEWCOMB: MEMORIAL ADDRESSES by Charles K. Wead, James Bryce, Milton Updegraff, R. S. Woodward, etc. etc., with portrait, roy. 8vo. (pp. 35), sewn, 1s 6d Washington, 1910
- 12479 **NEWELL** (Frederick Haynes) REPORT of the PROGRESS of STREAM MEASUREMENTS for 1902, 4 vols. 8vo. sewn, 4s U.S. Geol. Survey, Washington, 1903
- 12480 **NEWKIRK** (Burt L., Minneapolis) Eine UNTERSUCHUNG der PARALLAXE des ZENTRAL-STERNEs des RINGNEBELs in der LEIER, Inaugural-Dissertation, roy. 8vo. (pp. 37), sewn, with author's inser., 2s München, 1902
- 12481 **NEWLANDS** (John A. R.; F.I.C.) On the DISCOVERY of the PERIODIC LAW, and on RELATIONS among the ATOMIC WEIGHTS, with 2 folding tables, post 8vo. cl., with author's inser. (scarce), 6s 6d 1884
- The periodic law was discovered simultaneously, but independently of one another, by the author and Prof. Lothar Meyer (*q. v. ante*), and received its classic development by Prof. Mendelejeff, who by its means predicted the existence of certain elements then unknown, which were afterwards actually discovered.
- 'I claim to have been the first to publish a list of the elements in the order of their atomic weight, and also the first to describe the periodic law, showing the existence of a simple relation between them when so arranged.'—Preface.
- 12482 **NEWMAN** (Francis William; brother of Cardinal Newman) The DIFFICULTIES of ELEMENTARY GEOMETRY, especially those which concern the Straight Line, the Plane, and the Theory of Parallels, with 122 illustrations, 8vo. sewn (scarce), 5s 1841
- The author was evidently ignorant of the work of Lobatschewsky, Gauss, and Bolyai on parallel lines, which he does not mention, although he quotes Legendre's treatment, and T. P. Thompson's 'proof'.
- 12483 **NEWMAN** (John, philosophical instrument maker to the Royal Institution) DESCRIPTION of OSLER'S REGISTERING ANEMOMETER, with folding plate, 8vo. (pp. 9), unbound, 3s 1840
- 12484 — INSTRUCTIONS for FIXING the STANDARD BAROMETER, with woodcut, 8vo. (pp. 3), unbound, 1s n. d.
- 12485 — MINER'S SAFETY LAMP: an Account of his IMPROVEMENT on SIR HUMPHRY DAVY'S, with 8 woodcuts, 8vo. (pp. 10), unbound, 3s 6d [1835]
- The improvement consists of the addition of an outer cylinder of wire gauze. It was awarded the silver medal by the Society of Arts.
- 12486 **NEWNHAM** (Philip Hankinson, pr., F. R. MET.S.) The CLIMATE of BOURNEMOUTH, with 13 tables, 8vo. (pp. 16), sewn, 2s Bournemouth [1869]

- 12488 **NEWMAN** (John, M.I.C.E.) NOTES ON CYLINDER BRIDGE PIERS and the WELL SYSTEM of FOUNDATIONS; especially written for those engaged in the Construction of Bridges, Quays, Docks, River Walls, Weirs, etc., 8vo. cl., 3s (p. 6s) 1893

An enlargement of the author's calculations in designing iron cylinder bridge piers, for which he was awarded the Miller prize by the Institution of Civil Engineers.

- 12489 **NEWSHOLME** (Arthur, M.D.) The ELEMENTS of VITAL STATISTICS, with charts, thick cr. 8vo. cl., 3s 6d (p. 7s 6d) 1889

- 12490 **NEWTN** (George Samuel, F.I.C., F.C.S.) CHEMICAL LECTURE EXPERIMENTS: Non-Metallic Elements, with 224 illustrations, 8vo. cl., 2s 6d (p. 10s 6d) 1892

- 12491 ——— NEW EDITION [enlarged], with 230 illustrations, cr. 8vo. cl., 3s 6d 1908

- 12492 ——— MANUAL of CHEMICAL ANALYSIS, QUALITATIVE and QUANTITATIVE, with 100 illustrations, post 8vo. cl., 3s (p. 6s 6d) 1898

- 12493 **NEWTON** (Hubert Anson; Yale Univ.) On the CAPTURE of COMETS by PLANETS, especially their Capture by JUPITER, with diagrams, 8vo. (pp. 27), sewn, 2s [New Haven], 1891
'The researches of Tisserand, Caillaud, and Newton leave scarcely a doubt that the 'capture theory' represents the essential truth.'—Miss Agnes M. Clerke.

- 12494 ——— On the RELATION which the FORMER ORBITS of those METEORITES that are in our COLLECTIONS, and that were seen to FALL, had to the EARTH'S ORBIT, 2 diagrams, 8vo. (pp. 14) sewn, 2s [ib.], 1888
'He found that nearly all [falling meteorites] had been travelling with a direct movement in orbits the perihelia of which lay in the outer half of the space separating the earth from the sun.'—Eadem.

- 12495 ———, OBITUARY NOTICE of, by G[EO]RGE J[AMES] S[YMONS, F.R.S.], 8vo. (pp. 6), unbound, 1s [1896]
Professor Hubert Newton, born at Sherburne, N.Y., in 1830, was one of ten children of parents of whom one was engineer of the Buffalo section of the Erie Canal and the other (born Butler) was remarkable for her mathematical attainments. He graduated with the highest mathematical honours at Yale when only twenty.

- 12496 **NEWTON** (Sir Isaac, P.R.S.) OPERA quæ exstant OMNIA, Commentariis illustrabat SAMUEL HORSLEY, R.S.S. [Episcopus Roffensis]; plates, tables, and numerous diagrams, 5 vols. 4to. contemporary tree-calf (joints cracked); RARE, £8. 15s Londini, Nichols, 1779-85

- 12497 ——— ANOTHER COPY, 5 vols. roy. 4to. contemporary tree-calf gilt (joints neatly mended); a FINE AND TALL COPY, £9. 15s

This is the only collected edition of Newton's works, now becoming increasingly rare. It was the first to contain his important *Geometria Analytica*. The following is a list of the works reprinted in it:—I. *Arithmetica Universalis*. *Tractatus de Rationibus*. *Analysis per Equationes*. *Excerpta ad Series Fluxionesque pertinentia*. *De Quadratura Curvarum*. *Geometria Analytica*. *Methodus Differentialis*. *Enumeratio Linearum Tertii Ordinis*: II.—III. *Principia*. *Lectiones Opticæ*: IV. *Opticks*. *Letters on Various Subjects*. *Letters to Mr. Boyle*. *Tabule Colorum et Refractionum*. *De Problematis Bernoullianis*. *Propositions for determining the Motions of a Body urged by two Central Forces*. *Four Letters to Dr. Bentley*. *Commercium Epistolicum, cum Additamentis*: V. *Chronology of Ancient Kingdoms*. *Short Chronicle from a MS. Prophecies of Daniel and the Apocalypse*. *Two Notable Corruptions of Scripture*. There are also some original papers by the Editor, viz., *Geometria Fluxionum*; *Logistica Infinitorum*; *De Viribus Centralibus*, etc.

- 12498 ——— OPERA, EDITIO COLLECTIVA; with numerous plates, tables, and diagrams, 8 vols. 4to. uniformly bound in russet gilt, g. e. (a few joints neatly mended, but a FINE SET), £2. 12s 6d 1744-61

Besides Bp. Horsley's edition above, this was the only approximately complete and uniform edition of Newton's works ever issued. It comprises: OPERA MATHEMATICA, PHILOSOPHICA et PHILOLOGICA, collecti, recensuit, etc. Joh. Castillioneus, 3 v., *Lausannæ*, '44; PRINCIPIA, studio Thomæ Le Seur et Franc. Jacquier, 3 v., *Coloniæ*, '60; ARITHMETICA UNIVERSALIS, cum Commentariis Joh. Castillionei, 2 v., *Amst.*, '61.

- 12499 ——— OPUSCULA MATHEMATICA PHILOSOPHICA et PHILOLOGICA, collecti partimque Latine vertit ac recensuit JOH. CASTILLIONEUS, Jurisconsultus [accessit Commentariolus de Vita Auctoris]; with vignette portrait by Duflos after Delamonce, 64 plates, and 2 folding tables, 3 vols. 4to. hf. vellum, or, hf. calf, 18s 6d *Lausannæ*, 1744

- 12500 ——— ANOTHER COPY, contemporary pressed white vellum (fine copy), £1. 1s

The above work contains: *Analysis per Equationes*. *Methodus Fluxionum*. *Tractatus de Quadratura Curvarum*. *Enumeratio Linearum Tertii Ordinis*. *Methodus Differentialis*. *Excerpta ex Commercio Epistolari*. *De Mundi Systemate*. *Lectiones Opticæ*. *De Natura Acidarum*, etc. etc. etc.

PRINCIPIA:

- 12501 ———: PHILOSOPHIÆ NATURALIS PRINCIPIA MATHEMATICA. Auctore IS. NEWTON, Trin. Coll. Cantab. Soc. Matheseos Professore Lucasiano, & Societatis Regalis Sodali. Imprimatur. S. PEPYS, Reg. Soc. Præses. Julii 5. 1686, editio princeps; with folding plate, and numerous diagrams, 4to. old (? contemporary) calf, newly and very neatly rebaked, with auto. 'J. C. Willisford, August 1828' on title, (blank top margins of some ll. water-stained, and a very small hole in one page, otherwise a SOUND AND LARGE COPY, measuring $9\frac{1}{8} \times 7\frac{1}{2}$ inches), excessively rare, £18. 18s Londini, Jussu Societatis Regiæ ac Typis Josephi Streater. Prostat apud plures Bibliopolas. Anno MDCLXXXVII.

THE ABOVE IS THE FIRST ISSUE OF THE FIRST EDITION. A re-issue was published in the same year with a new title, having a different imprint. This second issue is somewhat less rare than the above, although copies of either are now practically unprocurable. No copies of either can be traced as having sold at auction during the last twenty years.

The interest of the first edition of what probably constitutes the most important printed work on exact science ever published need hardly be emphasised. It should also be noted that the first edition has never been reprinted in any form.

The cost of printing the first edition was borne by EDMUND HALLEY, F.R.S., who edited and saw it through the press, and added the Latin verses reprinted in all the later editions. The idea of Mr. Samuel Pepys, F.R.S. giving the Society's imprimatur to Newton's *Principia* is tickling.

Owing to the importance of the work and the comparatively small number of copies printed, the first edition became rare almost immediately after publication. Sir David Brewster, in his *Life of Newton*, mentions (Vol. I, pp. 312 and 337): 'The impression was quickly sold. A copy of the *Principia* could scarcely be procured in 1691. . . . Cotes states in his preface to the second edition that copies of the first were scarce, and could only be obtained at an immense price. Sir William Browne, when at college, gave more than two guineas for a copy, and owing to the difficulty of procuring one at a reasonable price, the father of Dr. John Moore of Glasgow transcribed the whole work with his own hand.'

PRINCIPIA, continued:—

- 12503 **NEWTON** (Sir Isaac, P.R.S.) PHILOSOPHÆ NATURALIS PRINCIPIA MATHEMATICA; EDITIO SECUNDA, auctor et emendator; *with folding plate, and numerous diagrams, 4to. sound and very clean copy in old calf (RARE), £1. 15s* Cantabrigiæ, 1713

This copy bears the autograph while at Caius College of SAMUEL SHUCKFORD, afterwards Prebendary of Canterbury, and author of the 'Connexion of Sacred and Profane History', which had an extraordinary vogue of a hundred years till it was finally edited by James Talboys Wheeler, the historian of India, in 1858.

- 12504 ——— ANOTHER COPY, *old calf (binding slightly damaged), £1. 10s*

- 12505 ——— THE SAME, *hf. calf gilt (title mounted and some ll. inked or stained), £1. 5s*

This edition contains considerable additions by the AUTHOR, while the chapters on the lunar theory and the theory of comets were much enlarged. It was edited by ROGER COTES, F.R.S., whose preface (pp. 16), in which he vigorously attacks the Cartesian philosophy then still in vogue at the universities, and refutes an assertion that Newton's theory of attraction is a *causa occulta*, is of great historical importance. It also contains a new preface by the author, the Latin verses on him by EDMUND HALLEY, the Astronomer Royal, and an 'Index Capitum' and 'Index Rerum Alphabeticus' at end, both by the Editor. Seven hundred and fifty copies were printed of this edition, which has now also become RARE.

- 12506 ——— EDITIONIS SECUNDÆ REIMPRESSIO AMSTÆLODAMENSIS [*in titulo:*] Editio Ultima, auctor et emendator; *with folding plate and numerous diagrams, 4to. old calf (back of binding damaged, and last 18 ll. water-stained), 15s* Amst., sumptibus Societatis, 1714

The first Amsterdam reprint of the second edition. It was reprinted in 1723 with the addition of 'Analysis per Quantitatum Series'.

- 12507 ——— EDITIO TERTIA [ET ULTIMA], aucta et emendata; *with numerous diagrams, 4to. sound copy in contemporary panelled calf (portrait wanting), with bookplate of Earle Bulwer [Sir Henry Bulwer, Lord Dalling, Ambassador at Washington, and concluser of the Clayton-Bulwer Treaty], £1. 1s* Londini, Guil. & Joh. Innys, 1726

- 12508 ——— ANOTHER COPY, *with portrait by G. Vertue, sound copy in old calf, newly rebacked, with auto. of Samuel Roberts, F.R.S., 18s 6d*

- 12509 ——— ANOTHER COPY, *old calf (joints broken and portrait wanting), 12s 6d*

- 12510 ——— A Largest Paper Copy, *printed on thick paper, with portrait at. 83 by G. Vertue after Vanderbank, folio, contemporary russia extra (back badly rubbed and slightly damaged, and joints cracked), g. e., with label of George Kennie, F.R.S. (very rare), £3. 10s*

Less than 20 copies were printed of this edition, all of which were reserved for presentation.

This edition, the last published during the author's life-time, and the one on which all subsequent ones are based, was edited by HENRY PEMBERTON, M.D., F.R.S., and contains a new preface by Newton, and a large number of alterations, the most important being the scholium on fluxions, and the addition of a new one on the motion of the moon's nodes, to which I may add an account of some additional experiments on the resistance of the air to bodies falling through it, and the use of some fresh astronomical observations in book III.—W. W. R. Ball. It also contains Halley's verses and Cotes's preface.

Newton modified in the third edition of the *Principia* the scholium relating to fluxions, in which Leibnitz had been mentioned by name. Leibnitz and his friends had always held this scholium to be an acknowledgment of his claim to originality.—Dr. R. T. Glazebrook, F.R.S. See in this connexion note to No. 12570, post.

- 12511 ——— REPRINT OF THE THIRD EDITION, reprinted for SIR WILLIAM THOMSON [LORD KELVIN, P.R.S.] and HUGH BLACKBURN, Professors of Natural Philosophy and Mathematics in the University of Glasgow, *with fs. title and numerous diagrams, 4to. cl. (SCARCE), £1. 5s* Glasgow, 1871

'Finding that all the Editions of the *Principia* are now out of print, we have been induced to reprint Newton's last Edition without note or comment, only introducing the 'Corrigenda' of the old copy and correcting typographical errors. W. T. H. B.—Notice. This reprint contains besides the author's prefaces to the three editions, the valuable introduction to the second edition by Roger Cotes, and the Latin verses by Edmund Halley.

- 12512 ——— EDITIO NOVA, perpetuis Commentariis illustrata, communi Studio PP. THOMÆ LE SEUR et FRANCISCI JACQUIER, Ord. Min.; *with vignettes, and numerous diagrams, 3 vols. 4to. in 4. sound copy in contemporary calf gilt, £1. 5s* Genève, 1739-42

THE FIRST so-called 'JESUITS' EDITION,' much valued for its copious commentary. 'Le professeur Calandrini, à Genève, a été l'éditeur de cet excellent commentaire et l'a enrichi de notes, de citations et de démonstrations.'—Brunet.

The above edition also contains in v. III the following important pieces, which gained the prize of the French Academy: *Traité sur le Flux et Reflux de la Mer*, par DANIEL BERNOULLI (pp. 133-246); *De Causa Physica Fluxus et Refluxus Maris* a COLIN MACLAURIN, S.R.S. (pp. 247-82); *Inquisitio Physica in Causam Fluxus et R-fluxus Maris* a LEONARDO EULER (pp. 283-374). According to Mr. W. W. R. Ball, 'these three memoirs contain all that was done on the theory of tides between the publication of Newton's *Principia* and the investigations of Laplace.

The text of the *Principia* is that of the third Edition.

- 12513 ——— EDITIO ALTERA, longè accuratior et emendatior; *with numerous diagrams, 3 vols. 4to. old calf gilt (a few joints cracked), 18s 6d* Colonie Allobrogum, 1760

The second 'Jesuits' Edition,' being a reprint of the first with corrections, and the memoirs on the theory of tides, but without Halley's verses.

- 12514 ——— ANOTHER COPY, 3 vols. in 4, *old calf (joints broken), with numerous MS. notes in a contemporary hand, 14s*

- 12515 ——— EDITIO NOVA, summa Cura recensita; *with numerous diagrams, 2 vols. impl. 8vo. hf. calf (joints cracked), 12s* Glasguae, 1833

The last and best of the 'Jesuits' Editions,' edited by JOHN M. F. WRIGHT, containing all the prefaces to the first three editions, as well as the memoirs on the tides. 'Edition belle et soignée.'—Brunet.

- 12516 ——— THE MATHEMATICAL PRINCIPLES OF NATURAL PHILOSOPHY, translated by ANDREW MOTTE; with the LAWS of the MOON'S MOTION, according to Gravity, by JOHN MACHIN, F.R.S., *with fronts., and vignettes by the Translator, and 47 folding plates, 2 vols. 8vo. old calf, 15s* Benjamin Motte, 1729

- 12517 ——— ANOTHER COPY, 2 vols. *old calf (fronts. wanting, binding not uniform and that of v. I damaged, also wanting fronts.), 10s*

First edition of the first English translation of the *Principia*, 'handsomely printed', and 'a highly creditable productio n.'—D. N. B.

PRINCIPIA, continued :—

- 12519 **NEWTON** (Sir Isaac, P.R.S.) **THE MATHEMATICAL PRINCIPLES OF NATURAL PHILOSOPHY**; new Edition, with Newton's **SYSTEM of the WORLD**; a short Comment on, and Defence of, the Principia, by W. EMERSON; and **LIFE**, carefully revised and corrected by WILLIAM DAVIS, with fine bust portrait by Scriven, and 54 folding plates, besides diagrams, 3 vols. 8vo. old calf, or, hf. cl. (RARE), £1. 5s 1803
- 12520 ——— **ANOTHER COPY**, 3 vols. in 1, hf. calf, £1. 4s
- 12521 ——— **ANOTHER COPY**, 3 vols. mottled calf extra (name cut off titles, but FINE COPY), £1. 10s
This edition contains for the first time the translation of the *De Mundi Systemate*, which was not contained in the edition of 1729.
'The inconvenience arising from the great scarcity of former editions of the Principia, and System of the World, added to the exorbitant prices charged for them when to be met with, determined the Editor to undertake a New Edition of those Works.'—*Preface*.
- 12522 ——— **REPRINT of the above EDITION**, with fine bust portrait by Scriven, and 54 folding plates, 3 vols. 8vo. old hf. calf (a few joints cracked), £1. 1s 1819
- 12523 ——— **MATHEMATICAL PRINCIPLES OF NATURAL PHILOSOPHY, BOOK I** [Motion of Bodies], translated, and illustrated with a Commentary, by ROBERT THORP, D.D., Archdn. of Northumberland; 2nd Edition, with 22 plates, roy. 4to. russia extra, g. e., with booklabel of George Rennie, F.R.S. (fine and large copy), 12s 6d 1802
- 12524 ——— **ANOTHER COPY, boards, uncut**, 10s 6d
This translator was a member of Peterhouse, and Senior Wrangler in 1758. His Son CHARLES, pr., was the first Warden of Durham University. The above translation includes Newton's Prefaces, and Cotes's to the second Edition, and an Introduction (pp. 18) by himself.
'Newton is the new Archimedes, and the Principia forms the Novum Organum of scientific method. . . . There is hardly a progressive branch of physical and mathematical science, excepting perhaps chemistry and electricity, which has not been developed from the germs of true scientific procedure which he disclosed in the Principia and Opticks.'—*Prof. W. S. Jevons, F.R.S.*
- 12525 ——— **THE FIRST THREE SECTIONS**, with copious Notes and Illustrations, and a great Variety of Deductions and Problems, by JOHN CARR, pr., Fellow of Trinity, with 6 folding plates, Svo. cl., with auto. of C. F. Mackenzie, first Bp. of the Universities' Mission to Central Africa, 2s 6d 1821
- 12526 ——— **SECOND EDITION**, improved and enlarged, with 6 folding plates, Svo. hf. cl., 3s 1825
- 12527 ——— **THE FIRST THREE SECTIONS and Part of the SEVENTH**, with Preface recommending a Geometrical Course of Mathematical Reading, and Introduction on the Atomic Constitution of Matter, and the Laws of Motion, by GEORGE LEIGH COOKE, pr., with 54 diagrams, Svo. cl., 4s Oxford, 1850
- 12528 ——— **THE FIRST THREE SECTIONS**, with Appendix, and the IX. and XI. SECTIONS, edited by JOHN H. EVANS, Master of Sedbergh School, 2nd Edition, with diagrams, Svo. hf. cl., 2s Cambridge, 1838
- 12529 ——— **FIFTH EDITION**, by P. T. MAIN, with diagrams, 12mo. cl., 2s ibidem, 1871
- 12530 ——— **SECTIONS I. II. III.**, with Notes and Illustrations, also Problems, principally intended as Examples of Newton's Methods, by PERCIVAL FROST; pr., F.R.S., with diagrams, post Svo. cl., 3s ib., 1854
- 12531 ——— [SECOND EDITION, enlarged], with diagrams, Svo. cl., 4s 6d ib., 1863
- 12532 ——— [THIRD EDITION], with diagrams, Svo. cl. (cover slightly soiled), with auto. of Samuel Roberts, F.R.S., 5s 1880
- 12533 ——— **FOURTH [LAST] EDITION**, with diagrams, Svo. cl., 6s 6d (p. 12s) 1883

OPTICS :

- 12534 [——] **OPTICKS: or a Treatise of the Reflexions, Refractions, Inflexions and Colours of Light**; also **TWO TREATISES on the Species and Magnitude of CURVILINEAR FIGURES**, first edition, with 19 folding plates, 4to. hf. calf antique (VERY RARE), £2. 2s
S. Smith and B. Walford, Printers to the Royal Society, 1704
- 12535 ——— **ANOTHER COPY**, contemporary panelled calf (joints cracked, but a large and sound copy), with auto. 'Isaac Newton' on endpaper, £3. 15s
- 12536 ——— **THE SAME, A FINE COPY in CONTEMPORARY ENGLISH RED MOROCCO EXTRA**, Harleian gold tooling on sides, g. e., £4. 4s
The above work is one of the great classics of optics. It expounds Newton's corpuscular or emission theory of light, and first contains his important optical discoveries in a collected form. The above first edition also contains two important mathematical treatises left out in the later ones, viz., 'Enumeratio Linearum III. Ordinis', and 'Tractatus de Quadratura Curvarum', containing his invention of the 'fluxional' calculus. They were here published for the first time, especially with a view to assert Newton's rights to the discovery of the calculus (of which the controversy with Leibniz was then just preparing). In his introduction to the *Tractatus* he states that he had invented the 'method' in 1665—thus claiming priority over Leibniz. According to the *Advertisement*, 'the ensuing discourse was written at the desire of some Gentlemen of the Royal Society, in 1675. He reveals therein also his peculiarity of shrinking from every kind of publicity, when he complains that he had delayed the printing 'to avoid being engaged in disputes about these matters'.
The last passage of the *Advertisement* is of importance in connexion with the Newton-Leibniz controversy: 'In a Letter written to Mr. Leibnitz in 1676 . . . I mentioned a Method by which I had found some general Theorems about squaring curvilinear Figures . . . And some Years ago I lent out a Manuscript containing such Theorems, and having since met with some Things copied out of it, I have on this Occasion made it publick'.
- 12537 ——— **ANOTHER COPY**, without the Two Mathematical Treatises, with 12 folding plates, 4to. old calf (joints cracked), £1. 5s [1704]
The above consists of the optical part only, with a new title, without date, place, or printer's name, but giving the author's name. This issue seems to be rare, no mention being made of it in bibliographies.

OPTICS, continued:—

Sir Isaac Newton's own corrected copy:

- 12539 NEWTON (Sir Isaac, P.R.S.) OPTICKS, SECOND [FIRST OCTAVO] EDITION, with Additions, with 12 folding plates, 8vo. old calf, joints neatly mended (FINE COPY); with MS. corrections in Sir Isaac Newton's handwriting, £25.

A. Bowyer for W. Innys, 1717

The original issue of the second edition, and printed on strong paper. It is rare thus, most copies being of the second issue of 1718. The mathematical tracts were left out in this and the following editions.

The above copy is of great interest for having belonged to Sir Isaac Newton himself, who has made additions and corrections (all verified to be in his handwriting), which were wholly or partly adopted in the later editions of the 'Opticks'. They are: on page 70, line 20: $\frac{MCa}{NGa}$ is altered

into $\frac{AD}{EPa}$ (this correction was made in the 3rd Edition). Page 230, line 19: $\frac{16\frac{1}{2}}{10000}$ is altered in text and written out on margin: $\frac{9\frac{1}{2}}{1000000}$ (corrected in the 3rd Edition). Page 271, line 14: after 'plainest' is added on margin: 'upon the

Chart, & removing the chart' (alteration not adopted). Page 275, line 15: after 'second' is added on margin: 'without quicksilver in the same angle' (addition not adopted). Page 334, line 11-12: The passage: 'that side of the same Ray which looks towards' is struck out (correction not adopted). Page 342, line 6: after 'Earth' is added on margin 'or 73'; line 8: 14 is altered in text into 15 $\frac{1}{2}$, and on margin into 16 $\frac{1}{2}$; line 10: '21, 28 or 35' is altered in text into '22, 30 $\frac{1}{2}$, 35 $\frac{1}{2}$ ', and on margin into '23, 30 $\frac{1}{2}$, 38 $\frac{1}{2}$ '; lines 12 and 13: '70, 140, 210', is altered in text into '76 $\frac{1}{2}$, 153 $\frac{1}{2}$, 230', and on margin into '80, 160, 238' (corrections adopted slightly modified in the 4th Edition). Page 366, line 22: 'height' is struck out, and 'distance' substituted for it on margin (correction made in the 4th Edition). Page 382, line 4: after 'Benefactor' is added: 'as their ancestors did before they corrupted themselves. For the seven Precepts of the Noachides were originally the moral Law of all nations; & the first of them was to have but one supreme Lord God & not to alienate his worship; the second was not to profane his name; & the rest were to abstain from blood or homicide & from fornication (that is from incest adultery & all unlawful lusts,) & from theft & all injuries, & to be merciful even to brute beasts, & to set up magistrates for putting these laws in execution. Whence came the moral Philosophy of the ancient Greeks' (partly adopted in the third Edition, by adding after 'Benefactor': 'as their Ancestors did under the Government of Noah and his Sons before they corrupted themselves').

- 12540 — SECOND ISSUE OF THE SECOND EDITION, with 12 folding plates, 8vo. old calf, or, old calf, rebacked, 12s 6d
W. and J. Innys, 1718

In this edition the number of queries at the end of the work is increased from 16 to 31, including the celebrated one (No. 28): 'Are not all hypotheses erroneous in which Light is supposed to consist in pressure or motion propagated through a fluid medium? . . . If it consisted in pressure or in motion propagated either in an instant or in time, it would bend into the shadow. For pressure and motion cannot be propagated in a fluid in right lines beyond an obstacle which stops part of the motion, but will bend and spread every way in the quiescent medium which lies beyond the shadow.' Query 17 discusses the double refraction of Iceland spar. It also contains a new and interesting preface.

'At the end of the 3rd book I have added some Questions. And to shew that I do not take Gravity for an essential Property of Bodies, I have added one Question concerning its Cause, chusing to propose it by way of a Question, because I am not yet satisfied about it for want of Experiments.'—Advertisement II.

- 12541 — THIRD EDITION, corrected, with 12 folding plates, 8vo. old calf, or, old calf, neatly rebacked, 12s
apud eosdem, 1721

This is a literal reprint of the foregoing edition, save for a few corrections and the addition of one passage in the last sentence in the work referring to Noah and his sons, as pointed out in the note to Newton's annotated copy of the second edition (No. 12539, *supra*).

- 12542 — FOURTH [FINAL] EDITION, corrected, with 12 folding plates, 8vo. old calf, or, old calf, newly rebacked (RARE), 17s 6d
William Innys, 1730

This was the last edition revised by the Author. 'It was corrected by the Author's own hand, and left before his Death with the Bookseller. . . . It has been thought proper to make at the bottom of the Pages several Citations from thence [Lectioes Opticæ], where may be found the Demonstrations, which the Author omitted in these Opticks'.—Advertisement to this Fourth Edition.

- 12543 — OPTICE: sive de Reflexionibus, Refractionibus, Inflexionibus et Coloribus Lucis Libri III, Latine reddidit SAMUEL CLARKE, A.M.; accedunt Tractatus II ejusdem Authoris de SPECIEBUS et MAGNITUDE FIGURARUM CURVILINEARUM; with 19 folding plates, 4to. contemporary calf, newly rebacked (sound and clean copy); RARE, £1. 5s Londini, S. Smith & B. Walford, 1706

- 12544 — ANOTHER COPY, old panelled calf (joints cracked, and title and some ll. somewhat stained), 18s 6d

THE FIRST LATIN EDITION, translated by Newton's disciple DR. SAMUEL CLARKE, afterwards Rector of St. James's, Westminster, whose alleged Arianism gave rise to so long a controversy. It was the first edition to contain Newton's views on the double refraction of Iceland spar, and included six more queries than the English Edition of 1704. It contains for the first time the celebrated one [No. 28] on the nature of light (*v. note to No. 12540, supra*). The translator received £500. from Newton for his work.

- 12545 — EDITIO SECUNDA, auctior; with 12 folding plates, 8vo. old calf (binding damaged), 6s
ibidem, Gul. & Joh. Innys, 1719

- 12546 — A LARGE PAPER COPY, 4to. old calf, newly rebacked, 10s 6d
Neither this nor the later editions contain the two mathematical treatises included in the edition of 1706. The queries however are extended from 22 to 30.

- 12547 — EDITIO NOVISSIMA [TERTIA]; with vignette on title, and 12 folding plates, 4to. old calf gilt (some ll. browned), 8s 6d
Lausanne, 1740

This edition has a dedication to Jean Bernoulli by the publisher, and is valuable for a copious index which it contains.

TRANSLATED BY MARAT:

- 12548 — OPTIQUE de NEWTON, Traduction Nouvelle, faite par M*** [JEAN PAUL MARAT; 'L'Ami du Peuple'] sur la dernière Edition originale. Dedicée au Roi [avec Préface], par M. BEAUZÉE, Editeur de cet Ouvrage, l'un des Quarante de l'Académie Française, etc. etc.; with 21 folding plates, 2 vols. 8vo. old hf. calf (binding rubbed, but a sound and clean copy); RARE, £1. 5s
1787

OPTICS, continued:—

- 12550 **NEWTON** (Sir Isaac, P.R.S.): OPTIQUE de NEWTON: ANOTHER COPY of MARAT'S TRANSLATION (as fully described in No. 12548), 2 vols. 8vo. HANDSOMELY BOUND IN CONTEMPORARY FRENCH CRIMSON MOROCCO EXTRA, hand-tooled backs, silken linings and flyleaves, g. e., by DERÔME (A VERY FINE COPY), £4. 4s

This, like all the other works of this monster of the Terror, is very rare (v. Nos. 11385-91, ante). The 'Opticks' were previously translated into French by Pierre Coste in 1725, and reprinted in 1722. This translation appears however to have been very unsatisfactory, for the editor characterizes it as 'défectueuse, infidèle et obscure, servile et barbare'. Marat's translation is by no means a literal one, and should be of special interest, as it was Marat who first, in France, dared to attack Newton's corpuscular theory.

Marat's translation was apparently unknown to Sir David Brewster, as he only mentions that of P. Coste.

- 12551 ——— **LECTIONES OPTICÆ**, Annis MDCLXIX ad MDCLXXI, in Scholis Publicis habitæ: et nunc primum ex MSS. in Lucem editæ, editio princeps; with 24 folding plates, 4to. sewn, uncut (sound copy); RARE, £1. 1s
Londini, Guil. Innys, 1729

- 12552 ——— ANOTHER COPY, old vellum (fine copy), £1. 5s

- 12553 ——— ANOTHER COPY, contemporary calf, newly rebaked, £1. 4s

Consisting of two parts, 'de radiorum lucis refractionibus', and 'de colorum origine'. Only the first part was translated into English.

'Before the end of 1669 he had worked out the details of his discovery of the decomposition of a ray of white light into rays of different colours by means of a prism. The complete explanation of the theory of the rainbow followed from this discovery. These discoveries formed the subject matter of the lectures which he delivered as Lucasian professor from 1669 to 1671 . . . The MS of his original lectures was printed in 1729 under the title *Lectioes Opticæ*.'—W. W. R. Ball.

'This valuable work contains many beautiful propositions, and interesting and instructive experiments, which are not to be met with in any modern treatise on optics.'—Sir David Brewster, F.R.S.

ARITHMETICA UNIVERSALIS:

- 12554 [——] **ARITHMETICA UNIVERSALIS**; sive de Compositione et Resolutione Arithmetica Liber, cui accessit HALLEIANA ÆQUATIONUM RADICES arithmetice inveniendi METHODUS, editio princeps; with numerous diagrams, sm. 8vo. contemporary calf (joints neatly mended, otherwise a FINE COPY), with inser. 'E Libris B: Baker Sanc: Trin: Coll: Cant. Alumni, 1707' on flyleaf, and bookplate of John Kentish (Unitarian); RARE, £1. 10s
Cantabrigiæ, 1707

- 12555 ——— ANOTHER COPY, old hf. calf gilt, £1. 8s 6d

- 12556 ——— ANOTHER COPY, contemporary panelled calf gilt (VERY SOUND AND FRESH COPY), with old engraved bookplate of John Peyto Verney, Lord Willoughby de Broke, £1. 12s 6d

This work was published by WILLIAM WHISTON, PR., F.R.S., who 'extracted a somewhat reluctant permission from Newton to print it. Among several new theorems on various points in algebra and the theory of equations Newton here enunciates the following important results. He explains that the equation whose roots are a solution of a given problem will have as many roots as there are different possible cases. . . . He extends Descartes's rule of signs to give limits to the number of imaginary roots. He uses the principle of continuity to explain how two real and unequal roots may become imaginary in passing through equality . . . and shows that imaginary roots must occur in pairs. . . . The most interesting theorem contained in the work is his attempt to find a rule (analogous to that of Descartes for real roots) by which the number of imaginary roots of an equation can be determined.'—W. W. R. Ball.

- 12557 ——— **EDITIO SECUNDA**, in qua multa immutantur et emendantur, nonnulla adduntur; with numerous diagrams, 8vo. old calf (newly rebaked); RARE, 15s
Londini, 1722

This edition, the last published during the author's lifetime, is almost as rare as the first. It was unknown to Prof. de Morgan.

- 12558 ——— **EDITIO NOVA**, cum Commentario JOHANNIS CASTILLIONEI; with 37 folding plates, 2 vols. 4to. old calf, 10s 6d
Amstedodami, 1761

- 12559 ——— ANOTHER COPY, 2 vols., contemporary mottled calf gilt (fine copy), 14s

Besides the editor's preface (pp. 14), and the copious commentary (pp. 288), the above edition contains 'Additamentum vel de Solutione et Constructione Æquationum, etc.: Scripta varia ex Transactionibus Philosophicis et aliunde excerpta [by EDMUND HALEY, JOHN COLSON, ABRAHAM DE MOIVRE, COLIN MACLAURIN, A. G. KÄSTNER, K. J. BOSOVICH, and others (pp. 134)].

- 12560 [——] **UNIVERSAL ARITHMETICK**: or a Treatise of Arithmetical Composition and Resolution. To which are added, DR. HALEY'S Method of finding the Roots of Æquations Arithmetically; translated by JOSEPH RAPHSON, F.R.S., and revised and corrected by SAMUEL CUNN, first English edition, with 8 plates, sm. 8vo. old calf, newly rebaked (rare), 15s
J. Senex, 1720

- 12561 ——— **SECOND EDITION**, very much corrected, with 8 plates, 8vo. old calf, rebaked, 7s 6d
apud eundem, 1728

- 12562 ——— ANOTHER COPY, contemporary panelled calf, 8s

- 12563 ——— [THIRD AND LAST EDITION], to which is added, a TREATISE on the MEASURES of RATIOS, by JAMES MAGUIRE, the whole illustrated and explained in a Series of Notes, by THEAKER WILDER, D.D., T.C.D., with 8 plates, thick 8vo. hf. calf gilt, or, old calf, 8s 6d
1769

COMMERCIIUM EPISTOLICUM:

- 12564 ——— **COMMERCIIUM EPISTOLICUM** D. JOHANNIS COLLINS ad aliorum de ANALYSI PROMOTA: Jussu Societatis Regiæ in Lucem editum [Curâ JOANNIS KEILL, S.R.S.]; editio princeps; with diagrams, 4to. contemporary panelled calf, newly rebaked (very rare), £2. 12s 6d
Londini, Typis Pearsonianis, 1712

This is the celebrated report drawn up by order of the Royal Society, and consisting of a selection from the correspondence of John Collins, F.R.S. with some of the most celebrated mathematicians of the time, which substantiated Keill's charge against Leibniz of having derived the fundamental ideas of his calculus from papers by Newton, said to have been communicated to him through Collins and Oldenburg.

Although greatly biased in Newton's favour, the work is nevertheless 'a repository of the utmost value to the history of science' (D. N. B.), and is now excessively rare.

The above is, according to Gray's Bibliography of Newton, THE EARLIEST OF THE TWO ISSUES OF THE FIRST EDITION.

- 12565 ——— [EDITIO SECUNDA], et jam unâ cum ejusdem Recensione præmissa, et Judicio primarii, ut ferebatur. Mathematici subjuncto, iterum impressum; with diagrams, 8vo. fine and tall copy in old calf gilt (RARE), £1. 12s 6d
ibidem, J. Tonson et J. Watts, 1722

- 12566 ——— ANOTHER COPY, cl., with MS notes by, and bookplate of, Prof. Lloyd Tanner, F.R.S., £1. 10s

The first issue of the second edition.

COMMERCIIUM EPISTOLICUM, continued:—

- 12568 **NEWTON (Sir Isaac, P.R.S.)**: COMMERCIIUM EPISTOLICUM: SECOND ISSUE OF THE SECOND EDITION, *with diagrams*, 8vo. *old calf (joints cracked)*, with 7 pp. of MS. NOTES at END IN AN XVIII. CENTURY HAND, HEADED 'ADDENDA', £1. 10s *Londini, J. Tonson et J. Watts, prostant venales apud Jacobum Mack-Euen, Bibliopolam Edinburgensem, 1722*
- The second edition, besides being a complete reprint of that of 1712, contains a new address to the reader (pp. 6), a 'Recensio Libri qui inscriptus est Commercium Epistolicum' (pp. 59), an Appendix (pp. 2), and an 'Annotatio' (pp. 4). The address and Recensio were written by NEWTON himself—a fact first announced by Prof. de Morgan, and confirmed by Sir David Brewster. The latter did not know of the edition of 1722, and only mentions (Life of Newton, v. II, p. 75) that 'in the year 1725, a new edition of the Commercium was published.'

- 12569 ——— **EDITIO SECUNDÆ REIMPRESSIO**; *with diagrams*, 8vo. *old calf (back torn)*, with 10 pp. of MS. Index added (RARE), £1. 12s 6d *ibidem, J. Tonson et J. Watts, 1725*

FIRST ISSUE OF THE 1725 REPRINT, which agrees with that of 1722, but has a new and much fuller title.

- 12570 ——— **SECOND ISSUE OF THE 1725 EDITION**; *with diagrams*, 8vo. *old hf. calf (one joint cracked)*; VERY RARE, £2. 2s *ib., apud eosdem, 1725*

This was the last issue of the last edition published (save for the French reprint), and is of great interest for a cancellation in Newton's preface. In all the previous issues of the 1722 and 1725 editions occurs the passage: 'Quæ novæ Principiorum editioni præmissa sunt, Newtonus non vidit antequam Liber in lucem prodiret. Quæ de Quæstionibus Philosophicis disputata sunt D. Des Maizeaux a D. Leibnitio et aliis accepti et in lucem edidit,' with a note referring to Leibniz's letters to Des Maizeaux. In the above issue however the passage 'a. D. Leibnitio et aliis accepti' and the note is cancelled. This was probably done at the time when Newton decided to leave out of the third Edition of 1726 the Scholium referring to Leibniz (*vide note to No. 12510*).

'It is due to historical truth to state, that Newton supplied all the materials for the *Commercium Epistolicum*, and that, though Keill was its editor, and the committee of the Royal Society the authors of the Report, Newton was virtually responsible for its contents.'—*Sir David Brewster*.

- 12571 ——— **COMMERCIIUM EPISTOLICUM . . . ou CORRESPONDANCE de J. Collins et d'autres Savants célèbres du XVII^e Siècle relative à l'ANALYSE SUPÉRIEURE**, réimprimée sur l'Édition Originale de 1712, avec l'Indication des Variantes de l'Édition de 1722, complétée par une COLLECTION de PIÈCES JUSTIFICATIVES et de DOCUMENTS, et publiée par J. B. BIOT et F. LEFORT; *with diagrams*, 4to. *hf. calf*, 10s (p. F. 15 nett sewn) 1856

The 'pièces justificatives' are letters that seemed to support Leibniz's claims in the opinion of the editors, as well as excerpts from Cavalieri, Descartes, Fermat, Hudde, Ricci, Barrow, and Sluze, which ultimately led to the discovery of the infinitesimal calculus. At end is a chapter by Lefort (pp. 9): 'Caractère des publications du *Commercium Epistolicum* faites en 1712 et en 1722, etc. etc.'

MINOR WORKS:

PRESENTATION COPY BY THE EDITOR:

- 12572 [—] **ANALYSIS per QUANTITATUM SERIES, FLUXIONES, ac DIFFERENTIAS: cum Enumeratione Linearum Terti Ordinis** [edente GULIELMO JONES, S.R.S.], editio princeps; *with vignettes and numerous diagrams*, 4to. *old calf, with inser. by the Editor, WILLIAM JONES, F.R.S., friend of Newton (1675-1749), as below (RARE)*, £1. 5s *Londoni, 1711*

'To Dr. Cockburn by his humble Servt. Wm: Jones.'—*Inscr. on flyleaf*.

- 12573 ——— **ANOTHER COPY, with 2 engraved tables of curves by J. Senex ADDED**, *old calf gilt*, £1. 2s 6d

First edition of Newton's Treatises on the higher mathematics, containing his discovery of the differential calculus. It comprises: 'De Analysis per Equationes Infinitas' (containing the *Binomial Theorem*), 'Fragmenta Epistolarum ad D. Oldenburgum', 'De Quadratura Curvarum', 'Enumeratio Linearum Terti Ordinis', and 'Methodus Differentialis'.

'In his Latin preface Jones gives notes of the earliest applications of Newton's method, no doubt with some reference to the contest with Leibnitz which was then preparing'.—*D. N. B.*

- 12574 ——— **THE CHRONOLOGY OF ANCIENT KINGDOMS AMENDED**, with Short Chronicle from the First Memory of Things in Europe, to the Conquest of Persia by Alexander the Great, first edition, *with engraved vignette and 3 folding plates*, 4to. boards, uncut, 10s 1728

- 12575 ——— **A LARGE PAPER COPY, printed on thick paper**, roy. 4to. *old hf. calf (one joint cracked)*; RARE, 15s

'Containing an attempt to determine the dates of ancient events from astronomical considerations. . . Newton indicates the manner in which astronomy might be used to verify the views on the chronological points derived in the main from Ptolemy, which were held in his time. These views have since that date been proved, by the Babylonish and Egyptian records, to be on the whole correct.'—*R. T. Glazebrook, F.R.S.*

- 12576 ———: **EXCERPTA quædam e NEWTONI PRINCIPIIS PHILOSOPHIAE NATURALIS, cum Notis Variorum**; *with 12 folding plates*, 4to. *old calf (binding damaged)*, 4s

Cantabrigiæ, Typis academicis, 1765

- 12577 ——— **ANOTHER COPY, contemporary hf. calf, uncut, with auto. of, and MS. notes and problems by, John North, Caius Coll., Cantab.**, 7s 6d

The above work was edited by JOHN JEBB, pr., M.D., F.R.S., GEORGE WOLLASTON, D.D., F.R.S., and ROBERT THORP. It has a long list of subscribers.

- 12578 ———: **NEUTONI GENESIS CURVARUM per UMERAS, seu Perspectivæ Universalis Elementa**; Exemplis Coni Sectionum et Linearum Terti Ordinis illustrata [curâ PATRICII MURDOCH, D.D.]; *with 12 folding plates*, 8vo. *old calf*. 7s 6d *Londini, 1748*

- 12579 ——— **THE METHOD OF FLUXIONS and INFINITE SERIES: with its APPLICATION to the GEOMETRY of CURVE-LINES**, translated from the Latin Original not yet made publick; with a Perpetual Comment, consisting of Annotations, Illustrations, and Supplements, by JOHN COLSON, F.R.S., first edition, *with front. on copper of shooting flying, and diagrams*, 4to. *old rough calf (joints cracked)*, *with old armorial bookplate of 'Parkinson'* (RARE), £1. 1s *H. Woodfall, 1736*

- 12580 ——— **ANOTHER COPY, old calf (title and front. mounted), with bookstamp of Prof. Lloyd Tanner, F.R.S.**, 17s 6d

The first edition of Newton's complete treatise on the calculus, originally written in 1671. It includes a valuable preface by the editor (pp. 15), and a 'commentary' (pp. 143-339). It was reprinted in 1737 in 8vo.

H. Wallisford August 1828.

PHILOSOPHIÆ
NATURALIS
PRINCIPIA
MATHEMATICA.

Autore *ſ* S. NEWTON, *Trin. Coll. Cantab. Soc. Matheseos*
Professore Lucaſiano, & Societatis Regalis Sodali.

IMPRIMATUR.
S. P E P Y S, *Reg. Soc. PRÆSES.*
Julii 5. 1686.

L O N D I N I,
Juſſu Societatis Regiæ ac Typis Joſephi Streater. Proſtat apud
plures Bibliopolas. Anno MDCLXXXVII.

N^o. 110 X^o. 110

No. 12501 (*page 621*).

First issue of the first edition of the greatest work on exact science
ever published.

instead of teaching the Transmigration of Souls,
and to worship the Sun and Moon, and dead
Heroes, they would have taught us to worship
our true Author and Benefactor, as their
ancestors did before they corrupted
themselves. For the seven Precepts
of the Noachides were originally the
moral Law of all nations; & the first
of them was to have ^{but} one supreme Lord
God & not to alienate his worship; the
second was no **F I N** ^{to profane his}
^{name;} & the rest were to abstain from for-
nication (that is from incest adultery & all
unlawful lusts,) & from homicide, theft &
all injuries, & to be merciful even to brute
beasts, & to set up ^{for} magistrates for
putting these laws in execution. Whence
came the moral **Philosophy** of the
Greeks.



MINOR WORKS, continued:—

- 12582 **NEWTON** (Sir Isaac, P.R.S.) *La MÉTHODE des FLUXIONS, et des SUITES INFINIES* [traduite par JEAN LOUIS LECLERC, COMTE DE BUFFON]; with diagrams, 4to. French boards (rare), 12s 6d
de Bure l'aîné, 1740
- 12583 — **ANOTHER COPY, old calf (binding damaged), with inser. as below, 17s 6d**
‘Taken out of a French Ship which was captured by Capt. John Rogers, Dover, Commander of the Grand Faulkner, during the late French War.’—*MS. Note in pencil on title.*
Buffon’s translation (the translator was unknown to Barbler) was made from Colson’s English translation, but contains neither his preface nor the commentary. It includes however a very interesting preface by Buffon himself (pp. 28), in which he maintains, in opposition to the opinion of the majority of the mathematicians of his own country, that Newton is the sole and only inventor of the calculus (‘on demeura convaincu que Newton seul est l’auteur de ces merveilleux calculs’ [p. VI of preface]).
- 12584 — **De MUNDI SYSTEMATE, editio princeps; with 2 folding plates, 4to. contemporary calf gilt (one joint cracked, but a sound copy); RARE, 12s 6d**
Londini, impensis Tonson, Osborn et Longman, 1728
This seems to be a very rare edition, that of 1731 being generally considered the first Latin one. The latter only is mentioned in Gray’s ‘Bibliography of Newton’.
Prof. de Morgan’s doubts as to Newton’s authorship of this work were dispelled by Edleston in his *Correspondence*. It was originally meant to form the third book of the *Principia*.
- 12585 — **TREATISE of the SYSTEM of the WORLD, translated into English, printed on stout paper, with 2 plates and diagrams, 8vo. old panelled calf, 6s 6d** 1723
The first English edition, containing an interesting preface (pp. 22), which was left out in the later ones.
- 12586 — **TABLES for RENEWING and PURCHASING the LEASES of CATHEDRAL-CHURCHES and COLLEGES, according to several RATES of INTEREST, with their Construction and Use explained; also Tables for Renewing and PURCHASING the LEASES of LAND or HOUSES, etc. etc., with the Value of Church and College Leases consider’d; sixth Edition, with TABLES of INTEREST exactly computed at 3, 3½, 4, and 5 p. C., with other useful Tables, 12mo. old calf (joints cracked), 5s** 1742
- 12587 — **SEVENTH EDITION, 12mo. old sheep (binding worn and joints cracked), 5s** 1758
Although generally attributed to Sir Isaac Newton, it is very doubtful whether this work, which is not included in Horsley’s edition, was ever written by him.
- 12588 — **TWO TREATISES of the QUADRATURE of CURVES, and ANALYSIS by EQUATIONS of an INFINITE NUMBER of TERMS, explained; containing the Treatises translated into English, with large Commentary, etc. etc., by JOHN STEWART, Prof. Mathematicks, Aberdeen; F.R.S., with diagrams, 4to. cl., or, old calf (rare), 15s** 1745
The only English translation of the ‘Tractatus de Quadratura Curvarum’ and ‘Analysis per Quantitatum Series’. It contains moreover a copious commentary.
- 12589 — **THIRTEEN LETTERS from, as Representative in Parliament of the University of Cambridge, to JOHN COVEL, D.D., Vice-Chancellor, Master of Christ’s College [with Notes by DAWSON TURNER], with fs. letter, roy. 8vo. sewn (scarce), 5s** 1848
Published by Dawson Turner from the great collection of the Macro Manuscripts.

NEWTONIANA :

- 12590 **[ALGAROTTI (Francesco Conte di)] Il NEWTONIANISMO per le DAME, ovvero DIALOGHI sopra la LUCE e i COLORI, prima edizione; with front. by Pitteri after Piazzetta (hand-coloured), sm. 4to. old hf. calf (back rubbed); rare, 10s 6d** Napoli, 1737
An interesting Italian popularisation of Newton. It was translated into English (by ELIZABETH CARTER) and into French, and was unknown to Riccardi.
‘Il se proposa de mettre à la portée des gens du monde les découvertes et le système de Newton, comme Fontenelle y avait mis les œuvres de Descartes. Il n’avait alors que 21 ans. Ce livre fit beaucoup de bruit, et lui fit obtenir l’honneur d’être invité par Maupertuis et Clairaut à les accompagner dans leurs expéditions scientifiques.’—*Biogr. Gén.*
- 12591 **BLOCH (Léon) La PHILOSOPHIE de NEWTON, 8vo. (pp. 644), sewn, 5s 6d (p. F. 10 nett)** 1908
- 12592 **BREWSTER (Sir David, F.R.S.) THE LIFE of SIR ISAAC NEWTON, with portrait by W. C. Edwards after Kneller, and woodcuts, 12mo. cl. (cover damaged), 3s 6d** 1831
- 12593 — **MEMOIRS of the LIFE, WRITINGS, and DISCOVERIES of SIR ISAAC NEWTON, BEST EDITION, with 2 steel portraits, and woodcuts, 2 vols. large 8vo. cl., uncut (SCARCE), 17s 6d Edin., 1855**
- 12594 — **ANOTHER COPY, 2 vols. cl. (binding slightly worn, and fronts. and titles stamped), 15s**
- 12595 — **ANOTHER COPY, 2 vols. cl. (wanting one portrait, also browned, and covers damaged), 10s 6d**

The chief authority on Newton’s life. It contains appendixes of original papers, viz., letters from and to Newton, ‘an Hypothesis explaining the Properties of Light discoursed in my several Papers’: Drawing and Measures of the Eye of a Sheep, and Description of the Optic Nerves; Notice of Prof. Cotes; Newton’s Directions to Dr. Bentley for studying the *Principia*; Newton’s 15th Query; Draught Copies of the Scholium to Lemma II Book II; Table of Refractions sent to Flamsteed; ‘De Metallo ad conficiendum Speculum Componendo et Fundendo’, etc. etc.

- 12596 **[BROUGHAM and VAUX (Henry Peter Lord, Lord Chancellor; F.R.S.)], LIFE of SIR ISAAC NEWTON [with BIBLIOGRAPHY], 8vo. (pp. 40), sewn, 2s** L. U. K. [1829]
‘Substantially a translation from the life in the ‘Biographie Universelle’, by M. Biot.’—*P. I.*
- 12597 — **and Edward John ROUTH, Fellow of Peterhouse, F.R.S.: ANALYTICAL VIEW of SIR ISAAC NEWTON’S PRINCIPIA, with diagrams, 8vo. cl. (scarce), 7s 6d** 1855
‘Explaining the connexion of the various parts of the *Principia* with each other, and with the preceding and subsequent progress of the science.’—*Preface.*

- 12598 **CATALOGUE of the PORTSMOUTH COLLECTION of BOOKS and PAPERS, written by, or belonging to, SIR ISAAC NEWTON, the Scientific Portion of which has been presented by the EARL of PORTSMOUTH to the UNIVERSITY of CAMBRIDGE, with diagrams, 8vo. cl. (o. p.), 4s**

Univ. Press, Cambridge, 1888

This is the great mass of Newton’s papers which came at his death into the hands of Mr. Conduitt, who married Catherine Barton, Newton’s niece, and eventually into those of Lord Portsmouth at Hursborne. They were inspected and ignored by Bp. Horsley, and but little used by Sir David Brewster.

The above valuable volume has preface and appendix to preface by H. R. LUARD, pr., SIR G. GABRIEL STOKES, J. COUCH ADAMS, and G. D. LIVEING, F.F.R.S.

NEWTONIANA, continued:—

- CLARKE (John, Dean of Sarum)** DEMONSTRATION of some of the PRINCIPAL SECTIONS of SIR ISAAC NEWTON'S PRINCIPLES of NATURAL PHILOSOPHY (1730)—*v. No. 6927, ante.*
- 12600 **DOMCKE (Georg Peter; F.R.S.)** PHILOSOPHIA MATHEMATICA NEWTONIANA ILLUSTRATA; with 16 folding plates, 8vo. old calf (rare), 6s 6d Londini, 1730
The book was licensed by William Whiston, who characterizes the above commentary as 'satis et felicit'. The second Part contains: Definitiones et Leges Motus; Leges Virium Centripetarum et Theoria Attractionis seu Gravitacionis Corporum in se Mutuo; Mundi Systema. The author, who is mentioned in Poggendorff, masquerades in *Allibone* as 'Domekins'.
- 12601 **EDLESTON (J., Trinity Coll., Cantab.)** CORRESPONDENCE of SIR ISAAC NEWTON and PROFESSOR [ROGER] COTES, including Letters of other eminent Men, now first published, with Appendix of UNPUBLISHED LETTERS and PAPERS by Newton, with Notes; SYNOPTICAL VIEW of his LIFE, etc. etc., with fine steel portraits and woodcuts, 8vo. cl. (scarce), 10s 6d 1850
- 12602 ——— ANOTHER COPY (binding torn), 9s 6d
'By far the most valuable collection of facts relating to him is the Synoptical View of Newton's Life, edited by Edleston in 1850.'—D. N. B. The preface contains an interesting historical account of the first two editions of the 'Principia'.
- 12603 **FRAGMENS** de LETTRES de divers SAVANS CONTEMPORAINS de NEWTON, précédés d'une Remarque sur quelques HYPOTHESES de NEWTON lui-même, 8vo. (pp. 31), *sewn (scarce)*, 5s s. l. n. d.
Containing the correspondence of NICOLAS FACCIO, F.R.S., Newton's friend, with Huygens, Jacques Bernoulli, and others.
- 12604 **GORDON (George)** REMARKS upon the NEWTONIAN PHILOSOPHY, as propos'd by SIR ISAAC NEWTON, in his Principia . . . ; and DR. GREGORY, in his Principia Astronomiæ Physiæ, wherein the FALLACIES of the PRETENDED MATHEMATICAL DEMONSTRATIONS are clearly LAID OPEN, and the PHILOSOPHY ITSELF fully PROVED to be FALSE and ABSURD, both by Mathematical and Physical Demonstration, with diagrams, 12mo. sound copy in old calf (rare), 7s 6d 1719
Interesting as an early attack on the Newtonian system, and a defence of Descartes's theory of vortices.
- GRAVESANDE (Willem Jacobus 's; F.R.S.)** PHILOSOPHIE NEWTONIANÆ INSTITUTIONES—*v. Nos. 8594-5, ante.*
- 12605 **HARTSOECKER (Nicolas; teacher of Peter the Great)** RECUEIL de PLUSIEURS PIÈCES de PHYSIQUE, où l'on fait principalement voir l'INVALIDITÉ du SYSTÈME de Mr. NEWTON, et où se trouve, entre autres, une Dissertation sur la Peste, et sur les Moyens de s'en garantir; with diagrams, 18mo. old calf gilt, 8s 6d Utrecht, 1722
'Il s'y declare nettement contre ces grands espaces vides où se mouvraient les planètes, obligées à décrire des courbes par des gravitations ou attractions mutuelles.'—*Biogr. Gén.*
- 12606 **HORNE (George; 59th Bp. of Norwich)** A FAIR, CANDID, and IMPARTIAL STATE of the CASE between SIR ISAAC NEWTON and MR. [JOHN] HUTCHINSON, in which is shown how far a System of Physics is capable of Mathematical Demonstration; how far Sir Isaac's, as such a System, has that Demonstration, and consequently, what Regard Mr. Hutchinson's Claim may deserve to have paid to it, 8vo. *sewn*, 7s 6d Oxford, 1753
'He allowed to Sir Isaac the great merit of having settled laws and rules in natural philosophy; but at the same time claimed for Mr. Hutchinson the discovery of the true physiological causes by which, under the power of the Creator, the natural world is moved and directed.'—*William Jones (of Nayland), pp., F.R.S.*
- 12607 **LIFE of NEWTON** [from the UNIVERSAL MAGAZINE], 8vo. (pp. 13), *sewn*, 2s [1748]
- 12608 **MACLAURIN (Colin, F.R.S.)** ACCOUNT of SIR ISAAC NEWTON'S PHILOSOPHICAL DISCOVERIES; published from the Author's MSS. [with LIFE (pp. 20)] by PATRICK MURDOCH, F.R.S., first edition, with 6 folding plates, roy. 4to. *russia extra, g. e. (fine copy)*, with bookplate of George Rennie, F.R.S., 12s 6d printed for the author's children, 1748
This edition was published for the benefit of Maclaurin's children, and contains a long list of subscribers.
- 12609 ——— SECOND EDITION, with 6 folding plates, 8vo. old calf (joints cracked), 4s 6d 1750
- 12610 ——— THIRD [LAST] EDITION, with 6 folding plates, 8vo. old hf. calf (rubbed and 2 plates mended), 3s 6d 1755
Comprising: Of a Method of Proceeding in Natural Philosophy, and the various Systems of Philosophers; Of the Theory of Motion, or Rational Mechanics; Gravity demonstrated by Analysis; The Effects of the General Power of Gravity deduced synthetically. The life prefixed is still the chief authority on Maclaurin.
The last chapter treats 'Of the Supreme Author and Governor of the Universe, the true and living God', and ends with an argument in favour of a future life, dictated but a few moments before his death.
- *v. Nos. 11220-2, ante.*
- 12611 **MANUSCRIPT (Italian)**: Sopra le TRE LEGGI del MOTO del NEWTON, Canzone: Sopra le TRE REGULE di FILOSOFARE del NEWTON, Canzone: Sopra l'ELEVATIONE de FLUIDI ne TUBI Capillari: Ecloga; a neatly written Manuscript on 8 pp., folio, 7s 6d Sæc. XVIII.
MARTIN (Benjamin) PANEGYRICK of the NEWTONIAN PHILOSOPHY (1754)—*v. No. 11492, ante.*
- PLAIN and FAMILIAR INTRODUCTION to the NEWTONIAN EXPERIMENTAL PHILOSOPHY (1754)—*v. Nos. 11502-4, ante.*
- 12612 **MERCIER (Louis Sébastien, de l'Institut)** De l'IMPOSSIBILITÉ du SYSTÈME ASTRONOMIQUE de COPERNIC et de NEWTON, 8vo. hf. calf (rare), 10s 6d 1806
Not mentioned in Gray's bibliography of Newton.
The author was a Platearther unbudgeted by Professor de Morgan.
'Locke, Condillac et leurs disciples devinrent aussi le sujet de ses attaques; par un mauvais jeu de mots, il les appelait les idiots rogues, idiologues. Les découvertes physiques ne lui inspiraient pas plus de respect: il attaqua même le système astronomique de Kopernik et de Newton, prétendant que la Terre est ronde et plate et que le Suleil tourne autour de ce plateau comme un cheval de manège.'—*Biogr. Gén.*
- 12613 **NEWTON et LEIBNITZ** [in French, English, and German], folio (pp. 3), *unbound (very rare)*, 7s 6d Pau, 1863
In this interesting letter, which was sent out to 1500 scientists, the anonymous author offers 250 francs for the publication of a certain passage in a Leibniz MS. (referred to by Dr. H. Sloman, but said to have been purposely left out in Gerhardt's edition, and since then disappeared altogether from its home in the Royal Library of Hanover), which would conclusively prove that Leibniz borrowed his differential calculus from a Manuscript by Sir Isaac Newton.

COMMERCIIUM.

EPISTOLICUM

D. JOHANNIS COLLINS,

ET ALIORUM

DE

ANALYSI

PROMOTA:

JUSSU

SOCIETATIS REGIÆ

In lucem editum.



LONDINI:

Typis PEARSONIANIS, Anno M DCC XII.

A D

LECTOREM.

*Quædam ob causam editæ sunt hæ Epistolæ Characterique col-
lectæ, apparet ex Literis D. Leibnitii & D. Keillii
in fine subscriptis. Offensionem attulerant D. Leibnito
nonnullæ, quæ scripto prodidit D. Keillius in Actis Londi-
nensibus anno 1708, injuriam D. Newtono oblatam propalam. Datis
igitur ad Societatis Regalis Secretarium literis, de calumniæ quæstus
D. Leibniti, remedium a Societate petitis; itaque eos æquum credidit
judicaverit, ut D. Keillius culpam suam publicè faceret. D. Keil-
lio ea est pars visa potior, ut ad illa, quæ quæstus erat D. Leib-
nitius, literis scriptis responderet: Quibus in literis quæ antea eide-
rat, & expositis plenius & vindicavit. D. Leibniti nonquam his
factis sibi factum arbitratus, literas alteras ad Societatem dedit; in qui-
bus adhuc de D. Keillio quæstus, novum eum hominem appellat, pa-
riturque periculum rerum antea factarum cognoscere, nec mandatum
ab eo, cujus interfecti, habentem; Societatisq; acquitati committit,
anon coercedæ sine vanæ & iniustæ vocitationes.*

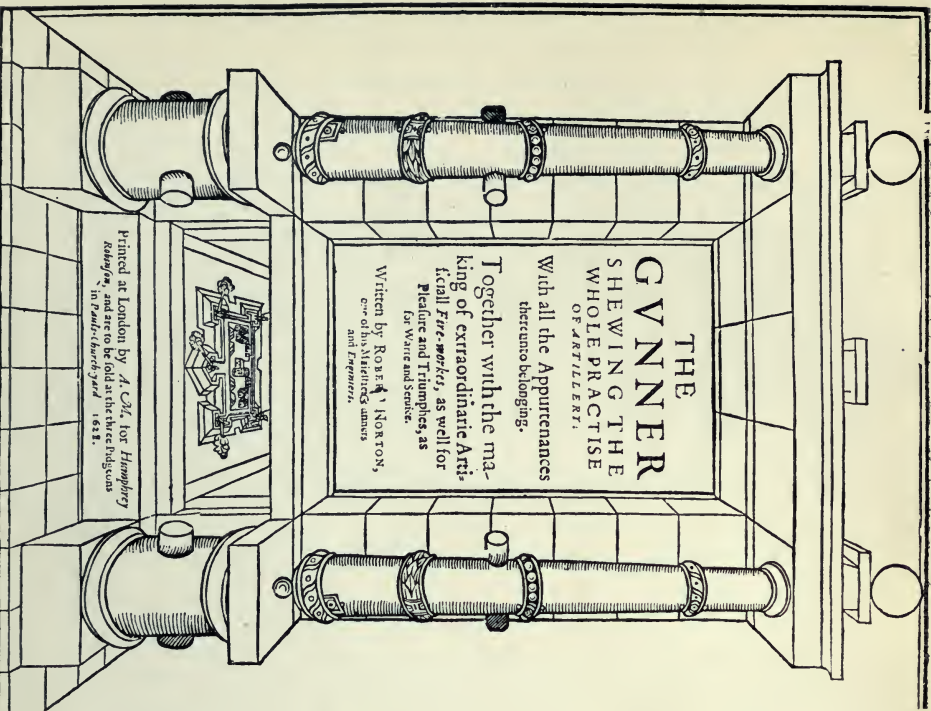
*Versabatur in Angliâ D. Leibnitiis inveniunt anno 1673, iterumq;
mense Octobri 1676; & interfecto illo temporis intervallo in Galliâ
egit. Quo omni temporis spatio, mutuis acceptis datiq; literis, com-
muni habuit cum D. Oldenburgo, & Oldenburgi operâ, cum D. Col-
lino itidem, & nonnunquam etiam cum D. Newtono. Quid autem
ille ex Angliis tandem, vel tum cum Londini esset, vel ex literis ipsis
mutuo datis, edidicerit, in eo serè veritas hæc omnis quæstio. D. Ol-
denburgus & Collinius jam illa obtulerunt; D. Newtonus autem tum
Cantabrigiæ egit; peritumq; amplius novit, quàm quod ex literis ipsis
a D. Wallisio deinceps editis apparet. D. Newtonus neque a D. Keillii
partibus Testis esse potest, nec D. Leibnitiis ipse a suis: Alius autem in
causâ Testis esse nullus. Societas itaq; Regalis, a D. Leibnito his ad-
versus*

No. 12564 (page 625).

The Newton-Leibniz controversy on the invention of the calculus.

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NEWTONIANA, continued:—

- 12615 **MORGAN** (Augustus de: F.R.A.S., *Univ. Coll., London*) **NEWTON**: his FRIEND: and his NIECE, edited by his WIFE [SOPHIA ELIZABETH], and by his Pupil, ARTHUR COWPER RANYARD, F.R.A.S., 8vo. cl. (*scarce*), 7s 1885

Dealing with an episode in Newton's life little referred to by his biographers, but characteristically mentioned by Voltaire: his relations with Charles Montagu, first Earl of Halifax, his friend and political patron, and his niece CATHERINE BARTON, afterwards Mrs. CONDUITT, who was Montagu's mistress. The work contains new evidence which quite clears Newton from a charge of connivance in his niece's easy virtue.

- 12616 — On a POINT connected with the DISPUTE between KEILL and LEIBNITZ about the INVENTION of FLUXIONS, 4to. (pp. 3), *unbound*, 1s 6d 1846

MORRISON (Commr. Richard James, R.N.; 'ZADKIEL') The NEW PRINCIPIA—v. No. 12163, *ante*.

NEUMANN (Carl Gottfried; *Univ. Leipzig*) ALLGEMEINE UNTERSUCHUNGEN über das NEWTON'SCHE PRINCIP der FERNWIRKUNGEN—v. No. 12442, *ante*.

- 12617 [**PEMBERTON** (Henry, M.D., F.R.S.)] A VIEW of SIR ISAAC NEWTON'S PHILOSOPHY, with 12 folding plates, 12 beautiful vignettes and tail-pieces by J. PINE after J. GRISON (including arms of Sir Robert Walpole), and 5 finely engraved initials by the same, 4to. old calf, with fine Chippendale bookplate of Thomas Holme, 8s 6d S. Palmer, 1728

- 12618 — ANOTHER COPY, *russia gilt*, g. e., with booklabel of George Rennie, F.R.S., 10s

- 12619 — A LARGE PAPER COPY, with superior impressions of Pine's engravings, roy. 4to. old calf gilt, 12s 6d

This copy has at end: 'Sir Isaac Newton's Corollaries from his Philosophy and Chronology; in his Own Words' page 1-16, signed by WILLIAM WHISTON.

- 12620 — ANOTHER LARGE PAPER COPY, *old morocco extra (joints mended)*, g. e., 12s 6d

'Interesting as being the account of a near friend.'—D. N. B. The preface contains the author's recollections of Newton, especially in his old age. Dr. Pemberton had studied under Boerhaave, and prepared the Fifth London Pharmacopœia. There is also a Poem (pp. 15) on Sir Isaac by RICHARD GLOVER (poet and M.P., 1712-85), written in his 16th year, the author's introduction on Newton's method of reasoning in philosophy, and a long list of subscribers.

- 12621 **RECUEIL** de DIVERSES PIÈCES sur la Philosophie, la Religion Naturelle, l'Histoire, les Mathématiques, etc., par MM. LEIBNIZ, CLARKE, NEWTON, etc., 3^{me} Édition, augmentée [publiée par PIERRE DES MAIZEAUX: F.R.S.], 2 vols. 16mo. *contemporary calf gilt*, 10s Lausanne, 1759

Containing the correspondence of Leibniz and A. S. Conti, F.R.S., on the disputed invention of the calculus, also Newton's remarks, and Leibniz's letter to him.

- 12622 **RIGAUD** (Stephen Peter, *Savilian Prof. Astron., Oxon.*, F.R.S.) HISTORICAL ESSAY on the FIRST PUBLICATION of SIR ISAAC NEWTON'S PRINCIPIA, with diagrams, 8vo. cl., *uncut (scarce)*, 10s 6d Univ. Press, Oxford, 1838

The name of Stephen Peter Rigaud will be familiar to Old Westminsters as that of the father of Stephen Jordan Rigaud, whose House in Little Dean's Yard is still known by his name, and who died of yellow fever in the West Indies within a year of his consecration to the Bishopric of Antigua. Professor Rigaud himself was a capable astronomer, but was still more remarkable for his accurate knowledge of the literature and history of the subject, and as a mathematical antiquary and bibliographer with no rival previous to de Morgan. It is to him that, in the first instance, we owe much of our information about Newton and the history of his discoveries. 'The Historical Essay is an admirable exposition of the facts then known, and contained much new and interesting matter about Halley, whose life Rigaud intended to write.'—D. N. B.

The appendix contains: I. Newtoni Propositiones de Motu: Early Notice on Fluxions (from an original paper in Newton's handwriting), Newton and Huygens, on the Cause of Gravitation, Halley's Review of the Principia, Unpublished Correspondence, etc.

- 12623 **ROBINSON** (Bryan, M.D., T.C.D.) A DISSERTATION on the AETHER of SIR ISAAC NEWTON, large 12mo. *hf. bound (joints broken)*; *rare*, 10s 6d 1747

Robinson was an ardent admirer of Newton, and tried to account for animal motions by his principles, and to apply them to the rational treatment of diseases. He attributed the production of muscular power to the vibration of an ethereal fluid pervading the animal body, a doctrine essentially in accord with modern views.—D. N. B. He attempts to prove that 'ether causes gravity by giving bodies a mutual tendency to one another.'

- 12624 **SAUNDERSON** (Nicholas, *Lucasian Professor, Cantab.*, F.R.S.) COMMENTARIUS in PRINCIPIA PHILOSOPHIÆ NEWTONIANA; a very neatly written Manuscript on 233 pp., with numerous diagrams, 4to. *contemporary panelled calf (one joint cracked, otherwise in fine condition)*, £1. 15s [1742]

A manuscript of the lectures delivered by the blind Lucasian Professor of Mathematics on Newton's Principia.

Quæ in Sequentibus Latina sunt ea ex Auctoris Libro MSO. descripta sunt: Cetera ipse viva Voce dictavit; exceptis his quæ spectant ad Figuram Telluris in Propositionem 9^{am} Libri 3ⁱ; Ea ntique expressa sunt ferè omnia ex MSO. A. D. 1739?—*Inscription facing title.*

Hunc descripti Librum Mense Martio A.D. 1741. ex Libro MSO. Viri Reverendi Johannis Samuelis Hill, quem ex ipse Auctoris Autographo ipse descripti A.D. 1739. GULIELMUS WARD?—*Inscr. at end.*

- 12625 **VOLTAIRE** (François Marie Arout de) THE ELEMENTS of SIR ISAAC NEWTON'S PHILOSOPHY, translated, revised, and corrected by JOHN HANNA, with folding plates and woodcuts, 8vo. old calf, 12s 1738

'The story that this train of thought [on gravitation] was aroused by seeing an apple fall is due to Voltaire, and is given in his 'Philosophie de Newton'. Voltaire had it from Newton's step-niece, Mrs. Conduitt. For many years tradition marked the tree in the garden at Woolsthorpe: it was shown to Sir David Brewster in 1814, and was taken down in 1820.'—D. N. B.

- 12626 [**WILSON** (Andrew, M.D., *Edin.*)] THE PRINCIPLES of NATURAL PHILOSOPHY: with Remarks on the FUNDAMENTAL PRINCIPLES of the NEWTONIAN PHILOSOPHY; in an Introductory Letter to Sir Hildebrand Jacob, Bart., 8vo. (pp. 72), *sewn*, 7s 6d 1754

RARE, and unknown to the author's biographer in D. N. B. The second part, 'the Principles and Properties of Material Motion', appeared in an enlarged form in 1764. The work is not noticed in Gray's Bibliography of Newton.

The introduction is strongly anti-Newtonian.

- 12627 **YOUNG** (Robert) EXAMINATION of the THIRD and FOURTH DEFINITIONS of the FIRST BOOK of SIR ISAAC NEWTON'S PRINCIPIA, and of the Three Axioms or Laws of Motion, vo. *sewn*, 3s 1787

NEWTONIANA, continued.—

- 12629 **WRIGHT** (John Martin Frederick, *Trin. Coll., Cantab.*) COMMENTARY on NEWTON'S PRINCIPIA; with a SUPPLEMENTARY VOLUME, diagrams, 2 vols. roy. 8vo. boards (*backs torn off*), 1833
4s 6d
- 12630 ——— ANOTHER COPY, 2 vols. prize calf (*joints cracked*), with *inscr. signed by John Fleming*, D.D., Aberdeen, 5s
- 12631 **NEWTON** (John; D.D., *Canon of Hereford*) ASTRONOMIA BRITANNICA, exhibiting the Doctrine of the Sphere, and Theory of the Planets DECIMALLY by TRIGONOMETRY, and by Tables, fitted for the MERIDIAN of LONDON, according to the COPERNICAN SYSTEM, as it is illustrated by BULLIALDUS, and the easie Way of Calculation, lately published by DR. WARD, with numerous diagrams, 4to. old calf (*title and some ll. soiled, and back of binding damaged*); RARE, 10s 6d
R. and W. Leybourn, 1657
- The second book contains 'The Theory of the Planets . . . exhibiting their first Inequalities at one Operation Trigonometrical, their other Inequalities, and Eclipses of the Sun and Moon with much Ease'; and the third 'Tables for the converting of Sexagenary Numbers into Decimal and the contrary, for Astronomical Chronologie with the Ecclesiastical Computation, and the Calculation of the Planets, Eclipses', etc. etc. Both have separate titles dated 1656. 'His writings are a proof of his great application to study, and a sufficient monument of his genius and skill in the mathematical sciences.'—Dr. Hutton.
- 12632 **NEWTON** (Thomas, *pr.*) SHORT TREATISE on the CONIC SECTIONS; in which the Three Curves are derived from a general Description on a Plane, and the most useful Properties of each are deduced from a Common Principle, with 11 folding plates, 8vo. boards, 5s Cambridge, 1794
Intended as an introduction to the fluxional calculus.
- 12633 **NIAUDET** (Alfred) TRAITÉ ÉLÉMENTAIRE de la PILE ÉLECTRIQUE, première édition; with 56 woodcuts, 8vo. cl. (*scarce*), 6s 1878
The first full account of the Voltaic pile or electric battery, including many forms long since forgotten.
- 12634 ——— ELEMENTARY TREATISE on ELECTRIC BATTERIES, translated by L. M. FISHBACK, with 55 woodcuts, cr. 8vo. hf. calf (*title stamped*), 4s 6d (p. 12s 6d) New York, 1880
- 12635 **NICHOL** (John Pringle, F.R.A.S.) The PHENOMENA and ORDER of the SOLAR SYSTEM, with 21 lithographs, many after old prints, and woodcuts, post 8vo. cl., 3s Edin., 1838
- 12636 ——— The PLANET NEPTUNE: an Exposition and History, with 6 plates, and diagrams, 8vo. cl., 2s ib., 1848
- 12637 ——— THOUGHTS on some IMPORTANT POINTS relating to the SYSTEM of the WORLD, with 14 plates (3 folding), besides woodcuts, 8vo. cl., or, hf. calf, 3s ib., 1846
- 12638 ——— VIEWS of the ARCHITECTURE of the HEAVENS, with 23 plates, and diagrams, 8vo. cl., 3s ib., 1837
- 'Nichol was a prolific and successful writer. His books were eloquent, enthusiastic, and learned. 'George Eliot' described herself in 1841 as 'revelling' in them, and they were most effective in the popularisation of science. . . . His astronomical observations were directed chiefly to the physical features of the moon, and to the nebulae, etc.'—Agnes M. Clerke.
- 12639 **NICHOLS** (Edward Leamington, *Cornell Univ.*) and William Suddards FRANKLIN: The ELEMENTS of PHYSICS, Vol. I.: MECHANICS and HEAT, with 143 illustrations, 8vo. cl., 3s 6d (p. 6s nett) New York, 1896
- 12640 **NICHOLS** (William Ripley) WATER SUPPLY; considered mainly from a Chemical and Sanitary Standpoint, 3rd Edition, with 54 woodcuts, 8vo. cl., 3s 6d (p. 10s 6d) New York, 1888
- 12641 **NICHOLSON** (John, C.E.) The MILLWRIGHT'S GUIDE: a Practical Treatise on the Construction of all kinds of Mill Work, and the Application of the Power of Wind and Water, with 15 plates, and vignette on title, 8vo. hf. cl., 2s 6d 1830
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Including a chapter on horology, with illustrations of the various escapements, and a very copious account of mills, afterwards published in a separate form (*supra*).
- 12643 **NICHOLSON** (Peter) The BUILDER'S and WORKMAN'S NEW DIRECTOR, with the Elements and Practice of Geometry in its Application to the Building Art; new Edition, much enlarged, with portrait by Armstrong after T. Heaphy, 136 plates, and numerous diagrams, 2 vols. 4to. hf. calf, 8s 6d 1845
'He was the first author who treated of the methods of forming the joints, and the hinging and the hanging of doors and shutters, and was also the first to notice that Grecian mouldings were conic sections, and that the volutes of Ionic capitals ought to be composed of logarithmic spirals . . . His invention of the centrolinead for use in drawing perspective views procured him 20 guineas from the Society of Arts.'—D. N. B.
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- He propounded a twofold-motion fluid hypothesis of electricity, by which he attempted to explain electric attraction and repulsion; investigated the influence of electricity on the germination of seeds; and constructed a primitive electroscope consisting of two linen threads, which, being projected on an arc of 180°, were to show the amount of the electric charge by the rate of their angular divergence.
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- Among the complimentary verses is one by CAPTAIN JOHN SMITH, President of Virginia, who signs himself 'Hungariensis', in remembrance of his taking part (in the Austrian army) in the Hungarian war against the Turks.
- 'Sir John Cope Bart.' is not identical with Lt.-Gen. Sir John Cope ('Johnnie Cope'), who was defeated by Prince Charles Edward at Prestonpans.
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printed in the year, 1643
- This work is numbered from page 71 to 92, with a title and dedication to the Duke of Buckingham. It was published with W. Bourne's 'Art of Shooting', 1643, but appears to have also been issued separately.
- In the dedication to the second Duke of Buckingham ('Zimri') the author complains of the 'penury of expert gunners and understanding men, and the weakness of the present meanes to breed more hereafter'.
- Neither of the above important works was known to Lowndes, who only mentions the author's 'Mathematical Appendix' (1604).
- 12758 **NORWICKI** (R.), und **Hans MAYER**: *FLÜSSIGE LUFT: die VERFLÜSSIGUNGSMETHODEN der GASE und die neueren Experimente auf dem Gebiete der flüssigen Luft, 2. erweiterte Auflage; with 48 woodcuts*, roy. 8vo. sewn, 1s 6d *Mähr.-Ostrau, 1906*
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- Unknown to Brunet, Poggenдорff, or Ebert, nor mentioned by Kopp and Waite. Nothing seems to be known of its author.
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W. Godbid, for Benj. Hurlock, at his shop on London Bridge, 1670 [-67]

The second work, beginning with signature Ee 1, and ending with Kk 10, was evidently taken from the author's 'Trigonometrie', in order to supplement the first.

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R. W. for W. Fisher, 1678

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Referring to Briggs's work on logarithms, the author in his preface mentions: 'Though we both handle the same thing, yet it is in such a different manner, that there is scarce any one proposition handled by us both.'

Between 1633 and 1635 the author measured a degree of the meridian between London and York, and in it first employed the compass to avoid deviations from the route measured—a fact unnoticed in *D. N. B.*

He was sent out by the Bermuda Company to survey the islands in 1616 (when he was accused of dishonest collusion with the Governor), and is of interest to Americans as having in 1623 patented lands in VIRGINIA, though it is doubtful whether he ever went there.

'He personally measured, partly by chain and partly by pacing, the distance between London and York, making corrections for all the windings of the way, as well as for the ascents and descents. He also, from computations of the sun's altitude, computed the difference of latitude of the two places, and so calculated the length of a degree of the meridian. Considering the roughness of his methods and the imperfection of his instruments it is not surprising that his result was some 600 yards too great; but even so it was the nearest approximation which had then been made in England.'—*D. N. B.*

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Unknown to Poggendorf and Houzeau and Lancaster, and to the author's biographer in *Allgemeine Deutsche Biographie*. The author occupied with success high judicial positions in Prussia, without however receiving the smallest payment for his services from his niggardly King.

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This work, which was unknown to the author's biographer in D. N. B., describes his invention of converting old smooth-bore ordnance into rifled guns by inserting tubes of coiled wrought iron—an inner tube of more ductile and an outer of less ductile metal—in cast-iron guns suitably bored out. 'Guns so treated were found on trial to give excellent results, and the method afforded means of utilizing the large stock of cast-iron smooth-bore ordnance . . . at one-third of the cost of new guns. Some thousands of these 'converted guns' have taken their place in the armament of our fortresses and coast batteries' (D. N. B.)—as built during the invasion-scare in the early 'Sixties.

Only a few copies of this work were privately printed, and it is now very scarce.

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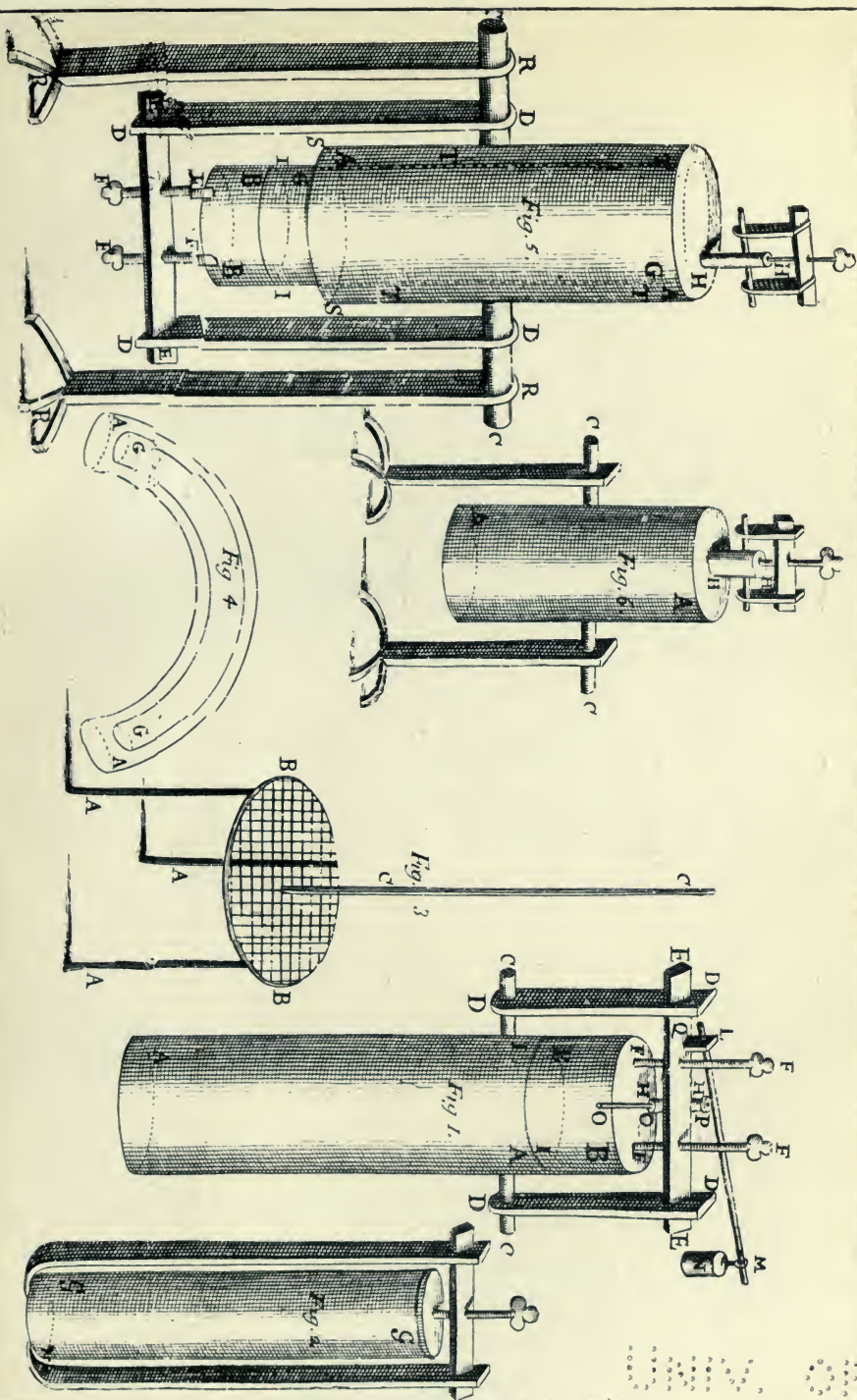
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The work was originally published in English, in 1681, as 'The New Digester'. This French edition contains an 'Advis' by CLAUDE COMIERS, in which he describes an improved form of the digester.



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[col.:] per Paganino, in Tusculano sulla riva del lago Benacense, 1523
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‘In the arithmetic Pacioli gives rules for the four simple processes, and a method for extracting square roots. He deals pretty fully with all questions connected with mercantile arithmetic, in which he works out numerous examples, and in particular discusses at great length bills of exchange and the theory of book-keeping by double entry. This part was then the first systematic exposition of algeristic arithmetic. . . . In the algebra he discusses in some detail simple and quadratic equations, and problems on numbers which lead to such equations. He mentions the Arabic classification of cubic equations, but adds that their solution appears to be as impossible as the quadrature of the circle. . . . Though much of the matter described is taken from Leonardo's *Liber Abaci*, yet the notation in which it is expressed is superior to that of Leonardo,’ etc. etc. etc.—W. W. R. Ball.
‘In the mathematical writings of the monk Luca Pacioli symbols began to appear. They consisted merely in abbreviations of Italian words, such as *p* for *pin*, *m* for *meno*, *co* for *cosa*. . . .’—Prof. Lajori.
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- 13145 **PESENTI** (Cesare) Il CEMENTO ARMATO, e la sua Applicazione Pratica: Formole, Tavole Grafiche, Tabelle Numeriche ed Esempi Pratici pel Calcolo di Costruzioni in Cemento Armato; with plates and other illustrations, roy. 8vo. *sewn*, 3s (p. L. 5.50 nett) Milano, 1910
The failures of reinforced concrete have yet to be chronicled.
- 13146 **PESSUTI** (Abate Gioacchino) DESCRIZIONE, MANEGGIO ed USI del TEODOLITO, Istrumento più di qualunque altro Sicuro Spedito ed Universale, with large folding copperplate, 8vo. boards (plate water-stained), 5s Roma, 1794
- 13147 ——— ANOTHER COPY, contemporary hf. calf (sound copy), 6s
- 13148 ——— OPUSCOLI due all' IDRODINAMICA appartenenti il primo sulla TEORIA delle TROMBE IDRAULICHE, il secondo sulla LEGGE delle VELOCITÀ dell' ACQUA prorompente da' PICCOLI FORI de' Vasi; with copperplate, 4to. contemporary hf. roan gilt (fine copy), 10s 6d ibidem, 1789
'Sur l'hydraulique il a laissé des travaux remarquables.'—*Biogr. Gén.*, where the first treatise only is mentioned. Neither was known to Riccardi.
- 13149 ——— RIFLESSIONI ANALITICHE sopra una Lettera dal ABATE CONTE VINCENZO RICCATI; with plate, 8vo. *sewn*, 4s 6d Livorno, 1777
The work deals with Imaginary numbers. Riccati's letter is included in it.

- 13151 **PERRY** (Jevon James Muschamp, pr.; F.R.A.S.) OBSERVATIONS and MEASUREMENTS on DOUBLE STARS, made at St. Paul's Vicarage, Alnwick, with 18" Silvered Glass Reflector, between 1880 and 1884, a Manuscript on 43 ll., with 4 original sketches of comets, 4to. hf. bound, 5s [1880-4]
- 13152 ——— ORIGINAL WATER-COLOUR DRAWINGS of JUPITER, 19 well-executed drawings, sketched between 1880 and 1884, with explanatory MS. Notes, in 4to: Album, cl., 8s 6d [1880-4]
- These drawings are interesting in connexion with the 'Great Red Spot' of Jupiter, which originally suggested them. As in the foregoing work, the author used an 18" silvered reflector, made by With of Hereford for Henry Cooper Key, pr., F.R.A.S., in 1878, which he describes as 'one of the finest 18" mirrors in existence'.
- 13153 **PERRY** (Capt. John) ACCOUNT of the STOPPING of DAGGENHAM BREACH, with the Accidents that have attended the same from the first Undertaking, with proper RULES for PERFORMING any the like WORK, and Proposals for rendering the PORTS of DOVER and DUBLIN (which the Author has been employ'd to Survey) commodious for entertaining LARGE SHIPS, with large coloured MS. plan of levels overflowed by the breach, 8vo. old calf (back slightly damaged, and 2 ll. in a neat contemporary MS.); RARE, £1. 1s 1721
- 'This book was bought by Mr. [ROBERT] MYLNE [F.R.S. (1734-1801)], Surveyor to Blackfriars Bridge, at the sale of Admiral Henry Norris's effects & presented by him to L. Henderson who transfers his title to Mr. [WILLIAM] CHAPMAN [C. E. (1749-1832)]. Dublin, 1792. W. C. to E. W. C. — Inscr. on flyleaf.
- 'In 1714, tenders being invited to stop the breach in the Thames embankment at Dagenham in Essex, Perry offered to do the work for £25,000. The contract was, however, given to William Boswell, who asked only £10,300. Boswell having found his task impossible, the work was entrusted to Perry in 1715. He completed it successfully in five years' time; but the expenses so far exceeded anticipation that, though an extra sum of £15,000. was granted to him by parliament, and a sum of £1,000. presented to him by the local gentry, Perry gained no profit by the transaction. He published an account thereof in 'An Account' etc. (supra). — D. N. B.
- He had a singularly chequered career. As a commander of the fireship Cygnet he surrendered after a very slight resistance to a French privateer. He was court-martialled for dereliction of duty in not setting fire to his ship before the Frenchmen boarded her, found guilty, and sentenced to a fine of £1,000. and ten years' imprisonment in the Marshalsea. In 1698 he proceeded to Russia, engaged by the TSAR PETER, to superintend the naval and engineering works in that country, to leave fourteen years later afraid for his life after humbly reminding the Great Tsar that he had only paid him one year's salary. Subsequently he embarked upon the above unlucky venture (D. N. B.).
- 13154 **PERRY** (John, F.R.S.; Roy. College of Science) APPLIED MECHANICS: a Treatise for Students who have Time to work Experimental, Numerical, and Graphical Exercises, with 371 illustrations, cr. 8vo. cl., with booklabel of, and a few MS. notes by, F. J. Jervis-Smith, pr., F.R.S., and author's auto., 3s 6d 1897
- 13155 ——— NEW [LATEST] Edition, enlarged, with 372 illustrations, cr. 8vo. cl., 4s 6d 1909
- 13156 ——— The CALCULUS for ENGINEERS, with 106 diagrams, cr. 8vo. cl., 3s 6d (p. 7s 6d) 1897
- 13157 ——— TENTH IMPRESSION [revised, with Appendix], with 106 diagrams, cr. 8vo. cl., 4s 6d [1910]
- An excellent manual for those who have only an elementary knowledge of algebra and trigonometry.
- 13158 ——— ENGLAND'S NEGLECT OF SCIENCE, 8vo. cl., 1s 6d 1900
- 13159 ——— LONG-DISTANCE TELEPHONY, 8vo. (pp. 8), sewn, 1s 6d 1893
- 13160 ——— SPINNING TOPS, with 59 illustrations, cr. 8vo. cl., 1s 6d S.P.C.K., 1890
- 13161 ——— The STEAM ENGINE and GAS and OIL ENGINES: a Book for Students who have Time to make Experiments and Calculations [new Edition, corrected], with 325 illustrations, 8vo. cl., 4s 6d (7s 6d nett) 1904
- 13162 ——— The TEACHING of MATHEMATICS, with Discussion, before the British Association, Glasgow, 1901, post 8vo. cl. boards, with author's inser., 2s 6d 1901
- Added are: Remarks, by G. B. MATTHEWS, F.R.S. (pp. 6), and 'The Cultivation of the Mathematical Imagination', by MARY EVEREST BOOLE, Colchester, n. d.
- 13163 ———, J. GRAHAM, and C. W. HEATH: LIQUID FRICTION, with folding plate, 8vo. (pp. 18), sewn, with Prof. Perry's inser., 1s 6d [1893]
- 13164 **PERRY** (Stephen Joseph, S.J., F.R.S.) REPORT of the OBSERVATIONS of the TOTAL SOLAR ECLIPSE of August 29, 1886, made at the Island of CARRIACOU, with plate and diagram, roy. 4to. (pp. 12), sewn, with author's inser., 1s 6d 1889
- 13165 **PETAU** (Denis, Latine Dionysius Petavius, S.J.) URANOLOGION, sive SYSTEMA variorum AUTHORUM, qui de SPHERA, ac SIDERIBUS, eorumque MOTIBUS Græcè commentati sunt: GEMINUS et ACHILLES TATIUS, HIPPARCHUS, PTOLEMÆUS, THEODORUS GAZA, MAXIMUS, ISAACUS ARGYRUS, S. ANDREAS CRETENSIS. Omnia vel Græcè ac LATINE nunc primum edita, vel antè non edita; accesserunt variorum Dissertationum Libri VIII; with vignette on title and diagrams, thick roy. folio, old vellum (fine copy); RARE, £1. 10s Lutetie Paris., S. Cramoisy, 1630
- Dedicated to Cardinal Richelieu, and valuable for first containing some of the authors mentioned in the title. The work was reprinted in Amsterdam, 1703.
- 'Il fut admiré de son temps, au point qu'on frappa en son honneur une médaille avec ses mots: Au prince des chronologistes.' — Biogr. Gén.
- 13166 **PETERMANN** (Andreas, Univ. Leipzig) OPUSCULA MEDICA atque CHIMICA, olim separatim, nunc vero conjunctim edita, eorum Usui apprime inserventia qui Arti huic salubriori noviter se manciparunt; with portrait, large 12mo. old calf gilt, 4s Lipsie, 1720
- Nothing appears to be known of the author, who is not mentioned by Poggendorff, Kopp, and others.
- 13167 **PETERS** (Christian August Friedrich; Sternwarte Altona) NUMERUS CONSTANS NUTATIONIS, ex ASCENSIONIBUS RECTIS STELLAE POLARIS, in Specula Dorpatensi Annis 1822 ad 1838 Observatis deductus; adjecta est Disquisitio Theoretica de FORMULA NUTATIONIS, 4to. (pp. 103), sewn, 5s St. Pétersbourg [Petrograd], 1843
- 13168 **PETERS** (Christian Heinrich Friedrich; Director of the Observatory, Clinton, N.Y.) FLAMSTEED'S STARS * OBSERVED, but not EXISTING*, 4to. (pp. 15), sewn, 1s 6d [Washington,] 1885
- 13169 ——— RESULTATE aus PENDELBEOBSACHTUNGEN. I. und III. ABTHEILUNG: BESTIMMUNG der Länge des einfachen Sekundenpendels in Altona und Königsberg, 2 parts 4to. (pp. 25), sewn. 3s [Kiel, 1850-1]

- 13171 **PETETIN** (Jacques Henri Désiré, M.D.) NOUVEAU MÉCANISME de l'ÉLECTRICITÉ, fondé sur les Lois de l'Équilibre et du Mouvement, démontré par des EXPÉRIENCES qui RENVERSENT le SYSTÈME de l'ÉLECTRICITÉ POSITIVE et NÉGATIVE; et qui établissent ses Rapports avec le Mécanisme Caché de l'AIMANT, dont il explique les principaux Phénomènes: et l'heureuse Influence du Fluide Électrique dans le Traitement des Maladies Nerveuses; with 10 folding plates, Svo. sewn, 8s 6d
Lyon, An 10 [1802]

Interesting for giving experiments to trace the connexion between electricity and magnetism.

- 13172 **PETIT** (Emma Gentille) PLAYING at SCIENCE [in Verse]: Recollections of a Course of Lectures on Geology, Astronomy, etc., given by the Rector of St. Michael's, Lichfield, 3 parts Svo. sewn, 3s 6d
privately printed, 1876-9

Lichfield scientific poetry almost suggesting a reincarnation of Erasmus Darwin.

- 13173 **PETIT** (Robert) HOW to BUILD an AEROPLANE: translated by T. O'B. HUBBARD and J. H. LEDEBOER, 2nd Edition, with 93 illustrations, Svo. cl., 2s
1911

- 13174 **PETRI** (Nicolas, Deventer) PRACTIQUE, om te LEEREN REKENEN, CYFHEREN, ende BOECKHOEWEN, met die REGEL COSS, ende GEOMETRIE seer profytelijcken voor allen Coop-lyuden, van nieus [sic] ghecorrigeert ende vermeerdert; with finely engraved portrait by H. GOLTZIUS, 2 folding plates, and numerous diagrams, 4 parts 12mo. in 1, black letter; old white vellum (F. 194 wanting); RARE, £1. 15s
z. p. [? Amsterdam], 1591

Unknown to Poggeendorff, Grasse, Brunet, and others.

'Petri published an excellent treatise, which went through four [recte five] editions. It deals with arithmetic and geometry, as well as with book-keeping, and treats the subject succinctly and well. The improvements in the matter of stock-taking and of making a periodical trial-balance are incorporated. . . . Petri introduces for the first time two important departures from the older methods. . . . He no longer journalises all transactions *seriatim*, but occasionally groups the kindred items . . . and takes a step towards the separation of the books of primary entry. He introduces an 'Expenses-Book', and at the end of every month transfers the total to cash account by means of the journal. . . . Petri's book is truly one of primary entry.'—Richard Brown.

The above edition was unknown to Mr. Brown, who only quotes those of 1588, 1595, 1596, and 1605. Prof. de Morgan only knew that of 1596.

- 13175 **PETTERSON** (Oscar, Univ. Stockholm) NILSON MEMORIAL LECTURE, with portrait, Svo. (pp. 18), sewn, 1s 6d
1900

Lars Frederik Nilson, F.R.S., was not only one of the greatest Swedish chemists of his time, but his beautiful native island of Gothland owes to him its present position as a great producer of sugar-beet.

- 13176 **PETTERSON** (Sven Otto; Univ. Stockholm) EXPERIMENTELLE METHODEN und UNTERSUCHUNGEN in der PHYSIKALISCHEN CHEMIE. I—VI; with 2 folding plates, 4to. (pp. 44), sewn, 3s 6d
Upsala, 1879

'Of more importance have been the researches made with the object of determining melting point and heat of solidification [*supra*], e. g. those of Petterson and Nilson.'—Prof. E. v. Meyer.

- 13177 ——— UNTERSUCHUNGEN über die MOLEKÜLARVOLUMINA einiger Reihen von isomorphen Salzen, 4to. (pp. 45), sewn, 3s 6d
ibidem, 1873

- 13178 **PETTIGREW** (James Bell, M.D., F.R.S.) ANIMAL LOCOMOTION, or Walking, Swimming, and Flying; with a DISSERTATION on AERONAUTICS, 2nd Edition, with 3 plates and 130 woodcuts, cr. 8vo. cl., 2s 6d (p. 5s)
1874

- 13179 **PETTUS** (Sir John; F.R.S., M.P., Deputy Governor of the Royal Mines) FLETA MINOR: the Laws of Art and Nature in Knowing, Judging, ASSAYING, FINING, REFINING and Inlarging the Bodies of confin'd METALS, in Two Parts. I. ASSAYS of LAZARUS ERCKERN [sic], Chief Prover (or Assay-Master General of the Empire of Germany), in V. Books; originally written by him in the Teutonic Language, and now translated into English. II. ESSAYS on METALLICK WORDS, as a Dictionary to many pleasing Discourses, first edition, with fine portrait et. 70 by R. WHITE, and 43 fine engravings on copper of metallurgical processes, large folio; FINE and EXCEPTIONALLY LARGE COPY in contemporary English calf (RARE), £3. 3s
printed for the author, by Thomas Dawks, 1683

Copies having the portrait are especially rare. It is different from that in the Fodine and less comely, as he has developed an aggressive Roman nose. The above copy is unusually tall, and probably on Large Paper, although Lowndes does not mention such.

- 13180 ——— ANOTHER COPY, contemporary calf, rebaked (portrait wanting, but a FINE and TALL COPY), £1. 12s 6d

- 13181 ——— ANOTHER COPY, also wanting the portrait, new hf. calf antique, £1. 11s 6d

The first 377 pp. contain the only English translation ever published of Ercker's classic work. (v. No. 7592, *ante*). The dictionary of mining terms is the first published in the language.

- 13182 ——— REPRINT, with 43 fine engravings on copper, folio, old calf, newly rebaked (portrait wanting and title mounted, but a large copy), £1. 5s
Stephen Bateman, 1686

- 13183 ——— FODINÆ REGALES: or the HISTORY, LAWS, and PLACES of the CHIEF MINES and MINERAL WORKS in ENGLAND, WALES, and the ENGLISH PALE in IRELAND; as also of the MINT and MONY; with a Clavis explaining some difficult Words relating to Mines, etc., with beautiful PORTRAIT BY W. SHERWIN (splendid impression), and 4 fine engravings on copper (2 full-page of Mines), folio, old calf (small part of blank margin torn out of portrait, but a LARGE and SOUND COPY); VERY RARE, £2. 12s 6d
T. Basset, 1670

This rare work is very valuable for giving an account of the state of mining in England during the XVIIth. Century. It was undertaken at the request of Prince Rupert and Lord Shaftesbury. Large extracts from it are given in Hunt's 'British Mining'.

The fine portrait is to be found only in a few copies of the work, it having evidently been subject to the ravages of the grangerizer or print-seller of the past. It is of a much earlier period of his life than that to the 'Fleta Minor' (*supra*), and is not mentioned in D. N. B.

- 13184 ——— REPRINT of the FIRST PART, 12mo. sewn (hole through last 6 ll.), 12s 6d F. Collins, 1706
Added to the above is: 'OBSERVATIONS made by J. H. mostly in the year 1706' (pp. 1-106, without title), which deals chiefly on CORNISH MINING.

- 13185 **PEWTNER** (W.) COMPREHENSIVE SPECIFIER: a Guide to the Practical Specification of every Kind of Building-Artificers' Work, edited by WILLIAM YOUNG, cr. 8vo. cl., 2s (p. 6s)
1870

- 13187 **PETTY** (Sir William, F.R.S.) THE DISCOURSE made before the ROYAL SOCIETY the 26. of November 1674 concerning the USE of DUPLICATE PROPORTION in sundry Important Particulars; with a NEW HYPOTHESIS of SPRINGING or ELASTIQUE MOTIONS, 24mo. *contemporary calf (blank portion of last l. missing, some ll. waterstained, and title soiled)*; RARE, 15s

John Martyn, Printer to the Royal Soc., 1674

Interesting for containing some extraordinary and interesting speculations in molecular physics. In his dedication to the Duke of Newcastle the author states the work to contain three parts: 'I. an Endeavour to explain the intricate Notions, or *Philosophia Prima* of Place, Time, Motion, and Electricity; II. to excite the World to the study of a little Mathematics by shewing the use of Duplicate Proportions in some of the most weighty of Humane Affairs; III. Chymical Speculations, to consider such points and proportions, even in *Atoms* (such, whereof perhaps a Million do not make up one visible *Corpusculum*.) as may give an intelligent Account of the Nexure, Mixtures, and Mobilities of all parts of the Universe.'

- 13188 **PETZOLDT** (Georg Paul Alexander; *Univ. Dorpat*) DIE AGRIKULTURCHEMIE in populären Vorlesungen, 2. umgearbeitete Auflage; *with woodcuts*, 8vo. *sewn*, 2s Leipzig, 1846

- 13189 ——— LECTURES to FARMERS on AGRICULTURAL CHEMISTRY, post 8vo. *cl.*, 2s 6d 1845

- 13190 **PETZVAL** (Joseph) INTEGRATION der LINEAREN DIFFERENTIALGLEICHUNGEN mit CONSTANTEN und VERÄNDERLICHEN COEFFICIENTEN, LIEFERUNG 1-3; *with plate*, in one vol. 4to. *hf. calf neat*, 7s 6d (p. M. 28.30 *sewn*) Wien, 1851-5

- 13191 **PEUERBACH**, *Latine* PURBACHIUS (Georg) THEORICÆ NOVÆ PLANETARUM, ab ERASMO REINHOLDO Salueldensi pluribus Figuris auctæ, et illustratæ Scholiis, quibus studiosi præparentur, ac inuitentur ad Lectionem ipsius PTOLEMÆI; recens editæ et auctæ novis Scholiis in Theoria Solis ab ipso Autore Incerta item METHODICA TRACTATIO de ILLUMINATIONE LUNÆ; *with 3 plates and numerous other woodcuts and diagrams*, 12mo. *old vellum (one corner partly water-stained, otherwise a very sound and clean copy)*, 18s 6d Parisii, C. Perier, 1557

The editor, Erasmus Reinhold, was professor of higher mathematics in the University of Wittenberg, and, according to Poggendorf, one of the first adherents of the Copernican system, and the first to mention, in the above work, the camera obscura, but in an imperfect state (*v. PORTA, A.o. 1351? post*). At end is: *Theorica Motus Octavæ Sphæræ*.

- 13192 ——— TRACTATUS super PROPOSITIONES PTOLEMÆI de SINUBUS et CHORDIS; item COMPOSITIO TABULARUM SINUM per JOANNEM de REGIOMONTE, cum TABULIS SINUM DUPLICES per eundem REGIOMONTANUM, editio princeps; *with diagrams*, folio, *parchment (water-stained, but a sound copy)*; RARE, £1. 1s Norimbergæ, Johan. Petreius, 1541

The first satisfactory table of sines ever published, and one of the author's most celebrated works. A full account of it will be found in Prof. Cantor's *Vorlesungen über Geschichte der Mathematik*, Vol. II.

'Les deux hommes à qui les mathématiques doivent le plus dans le XV^e siècle, sont Purbach et Regiomontanus. Ce ne sera pas concevoir d'eux une idée trop avantageuse, que de les regarder les vrais restaurateurs de ses sciences, et surtout de l'astronomie.'—*Montucla*.

The author was a native of Peuerbach, a market town of Upper Austria, whence his name; professor of mathematics in the university of Vienna, and the teacher of Regiomontanus.

- 13193 **PPAFF** (Christian Heinrich, *Univ. Kiel*) REVISION der LEHRE vom GALVANO-VOLTAISMUS, mit besonderer Rücksicht auf Faraday's, de la Rive's, Becquerel's, Karsten's u. a. neueste Arbeiten; *with folding plate*, 8vo. *sewn*, 7s 6d Altona, 1837

- 13194 ——— ANOTHER COPY, *boards (nice copy)*, 8s 6d

The author was one of the earliest and foremost supporters of the contact theory of voltaic electricity, and much of the work is directed against the chemical theory advanced (by Wollaston, Fabbioni, and Ritter) to account for electric action. He also revised Volta's contact series, and was one of the few who appreciated the importance of Ohm's discovery.

- 13195 **PPAFF** (Friedrich, *Univ. Erlangen*) DIE NATURKRÄFTE in den ALPEN; oder physikalische Geographie des Alpengebirges; *with diagrams and woodcuts*, post 8vo. *hf. calf extra (nice copy)*, 3s 6d München, 1877

- 13196 **PPAFF** (Johann Wilhelm Andreas, *Univ. Erlangen*) BETRACHTUNGEN über die SPIRALE; *with plate*, 4to. (pp. 14), *sewn*, 2s [? München, 1832]

Not noticed by Poggendorf.

- 13197 **PFAUNDLER** (Leopold v.; *Univ. Graz*) DIE ENTWERTHUNG der MATERIE, post 8vo. (pp. 32), *sewn*, 1s 6d Wien, 1888

- 13198 **PFEFFINGER** (Jean Frédéric) FORTIFICATION NOUVELLE, ou Recueil de différentes Manières de Fortifier en Europe, nouvelle Édition; *with frontispiece, vignette on title, and 46 folding copperplates*, 8vo. *boards, uncut, with auto. of [Gen.] Robert Melville [F.R.S., 1723-1809, inventor of a naval gun]*, 5s 6d La Haye, 1740

This work was unknown to Quérard. The *Biographie Générale* only mentions an edition of 1698.

- 13199 **PHELPS** (Robert, *Trinity Coll., Cantab.*) ELEMENTARY TREATISE on OPTICS, intended chiefly to elucidate the PRINCIPLES of the CONSTRUCTION of TELESCOPES, and some other Optical Instruments, *with 69 diagrams*, 8vo. *boards, uncut (scarce)*, 5s Cambridge, 1835

An early Cambridge text-book of geometrical optics.

- 13200 **PHILLIPPS** (Henry, *Philo-Nauticus*) THE SEA-MAN'S KALENDER: or. an Ephemerides of the Sun, Moon, and certain of the most notable Fixed Stars, also a TABLE of the LONGITUDE and LATITUDE of all the most eminent Places of the World, first calculated by JOHN TAP, corrected, with many Additions, *viz.* New Exact TABLES of the NORTH STAR; New TABLES of 65 of the principal FIXED STARS, etc., with a DISCOVERY of a Way to Find the Long Hidden SECRET of LONGITUDE, by HENRY BOND, all which are now newly calculated and corrected, and many Rules and Tables added, *with woodcuts (with the full-page one on p. 11 intact)*, sm. 4to. *large and sound copy in contemporary sheep (back damaged)*; RARE, *with Tixall Library label*, £1. 15s

W. Godbid for E. Hurlock, 1674

'It is a Compendium (if well understood) of the whole Art of Navigation. But its chiefest excellency consists in the Astronomical part thereof; the Tables whereof are so plain and full, and well ordered, that there never were the like in any Book.'—*Address to the Ingenious Sea-man*. At end is a table, giving the latitude and longitude of over 1000 places, by T. STERN, globe-maker.

The work was unknown to Lowndes, while Watt only quotes an edition of 1696. There was no copy of any edition in the Scott Library, nor is there one in that of the Institution of Naval Architects.

TRAITÉ DU TRIANGLE ARITHMETIQUE, AVEC QUELQUES AUTRES

PETITS TRAITEZ SUR LA

MESME MATIERE.

Par Monsieur PASCAL.

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Rangs paralleles

Triangle Arithmetique

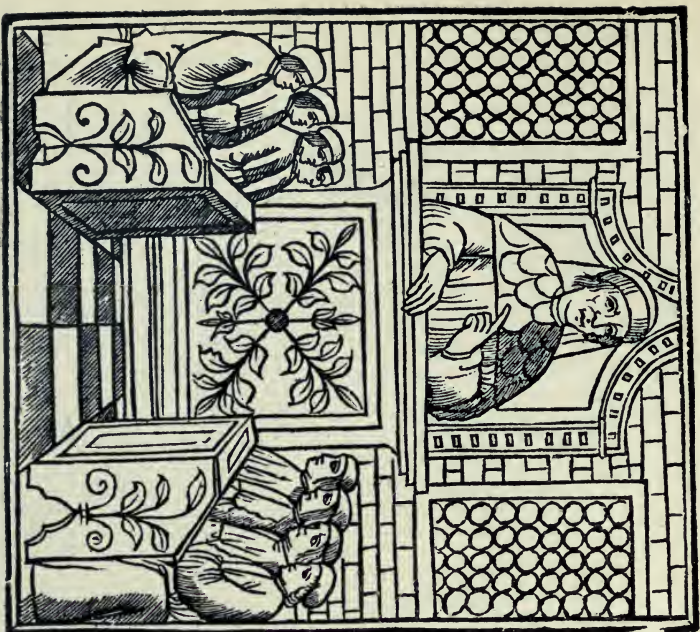
Rangs perpendiculaires

No. 12997 (page 650).

Pascal's Arithmetical Triangle.



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It was translated into German by Johann Heinrich Lambert.

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The first work has been greatly enlarged in the above edition, and increased from four to six books. The edition was unknown to Riccardi. The second work, though imperfect, contains all the star maps.

- 13298 — GLI STESSI; with numerous woodcuts and diagrams, and the 48 star maps, 2 v., Giov. Varisco e Paganino Paganini, s. a.: La PRIMA PARTE delle THEORICHE overo SPECULATIONI de' PIANETI; with numerous diagrams, Giov. Varisco & Ci., 1563—3 vols. sm. 4to. in 1, *old hf. white Italian vellum* (slightly foxed, but very good copies), £1. 1s *ib.*, s. a.—1563

'Buona edizione'.—Riccardi.

The second work 'De le Stelle Fisse', which has a separate title-page and pagination, is of special interest, containing as it does the first published star maps—a fact not generally known. Four different magnitudes are distinguished, and the stars are named with Latin letters. The Greek lettering, still in use at the present time, was first used by Johannes Bayer in 1603 (*q. v. post*).

These star maps in all the above editions are xylographs, and according to M. Libri, 'perhaps the last instance of a xylographic work, or portion of a work of any extent, printed during the XVI. Century.'

'La chiarezza, il buon ordine ed il bello stile coi quali sonovi esposte le cognizioni che allora si avevano intorno alla costituzione dell' universo, rendono ragione della straordinaria diffusione di questa opera.'—Riccardi.

- 13299 — De SPHAERA Libri IV, ex Italico in Latinum Sermonem conversi; eiusdem COMPENDIUM de COGNOSCENDIS STELLIS FIXIS, et de MAGNITUDINE TERRE et AQUÆ Liber unus, itidem Latinus factus, JOAN. NICOL. STUPANO Rheto interprete; with woodcuts, numerous diagrams, and 48 star maps, 3 v.: VERÆ SOLARIS atque LUNARIS ANNI QUANTITATIS aliarumque Rerum ad CALENDARIUM ROMANI EMENDATIONEM pertinentium, de Ortu item atque Occasu Stellarum Fixarum compendiosa atque dilucida EXPLICATIO. Opus olim a Petro Pitato Veronensi conscriptum; nunc revisum, etc. [a JOA. NIC. STUPANO]—4 vols. 4to. in 1, *old English calf, with gilt ornament in centre* (top of back and one corner of binding slightly damaged, otherwise a VERY LARGE AND FINE COPY); RARE, £1. 12s 6d Basileæ, per Petrum Pernam, 1568

The only Latin edition ever published of this work.

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The author gave in the above work an explanation of the formation of dew, by which he was able to explain a dew-maximum on clear nights. His theory was completed in 1814 by Dr. W. C. Wells, F.R.S. (v. Nos. 5322-5 ante).
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This work is not mentioned by Poggenorff and other bibliographers, nor contained in the otherwise complete list of books on electricity in the Catalogue of the Ronalds Library.

- 13329 **PIESSE (G. W. Septimus, analytical chemist)** *THE ART OF PERFUMERY*, and the Methods of Obtaining the Odours of Plants, with Appendix on the Colours of Flowers, Artificial Fruit Essences, etc., first edition, with numerous pretty full-page and other woodcuts, post 8vo. cl. (scarce), 6s 1835
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The Libri copy fetched 47 francs in 1847, but the work was unknown to Poggendorff.

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Jacques Quillau, Imprimeur-Juré de l'Université, 1714

This rare work was unknown to Quérard, Brunet, or Graesse, but is mentioned by Poggendorff, who states that the author made a planetarium, as described above, for Louis XIV., for which he received 'a royal reward', and sold another 'for a high price' to Peter the Great in 1716.

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- 13341 **PIHL (O. A. L.)** *On OCCULTING MICROMETERS, and their Value as applied to Exact Astronomical Measurements*, roy. 4to. (pp. 71), sewn, with inser. to Prof. A. S. Herschel, F.R.S., 3s 6d Christiania, 1893

- 13342 — *The STELLAR CLUSTER χ PERSEI micrometrically surveyed*, with 2 folding maps, roy. 4to. (pp. 107), sewn, with inser. to the same, 4s 6d ibidem, 1891

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A delightfully belated refutation of the Newtonian system, published under the auspices of Pope Pius VII. The author is unkindly ignored by Poggendorff and Riccardi.

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The work was written in 1813 while the author was a prisoner of war in Saratoff, with no other help than his memory.

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The above account is rare and was unknown to Houzeau and Lancaster; nor is the author mentioned by Poggendorf and other bibliographers.

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 It includes an account of the disastrous ascent of Mme. Blanchard, which the author witnessed while staying in Paris.
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Neapoli, apud Matthiam Ciceri, 1558

The first edition of this work in its original and more popular form in four books is of excessive rarity, Riccardi, who apparently could trace no copy of it ('rarissima edizione'), being unable to give a collation, while other bibliographers state that it only contained 3 books.

The *Magia Naturalis* in four books is quite a different work from that in twenty, and contains far more occult and superstitious matter than the latter, which made it however only the more acceptable to the contemporary reader. The author mentions therein the *camera obscura* without the lens, the discovery of which is generally ascribed to Leonardo da Vinci, but was really first mentioned by Levi ben Gerson in a work translated in A.D. 1342 under the title 'De Sinibus et Cordis.' The camera with the lens was first described in the work rewritten in 20 books. Porta also mentions that the declination of the magnetic needle varies with the longitude, which he assumed erroneously could be ascertained by the magnetic variation. The work was written at the age of 15, and is dedicated to Philip II. of Spain. The work as above contains the 'Experimentorum Omnium Magie Naturalis Index' (pp. 10), which is absent in the second edition of Antwerp, 1564, and other reprints.

'De tous les écrits de Porta ce fut celui qui eut le plus de succès; dès sa première apparition, on le traduisit en plusieurs langues, et l'empression du public fut tel, ce livre fut lu avec tant d'avidité, il passa par tant de mains, que cet usage continué a détruit les premières éditions, et que l'en connaît plus que des réimpressions. . . Ces apparitions prodigieuses, ces miracles, étaient le roman de l'époque: et c'est ci vrai que lorsque, après des longs travaux, l'auteur le fit imprimer de nouveau avec de si notables additions, en le purgeant d'un grand nombre de prodiges imaginaires, ce livre perdit considérablement de sa vogue, et fut bientôt relégué parmi d'autres ouvrages du même genre.'—*G. Libri.*

13518 ——— **MAGLE NATURALIS LIBRI XX**, ab ipso Authore expurgati, et superacti, in quibus Scientiarum Naturalium Divitiæ et Delitiæ demonstrantur. I. De mirabilium Rerum Causis. II. De variis Animalibus gignendis. III. De novis Plantis producendis. IIII. De augenda Supellectili. V. De Metallorum Transmutatione. VI. De Gemmarum Adulteriis. VII. De Miraculis Magnetis. VIII. De portentosis Medelis. IX. De Mulierum Cosmetice. X. De extrahendis Rerum Essentiis. XI. De Myropœia. XII. De incendiariis Ignibus. XIII. De raris Ferri Temperaturis. XIII. De miro Coniuviorum Apparatu. XV. De capiendis Manu Feris. XVI. De inuisibilibus Literarum Notis. XVII. De catoptriciis Imaginibus. XVIII. De staticis Experimentis. XIX. De Pneumaticis. XX. Chaos; editio princeps, with title within woodcut border, portrait et. 50, and numerous other woodcuts and diagrams, folio, old white vellum (some ll. browned as usual, otherwise a sound copy), very rare, £2. 10s

ibidem, apud Horatium Salvianum, D.D.LXXXVIII [recte 1589]

13519 ——— **ANOTHER COPY**; old white vellum gilt (some ll. slightly water-stained, and others browned, otherwise a sound and UNUSUALLY TALL COPY), £3. 3s

First edition of the complete work in 20 books, and now of great rarity. Numerous reprints were published, and it was translated into many foreign languages.

13520 ——— **EDITIO NOVA**, nunc vero ab Infinitis, quibus Editio illa [princeps] scatebat Mendis, optime repurgata: in quibus Scientiarum Naturalium Divitiæ et Deliciæ demonstrantur, accessit Index copiosissimus; with woodcuts and diagrams, sm. 8vo. contemporary white vellum (fine copy), 12s 6d
Rothomagi, Jo. Berthelin, 1650

13521 ——— **EDITIO ALTERA**, cum Indice copiosissimo; with engraved title, and numerous woodcuts and diagrams, 12mo. hf. calf (binding damaged), 10s
Lugd. Bat., P. Leffen, 1651

13522 ——— **ANOTHER COPY**, white vellum (engraved title wanting, but a very sound copy), 8s 6d

A very neatly printed edition. The engraved title is dated 1650. Porta's *Magia Naturalis* in Twenty Books is quite a different work from that in Four Books, first published in 1558, and is one of the most important works on natural science published during the XVIIth Century. Many of the superstitious and even puerile passages of the latter were left out in this work, and sixteen new books were added. It is a great storehouse of fact and fiction, brought together from every available source and from private conversations, during the author's extensive travels in Italy, France and Spain. Some of the books were afterwards published in an enlarged and separate form.

Of great interest is book VI, which shows that the production of artificial gems must have been far advanced in Porta's time. The seventh contains some important observations on the magnet. The most important however is the seveneenth, which contains Porta's invention of the camera obscura with the lens, and the laterna magica, afterwards improved by Father Kircher. A passage of the tenth chapter has also been quoted to ascribe to him (mistakenly) the invention of the telescope.

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Nos. 13517-19 (page 676).

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- 13530 ——— La FISONOMIA dell' HUOMO, et la CELESTE: Libri Sei, tradotti di Latino in Volgare, et hora in questa Settima Impressione ricorretta, con la Fisonomia Naturale di Monsignor Giovanni Ingegneri, di Polemone, di Adamantio, et il Discorso di Livio Agrippa sopra la Natura e Complessione Humana, con il Trattato di Nei di Lodovico Settali, aggiuntovi da nuovo la Metoposcopia di CIRO SPONTONE; with full-page woodcut portrait (different from the foregoing ones), and very numerous large woodcuts, 4to. boards, uncut, 16s
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- 'Tout en profitant des observations d'Aristote, de Polémon et d'Adamantius, Porta a déployé tant de sagacité dans ses propres recherches qu'il peut passer pour le véritable fondateur de la physiognomie.'—*Biogr. Gén.* To this edition is added the *Celeste Fisonomia* (v. No. 13515 supra).
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Argentorati, L. Zetzner, 1606
- The first edition of this work was published in four books in 1563 as *De Furtivis Literarum Notis*. The fifth book was first published in the edition of Naples, 1592, and the above first contains the 'Auctarium' and is the last mentioned by Riccardi.
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Neapoli, Jo. Jac. Carlinus, 1601
- This work is of interest as containing the earliest attempt towards measuring the volume of steam given off by a given quantity of water.
- 'An apparatus similar to that of Hero of Alexandria is described by della Porta in his Pneumatics, published in 1601, with this addition, that the condensation of steam within a close vessel is described as a means of producing a vacuum, and thereby causing water to ascend and fill the vessel.'—*Prof. Rankine, F.R.S.*
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ibidem, a. c., 1606
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- 'Dans la traduction italienne des *Pneumaticis*, Porta parle des moyens à employer pour connaître en combien d'air se transforme une quantité donnée d'eau. Cet air n'est autre chose que la vapeur, et l'on ne peut se refuser à voir ici une des premières applications faites par les modernes de ce puissant moteur. Au même endroit Porta traite de la raréfaction de l'air par la chaleur, et l'applique à un instrument, qui est une espèce de thermomètre.'—*M. Libri*.
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Venetis, J. B. à Porta, 1584
- An iatro-chemical work of importance, in which the author denies that the internal use of gold lengthens life, and containing matters of interest to the historian of chemistry and physics. It was unknown to Poggendorff, Brunet, Græsse, and other bibliographers.
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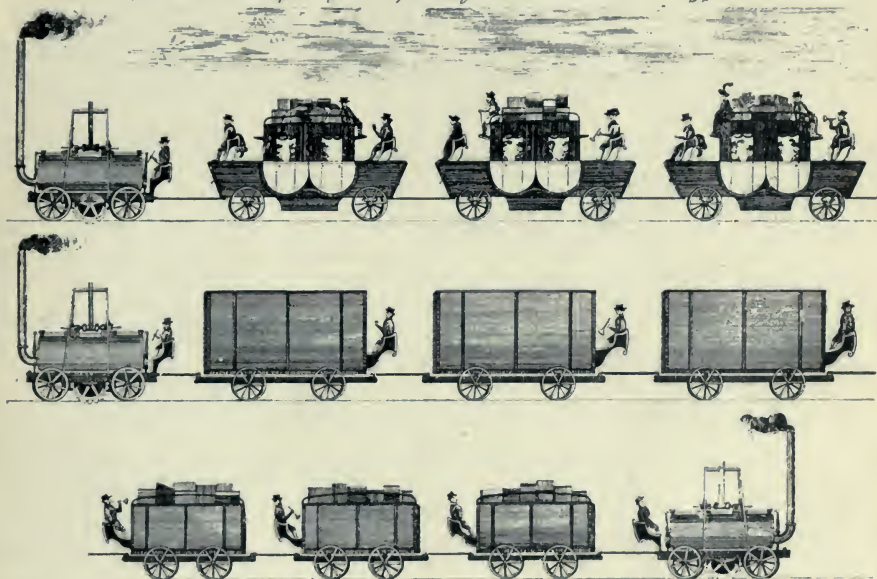
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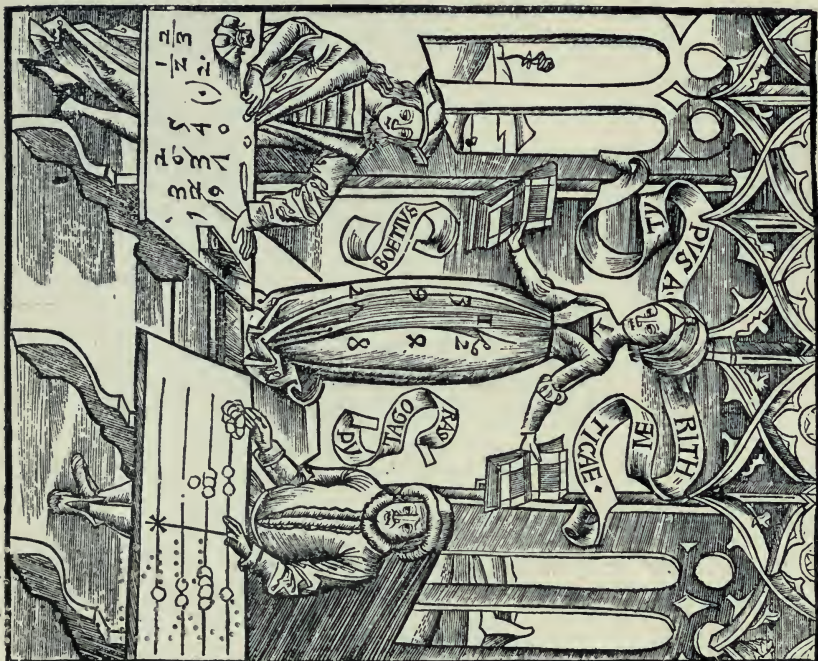
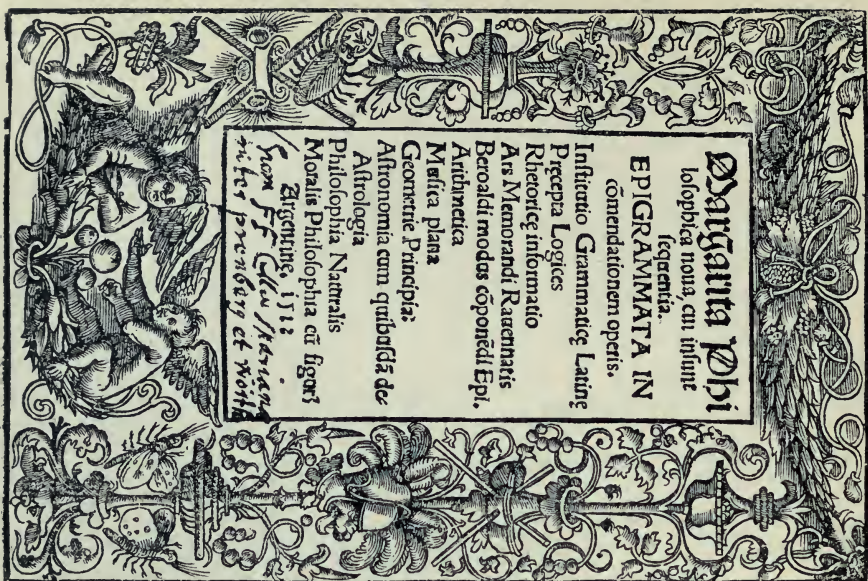


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The author tries to prove that the analysis of light and heat by the glass prism is a delusion. The following are some of his axioms: 'Blackness is compounded of blue, red and yellow rays, and there is as strong a reflection from black as from any other coloured substance' (p. 1): 'Atoms change colour with every change of condensation' (p. 164): 'The colours in Newton's experiment were occasioned by the black light, reflected from the inner margin of the hole in the quire of paper' (p. 258). There are nevertheless some sound remarks in this painstaking paradox.

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This book contains a dedication in English to Queen Mary, and another in Latin to Cardinal Pole. D. N. B. erroneously mentions 1551 as the date of the first edition, a statement palpably wrong, as Queen Mary's accession did not take place until 1553, and Cardinal Pole was consecrated Archbishop of Canterbury (the work being dedicated to him as such) only after Abp. Cranmer's execution in 1556.

He was probably the first, certainly one of the first, in England to adopt the Copernican system, which was only put forward as an hypothesis in 1543; though he seems to have thought the world not quite ripe for such a doctrine, and was perhaps afraid to avow it very distinctly. He advises his reader not to rely too much on Ptolemy; but it appears that he had not quite abandoned astrology. . . . In his prefaces, introductions, and conclusions he frequently indulges in very passable poetry (a beautiful and dignified hymn from *The Castle of Knowledge* is quoted in Collier's Bibliographical Account). —D. N. B.

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'Regiomontanus and Purbach adopted the Hindoo sine in place of the Greek chord of double the arc. Regiomontanus emphasised the use of the tangent in trigonometry, and following out some ideas of his master, calculated a table of tangents . . . He was the author of a complete treatise on trigonometry, containing solutions of both plane and spherical triangles. The form which he gave to trigonometry has been retained, in its main features, to the present day. . . . Regiomontanus ranks among the greatest men that Germany has ever produced'.—Prof. Cajori.

Nothing is known of the author of the second work, who is not mentioned by Montucla or Poggendorff (who mistakenly attributes the work to Regiomontanus), or in other bibliographies. It forms an appendix to the first work, and is especially interesting for its numerous well-executed woodcuts, which include many on artillery bombarding fortresses, which are still based on the contemporary notion that the projectile travels in a straight line, and after its strength is spent, drops vertically (c. No. 8212 ante).

Poggendorff mentions a Johannes Noviomagus (Jan Bronckhorst), 1494-1570, who for some time professed mathematics at Rostock; but there is no evidence to connect him with the above Daniel Santebech Noviomagus.

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The author's was the last of the classic series of experiments made by Robert Hooke, G. B. Guglielmini in 1791, and Benzenberg in 1802 (c. No. 338 ante) to ascertain the Easterly motion of a falling body, caused by the rotation of the earth. All these experiments 'showed, in addition to the predicted Easterly deviation, also a small Southerly displacement. For this no satisfactory explanation has yet been given' (Prof. Cajori).

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This is the work that contains the author's imaginary discovery of *od*, a physical force intermediate between electricity, magnetism, heat, and light, to which the phenomena of hypnotism (then 'mesmerism') are to be due. In its narrower sense it agrees perhaps best with Prof. Forel's *neurokymos*.

The subject may still offer a field of speculation to the scientific mystic in connexion with the undiscovered octaves of ether waves.

It consists of 2 parts, the first treating of 'Physico-Physiological Researches on the Imponderables, in their Relation to the Vital Force', and the second of 'Magnetic or Odylie Light.'

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- Nicholas Hawksmoor was the 'scholar' and greatest pupil of Wren, and helped in building St. Paul's. He did much work at Queen's and All Souls Colleges at Oxford, but his most interesting works to Londoners are St. Mary Woolnoth in Lombard St. and his many East End churches under Queen Anne's 'Fifty' scheme, which include St. Anne's, Limehouse, St. George's in the East, and that noble church, Christ Church, Spitafields.
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- This Manuscript was probably written on or immediately after leaving Edinburgh University, when he established a business on his own account as a millwright.

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This would have made the Great Eastern the original 'Great Northern' railway, and lacking endless tunnels a much more comfortable line. But it stuck at Cambridge. It is plain from the above interesting MS. that the first intention of all was to make it join the very early High Peak Railway, which still exists as a mineral line from Buxton to Wirksworth.

- 14072 ——— **LETTER to the DUKE of BEDFORD, Governor of the Corporation of the BEDFORD LEVEL, on the DRAINAGE of the MIDDLE LEVEL, with large folding map, 4to. (pp. 17), sewn, 5s** 1842
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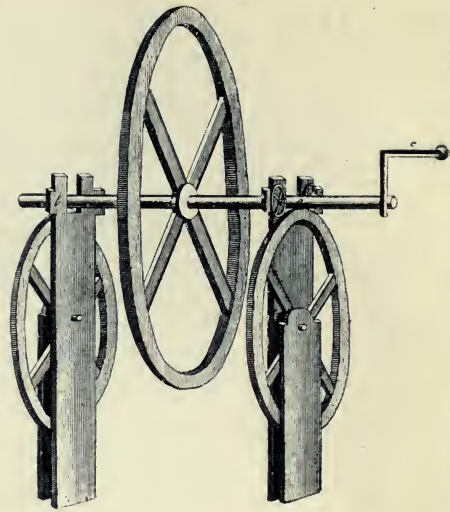
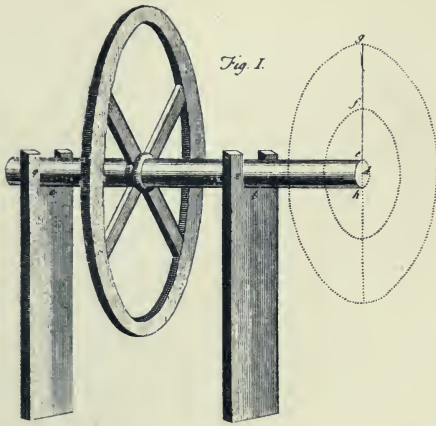
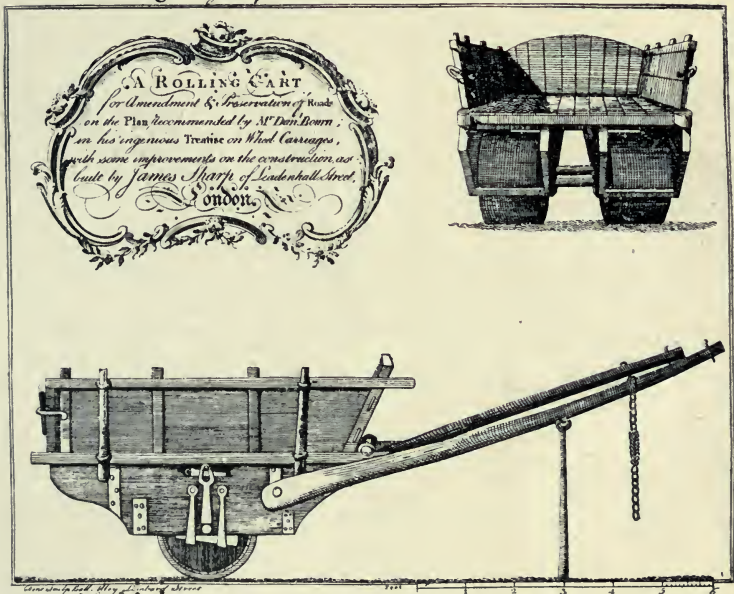


Fig. II.

Gent. Mag. Aug.^t 1768.



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- Adam Riese was the Cocker of Germany, ‘Nach Adam Riese’ being the exact equivalent of ‘according to Cocker.’ He uses the symbols + and -, and, according to Ludwig Darmstaedter, first introduced the symbol $\sqrt{\quad}$ for square root (attributed by Mr. W. W. R. Ball to Rudolff).
- ‘Er hat zu vereinen und zweckdienlich zu ordnen gewusst, was vorhanden war. Aus seiner Anordnung konnte der Rechenunterricht die methodischen Vorschriften sich bilden, welche heute als selbstverständlich gelten. Die Vorschrift des Aufstiegens vom concreten Denken zum abstrakten wird in jedem Rechenunterrichte heute beachtet; bei Riese ist das Rechnen mit Rechenpfennigen dem mit Ziffern vorausgeschickt. Die zweite Grundregel ist die des Übergangs vom Einfachen zum Zusammengesetzteren, und auch diese war Riese’s Rechenbuch zu entnehmen. . . . Michael Stifel nannte seine Aufgaben ‘holdselig’ und entnahm sie ihm für sein eigenes Werk. Andere folgten diesem Beispiele. . . ., und so galt hinfür für einen Meister der Rechenkunst, wer Adam Riese’s Rechnung nach der Länge vollständig durchgearbeitet hatte.’—*Prof. M. Cantor*.
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1787
‘Ouvrage fort estimé des navigateurs.’—*Quérard*. ‘M. Romme déduit aussi un phénomène important, c'est l'influence de la forme de l'arrière sur la résistance de l'avant.’—*Lalande*.
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- 14420 **RONALDS** (Sir Francis, F.R.S.; *inventor*, in 1816, of the electric telegraph) DESCRIPTIONS of an ELECTRICAL TELEGRAPH, and of some other Electrical Apparatus, 2nd Edition [with PREFACE], *with 4 plates (one folding) of the installation and the electrical apparatus used*, 8vo. *cl.* (SCARCE), 12s 6d
1871
This work contains the account of the electric telegraph invented by the author, which transmitted signals from his house at Hammersmith (occupied later on by WILLIAM MORRIS, the poet, and known as ‘Kelmiscott House’) over a system of wires 8 miles long, by observing at one end the divergence of a pair of pith balls when a charge of electricity was sent into the other.
‘Ronalds's instrument was of real practical use, and the brilliant idea of using synchronously rotating discs, now employed in the Hughes printing apparatus, was entirely his own. The only defect in his invention was the comparative slowness with which a succession of symbols could be transmitted.’—*D. N. B.* He at once offered the invention to the Admiralty, and was officially answered that now the French war was over telegraphs of any kind were wholly needless, and that no other than the semaphore then in use would be adopted. The inventor published the above account first in 1823, and then dropped telegraphy for good.
This second edition contains an interesting preface dated *Battle*, Oct. 9, 1871, and written in the inventor's 83rd year and 48 years after the publication of the first edition. There are however only 4 plates, instead of the 8 contained in the original edition.
It is pleasing to remember that an Englishman, DR. WILLIAM GILBERT, wrote the first scientific treatise on electricity in Elizabeth's reign, and another invented the electric telegraph in George the Third's, and another wireless telegraphy (on the Flat Holm in the Bristol Channel) in Queen Victoria's.
- 14421 **RONAYNE** (Philip) TREATISE of ALGEBRA, in two Books, the First treating of the ARITHMETICAL, the Second of the GEOMETRICAL PART; 2nd Edition, with Additions, *numerous diagrams*, 8vo. *old calf*, 8s 6d
1727
This work was unknown to Poggeendorff (who does not even mention the author), Lowndes, and Allibone. Pp. 395-461 treat of the obsolete METHOD of EXHAUSTION, with applications to draw tangents, to find the maxima and minima of curves, and to quadratures, yet the author does not even remotely refer to Newton's Method of Fluxions, or the principles underlying it. The author was doubtless an ancestor of Joseph Philip Ronayne, railway and hydraulic engineer in Ireland and California, and Home Rule M.P., who died in 1876.
- 14422 **RONCA** (Cap. di Fregata G.) MANUALE di BALISTICA ESTERNA; *with tables and diagrams*, 8vo. *sewn*, 4s
Livorno, 1901
- 14423 ——— MANUALE del TIRO, con un Appendice del PROF. [G.] PESCI sulla ‘NOMOGRAFIA’; *with 10 tables and 202 other illustrations*, thick 8vo. *sewn*, 6s (p. L. 10 nett)
ibidem, 1901
- 14424 ——— ed A. BASSANI: BALISTICA ESTERNA; *with 78 illustrations*, 8vo. *sewn*, 5s *ib.*, 1901
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- 14425 **RONDELET** (Antoine Jean Baptiste; *son of Jean Rondelet*) ESSAI HISTORIQUE sur le PONT de RIALTO; *with 12 engraved plates, folio, boards* (back damaged), 6s 6d
1836
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- 14426 **RONDELET** (Jean, *de l'Institut*) MÉMOIRE sur la MARINE des ANCIENS, et sur les NAVIRES à PLUSIEURS RANGS de RAMES; *with 10 folding copperplates*, roy. 4to. *sewn* (RARE), 15s
chez l'auteur, 1820
This is probably the only complete work ever written on this interesting subject, and fully discusses the ships of many-banked oars which must have added a horror of their own to the slavery of a cultured Antiquity. There was no copy of the work in the Scott Library, nor is there one in that of the Institution of Naval Architects.
- 14427 ——— TRAITÉ THÉORIQUE et PRATIQUE de l'ART de BÂTIR, 10^e Edition, 5 vols. 4to., and Atlas containing 210 plates, roy. folio—6 vols. *hf. russia* (backs rubbed), 15s
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There was no copy of this work in the Scott Library.
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The author would cause rain 'by raising electrical conductors to a cloud by means of balloons, withdrawing the surcharge of electricity, and causing rain to fall.' (p. 9.) There is no copy of the above pamphlet in the R. Met. Society's Library Catalogue (1891).

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The author, the pioneer iron shipbuilder of the Isle of Dogs, was with Samuel Clegg the elder the first to utilize George Medhurst's suggestion to obtain locomotive power by differential atmospheric pressure, by constructing an exhaust railway between London and Wornwood Scrubbs in 1840. The impossibility of maintaining a working vacuum however produced an enormous coal bill, and the scheme came to an end, as mentioned in the next article. It had one final modified trial in the system of the Pneumatic Dispatch Co., but their tube too has long been derelict, and the new Post Office Railway is to have electric draught.

- 14664 — RAILWAYS ATMOSPHÉRIQUES, ou Application de la Pression Atmosphérique à la Traction sur les Railways, traduit et annoté par C. DU PERRON; with 3 folding plates, 8vo. (pp. 62), *limp smooth maroon morocco gilt, t. e. g. (fine copy); scarce*, 10s 1842

The 'Atmospheric Railway' actually worked the St. Germain incline till 1860, the only instance of its practical employment after its costly collapse on the South Devon Railway.

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The author investigates in the above paper the vibrations of the magnetic needle in the mariner's compass, and suggests replacing the iron bowl by a nickle-copper alloy to damp the vibrations by exciting currents of induced electricity.

- 14797 [SECONDOAT (Jean Baptiste Baron de)] MEMOIRE sur l'ELECTRICITÉ; *with vignette on title*, 12mo. boards (rare), 10s 6d 1746
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* That celebrated treatise, the *New Light of Alchemy*. . . In insists on the existence of a sperm in everything, and that all Nature originated at the beginning from one only seed. It treats of the generation of metals and the manner of their differentiation, of the extraction of their seed, and of the manufacture of the stone or tincture. — A. E. Waite.

The Nine Books of Paracelsus and the Chemical Dictionary have a separate titlepage and pagination.

- 14815 [—] **NOVUM LUMEN CHYMICUM**, e Natura, Fonte, et manuali Experientia depromptum: cui accessit TRACTATUS de SULPHURE, Authoris Anagramma, Divi Leschi Genus Amo, 18mo. cl. (*rare*), £1. 1s *Geneva*, 1639

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- 14816 [—] **NOVUM LUMEN CHYMICUM**, Novo Lumine auctum, sive ZWÖLFF GEHEIME CHYMISCHE TAFELN und BEISCHRIFTEN über die XII. Tractate SENDIVOGI, nebenst beygehenden kurtzen COMMENTARIO und angefügter Schlussen Rede ORTHELII; *with woodcuts*, 12mo. *old vellum (back damaged); RARE*, £1. 1s *Frankfurt*, 1682

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- 14817 **SENEBIER (Jean)** RECHERCHES sur l'INFLUENCE de la LUMIÈRE SOLAIRE pour MÉTAMORPHOSER l'AIR FIXE en AIR PUR par la Végétation, avec des Expériences et des Considérations propres à faire connoître la Nature des Substances Aëriiformes, 8vo. *hf. calf (SCARCE)*, 12s 6d *Genève*, 1783

The author confirmed the discoveries of Ingenhousz (v. Nos. 9665-6), and discovered the fact that chlorophyll is bleached by the action of light in a few minutes. He also made important investigations on the action of light on resins and essential oils.

- 14818 **SENEFELDER (Alois)** COMPLETE COURSE of LITHOGRAPHY: containing clear and explicit Instructions in all the different Branches and Manners of that Art: with a HISTORY of LITHOGRAPHY from its Origin to the present Time, and a Preface by FREDERIC V. SCHLICHTEGROTH, translated by A. S., *with portrait, and 13 plates of lithographic specimens*, 4to. *hf. calf (binding damaged); SCARCE*, £2. 2s *R. Ackermann*, 1819

Containing a full account of the author's discovery of lithography.

- 14819 **SENNERT (Daniell, Prof. Medicine, Univ. Wittenberg)** PHYSICA HYPOMNEMATA. I. De Rerum Naturalium Principiis. II. De Occultis Qualitatibus. III. De Atomis et Mistione. IV. De Generatione Viventium. V. De Spontaneo Viventium Ortu, cum Indicibus necessariis, 8vo. *old vellum (sound copy); RARE*, £1. 1s *Lugduni*, 1637

'C'est dans ce recueil que Sennert donna carrière à sa vaine paradoxale. D'après lui, l'âme était dans la semence avant l'organisation, et c'est elle qui formait les corps; les métaux devaient leur création à des esprits intelligents, et l'âme des bêtes n'était point matérielle.' — *Biogr. Gén.*

The work is nevertheless scientifically important for the contributions to the atomic theory which it contains. The author accepts physical, as distinct from mathematical, minima as the smallest no longer physically perceptible parts of a body, and attacks in this connexion the doctrines of Aristotle. His atomistic theory found many followers, among others Otto von Guericke and Johannes Sperling.

- 14820 **SERLE (George)** DIALLING UNIVERSAL, shewing by an easie and speedy Way, how to describe the Houre-lines upon all Sorts of Plains in any Latitude whatsoever: Performed by certain SCALES set upon a small portable RULER; 2nd Edition furnished with these Varieties. I. Reflex Dialling. II. To finde the necessary Requisites belonging to all Plains. III. Severall Tables ready calculated, with an Appendix: Shewing the USE of the SCALES in resolving of the most useful Questions appertaining to Astronomie, Navigation and Geographie, *with numerous diagrams*, sm. 4to. *fine and large copy (but slightly wormed) in contemporary English calf (RARE)*, £1. 5s *W. Leybourn, for Thomas Pierrepont*, 1664

- 14821 **SERRET (Joseph Alfred, de la Sorbonne; de l'Institut)** COURS d'ALGÈBRE SUPÉRIEURE, 2^e Édition, augmentée; *with folding plate*, 8vo. (pp. 600), *sewn*, 2s 1854

- 14822 [—] TROISIÈME ÉDITION [refondue et augmentée]; *with diagrams*, 2 vols. 8vo. *sewn*, 4s 6d (p. F. 24 nett) 1866

- 14823 [—] QUATRIÈME ÉDITION [augmentée]; *with diagrams*, 2 vols. 8vo. *hf. calf (binding worn and one joint cracked)*, 10s 6d (p. F. 25 nett sewn) 1877-9

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'Le présent traité peut être considéré comme une véritable introduction au traité de Laplace'. — *Préface*.

Laurent's work is out of print and scarce, and includes a 'Liste des principaux Ouvrages ou Mémoires publiés sur le Calcul des Probabilités' (pp. 14).

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Chiefly interesting for the fact that it was still considered necessary at so late a date to write a defence of the Copernican System. The author was a friend of Samuel Pepys, and took part in the campaign against the Duke of Monmouth as an officer of artillery at the battle of Sedgemoor.

14829 **SETTELE** (Giuseppe, *Canonico; Univ. Rome*) BREVE ESPOSIZIONE della TEORIA del Sig. HAÛY sulla STRUTTURA dei CRISTALLI; *with folding plate, 4to.* (pp. 37), *sewn, 3s 6d* Roma, 1805
Unknown to Pogendorff.

14830 ——— ELEMENTI di OTTICA e di ASTRONOMIA; *with 20 folding plates, 2 vols.* 8vo. *h.f. parchment gilt (scarce), 12s* *ibidem, 1818-19*

This work is of importance in connexion with the attitude of the Roman Catholic Church towards the Copernican System. It was the first orthodox work based on it, and therefore immediately objected to by the Papal Censor, who expected the author to treat the system as an hypothesis devoid of proof. The author refused and appealed to Pope Pius IX., who finally decreed that the Copernican system might thenceforward be taught without hindrance.

14831 ——— MEMORIA sopra la FORMA delle LINEE ORARIE, indicanti le Ore inequali degli Antichi sopra gli OROLOGJ SOLARI; *with frontispiece, folding plate, and vignette, 8vo.* (pp. 44), *sewn, 5s* *ib., 1816*

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Consisting of 129 numbered ll., signatures a—p in fours, and q in 5, the last being blank. At end is a 4-page Italian Arithmetical MS.

All editions of this work are very rare, especially the first. Prof. de Morgan, who owned an imperfect copy of an edition which he was on this account unable to describe, states: 'I can find no mention of Sfortunati in catalogues.'

'Questa prima edizione è rarissima . . . Le Sfortunati, il cui nome figura nella famosa questione fra Cardano e Tartaglia, viene meritamente noverato tra i migliori autori aritmetici del principio del secolo XVI.'—Riccardi.

14834 **SHAFFNER** (Col. Taliaferro P., *Secretary, American Telegraph Confederation, New York*) TELEGRAPH COMPANION, devoted to the Science and Art of the MORSE AMERICAN TELEGRAPH, Vols. 1-2 (all pub.; January 1854—October 1855), *with steel portraits of Morse and the editor, and numerous woodcuts, 2 vols. 8vo. in 1, cl. gilt, g. e., with editor's inser. (SCARCE), £1. 1s* *New York, 1854-5*

Very interesting for the account of patent litigation in the United States in the infancy of electric telegraphy. There is an interesting chapter (Vol. II pp. 6-96): The Electro-Magnetic Telegraph: a Defence against the Injurious Deductions drawn from the Deposition of Prof. Joseph Henry, with Critical Review, and Examination of Prof. Henry's Alleged Discoveries, bearing on the Electro-Magnetic Telegraph, by Samuel F. B. Morse; with Prof. Henry's Deposition (pp. 97-112).

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There is no copy of this work in the Library of the Institution of Naval Architects, while the Scott Library only contained the edition of 1822.

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'While a pupil [with a firm of millwrights] he conducted extensive land and marine surveys, in the almost entire absence of trustworthy charts and maps, and made tidal and other hydrometric observations for lighthouses, piers, harbours, docks, and for river and estuarial improvements. His results he published in 'The Application of Marine Surveying,' etc. (1842), the first book of its kind.'—*D. N. B.*
- 15064** ——— (—— and Thomas) REPLY to SIR DAVID BREWSTER'S MEMORIAL to the Lords Commissioners of Her Majesty's Treasury, on the NEW SYSTEM of DIOPTRIC LIGHTS, 8vo. (pp. 23), *sewn, 3s 6d ib.*, 1859
- 15065** ——— ANOTHER COPY, with the Appendix (pp. 12). 2 vols. 8vo. *sewn, 5s ib.*, 1859-60
An answer to 'a gross misrepresentation made by Sir David Brewster, and to his alleged claim of being the inventor of the polygonal lens, and its application to lighthouses.'

- 15067 **STEVENSON** (Robert, F.R.S.E.; *father of Alan, David, and Thomas Stevenson, and grandfather of R. L. S.*) ACCOUNT of the BELL ROCK LIGHT-HOUSE, including the Details of the Erection and Peculiar Structure of that Edifice; with a [*sic*] Historical View of the Institution and Progress of the Northern Light-Houses, with fine frontispiece after TURNER (on India paper), and 21 copperplates, roy. 4to. *hf. roan, uncut, with visiting card of George Rennie, F.R.S., and presentation inser. to him from the Commissioners of the Northern Light-Houses* (SCARCE), £1. 5s (p. £5. 5s) Edin., 1824

'The most important of his light-houses was the famous Bell Rock tower, erected on a dangerous cliff submerged by every tide to the depth of twelve feet. . . . Previous attempts [after the Abbot of Aberbrothock's bell had been sunk by Ralph the Rover] made by Capt. Brodie to erect beacons upon it had failed. . . . The tower rises to a height of 100 ft.; the diameter of the base is 42 ft., diminishing to 15 ft. at the top. . . . The cubic contents of the tower are more than double those of the Eddystone, from which it differs in many respects owing to its far more difficult and dangerous site. . . . The optical apparatus consisted of parabolic reflectors of silvered copper, combined with argand burners, arranged on a four-sided frame, the best and most complete apparatus then known; and, as a means of further distinguishing the light, it showed red and white alternately, hence Sir Walter Scott's 'ruddy gem of changeful light'.'—D. N. B.

- 15068 ——— OBSERVATIONS on the ALVEUS or General Bed of the GERMAN OCEAN and BRITISH CHANNEL, 4to. (pp. 7), *unbound, with author's inser., and addressed, to George Rennie, F.R.S.,* [1816] 4s

'His 'Alveus of the German Ocean' is frequently quoted by geologists.'—D. N. B.

- 15069 ——— REPORT relative to a Line of CANAL on ONE LEVEL between the Cities of EDINBURGH and GLASGOW, to form a Junction with the Forth and Clyde Canal at Lock No. 20, and also with the Port of Leith, and the Broomielaw at Glasgow, with folding map, 4to. (pp. 36), *sewn, 4s* Edin., 1817

- 15070 ——— ROADS and HIGHWAYS : communicated to the Editor of the Edinburgh Encyclopædia, with plate, 4to. (pp. 12), *sewn, 3s 6d* ibidem, 1824

'He proposed to use stone tracks as a 'smooth and durable city road'.'—D. Stevenson.

- 15071 ——— : STEVENSON (David, F.R.S.E.) LIFE of ROBERT STEVENSON, with bust portrait, 12 plates, and 20 woodcuts, 4to. *cl.*, 6s (p. £1. 1s) ib., 1878

- 15072 ——— : MEMORIAL of the COMMISSIONERS appointed by Act of Parliament for ERECTING LIGHTHOUSES in the NORTHERN PARTS of GT. BRITAIN, relative to the Erection of a Lighthouse on the [INCH] CAPE or BELL ROCK, 8vo. (pp. 57), *sewn, 3s 6d* ib., 1806

- 15073 **STEVENSON** (Thomas, M.I.C.E., F.R.S.E.; *father of Robert Louis Stevenson*) The DESIGN and CONSTRUCTION of HARBOURS, with 10 plates and 32 woodcuts, 8vo. *cl.*, with author's inser., 4s Edin., 1864

- 15074 ——— ANOTHER COPY; with: CALVER (Edward Killwick, R.N.) The CONSERVATION and IMPROVEMENT of TIDAL RIVERS, considered principally with Reference to their Tidal and Fluvial Powers, with 28 woodcuts and coloured folding plan—2 vols. 8vo. in 1, *hf. calf (rubbed)*, 7s 6d ibidem, 1864—London, 1853

A reprint, with many additions, of the article 'Harbours' in the eighth edition of the Encyclopædia Britannica.

- 15075 ——— LIGHTHOUSE ILLUMINATION: a Description of the HOLOPHOTAL SYSTEM, and of Azimuthal-Condensing, and Apparent Lights, with other Improvements, with 4 plates, and 53 woodcuts, 8vo. boards, with author's inser., 7s 6d 1859

'His crowning invention was his 'azimuthal condensing system of lighthouse illumination.' No attempt had previously been made to allocate the auxiliary light in proportion to the varying lengths of the different ranges and the amplitudes of the arcs to be illuminated, or, where a light had to show all round the horizon, to weaken its intensity in one arc, and with the rays so abstracted to strengthen them some other arc, which from its range being longer required to be of greater power.'—D. N. B.

A possible hindrance to German success in world-domination may exist in a certain limitation in the national mentality, which while allowing to the Statebound scientist much success in poisoning and other arts of destruction, has not tended to the development in one family of such brilliant gifts in the arts of peace and the realm of the imagination as those with which mankind was endowed in eighty years from Robert to Robert Louis Stevenson.

- 15076 **STEVINUS** (Simon, de Bruges) ŒUVRES MATHÉMATIQUES, où sont insérées les MÉMOIRES MATHÉMATIQUES; le tout reven, corrigé, et augmenté par ALBERT GIRARD; with numerous woodcuts and diagrams, large folio, contemporary white vellum (RARE), £2. 10s Leyde, B. et A. Elsevier, 1634

The most complete edition of the author's works, containing: Arithmétique; Algèbre de Diophante d'Alexandrie; Pratique d'Arithmétique, contenant les Tables d'Interest, la Disme, et un Traicté des Incommensurables Grands; Cosmographie (Doctrine des Triangles, Géographie, Astronomie); Pratique de Géométrie; Art Ponderaire ou Statique; Optique; Castramétation; Fortification par Esculuses; Fortification.

'Il a employé dans ces recherches des artifices mathématiques qu'on peut considérer comme un premier acheminement vers le calcul infinitésimal, et donné un des meilleurs traités de navigation, qui a servi de texte dans toutes les écoles chez les nations maritimes.'—Van de Weyer.

- 15077 ——— HYPOMNEMATA MATHEMATICA, à Belgico in Latinum à WIL[LEBRORDO] SN[ELLIO] conversa; with woodcuts and numerous diagrams, 3 vols. folio in 1, old limp white vellum (SOUND COPY); RARE, £2. 2s ib., J. Patius, 1608

The first collected edition of the author's works, including: Doctrinae Triangulorum de Sinuum Canonibus Fabricandis; de Triangulis Planis; de Sphaericis Triangulis; Libri VI Geographiae (Canones Loxodromici, de Histiodromia, de Theoria Maritimum Aestuuum, etc.); de Caeli Motu.

- 15078 ——— PROBLEMATUM GEOMETRICORUM Libri V, editio princeps, with vignette on title and numerous diagrams, 4to. old half binding (somewhat waterstained); extremely rare, £2. 10s Antverpia, Joa. Bellerus [1583]

This work, which had never been reprinted, was unknown to Poggendorff, Brunet, and other bibliographers.

Prof. M. Cantor (*Vorlesungen üb. Gesch. d. Math.*, Bd. II p. 523), who mentions 'die bei der all Unauffindbarkeit grenzenden Seltenheit' of the original editions, was also unable to see the above work. A description of it is given by M. Steichen (*v. No. 15093 infra*), who complains that 'il est déplorable de voir l'histoire des sciences rester muette encore une fois sur ce beau travail.'

- 15079 ——— : STEICHEN (Michel) MÉMOIRE sur la VIE et les TRAVAUX de SIMON STÉVIN; with 5 folding plates, 8vo. boards (back damaged), 3s Bruxelles, 1846

- 15081 **STEVINUS** (Simon, de Bruges) ARITHMETIQUE, reveuë corrigée et augmentée de plusieurs Traitez et Annotations par ALBERT GIRARD; with fine engraved title and diagrams, thick 8vo. contemporary white vellum (somewhat browned, but a FINE COPY); very rare, £2. 15s

Leide, de l'Imprimerie des Elzeviers, 1625

This edition contains the author's Arithmétique théorique, first published in 1585, his 'Arithmétique pratique', and 'Les Six Premiers Livres d'Algèbre de Diophante d'Alexandrie, dont les quatre premiers sont traduits et expliqués par Simon Stevin, et les deux derniers par Albert Girard.'

In it appeared first 'La Pratique d'Arithmétique' (pp. 695-822), La Disme, enseignant facilement expédier par nombres entiers sans rompez, tous comptes se rencontrans aux affaires des Hommes' (pp. 823-49), and 'Traicté des Incommensurables Grands, avec Appendice de l'explication du 10^e livre d'Euclide' (pp. 850-85).

'La Disme' contains, according to Prof. de Morgan, 'the first announcement of the use of decimal fractions.'

He introduced in his Arithmetic exponents to mark the power to which quantities were raised. . . . He further suggested the use of fractional (but not negative) exponents, and a decimal system of weights and measures. His geometry is ingenious. . . . Some theorems on perspective are enumerated.—W. W. R. Ball.

- 15082 ——— **De BEGHINSELEN der WEEGHCONST: De WEEGHDAET: De BEGHINSELEN des WATERWICHTS**; all first editions, with vignette on titles, and numerous woodcuts and diagrams, 3 vols. sm. 4to. in 1, old white vellum (first title slightly soiled, and a few slight water-stains, otherwise FINE COPIES); excessively rare, £7. 15s

ibidem, CHRISTOFFEL PLANTIJN, 1586

- 15083 ——— **THE SAME**, 3 vols. in 1, hf. citron calf, as good as new (neat library stamp on third title, otherwise remarkably fine and exceptionally tall copies), £9. 9s

'It is however on his Statics and Hydrostatics, published (in Flemish) at Leyden in 1586, that his fame rests. In these works he enunciates the triangle of forces—a theorem which some think was first propounded by Leonardo da Vinci. Stevinus regards this as the fundamental proposition of the subject. Previous to the publication of his work the science of statics had rested on the theory of the lever, but subsequently it became usual to commence by proving the possibility of representing forces by straight lines, and thus reducing many theorems to geometrical propositions, and in particular to obtaining in this way a proof of the parallelogram (which is equivalent to the triangle) of forces. . . . Stevinus also found the force which must be exerted along the line of greatest slope to support a given weight on an inclined plane—a problem the solution of which had been long in dispute. He further distinguishes between stable and unstable equilibrium. In hydrostatics he discusses the question of the pressure which a fluid can exercise, and explains the so-called hydrostatic paradox.'—W. W. R. Ball.

A full account of this classic of statics will be found in Prof. E. Mach's 'Science of Mechanics.' The above original editions are excessively rare, the work being generally quoted by historians of mathematics from the Latin translation in the reprint in *Hypomnemata Mathematica*.

- 15084 **STIFEL** (Michael) ARITHMETICA INTEGRÆ, cum Præfatione PHILIPPI MELANCHTHONIS, editio princeps; with numerous diagrams, thick sm. 4to. old calf (back of binding damaged, title mounted, and a few wormholes in blank margin, nevertheless a SOUND COPY); very rare, £5. 5s

Norimbergæ, apud Johan. Petreum, 1544

'The first two books deal with surds and incommensurables, and are Euclidean in form. The third is on algebra, and is noticeable for having called general attention to the German practice of using the signs + and - to denote addition and subtraction. . . . It used to be said that Stifel was the real inventor of logarithms, but it is now certain that this opinion was due to a misapprehension of a passage in which he compares geometrical and arithmetical progressions. Stifel is said to have indicated a formula for writing down the coefficients of the various terms in the expansion of $(1+x)^n$ if those in the expansion of $(1+x)^{n-1}$ were known.'—W. W. R. Ball.

- 15085 **STILLMANN** (Thomas Bliss) ENGINEERING CHEMISTRY: a Manual of QUANTITATIVE CHEMICAL ANALYSIS for the Use of Students, Chemists, and Engineers, 3rd Edition [enlarged], with 139 illustrations, 8vo. cl., 9s (p. 19s nett)

Easton, Pa., 1905

- 15086 **STIRLING** (James, F.R.S.) LINEÆ TERTII ORDINIS NEUTONIANÆ, sive Illustratio Tractatus D. NEUTONI de Enumeratione Linearum Tertii Ordinis, cui subjungitur, Solutio trium Problematum; with numerous diagrams, and view of Sheldonian Theatre on title, 8vo. old calf (joints cracked), with auto. of Michael Fryer (VERY RARE), £1. 5s

Oxonie, 1717

'It supplied four additional varieties to Newton's seventy-two forms of the cubic curve.'—D. N. B. The work forms a necessary supplement to Newton's *Enumeratio Linearum III. Ordinis* (v. Nos. 12572-8 ante). It contains a long list of subscribers, including Sir Isaac Newton. A note by Michael Fryer (1806) on the flyleaf states: 'Extremely rare—cost me £1. 1s. M. F.'

- 15087 ——— **METHODUS DIFFERENTIALIS: sive Tractatus de SUMMATIONE et INTERPOLATIONE SERIERUM INFINITARUM, editio princeps; with diagrams**, 4to. large and sound copy in contemporary calf gilt (name cut off title); very rare, £2.

Londini, 1730

- 15088 ——— **ANOTHER COPY, contemporary calf, with bookplate of, and MS. notes by, Philip 2nd Earl Stanhope, F.R.S. (fine copy)**, £2. 2s

- 15089 ——— **EDITIO SECUNDA; with diagrams**, 4to. hf. calf (joints cracked), with bookplates of [SIR] GEORGE PRETYMAN [TOMLINE], Bp. of Winchester, William Pitt's tutor and biographer, and Prof. Lloyd Tanner, F.R.S. (RARE), £1. 10s

ibidem, 1764

- 15090 ——— **THE DIFFERENTIAL METHOD: or a Treatise concerning Summation and Interpolation of Infinite Series**, translated, with the Author's Approbation, by FRANCIS HOLLIDAY, with diagrams, 1749: The TWO BOOKS of APOLLONIUS PERGEUS, concerning TANGENCIES, as they have been restored by Franciscus Vieta and Marinus Ghetaldus, with a Supplement by JOHN LAWSON, pr., with 6 plates, Cambridge, '64—2 vols. 4to. in 1, hf. bound (first title mounted), with autos. of Michael Fryer and Samuel Roberts, F.R.S., and MS. notes by the former (VERY RARE), £1. 15s

1749-64

This work is of importance in the history of the differential calculus, as having been the first to give the proof of what is known as 'Maclaurin's theorem' (v. Nos. 2761-3, ante); but, save for Montclau, who gives a full account in his *Histoire des mathématiques*, v. III, pp. 223-7, and Cantor (*Vorlesungen üb. Gesch. d. Mathematik*, Bd. III pp. 625-80), the work is curiously enough almost unnoticed in modern histories of mathematics.

'La première partie de cet ouvrage a pour objet la sommation des suites dans lesquelles chaque terme est formé du précédent, multiplié par une fonction rationnelle de son rang. Un grand nombre des résultats sont fort intéressants. . . . Ses recherches présentent quelque utilité dans certaines questions spéciales dépendant du calcul des probabilités.'—M. Marie.

- 15091 **STREETER** (Edwin William; JEWELL) GOLD: Legal Regulations for the Standard of Gold and Silver Wares in different Countries of the World, translated and abridged from the Work of A. v. STUDNITZ by MRS. BREWER, with Notes and Additions; 6th Edition, enlarged, with 2 coloured plates, and map, post 8vo. cl. (scarce), 8s

1878

- 15093 **STOCKMAN** (Bernardus, *certys Fransoysche Schoolmr. tot Dordrecht*) ARITHMETICA, met Tafelken om te rebatteren, door ABEL W. WASSENAER, van nieuws oversien, gecorrigeert en verbeteret; *engraved title with portrait*, 12mo. old vellum (rare), 12s 6d Amsterdam, 1648
This work was unknown to Prof. de Morgan, Poggendorff, and other bibliographers. It contains much on commercial arithmetic.

- 15094 **STÖFFLER** (Johann; *Univ. Tübingen*) CALENDARIUM ROMANUM MAGNUM [in fine: ABACUS REGIONUM, Principatū, Ducatū, Satrapiarū, Marchiarū Comitatum, Prouinciariū, Insularū, Peninsularū, et Oppidorum nobiliorū, aut cognobiliorū per totā ferme Europā; *title surrounded by woodcut border of arms, and numerous fine woodcut initials; the second part printed in red and black, with beautiful woodcut vignettes representing the seasons, fortified towns, etc.* [col.:] *Oppenheim per Jacobum Köbel*, 1518: RUDIMENTA MATHEMATICA, hæc in duos digeruntur Libros, quorum prior GEOMETRIÆ tradit Principia seu Prima Elementa, unā cum Rerum et uariarum Figurarū Dimensionibus. Posterior uerò omnigenum HOROLOGIORUM docet DELINEATIONES, autem Sebastianum Munstero; *with folding plate, and numerous large and fine woodcuts and diagrams* [col.:] *Basilee in officina Henrici Petri*, 1551—2 vols. folio in 1, old calf gilt, *with arms on sides (binding rubbed and back damaged, but SOUND AND TALL COPIES)*; very rare, 1518-51 £7. 7s

The above edition of the first work is according to Houzeau and Lancaster (*Bibliographie de l'Astronomie*) 'fort rare. Ouvrage remarquable comme exécution typographique, imprimé en rouge et noir, orné dans toute son étendue de superbes initiales et d'enlacements. Les colonnes de la table des lieux se terminent par de charmantes vues de villes: il y en a 24. La seconde partie, contenant le calendrier proprement dit, offre à côté de chaque mois le signe du zodiaque, et au bas les attributs propres aux différentes époques de l'année; il y en a également 24, gravés sur bois par un maître de l'école de Francfort. Vient ensuite le tableau des éclipses de Soleil et de Lune, depuis 1518 jusqu'en 1575, au nombre de 63, avec diagrammes pour toutes. A la fin, une table de la Lune, le quadrant, le cadran solaire et l'instrument pour déterminer les heures temporaires, fort bien exécutés, dans toute la grandeur de la page'.

The second work is valuable for its treatise on dialling (pp. 74-243), one of the earliest works on the subject.

- 15095 ——— ELUCIDATIO FABRICÆ USUSQUE ASTROLABII, cui multa et diligens accessit Recognitio, unā cum Schematum Negotio accommodatorum, exactissima Expressione, et Indice Rerum et Verborum copiosissimo; *printed in italics, with numerous fine woodcuts, and folding tables*, 12mo. hf. calf gilt (nice copy); RARE, £1. 5s Lutetie, Gul. Cauellat, 1553

'Ouvrage qui résume les procédés employés alors pour la construction des astrolabes; une analyse a été donnée dans l'Histoire de l'Astronomie de Delambre. — *Biogr. Gén.*

- 15096 ——— IN PROCLI DIADOCHI, Authoris grauissimi SPHERAM MUNDI, omnibus Numeris longè absolutissimus COMMENTARIUS, ante hac nunquam Typis excusus; *with numerous diagrams*, folio, sewn (RARE), £1. 5s (col.:) *Tubingæ, ex offic. Hulderrichi Morhart*, 1534

- 15097 **STONE** (Edmund, F.R.S.) ANALISE des INFINIMENT PETITS, comprenant le CALCUL INTEGRAL dans toute son Étendue; avec son Application aux Quadratures, Rectifications, Cubatures, Centres de Gravité, de Percussion, et de toutes Sortes de Courbes, traduit par M. RONDET; *with 4 folding plates: ANALYSE des INFINIMENT PETITS, pour l'Intelligence des Lignes Courbes*, par le Marquis de l'Hospital, 2^e Édition; *with 11 folding plates*—2 vols. 4to. in 1, old hf. calf (back damaged), *with long presentation inscription by James Lockhart (well-known amateur mathematician)*, 8s 1735-16

L'Hospital's work was the first published in French on the differential calculus. Stone's was originally published with his English translation of the first work, and was later translated into French as the first work published in that language on the integral calculus.

- 15098 [——] The DESCRIPTION, NATURE and GENERAL USE, of the SECTOR and PLAIN-SCALE, briefly and plainly laid down; as also, a Short Account of the USES of the LINES of NUMBERS, ARTIFICIAL SINES and TANGENTS; 2nd Edition, *with 3 folding plates*, post 8vo. (pp. 44), sewn (rare), 7s 6d 1728

The authorship of this brochure is not noticed in *D. N. B.*, Allibone, or Poggendorff, and was unknown to Halkett and Laing, but may be inferred from the preface being signed E. S. Stone also revised the new edition of Cunn's Treatise of the Sector in 1729.

- 15099 ——— NEW MATHEMATICAL DICTIONARY, wherein is contain'd, not only the Explanation of the bare Terms, but likewise an HISTORY of, with the Rise, Progress, State, Properties, etc. of Things in PURE MATHEMATICKS and NATURAL PHILOSOPHY, first edition, *with numerous woodcuts and diagrams*, 8vo. contemporary calf gilt (rare), 6s 1726

- 15100 ——— SECOND [LAST] EDITION. with [Preface and] large Additions, *with numerous woodcuts and diagrams*, 8vo. old calf, roughly rebacked (title and some ll. soiled), 5s 1743

- 15101 ——— Some REFLECTIONS on the UNCERTAINTY of many ASTRONOMICAL and GEOGRAPHICAL POSITIONS, with Regard to the Figure and Magnitude of the EARTH, the finding the LONGITUDE at SEA by WATCHES, and other Assertions of the most eminent Astronomers; with some Hints towards their Reformation and Emendation, post 8vo. (pp. 135), sewn, 6s 1766

'Consisting of a series of propositions attacking the accuracy of the conclusions of astronomers concerning the shape of the earth and other matters of a similar kind.'—*D. N. B.*

'Exposing the weakness and insufficiency of the arguments and proofs of those who will have the figure of the earth spherial or spheroidal, with some hints tending to shew the uncertainty of the truth of the Newtonian physical part of astronomy.'—p. 17.

- 15102 **STONE** (Edward, pr., *Wadham Coll.*) The WHOLE DOCTRINE of PARALLAXES explained and illustrated by an Arithmetical and Geometrical Construction of the TRANSIT of VENUS over the Sun, June 6th, 1761; with a new and general Method of determining the Places where any Transit of this Planet, and especially that which will be June 3d, 1769, may be best observed for the Investigation of its Parallax, *with numerous diagrams*, post 8vo. (pp. 108), sewn, 4s Oxford, 1758
- 15103 **STORER** (Frank Humphreys; *Mass. Inst. Technology*) FIRST OUTLINES of a DICTIONARY of SOLUBILITIES of CHEMICAL SUBSTANCES, thick roy. 8vo. cl., *with auto. of Alex. Scott, F.R.S.* (VERY SCARCE), £2. 10s Cambridge [Mass.], 1864

The only dictionary of chemical solubilities ever attempted, and at the same time the first English alphabetical catalogue of chemical substances.

PLATE 1.

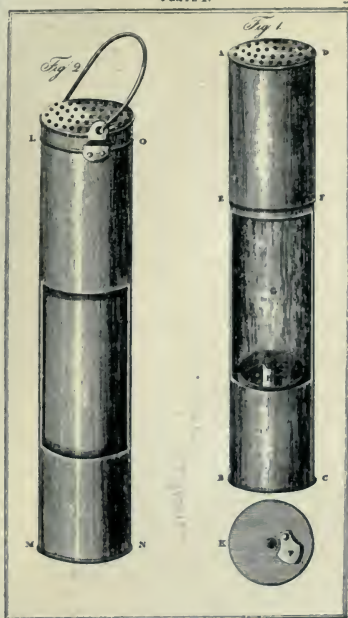


PLATE 2.

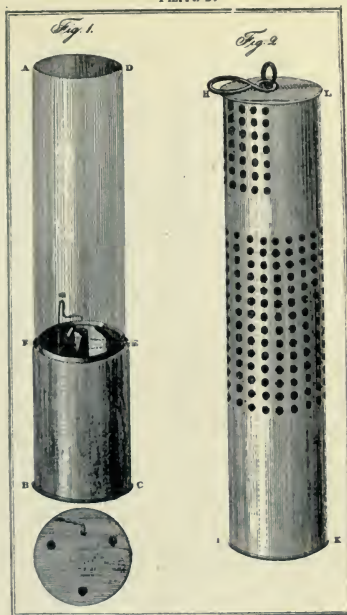


PLATE 3.

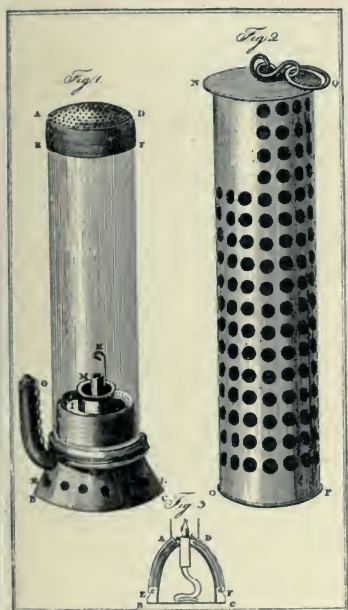
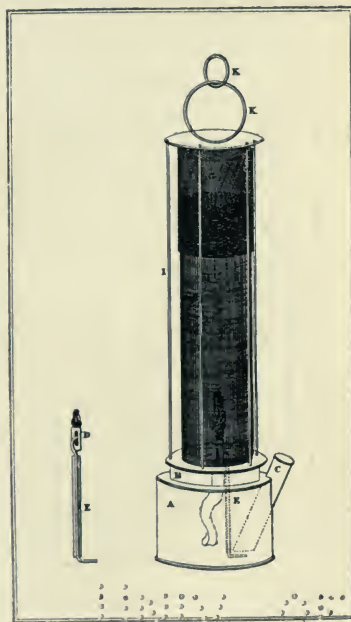


PLATE 4.



No. 15036 (page 754).

George Stephenson's Safety Lamp.

KL		Aprilis.	Solis motus ies	Lune motus medius	Lune Cen- trum	Lune ar gumētū medium
		¶ A	G m	S G m	S G m	S G m
1	g		05 21 22	3 29 3	1 28 43	3 18 55
2	A	4 Non	4 22 20	4 12 14	2 23 6	4 1 59
3	b	3 Non	23 19	4 25 24	3 17 29	4 15 3
4	c	2 Non	Ambrosij episcopi.	12 24 17	5 8 35	4 11 52
5	d	None.		1 25 15	5 21 45	5 6 15
6	e	8 Idus		26 14	6 4 56	6 0 37
7	f	7 Idus		9 27 12	6 18 7	6 25 0
8	g	6 Idus	Marię Egyptiace	28 10	7 1 17	7 19 23
9	A	5 Idus		17 29 8	7 14 38	8 13 46
10	b	4 Idus	¶ Taurus	6 6	7 27 38	9 8 9
11	c	3 Idus		1 5	8 10 49	10 2 32
12	d	2 Idus		14 2 3	8 24 0	10 26 55
13	e	Idus		3 3 1	9 7 10	11 21 18
14	f	18 Kal	Maę Tiburtij & valeriani	3 59	9 20 21	0 15 41
15	g	17 Kal	¶ Claus rogationū	11 4 57	10 3 31	1 10 3
16	A	16 Kal		5 54	10 16 42	2 4 26
17	b	15 Kal		19 6 52	10 29 52	2 28 49
18	c	14 Kal		8 7 50	11 13 3	3 23 12
19	d	13 Kal		8 48	11 26 14	4 17 35
20	e	12 Kal		9 46	0 9 24	5 11 58
21	f	11 Kal		10 43	0 22 35	6 6 21
22	g	10 Kal		11 41	1 5 45	7 0 44
23	A	9 Kal	Georgij martiris.	12 39	1 18 56	7 25 7
24	b	8 Kal		13 36	2 2 7	8 19 29
25	c	7 Kal	Marci euangeliste	14 34	2 15 17	9 13 52
26	d	6 Kal		15 32	2 28 28	10 8 15
27	e	5 Kal		6 29	3 11 38	11 2 38
28	f	4 Kal	Vitalis martiris	17 27	3 24 49	11 27 1
29	g	3 Kal	Claus Penthecostes	18 24	4 7 59	0 21 24
30	A	2 Kal		19 22	4 21 10	1 15 47



¶

¶

Aprilis patulę nucis sub vmbra
Post conuiuia/dormio libenter



B v

- 15105 **STOKES** (Sir George Gabriel, P.R.S., *Lucasian Prof. Mathematics, Cantab.*) MATHEMATICAL and PHYSICAL PAPERS, reprinted from the original Journals and Transactions, with Additional Notes by the Author [and (vv. IV--V) SIR JOSEPH LARMOR, F.R.S., M.P.], with numerous illustrations, 5 vols. 8vo. cl., £2. 5s (p. £3. 15s) *Univ. Press, Cambridge, 1880-1905*
- 15106 ——— VOLUMES I AND II ONLY, with illustrations, 2 vols. 8vo. cl., 15s (p. £1. 10s) *apud eandem, ibidem, 1880-3*
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 This work appears to be very rare. It was unknown to Poggendorff, who mentions however the author's other works, nor is it mentioned by other bibliographers.
 According to R. Stuart (*Historical and Descriptive Anecdotes of Steam Engines, Vol. II., p. 61s*), the author, who is not included in the *Biographie Générale*, 'came to England in 1716 to obtain information regarding the mode of mining followed at Newcastle. He remained in the neighbourhood for some years, and was employed as an engineer at a coal-mine; he was a pupil of Desaguliers, and some of his improvements on the diving bell are described in the Doctor's *Experimental Philosophy*. He returned to Sweden in 1726, and erected an atmospheric engine [*supra*], the parts of which he got fabricated in England. He was captain of mechanics, and military architect to the King of Sweden; and was in correspondence with some of his friends in the Royal Society until his death. He invented a mode of warming conservatories by hot water.' According to the *Record of the Royal Society*, he was elected a Fellow in 1731.
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No. 15173 (page 762).

Portrait of George I., surrounded by the 257 ships of the Royal Navy.

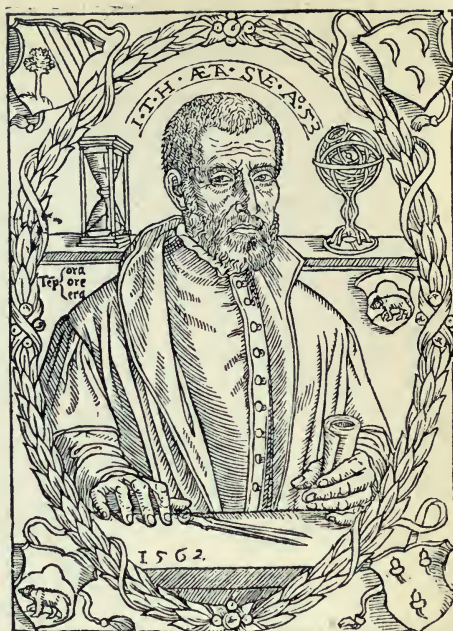
OPVSCVLVM
PERPETVA ME-
MORIA DIGNISSIMVM, DE
NATVRA MAGNETIS, ET EIVS
EFFECTIBVS.

De motu continuo.
Item Demonstratio proportionū motuum localium, con-
tra Aristotelem & alios Philosophos.
De motu alio celerrimo, hactenus incognito.

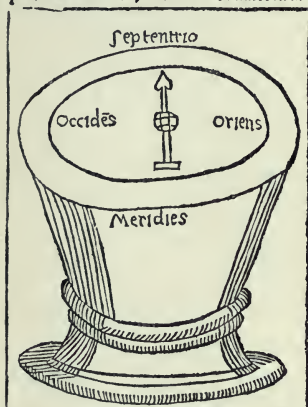
Authore Ioanne Taisnierio Hannonio, vtriusque
Iuris Doctore, Poëta Laureato, Musico & Rc.
Gore Sacelli Mufices Reuerend. Colo-
niensis Archiepiscopi, &c.



COLONIAE,
Apud Ioannem Birckmannum,
Anno M. D. LXII.



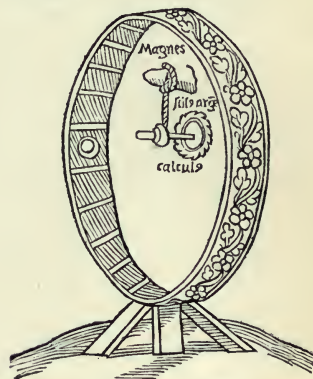
12 DE MOTV CONTINVO,
res æqualis ponderis, dein axem affiges per medium, sus
per quē voluetur rotula, axe omnino immobili manente,



cui iterum axi stylus adducatur argēteus affixus eidem,
interque duas casulas collocatus, in cuius summitate Ma-
gnes collocetur. In hunc modum preparatus, reducatur
primū ad formam rotundam: dein (ut dictum est) Poli ipsi
inueniantur: postea in ætalis Polii, duo latera oppsitā, in-
terque Polos media elimentur, & quasi ad formam oui,
lapis

IOANNES TAISNIER HANNO.

14



rot.æ in imam partem sit pēpetuus, & casus calculi in op-
positam, inter quoslibet duos denticulos receptus, etiam
perpetuus erit, qui quidē suo pōdere appetet Centrum ter-
ræ, in unumque locum. Quare cum permittet denticulos cir-
ca Magnetem quiescere, fiet tandem, ut inlilituto satisfa-
ctum fuerit. Sint autem loca intermedia denticulorum,
et ali arte excauata, ut aptē cadentem calculum recipiant,
ut præfens ostendit figura. Et hæc hactenus pauca com-
pendiose narrata de motu continuo.

C 2 AD

No. 15198 (page 763).

The second published work on magnetism.

- 15344 **TUPINIER** (—, *Director of Naval Constructions*) OBSERVATIONS on the DIMENSIONS of the SHIPS of the LINE and FRIGATES in the FRENCH NAVY, translated by a British Officer [CAPT. WILLIAM JONES, R.N.], 8vo. boards (scarce), with bookplate of Rear-Adml. Lord Adolphus Fitzclarence (younger son of William IV. by Mrs. Jordan), 8s 6d *privately printed, 1830*
The original work contained the program adopted by the French Government for greatly increasing the French Navy with ships vastly superior in build and armament to any then in existence. The translator strikes a warning note in the preface as to the threat implied by it to British naval supremacy.
Only a few copies of the translation were privately printed. There is no copy of either original or translation in the Library of the Institution of Naval Architects.
- 15345 **TURNBULL** (Laurence, M.D., *Franklin Inst.*) The ELECTRO-MAGNETIC TELEGRAPH, with an Historical Account of its Rise, Progress, and present Condition, and also practical Suggestions in regard to INSULATION, and PROTECTION from LIGHTNING, with Appendix, containing several important Telegraphic Decisions and Laws; 2nd Edition, improved, with 2 plates and 69 woodcuts, large 8vo. cl. (scarce), 12s *Philadelphia, 1853*
One of the best early histories of the electric telegraph, containing a good description of the numerous systems then in use, or recently invented. It includes a list of the American and English telegraphic lines then existing, and a chapter 'on the Importance of the Telegraph on Railroads.'
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John Turner's work was unknown to Watt, Allibone, or Lowndes. Robins's was a successful refutation of Bp. Berkeley who attacked in his Analyst (*v. Nos. 6144-5 ante*) Newton's principle of ultimate ratios.
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- Pp. 115-208 contain an account of all the magneto-electric telegraphic systems known at the time, from Lomond's, invented in 1787, to Wheatstone's rotating disc telegraph, invented in 1841, and also include the author's own, the first electro-magnetic printing telegraph invented (in 1837).
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 The author, a native of Sebenico, Dalmatia, was Bishop in Partibus of Canadum, in Hungary, and in his later years appears to have lived in Venice. There is a full description of the work in M. Libri's *Histoire des Sciences Mathématiques*, where it is termed 'un ouvrage très rare qui ne se trouve guère indiqué par les bibliographes.'
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[c. 1865]
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Firenza, G. Marescotti, 1582
 Second and last edition of this early treatise on meteorology, and the only one containing the fourth book. Besides meteorological subjects, it treats of comets, the tides, and the rainbow. Book IV (pp. 187-424) treats of Aristotelian meteorology and physics.
 The author is not noticed by Poggendorff.
 15390 **VIÈTE** [latine VIETA] (François) *OPERA MATHEMATICA*, Opera atque Studio FRANCISCI À SCHOOTEN; with numerous diagrams (a few with moveable slips), folio, boards, uncut (*RARE*).
 £1. 17s 6d
Lugd. Batav., B. et A. ELZEVI, 1646
'Belle édition.'—*Brunet.*
 In his most important work, *In Artem*, 'the earliest work on symbolic algebra, explaining how algebra could be applied to the solution of geometrical problems', he 'introduced the use of letters for both known and unknown (positive) quantities, a notation for the powers of quantities, and enforced the advantage of working with homogeneous equations . . . One of his improvements was that he denoted the known quantities by the consonants B, C, D, etc., and the unknown quantities by the vowels A, E, I, etc., the other was to introduce new symbols to represent the square, cube, etc. of quantities which had already occurred in the equations . . . These two improvements were almost essential in any further progress in algebra. . . Vieta's works on geometry are good. He applied algebra and trigonometry to help him in investigating the properties of figures', etc. etc. etc.—*W. W. R. Ball.*
'The greatest mathematician of the Sixteenth Century.'—*Thomas Fowler, pr., President of Corpus.*
 15391 ——— *PRINCIPES de COSMOGRAPHIE: tirez d'un Manuscrit de Viète, et traduits en François; with astronomical diagram*, 18mo. old vellum (*rare*), 10s 6d
A. Courbé, 1637
 15392 ——— *ZETETICORUM Libri V; with diagrams, folio, limp vellum wrapper (RARE)*, 15s
s. l. a. aut t. n.

This work, which treats of the solution of equations, was originally published as an appendix to Vieta's *In Artem Analyticam Isagoge*. The above edition, which is quite different from that of 1593, has no title, and is numbered from 1 to 24, with the signatures A—M in twos, and appears to be unknown to bibliographers.

- 15394 **VIÈTE** [*latine VIETA*] (François) OPUS RESTITUTÆ MATHematicæ ANALYSEOS, seu ALGEBRA NOVA [in Artem Analyticam Isagoge. Zeteticorum Libri V. Effectuum Geometricarum Canonis Recensio. Supplementum Geometricæ (*imperfect at end*)]; with diagrams: VARIORUM de REBUS MATHematicis RESPONSORUM Liber VIII., cuius præcipua Capita sunt, de Duplicatione Cubi; et Quadratione Circuli; quæ claudit Πρόλογον, seu Ad Usum Mathematici Canonis Methodica; with woodcut vignette on title, and numerous diagrams—2 vols. folio in 1, old limp vellum (VERY RARE), £2. 10s

Turonis, I. Mettayer, 1591-3

All the above are original editions and of great rarity, having been privately printed for distribution among the author's friends only. They include his most important work, *In Artem Analyticam Isagoge*.

- 15395 **VIGENÈRE** (Blaise de, Bourbonnois) TRAICTÉ des CHIFFRES, ou Secretes Manieres d'Ecrire; with plates and other illustrations, 4to. fine copy in old calf (RARE), £1. 1s 1586

'Il y a beaucoup d'érudition cabalistique.'—*Biogr. Gén.*

- 15396 ——— TRAICTÉ du FEU et du SEL. Excellent et rare Opusculé, trouvé parmy ses Papiers apres son Deceds, derniere [2^e] Edition, reveuë et corrigée; with engraved vignette on title, 4to. large copy in old limp vellum (*slightly water-stained*); RARE, 17s 6d Rouen, 1642

This work contains the first description of crystallised benzoic acid. 'On y trouve une recette pour faire de l'or.'—*Biogr. Gén.* It was translated into English in 1649, and into Latin in 1613 (for *Theatrum Chemicum*).

- 15397 **VILLE** (Georges) On ARTIFICIAL MANURES, their Chemical Selection and Scientific Application to Agriculture, translated and edited by SIR WILLIAM CROOKES, P.R.S., with 5 folding plates (one coloured), and woodcuts, 8vo. cl., 4s (p. £1. 1s) 1879

- 15398 ——— NEW EDITION, revised by SIR WILLIAM CROOKES, P.R.S., and JOHN PERCIVAL, with 5 folding plates (one coloured), and woodcuts, 8vo. cl., 7s (p. 10s 6d nett) 1909

The author first demonstrated that wheat would grow in calcined sand to which salts of ammonia only were added.

- 15399 **VIMERCATO** (Giovanni Battista, Monaco di Certosa) DIALOGO [della Descriptione Teorica et Pratica] de gli HOROLOGI SOLARI: nel quale con Ragioni speculative, et pratiche facilmente s'insegna il MODO di FABRICAR tutte le Sorti di HOROLOGI, nuovamente ristampato, con Postille in Margine, ed un Aggiunta di un Horologio da servir sene al Lume della LUNA, d' à i Raggi di essa per saper qual Hora si della Notte; with 3 folding plates, and numerous large woodcuts, sm. 4to. contemporary vellum (*sound copy*); RARE, £1. 10s Padova, 1672

Last edition of this popular work on dialling. All editions of this work, which was unknown to Lalande, Poggendorff, and Brunet, are now VERY RARE. 'Buon trattatello di gnomonica.'—*Riccardi*.

- 15400 **VINTÉJOUX** (F.) NOUVELLES TABLES d'INTÉRÊTS COMPOSÉS et d'ANNUITÉS, et Précis de la Théorie et de la Pratique des Opérations Financières à Long Terme, particulièrement des Emprunts, 8vo. hf. French morocco neat, 6s (p. F. 12 nett) 1905

- 15401 **VIOLLE** (Louis Jules Gabriel, de l'Institut) COURS de PHYSIQUE, TOME I: PHYSIQUE MOLÉCULAIRE; with 566 woodcuts, large 8vo. (pp. 1021), hf. morocco gilt (*nice copy*), 15s (p. F. 28 nett sewn) 1884

- 15402 ——— ANOTHER COPY, 2 vols. hf. calf neat, 14s 1883-4

- 15403 ——— TOME II 1^{RE} PARTIE: ACOUSTIQUE; with 163 woodcuts, large 8vo. hf. calf neat, 5s (p. F. 9 nett sewn) [1886]

- 15404 **VISPRÉ** (François Xavier) DISSERTATION of the GROWTH of WINE in ENGLAND, to serve as an Introduction to a Treatise on the Method of Cultivating Vineyards, in a Country from which they seem at present entirely eradicated, and making from them GOOD SUBSTANTIAL WINE, 8vo. (pp. 69), sewn, 6s 6d Bath, 1786

The vineyards got entirely eradicated because post-Reformation stomachs were weaker than their Medieval forebears. But that wine can be grown in England was shown by the late Marquess of Bute in Glamorganshire, where the vineyard is still kept up. Whether Lord Bute's guests at Castell Coch liked the brand any more than they did William Burgess's grand oaken settles is not recorded.

- 15405 **VITELLIONIS** Mathematici Doctissimi ΠΕΡΙ 'ΟΠΤΙΚΗΣ, id est de NATURA, RATIONE, et PROTECTIONE RADIORUM VISUS, Luminum, Colorum atque Formarum, quam vulgo PERSPECTIVAM vocant, Libri [cum Præfatione PETRI APIANI], editio princeps; with pretty woodcut on title, large arms, and very numerous diagrams, Norimbergæ, Jo. Petreius, 1535: Euclidis ELEMENTORUM GEOMETRICORUM Libri XV, cum Expositione THEONIS in priores XIII à BARTHOLOMÆO ZAMBERTO Veneto Latinitate donata, CAMPANI in omnes, et HYPsiclis Alexandrini in duos postremos: adiecta sunt PHENOMENA. CATOPTICA et OPTICA, deinde Protheoria MARINI et DATA, postremum, OPUSCULUM de LEVI et PONDEROSO, hactenus non visum; with numerous woodcut initials and diagrams, Basileæ, Joh. Hervagius, 1537—2 vols. folio in 1, old oaken boards, covered with stamped pigskin, with metal clasps (very fine and large copies): rare, £3. 15s 1535-7

Vitello's work contains not only a summary of all that was known on optics to the ancients and to Alhazen, but also a number of original investigations.

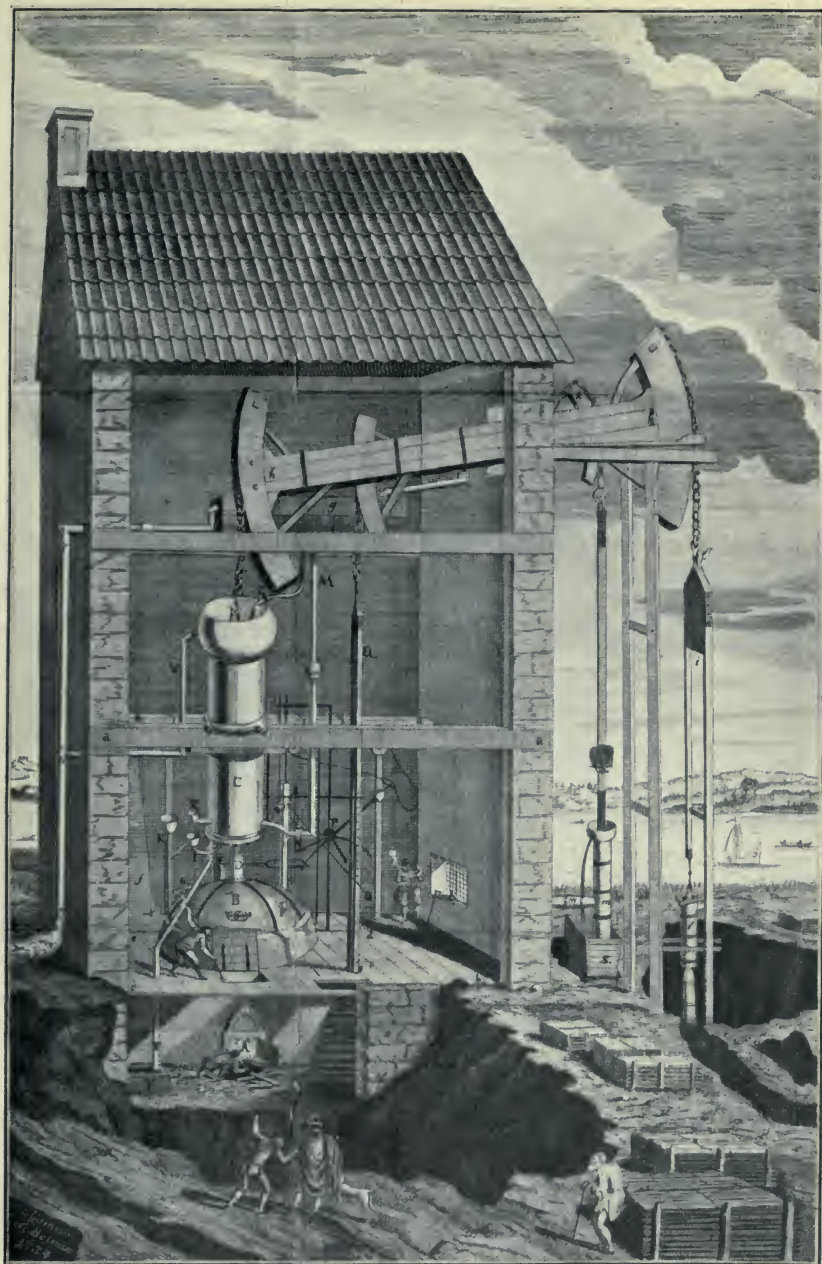
'A work on optics less diffuse and more systematic than that of Al Hazen, on which it was based. Witelo explained the twinkling of stars as due to the motion of the air, and showed that the effect was intensified if the star was viewed through water in motion. He pointed out that the rainbow was not formed by reflexion alone, as was taught by Aristotle, but was due to both reflexion and refraction.'—*Prof. Cajori*.

The existence of a separate edition of his works was unknown to Poggendorff and Heller, who only quote the edition published with Alhazen's works in 1572.

The second piece is the first complete edition of Euclid's works. The above copy contains the three preliminary ll., with an address by Philip Melancthon, which were abstracted in nearly all cases by the clerical censor—an interesting instance of the rigidity of Ecclesiastical censure at the period of the Reformation.

- 15406 **VLACQ** (Adriaan): EPHEMERIDES MOTUUM CÆLESTIUM ad Annos vulgaris Aëræ 1633-6, summa Diligentia in Luminarium Motibus et Zyzgiis, ex Tabulis Lansbergianis ab A.V.; in reliquis Planetis ex Tabulis Rudolphinis a JOANNE KEPLERO supputatæ, cum Instructione super earum Usu; with vignette on title, and 2 other woodcuts, sm. 4to. boards (*sound and clean copy*), 14s Gouda, P. Rammasenius, 1632

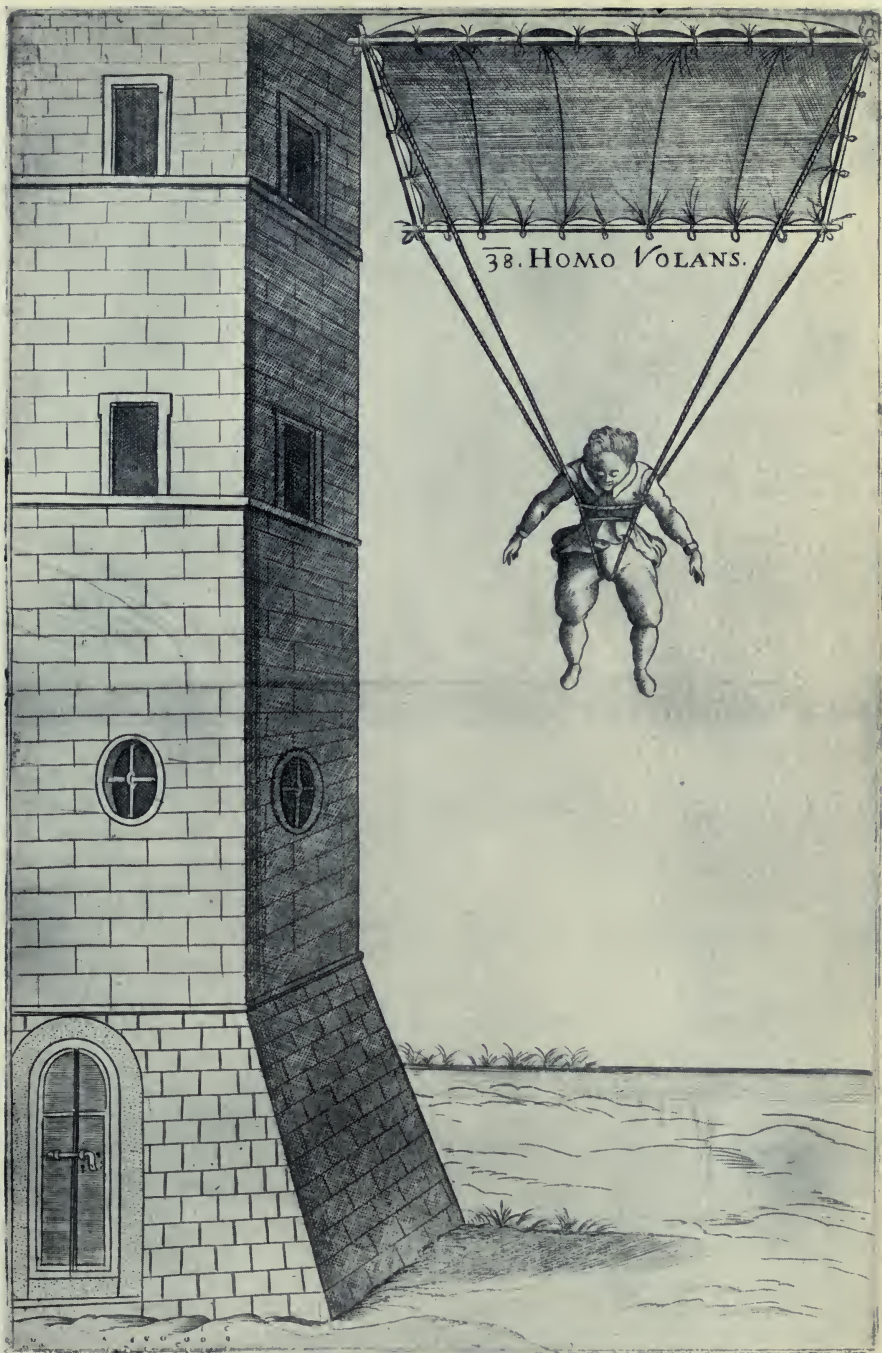
- 15407 ——— ANOTHER COPY, old vellum (*title slightly defective*), 10s 6d



*Dannemora Eld och Luft Maskin.
Kongl. Maj:ts och Rikssens Höglofliga Bergs Collegio
Underdånigst Dedicerad af Marten Triewald.*

No. 15335 (page 770).

The first steam engine in Sweden.



No. 15387 (page 773).

The first illustration of a parachute.

- 15409 **VITRUVIUS Pollio (Marcus)** [De ARCHITECTURA Libri X] per JOCONDUM SOLITO castigatio fact[i], cum Figuris et Tabula ut jam legi et intelligi possit; *title within woodcut border, and numerous good woodcuts, folio, hf. white vellum (wanting ff. 1, 9, 13, 19, 22, 35-8, 40-1, 64-5, 88-90, 95-7, 104, and first l. of table); rare, 10s 6d (col.) Venetis, Joa. de Tridino alias Tacuino, 1511*
The first illustrated edition of Vitruvius. The above copy contains the table which is often missing.
- 15410 — De ARCHITECTURA Libri X, cum Commentariis DANIELIS BARBARI, electi Patriarchae Aquileiensis: Multis AEDIFICIORUM, HOROLOGIORUM, et MACHINARUM DESCRIPTIONIBUS, et FIGURIS, una cum Indicibus copiosis, aucti et illustrati; *with very numerous large and fine woodcuts, and diagrams, folio, hf. morocco (name torn off title); RARE, £2. 2s*
ibidem, Franc. Franciscus Senensis et Joa. Crugher, 1567
A beautiful edition, esteemed for the woodcuts it contains. 'Texte de l'édition Lyonnaise de 1552 corrigé sur des conjectures et muni d'un commentaire explicatif. Une partie des figures ont été gravées par Giov. Crugher.'—Grasse.
The Sunderland copy (in calf) fetched £4. 15s.
- 15411 — De ARCHITECTURA Libri X, cum Notis, Castigationibus et Observationibus GUILIELMI PHILANDRI integris; DANIELIS BARBARI excerptis, et CLAUDII SALMASII passim insertis, præmittuntur ELEMENTA ARCHITECTURÆ, collecta ab HENRICO WOTTONO Equite Anglo; accedunt Lexicon Vitruvianum BERNARDINI BALDI Urbinitis, et ejusdem Scamilli Impares Vitruviani, de Pictura Libri III Leonis Baptistæ de Albertis, de Sculptura Excerpta ex Dialogo Pomponii Gaurici . . . cum Indicibus copiosissimis, omnia collecta, digesta, et illustrata a JOANNE DE LAET; *with finely engraved title, and numerous well-executed woodcuts, thick sm. folio, hf. calf gilt (joints cracked, but a sound and clean copy); rare, £3. 3s*
Amstelodami, apud Lud. Elzevirium, 1649
'Magnifique édition.'—A. Willems. 'Belle édition. Elle est encore recherchée, et les exemplaires en sont assez rares.'—Brunet. It is interesting to find Sir Henry Wotton's treatise among the works included.
'Ce qui donne à cet ouvrage une valeur particulière, c'est qu'il est le seul de ce genre qui soit parvenu jusqu'à nous, c'est qu'il renferme des notions importantes pour l'histoire de l'art, c'est qu'il a été écrit à une époque où l'architecture à Rome atteignit à sa plus grande perfection'.—Biog. Gén.
Book 8 deals with WATER-SUPPLY and AQUEDUCTS; the 9th with DIALLING, and the 10th with MECHANICS.
- 15412 **VOGEL (Rudolf Augustin, Univ. Göttingen)** INSTITUTIONES CHEMIE ad Lectiones Academicas accomodate, Editio altera locupletata, 8vo, *old calf (nice copy), 5s Lugd. Bat., 1757*
The author was a distinguished adherent of the Phlogiston Theory. He denied the metallic character of mercury.
- 15413 — LEHRSÄTZE der CHEMIE, übersetzt und mit Anmerkungen versehen von JOHANN CHRISTIAN WIEGLEB, 8vo, *old hf. calf, 4s 6d Weimar, 1775*
- 15414 **VOIGT (Woldemar, Univ. Göttingen)** ELEMENTARE MECHANIK als Einleitung in das Studium der theoretischen Physik; *with 55 illustrations, 8vo. cl., with Dr. Emil Reich's bookplate, 4s 6d Leipzig, 1889*
(p. M. 12 sewn) *ibidem, 1901*
- 15415 — ZWEITE UMGARBEITETE [NEUESTE] AUFLAGE; *with 56 illustrations, 8vo. hf. German morocco neat, 10s (p. M. 16)*
- 15416 — KOMPENDIUM der THEORETISCHEN PHYSIK, 2 vols. 8vo. *hf. German morocco, 6s Dr. Emil Reich's bookplate, £1. 1s (p. M. 36)*
ib., 1895-6
- 15417 — LEHRBUCH der KRISTALLPHYSIK (mit Ausschluss der Kristalloptik); *with 213 illustrations and folding table, thick 8vo. sewn, 18s (p. M. 30)*
ib., 1910
- VOLTAIRE (François Marie Arouet de)** THE ELEMENTS of SIR ISAAC NEWTON'S PHILOSOPHY (1738)—v. NEWTONIANA, No. 12625, ante.
- 15418 **VOSSIUS (Isaac; Canon of Windsor)** VARIARUM OBSERVATIONUM Liber; *with woodcuts, 4to. old white vellum, or, old calf, 12s 6d Londini, Robertus Scott, 1685*
Including: de Artibus et Scientiis Sinarum; de Origine et Progressu Pulveris Bellici apud Europæos; de Trirremum et Liburnicarum Constructione; de Emendatione Longitudinum; de apparentibus in Luna Circulis; de Causa Gravitatis, etc.; also his well-known 'de Sibyllinis aliisque Christi Natalem præcedentibus Oraculis.'
The dissertation on the construction of triremes was inserted by Grævius in his *Thesaurus Antiquitatum Romanorum*, and is referred to with commendation in Smith of Jordanhill's 'Dissertation on the Navigation of the Ancients.'
- 15419 **VREDEMAN (Jan)** PERSPECTIVA THEORETICA et PRATICA, hoc est, Opus Opticum absolutissimum, continens Aedificiorum, Templorum, Pergularum aliarumque Structurarum perfectissima Fundamenta, Icones apte Delineamenta, juxta veterum ac recentiorum Autorum Doctrina accurate exaratum, multis verò Notis illustratum per SAMUELEM MAROLOIS; *with 65 plates, folio, old vellum (binding damaged and some plates torn); RARE, with fine etched bookplate by Boutet, £1. 1s Amsterdam, Joa. Jansson, 1633*
- 15420 **VULLIAMY (Benjamin Lewis, F.R.A.S.)** Some CONSIDERATIONS on the Subject of PUBLIC CLOCKS, particularly CHURCH CLOCKS: with Hints for their Improvement, with the Supplement, 2 vols. 4to. in 1, (pp. 15 + 31), *hf. russica (binding damaged), with author's inscr., 5s privately printed, 1828-30*
- 15421 **WACKERBARTH (A. D.)** PROVISIONAL THEORY of LEDA, 4to. (pp. 24), *sewn, with author's inscr., 2s 6d Upsala, 1866*
- 15422 — ANOTHER COPY, cl., 3s
The planetoid Leda was discovered by Chacornac in 1856.
- 15423 **WAEYWEL (Daniel)** DEMONSTRATIE wegens de QUADRATURA CIRCULI ontdeekt en uytgevonden; *with folding plate, sm. 4to. (pp. 28), boards (headlines cut into); rare, 15s Amsterdam, 1712*
The author finds 3/142 as value for π . Holland was the great country of circle-squarers during the XVIII. Century, probably owing to the fact that a money prize was offered there for a 'correct' solution.
- 15424 **WAGNER (Joseph Friedrich)** NOTIZEN über die MINERALIEN-SAMMLUNG von ALEXANDER V. CRICHTON; *with fine portrait of Gotthelf Fischer, and 18 plates, 4to. (pp. 147), sewn, 4s 6d Moskau, 1818*
'Thomas Allan Esquire [F.R.S.] with best compliments from his friend [Sir] A[lexander] Cr[ichton], F.R.S.'—Inscr. on title.

15426 **WADDELL** (John Alexander Low, C.E., *Univ. Tokio*) The DESIGNING of ORDINARY IRON HIGHWAY BRIDGES, with diagrams and 42 folding tables, large 8vo. cl. (o. p.), 6s 6d (p. £1. 1s)

New York, 1884

15427 **WALKER** (Charles Vincent; F.R.S.) ELECTRIC TELEGRAPH MANIPULATION: the Theory, and Plain Instructions in Transmitting Signals to Distant Places, as practised in England, through Electricity and Magnetism, with woodcuts, 16mo. pictorial wrapper (scarce), 5s 1850

Written when the author was telegraph superintendent to the South Eastern Railway, one of the first lines to use the electric telegraph extensively in England. At this date (1850) the writer says the Brighton Railway had no telegraphs!

The book includes a chapter on the Submarine Telegraph. The author also, in conjunction with James Glaisher and Sir G. B. Airy, introduced the system of electric time-signals from Greenwich Observatory.

15428 ——— ELECTROTYPE MANIPULATION: being the Theory, and plain Instructions in the Art of Working in Metals by precipitating them from their Solutions through the Galvanic or Voltaic Electricity, with woodcuts, 16mo. sewn (scarce), 4s 1841

This is probably the earliest English work on electrotyping, as M. H. v. Jacobi did not publish his invention until 1840 (v. no. 9709-10 ante).

15429 **WALKER** (Frederick, C.E.) AERIAL NAVIGATION: a Practical Handbook on the Construction of Dirigible Balloons, Aërostats, Aëroplanes, and Aëromotors, with frontispiece and 104 illustrations, post 8vo. cl. 2s 6d (p. 7s 6d nett) 1902

15430 ——— SECOND EDITION, revised and enlarged, with 123 illustrations, post 8vo. cl., 3s 6d 1910

15431 **WALKER** (James, *Univ. Edin.*, F.R.S.) INTRODUCTION to PHYSICAL CHEMISTRY, third Edition [enlarged], with 50 illustrations, 8vo. cl. 5s (p. 10s nett) 1903

15432 ——— The THEORY and USE of a PHYSICAL BALANCE, with 3 folding plates, 8vo. sewn, 2s Clarendon Press, Oxford, 1887

15433 [**WALKER** (Obadiah)] PROPOSITIONS concerning OPTIC GLASSES, with their natural Reasons, drawn from Experiments, with vignette of the Sheldonian Theatre on title, and 38 diagrams, sm. 4to. (pp. 46), hf. brown calf, uncut (fine copy); RARE, 17s 6d

Oxford, at the Theater, 1679

An elementary work which seems to have sufficed for the needs of a university education in the latter end of the Seventeenth Century.

The author was Master of University College, Oxford, and went over to Rome on James II.'s accession, who charged him with the uphill task of Romanising the University. Walker only succeeded however in getting 'the curses of all both great and small' (Anthony à Wood), a sentiment also expressed in some contemporary doggerel, which was sung by the undergraduates:

'Oh, old Obadiah
Sing Ave Maria
But so will not I a
for why a
I had rather be a fool than a knave a.'

15434 **WALKER** (Ralph) TREATISE on MAGNETISM, with Description and Explanation of a Meridional and Azimuth Compass, for ascertaining the Quantity of Variation, without any Calculation whatever, at any Time of the Day, also Improvements on Compasses in General, with TABLES of VARIATION, for all Latitudes and Longitudes, with 7 folding plates, 8vo. calf gilt (one joint cracked, and title mounted), 7s 6d 1794

15435 ——— ANOTHER COPY, hf. calf, with auto. of John Lee, of Hartwell, Q.C., F.R.S., 9s

Chiefly valuable for the full tables of variation (pp. 139), compiled from observations between 1760 and 1780.

15436 **WALKER** (Comm. William, R.N.) The MAGNETISM of SHIPS, and the MARINER'S COMPASS: a Rudimentary Exposition of the Induced Magnetism in Sea-going Vessels, and its Action on the Compass, etc., with woodcuts by L. F. W. JEWITT, F.S.A., 12mo. cl. (scarce), 5s 1853

Pp. 1-20 contain an interesting history of the mariner's compass. There is also an account of the author's own compensated compass; with an appendix of official reports.

15437 **WALLACE** (William, F.R.S.E., *Univ. Edin.*) INVESTIGATION of FORMULÆ, for FINDING the LOGARITHMS of TRIGONOMETRICAL QUANTITIES from one another, and a proposed Improvement in the Solution of a Case in Plane Trigonometry, 4to. (pp. 23), sewn, 2s 6d Edin., 1823

15438 ——— NEW SERIES for the QUADRATURE of the CONIC SECTIONS, and the COMPUTATION of LOGARITHMS, with plate, roy. 4to. (pp. 78), sewn, with inser. to Nevil Maskelyne, pr., F.R.S., 4s 6d ibidem, 1808

15439 **WALLACE** (William) The LAWS which regulate the DEPOSITION of LEAD ORE in VEINS; illustrated by an Examination of the Geological Structure of the Mining Districts of ALSTON MOOR, with 21 lithographic views and plans (some coloured or folding), 8vo. cl. (map wanting); SCARCE, 7s 6d 1861

15440 **WALLACH** (Otto; *Univ. Göttingen*) TERPENE und CAMPHER: Zusammenfassung eigener Untersuchungen auf dem Gebiet der alicyclischen Kohlenstoffverbindungen, large 8vo. sewn, with inser. to Prof. W. H. Perkin, F.R.S., 12s (p. M. 18) Leipzig, 1909

A systematic account of the author's important researches on essential oils, made between 1885 and 1908, and containing a new classification of terpenes.

15441 **WALSH** (Francis) The ANTEDILUVIAN WORLD: or a NEW THEORY of the EARTH: containing a clear Account of the Form and Constitution of the Terrestrial Globe before the Universal Deluge; proving it to be quite different from what it is at present; with the Origin and Causes of the said Deluge, Subterraneous Cavities, Seas, Islands, Mountains, etc., with woodcuts, 8vo. old calf (rare), 8s 6d Dublin, 1743

This grand defence of the Deluge and curious geological paradox was unknown to Watt, Lowndes, Allibone, and other bibliographers.

15442 **WALTER** (Thomas) NEW MATHEMATICAL DICTIONARY: the Explication of all the Terms in Pure and Mixed Mathematics, the Explications, Uses, etc. of the most considerable Instruments, Engines, and Machines, with the Elements of Geometry, with 3 plates and diagrams, 8vo. cl., 5s [1762]

- 15444 **WALLENTIN (Ignaz)** EINLEITUNG in die THEORETISCHE ELEKTRIZITÄTSLEHRE; with 81 diagrams, 8vo. cl., 7s 6d (p. M. 12) Leipzig, 1904
- 15445 **WALLERIUS (Johan Gottskalk, Univ. Upsala)** ELEMENTS d'AGRICULTURE Physique et Chimique, traduits du Latin, 12mo. *fine copy in contemporary calf extra, with auto. of Richard Watson, F.R.S., absentee Bp. of Llandaff (1737-1816), and his Calyarth Park book-label, 7s 6d* Yverdon, 1766

An important work in which the author bases the principles of agriculture on a comparative study of the chemical constitution of plants and the soil.

Bishop Watson bought this book to improve his estate in Westmorland, where he lived while Bishop of Llandaff, and took to planting, and what Wordsworth called a vegetable manufactory, while his sons 'merrily pursued cockfighting', and the natural result ensued 98 years *post mortem* in the disendowment of the Church in Wales.

- 15446 — **PHYSISCHE CHEMIE : Natur und Beschaffenheit der Chemie überhaupt, ihre Geschichte u. s. w.; von den Salzen, dem Schwefel, dem schwefelichten und erdharzigen Körpern; von den 7 halben und 7 ganzen Metallen, und den Produkten derselben, übersetzt mit Anmerkungen von C. A. MANGOLD und C. E. WEIGEL (Bd. I 2. Auflage, mit Anmerkungen von C. E. Weigel); 2 vols. 8vo. in 3, sewn, 5s** Leipzig, 1780-76

The author was Bergman's predecessor as professor of chemistry at Upsala. He promoted the study of mineralogy by giving a more systematic arrangement of minerals.

- 15447 **WALLIS (John, D.D., F.R.S., Savilian Prof.)** DISCOURSE of GRAVITY and GRAVITATION, grounded on Experimental Observations presented to the Royal Society, November 12, 1674, with folding plate, sm. 4to. (pp. 36), hf. brown calf (RARE), £1. 1s J. Martyn, 1675

Interesting as a discourse on the subject on the eve of the discovery of the law of gravitation by Sir Isaac Newton. The work contains many experiments in illustration.

- 15448 — **INSTITUTIO LOGICÆ, ad communes Usus accommodata, Editio VI., auctor et emendator, large 12mo. old sheep, rebounded, with auto. of Sam. Roberts, F.R.S., 5s** Ozonii, 1763

- 15449 — **MECHANICA: sive, de MOTU, TRACTATUS GEOMETRICUS, Pars I. in qua, de Motu Generalia; de Gravium Descensu, et Motuum Declivitate; de Libra. Pars II. in qua, de Centro Gravitatis, ejusque Calculo. Pars III. in qua, de Vecte, de Axe in Paritrochio, de Trochleâ, de Cochleâ, de Motibus Compositis, de Percussione, de Cuneo, de Elatere, et Resilitione seu Reflexione, de Hydrostaticis, et Aeris Æquipondio, variisque Questionibus Mathematicis, editio princeps; with finely engraved portrait by W. FAITHORNE, and 17 folding plates, 3 vols. 4to. in 1, sound and large copy in contemporary calf (VERY RARE), £2. 10s Londini, Gul. Godbid, 1670-1**

One of the classics of mechanics, containing the first exhaustive treatment of the theory of the collision of bodies considered as imperfectly elastic bodies—being the solution of a problem propounded by the Royal Society—while Sir Christopher Wren and Huygens treated the subject simultaneously, but confined their theory to perfectly elastic bodies. On these investigations, according to Prof. Mach, Sir Isaac Newton based his researches contained in the *Principia*.

'Wallis geht von dem Grundsatz aus, dass das Moment, das Produkt aus der Masse (Pondus) und der Geschwindigkeit (Celeritas), bei dem Stosse maassgebend sei. Durch dieses Moment wird die Kraft des Stosses bestimmt. Stossen zwei (unelastische) Körper mit gleichen Momenten aufeinander, so besteht nach dem Stoss Ruhe. Bei ungleichen Momenten ergibt die Differenz der Momente das Moment nach dem Stosse.'—Prof. Mach.

The third volume is especially rare, and often wanting.

- 15450 — **PARS I. (de Motu Generalia, de Gravium Descensu, et Motuum Declivitate, de Libra); with 2 folding plates, 4to. old calf (roughly rebounded), 15s** *ibidem, apud evundem*, 1670

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- 15525 **WHISTON** (William, *pr.*; *Lucasian Prof. Mathematics, Cantab.*; *translator of Josephus*) **ASTRONOMICAL LECTURES, with the Astronomical Tables of Flamsteed, Halley, Cassini, and Street, 2nd Edition, corrected, with engraved frontispiece, and diagrams**, 8vo. *old calf*, 4s 6d 1728

- 15526 ——— **ASTRONOMICAL PRINCIPLES of RELIGION, Natural and Reveal'd, with Preface of the Temper of Mind necessary for the Discovery of Divine Truth; and of the Degree of Evidence that ought to be expected in Divine Matters, first edition, with copperplates**, 8vo. *old calf gilt*, 4s 6d 1717

Dedicated to Sir Isaac Newton, who balked the author's election as a fellow of the Royal Society.

- 15527 ——— **A NEW THEORY of the EARTH, wherein the Creation of the World in Six Days, the Universal Deluge, and the General Conflagration are shewn to be perfectly agreeable to Reason and Philosophy; with large Introductory Discourse concerning the Mosaic History of Creation, first edition, with plates and smaller engravings on copper**, 8vo. *old calf* (rare), 12s 1696

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- 15528 ——— **ANOTHER COPY; also: Woodward (John, M.D. F.R.S.) ESSAY towards a NATURAL HISTORY of the EARTH: and Terrestrial Bodies, especially Minerals: as also of the Sea, Rivers, and Springs, with Account of the Universal Deluge: and of the Effects that it had upon the Earth, first edition—2 vols.** 8vo. in 1, *sound copies in old calf*. £1. 5s 1696-5

'The MS. was shown to Newton and Wren. It was praised by Locke. . . . Whiston's speculation was meant to supersede the previous theory of Thomas Burnet. He confirmed the narrative in Genesis on Newtonian grounds, explaining the Deluge by collision with a comet.'—*Sir Leslie Stephen.*

'Whiston was one of the first who ventured to propose that the text of Genesis should be interpreted differently from its ordinary acceptation, so that the doctrine of the earth having existed long previous to the creation might no longer be regarded as unorthodox. . . . Locke pronounced a panegyric on his theory, commending it for having explained so many wonderful and before inexplicable things.'—*Sir Charles Lyell.* The work was attacked by JOHN KEILL (*v. No. 10021 ante*).

It is a touching fact in Eighteenth Century Arianism that whatever doubts it may have had as to the cardinal fact of Christianity, it was as unswervingly faithful to the Deluge as his wife was to Mr. Micawber.

- 15529 ——— **PRÆLECTIONES PHYSICO-MATHEMATICÆ Cantabrigiæ, quibus accedunt Tabulæ Astronomicæ Flamsteedianæ correctæ, Halleianæ, Cassinianæ, et Streetianæ, editio princeps, with diagrams**, 8vo. *old panelled calf*, 5s Cantabrigiæ, 1707

- 15530 ——— **SIR ISAAC NEWTON'S MATHEMATICK PHILOSOPHY more easily DEMONSTRATED: with DR. HALLEY'S ACCOUNT of COMETS Illustrated.** In this English Edition the Whole is corrected and improved by the Author, with 9 *plates*, 8vo. *old panelled calf* (nice copy), 7s 6d 1716

Whiston was one of the first to popularise the Newtonian theories, and, according to Professor de Morgan, one of the first to give lectures with experiments in London. He is thought to have suggested Dr. Primrose.

- 15532 **WHETHAM** (William Cecil Dampier, F.R.S.; *eugenist*) 'IONIC VELOCITIES' (Abstract), with 2 illustrations, 8vo. (pp. 8), *sewn*, 1s 1892
- 15533 ——— The IONIZATION of DILUTE SOLUTIONS at the FREEZING POINT, with woodcuts and charts, 4to. (pp. 40), *sewn*, 2s 1900
- 15534 ——— The RECENT DEVELOPMENT of PHYSICAL SCIENCE, with portraits, plates, and woodcuts, large post 8vo. *cl.*, 3s 6d (p. 7s 6d nett) 1904
- 15535 ——— SOLUTION and ELECTROLYSIS, with 19 illustrations and folding table, post 8vo. *cl.* (o. p.), 5s *Univ. Press, Cambridge*, 1895
- 15536 ——— TREATISE on the THEORY of SOLUTION, including the Phenomena of ELECTROLYSIS, with 66 illustrations, 8vo. *cl.*, 6s 6d (p. 10s nett) *apud eandem, ibidem*, 1902
- 15537 ——— 'On the VELOCITIES of the IONS' (Abstract), 8vo. (pp. 6), *sewn*, 1s 1895
- 15538 ——— On the VELOCITIES of the IONS and the Relative Ionization-Power of Solvents, 8vo. (pp. 5), *sewn*, 1s 6d 1894
- 15539 **W[HITE]** (J[ohn, Vicar of Cherton]) RICH CABINET, with VARIETY of INVENTIONS: unlock'd and open'd, for the Recreation of Ingenious Spirits at their vacant Hours, being Receipts and Conceits of several Natures, and fit for those who are Lovers of Natural and Artificial Conclusions; as also Variety of Recreative FIRE-WORKS both for Land, Air, and Water, and Fire-works of Service for Sea and Shore, with divers Experiments in Drawing, Painting, ARITHMETICK, GEOMETRY, ASTRONOMY, and other Parts of the Mathematicks, likewise Directions for Ringing the most usual Peals that belong to that Art; 5th Edition, with many Additions, with engraved title in compartments by T. Cross, and numerous woodcuts, 12mo. handsomely bound in mottled calf (hole burnt in one leaf and slightly soiled, but a sound copy); RARE, £1. 10s
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- Especially interesting for containing numerous recipes for fireworks. There are also descriptions of some curious dials, a diving bell, 'a Ship that cannot be drowned', etc. etc.; while Bell-ringing is probably included from the interest which the extraordinarily complex combinations in a ring of eight may have to a mathematician.
- 15540 **WIDMER** (Georg, M.D.) CHYMIA CORPORIS ANIMALIS, cum Lithoegnosia et Artifeio Aquas Salsas dulcificandi, Methodo scientifica pertractata, 4to. (pp. 40), *sewn*, 4s *Argentorati*, 1751
- 15541 ——— THEORIA CHIMIFICATIONIS, CHYLIFICATIONIS, et LACTIFICATIONIS Methodo scientifica pertractata, 4to. (pp. 28), *sewn*, 5s *ibidem*, 1753
- 15542 **WIEGLEB** (Johann Christian) CHEMISCHE VERSUCHE über die ALKALISCHEN SALZE, neue verbesserte und vermehrte Auflage, 8vo. *sewn* (rare), 8s 6d *Berlin, Friedrich Nicolai*, 1781
- An important work, in which the author proved the existence of alkalies in fresh plants, against the opinion then held that they only existed there in the burnt state.
- 15543 ——— HANDBUCH der ALLGEMEINEN CHEMIE, 2. neuberichtigte Auflage, 2 vols. 8vo. *hf. calf*, 7s 6d *ibidem, apud eundem*, 1786
- 'He enriched pharmaceutical and technical chemistry by valuable observations.'—*Prof. E. v. Meyer*.
The publisher of both works was Friedrich Nicolai, polygraph and friend of Lessing.
- 15544 **WILCKE** (Johan Carl) TAL om MAGNETEN; with vignette on title, 12mo. (pp. 44), *sewn* (rare), 8s 6d *Stockholm*, 1764
- A short historical account of magnetism, copiously quoting the original authorities. There was no copy of it in the Ronalds Library.
- 15545 **WILDA** (Hermann, *Technikum Bremen*) Der SCHIFFSMASCHINENBAU: Grundlagen der Theorie, Berechnung und Konstruktion, auf Grund des Werkes 'Machines Marines' von L. E. BERTIN bearbeitet; with folding plate, and 492 illustrations, roy. 8vo. *cl.*, 13s (p. M. 26) *Hannover*, 1901
- 15546 **WILKENS** (Marten) ARITMETICA ofte REKEN-KONST, verciert met veel schoone Regelen ende Exempelen; laetste Druck veel verbeterd en vermeerderd; with fine portrait, 12mo. *old hf. calf*, 7s 6d *Groningen*, 1719
- Unknown to Professor de Morgan, who does not mention the author in his 'List of 1580 Names of Authors of Works on Arithmetic.'
- 15547 **WILLCOCKS** (Sir William; *Roorkee Coll.*: M.I.C.E., designer of the Aswan Dam) EGYPTIAN IRRIGATION, with Introduction by LT.-COL. J. C. ROSS, R.E., 26 folding plates and plans, and 69 other illustrations, thick roy. 8vo. *cl.*, 9s (p. £1. 16s) 1889
- 15548 ——— The IRRIGATION of MESOPOTAMIA, roy. 8vo. *cl.*, with Atlas, containing 46 plates, folio, portfolio—2 vols., 12s 6d (p. £1 nett) 1911
- 15549 ——— The RESTORATION of the ANCIENT IRRIGATION WORKS on the TIGRIS, or the Re-Creation of Chaldea, with Appendixes (Meteorological Information about Bagdad, etc.), with 10 folding plates and plans, roy. 8vo. *sewn*, 4s *Cairo*, 1903
- Perhaps now that superhate has ruined German prospects in Mesopotamia, General Chesney's ghost may yet see the Euphrates Valley Railway carried out by the country which first surveyed it.
- 15550 **WILLIAMS** (John) The CLIMATE of GREAT BRITAIN; or Remarks on the Change it has undergone, particularly within the last 50 Years, accounting for the increasing Humidity and consequent CLOUDINESS and COLDNESS of our SPRINGS and SUMMERS . . . including various Experiments to ascertain the Causes of such Change, 8vo. *old hf. calf*, 6s 6d 1806
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- 'A work of great merit for that day, and of practical utility, as containing the best account of the coal strata.'—*Sir Charles Lyell*. The work contains an attack on the Huttonian System, which, the author fears, will 'lead to downright infidelity and atheism'.

- 15553 **WILKINS** (John, 14th Bp. of Chester; first Sec. Roy. Society) MATHEMATICAL and PHILOSOPHICAL WORKS, with Life and Account of his Works, *portrait, fs. title, and numerous woodcuts*, 8vo. *old panelled calf (rare)*, 15s
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- 15554 [—] THE DISCOVERY of a WORLD in the MOONE, or a Discourse tending to prove, that 'tis probable there may be another Habitable World in that Planet, *first edition, with frontispiece, woodcuts, and diagrams*, 18mo. *calf gilt (a few wormholes in blank margin, otherwise a LARGE AND VERY FINE COPY)*, very rare, £3. 3s *E. G. for Michael Sparke and Edward Forrest, 1638*
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The 'Discourse' is a stout defence of the Copernican system, by no means generally accepted at this time—*cf. No. 4085 ante.*
- 15556 [—] ANOTHER COPY, 2 vols. in 1, *old tree-calf (back damaged)*, £1. 5s
Although mentioning 'third Impression', this is really the second edition of the first work, and the first collected edition.
This edition of the *Discovery* has the 14th Proposition, famous in the history of airman'ship, which is not included in the first: 'That tis possible for some of our posteritie, to find out a conveyance to this other world; and if there be inhabitants there, to have commerce with them.' The 13th Proposition, however, is shortened in this edition. The conveyance suggested is a 'flying Chariot', of which the particulars of construction are given in the 'Mathematicall Magick'. The author supposes a natural passage to the moon, whence he imagines locusts to come, and whither he supposes birds to migrate.
- 15557 [—] FOURTH [LAST] EDITION, corrected and amended, *with frontispiece and woodcuts*, 2 vols. sm. 8vo. in 1, *old calf, newly rebaked (front. and some ll. soiled)*, 17s 6d *J. Gillibrand, 1684*
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- 15559 [—] MATHEMATICALL MAGICK, or the Wonders that may be performed by Mechanicall Geometry, concerning Mechanicall Powers and Motions. Being one of the most easie, pleasant, usefull (and yet most neglected) parts of Mathematicks. Not before treated of in this Language. By J. W. M. A., *first edition, with numerous engravings on copper and wood*, 12mo. *sound copy in old calf (RARE)*, £1. 10s *S. Gellibrand, 1648*
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- 15562 [—] FOURTH EDITION [unaltered], *with portrait, and numerous engravings on copper and wood*, 12mo. *contemporary calf, rebaked (a sound and clean copy)*, 15s *R. Baldwin, 1691*
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An exceedingly interesting storehouse of extravaganzas in engineering, and of special interest for containing descriptions of a number of machines, some of them the author's own invention, supposed to produce PERPETUAL MOTION, a subject in which he took a special interest; 72 pages are devoted to this subject. There are also three chapters on **AIRMANSHIP**: 'Of the volant Automata, Archytas his Dove, and Regiomontanus his Eagle. The possibility and great usefulness of such inventions; Concerning the Art of flying. The several ways whereby this hath been, or may be attempted. A resolution of the two chief difficulties that seem to oppose the possibility of a flying Chariot; and others 'of the contrivance of several motions by rarified air,' on 'Wind-guns,' 'an Ark for submarine Navigation,' etc. etc. etc.
'He was well versed in mechanical science, and his writings display an extensive acquaintance with a variety of ancient authorities on every matter on which he discourses. He is the most exact writer of the XVIIth. century on the subject of Perpetual Motion, examining it thoroughly, with admirable acuteness as well as candour.'—*H. Dircks, C.E.*
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- 15566 **WILKINSON** (Abraham, F.S.A. Scot.) TENTAMEN PHILOSOPHICO-MEDICUM de ELECTRICITATE, 8vo. (pp. 61), *sewn*, 4s 6d *Edinburgi, 1783*
There is no copy of this work in the Ronalds Library.
- 15567 **WILLIS** (John) EASY METHOD of CONSTRUCTING the various Types of MAGIC SQUARES and MAGIC CUBES, with Symmetric Designs founded thereon, *with coloured illustrations and folding table*, *cr. 4to. cl.*, 8s *Bradford, 1909*
- 15568 **WINTERSTEIN** (Ernst, Zürich) und **George TRIER**: Die ALKALOIDE: eine Monographie der natürlichen Basen, roy. 8vo. *sewn*, 7s (p. M. 11) *Berlin, 1910*

- 15570 **WILSON** (Benjamin; F.R.S., *portrait painter*) ESSAY towards an EXPLICATION of the PHENOMENA of ELECTRICITY, deduced from the Æther of Sir Isaac Newton, *with folding copper-plate of electrical machine, etc.*, 8vo. (pp. 110), *sewn*, 7s 6d 1746
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'This work was communicated to several foreign learned bodies, and was the subject of a memoir by Leonhard Euler, read at the Academia Scientiarum Imperialis at St. Petersburg, and of a Letter from G. B. Beccaria'.—D. N. B.
- 15573 ——— SHORT VIEW of ELECTRICITY, *with plate, woodcuts, and diagrams*, 4to. (pp. 37), *sewn*, 6s 1780
- 15574 ———: SUNDRY PAPERS relative to an ACCIDENT from LIGHTNING at PURFLEET, *with 4 folding plates by Basire, including one of the Great Cylinder in the Pantheon, and etched portrait of Wilson by himself (inserted)*, 4to. (pp. 81), *sewn (rare)*, 12s 6d [1777]
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- 15575 ——— TREATISE on ELECTRICITY, 2nd Edition, *with fine etched portrait by the ARTIST HIMSELF, and 5 copperplates*, 8vo. *old calf (rare)*, 15s 1752
The author was the first to use a conductor with the collector of his cylinder electrical machine. He also found that the electric property of tourmaline was shared by other crystals. He received the Royal Society's gold medal in 1760 for his electrical experiments.
- 15576 **WILSON** (Eugene Benjamin) The CHLORINATION PROCESS, *with 8 illustrations*, cr. 8vo. *cl.*, 3s 6d (p. 6s 6d nett) New York, 1901
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This was published in connexion with the proposal to Parliament of John Senex, F.R.S., for the publication of a complete Sea Atlas on the globular projection
- 15581 ——— SURVEYING IMPROVED: or the Whole Art, both in Theory and Practice, fully demonstrated; 4th Edition, with Additions; also GEODESIA ACCURATA: or Surveying made Easy by the Chain only, with a new Essay on Solids, by WILLIAM HUME, *with numerous plates and diagrams*, 8vo. *contemporary calf (fine copy)*, 7s 6d 1755
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- 15584 **WINCHILSEA** (Heneage Finch, 2nd Earl of): A TRUE and EXACT RELATION of the late PRODIGIOUS EARTHQUAKE and ERUPTION of MOUNT ÆTNA, or Monte-Gibello; as it came in a Letter written to His Majesty from Naples by the Right Hon. the EARLE of WINCHILSEA, His Majestie's late Ambassador at Constantinople, who in his Return from thence, visiting Catania in the Island of Sicily, was an EY-WITNESS of that DREADFULL SPECTACLE. Together with a more particular Narrative of the same, as it is collected out of severall Relations sent from Catania, *with folding copperplate, and another contemporary view on copper of the Eruption (added)*, sm. 4to. (pp. 38), *hf. roan (VERY RARE)*, £1. 5s T. Newcomb in the Savoy, 1669
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- 15586 **WING (Vincent)** EPHEMERIDES of the CELESTIAL MOTIONS for XIII Years, 1659-1671, diligently calculated according to the Doctrine of Astronomia Instaurata, and applied to the Horizon of the most famous CITY of LONDON, with a brief Introduction [pp. 156] for the Use thereof, *with woodcuts and diagrams*, sm. 4to. FINE COPY in contemporary calf, with bookplate of Lord Arundell of Wardour, and auto. of [HENRY 3RD] LORD ARUNDELL [OF WARDOUR] on title (RARE), £1. 15s
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*Wing issued ephemerides, the 'exactest' then to be had, according to John Flamsteed, who maintained 'a fair correspondence' with him.—*D. N. B.* They include astrological meteorology.

- 15587 ———: GEODETIC PRACTICUS REDIVIVUS: the ART of SURVEYING, formerly publish'd by VINCENT WING, now much augmented and improv'd; with APPENDIX, shewing the whole Art of Surveying by a New Instrument, called the EMERAL TABLE, performing the Work of the Theodolite, Circumferenter, Semi-Circle, Chard and Needle; with the Description and Use of a New QUADRANT, with Supplement, SCIENTIA STELLARUM, containing new and accurate Tables of the Planetary Motions, etc. etc., by JOHN WING, *with copperplates, and numerous diagrams*, folio, *old panelled calf, newly and neatly rebaked* (RARE), £1. 7s 6d 1700

The 'Emeral Table' was the editor's own invention, and consisted of 'a perfect plain table, an exact theodolite and circumferenter, and the peractor exactly adjusted, the needle or declinatory also fully completed thereon, in its own kind and order, which instruments are here fully completed upon this one instrument, without the least confusion of lines or parts.'

One of Vincent Wing's best known publications was the *Olympia Domata*, a semi-astrological almanack, continued for over a hundred years by the Stationers' Company.

- 15588 ——— HARMONICON CÆLESTE: or, the Cœlestiall Harmony of the Visible World: containing, an absolute and entire Piece of Astronomie, wherein is succinctly handled the TRIGONOMETRICALL PART, generally propounded, and particularly applied to the Diurnall Motion . . . the Second Motions of the Luminaries and the other Planets, with their Eclipses, etc., grounded on the most Rationall Hypothesis yet constituted, and compared with the best Observations, especially those of TYCHO BRAHE, and other more modern Observators, fitted to the Meridian of London, *with numerous diagrams*, folio, *boards (stained and last l. mounted)*, 8s 6d R. Leybourn, 1651

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Wingate's Arithmetic was originally published, in two parts, in 1630. The first part appeared in 1650, revised by JOHN KERSEY the elder, as 'Arithmetique made easie.' The above second part was reprinted for the first and last time in 1652.

- 15590 ——— ARITHMETICK, containing a plain and familiar Method for attaining the Knowledge and Practice of Common Arithmetick; 4th Edition, with Appendix, containing choice Knowledge in Arithmetick, both Practical and Theoretical (pp. 243), by JOHN KERSEY [the Elder], 12mo. *hf. bound (title wanting)*; RARE, 10s 6d [1668]

Both the above editions were unknown to Professor de Morgan. The earliest edition described by him is that of 1673. This edition is also unknown to *D. N. B.*

- 15591 ——— TWELFTH EDITION, with a New SUPPLEMENT, of Easie Contraction in the necessary Parts of Arithmetick, useful Tables of Interest and Flemish Exchanges, also a Practical Mensuration, by GEORGE SHELLEY, sm. 8vo. *contemporary calf*, 6s 1708

- 15592 ——— THIRTEENTH EDITION, with a new Supplement, by GEORGE SHELLEY, sm. 8vo. *contemporary panelled calf (sound copy)*, 6s 1713

- 15593 ——— EIGHTEENTH EDITION, with the Additions and Emendations by JOHN KERSEY and GEORGE SHELLEY, and all the Improvements that have appeared in other Writers since their Time; also sundry others, that are entirely new, by JAMES DODSON, *with frontispiece*, 8vo. *old calf*, 7s 6d 1751

The first edition published by James Dodson, and the best of the work, but according to Professor de Morgan, with very little Wingate in it. *D. N. B.* mistakenly gives the date as 1753.

- 15594 ——— NINETEENTH EDITION [unchanged], *with frontispiece*, 8vo. *cl.*, 5s 1760

- 15595 ——— ANOTHER COPY, *old calf*, 6s

The last edition published.

- 15596 ——— ΛΟΓΑΡΙΘΜΟΤΕΧΝΙΑ, or the CONSTRUCTION and USE of the LOGARITHMETICALL TABLES, by the Helpe whereof, Multiplication is performed by Addition, Division by Subtraction, the Extraction of the Square Root by Bipartition, and the Cube Root by Tripartition, etc.; finally, the Golden Rule, and the Resolution of Triangles as well right lined as sphericall by Addition and Subtraction, first published in the French Tongue, and after translated by the same Author; 3rd Edition, enlarged by the Author himself, 24mo. *contemporary sheep (sound and clean copy)*; RARE, £1. 1s Miles Flesher, 1648

First published at Paris, 1626, in French. The tables of logarithms are compiled from HENRY BRIGGS's.

- 15597 ——— The USE of the RULE of PROPORTION, in Arithmetique and Geometrie, first published in the French Tongue, and now translated by the same Author; whereinto is now also inserted the Construction of the same Rule, and a further Use thereof, in Questions that concern Astronomie, Dialling, Geographie, Navigation, Gaging of Vessels, Military Orders, Interest, and Annuities, *with large folding plate of Gunter's Scale*, 32mo. *contemporary sheep* (RARE), £1. 1s

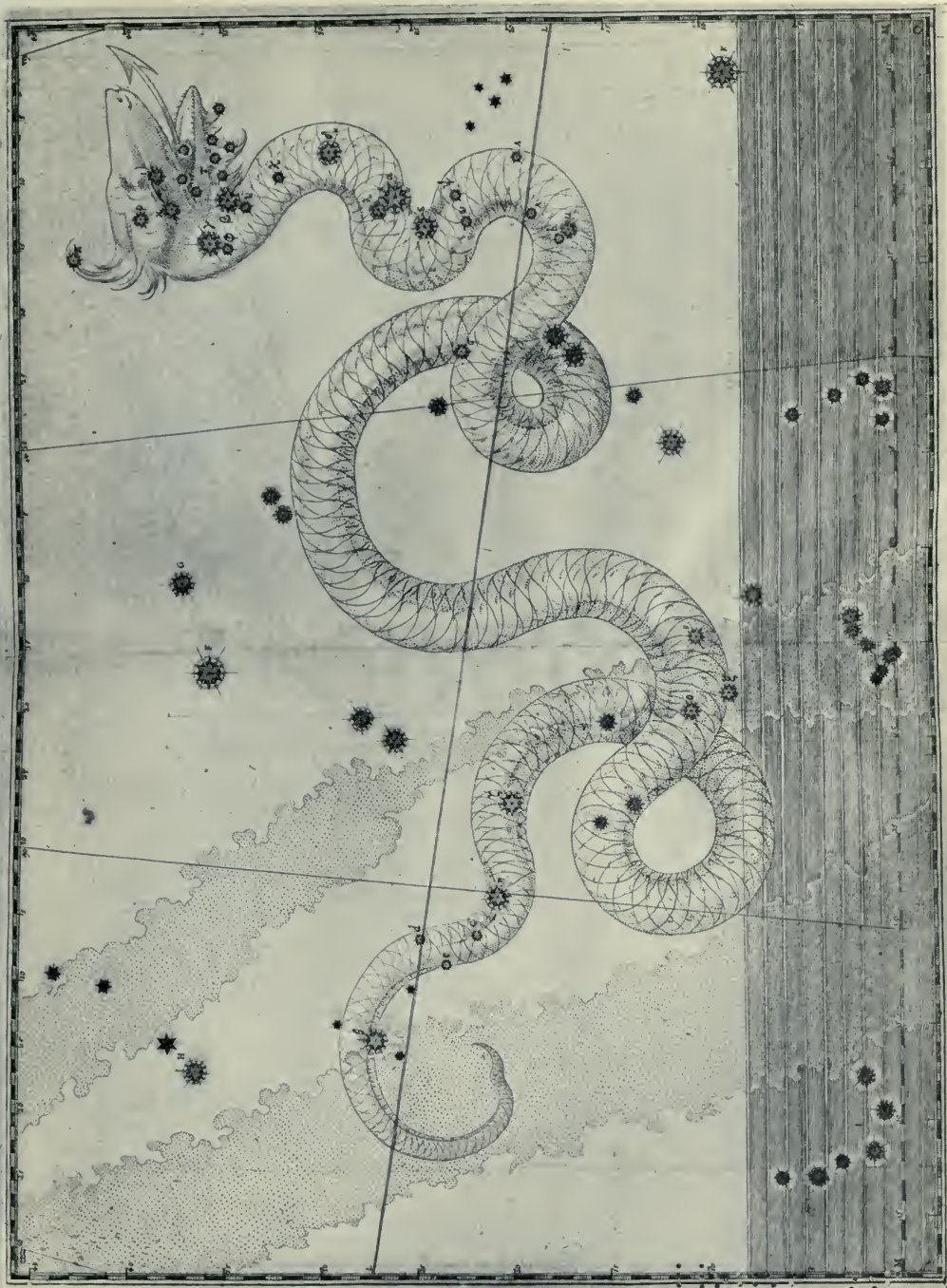
M. F. for P. Stephens, 1645

An account of Gunter's logarithmic scale, which was first published (in French) at Paris in 1624.

- 15599 **WINKLER** (Johann Heinrich; *Univ. Leipzig*) ELEMENTS of NATURAL PHILOSOPHY Delineated, translated from the 2nd German Edition, as enlarged by the Author, with 14 plates, 2 vols. 8vo. *tree-calf, newly rebaked (scarce)*, 12s 6d 1757
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- This work contains a description of the author's electrical machines, in which for the first time a leathern cushion is used, which is pressed against the glass globes by a spring.
- 15601 — GEDANKEN von den EIGENSCHAFTEN, WIRKUNGEN und URSACHEN von der ELECTRICITÄT, nebst einer Beschreibung zwey NEUER ELECTRISCHEN MASCHINEN; with 3 plates, sm. 8vo. *sewn, or, boards (rare)*, 12s *ibidem*, 1744
- Containing experiments in which the author first showed that the electric spark ignites alcohol, etc.
- ESSAI sur la NATURE, les EFFETS, et les CAUSES de l'ELECTRICITÉ (1748)—v. No. 12736 ante.
- 15602 — Die STÄRKE der ELECTRISCHEN KRAFT des WASSERS in gläsernen Gefässen, welche durch den Musschenbröckischen [*sic*] Versuch bekannt geworden; with 2 plates, 8vo. *sewn (rare)*, 15s *ib.*, 1746
- 15603 — ANOTHER COPY, *wanting the plates; sewn, 6s*
- Including his experiments with three powerful Leyden jars, when he obtained sparks that could be seen at a distance of 200 yards in broad daylight. From their discharge he inferred that the phenomena of lightning and thunder must be the result of an electric discharge on a large scale. Winkler was also the first to mention that the earth was a good conductor of electricity.
- There was no copy of any of the above three works, the only important ones written by the author on electricity, in the Ronalds Library.
- 15604 **WISLICENUS** (Johannes; *Univ. Leipzig*) Über die RÄUMLICHE ANORDNUNG der ATOME in ORGANISCHEN MOLEKULEN und ihre Bestimmung in geometrisch-isomeren ungesättigten Verbindungen, 2. mit Nachträgen versehener Abdruck; with 186 diagrams, impl. 8vo. *sewn, 2s 6d (p. M. 4)* Leipzig, 1889
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- 'Wislicenus has attempted to explain phenomena of this kind [metamerism] by the aid of an hypothesis propounded by van t'Hoff and Lebel. According to this hypothesis, which was designed with the object of explaining the optical activity of isomeric compounds, the centre of gravity of an atom in carbon is supposed as in the middle of a tetrahedron, and its four affinities as at the four corners . . . Wislicenus has made this hypothesis the basis of his discussions and experimental researches.'—*Prof. E. v. Meyer.*
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Nos. 15617-18 (page 787).

First edition of the first important star atlas.

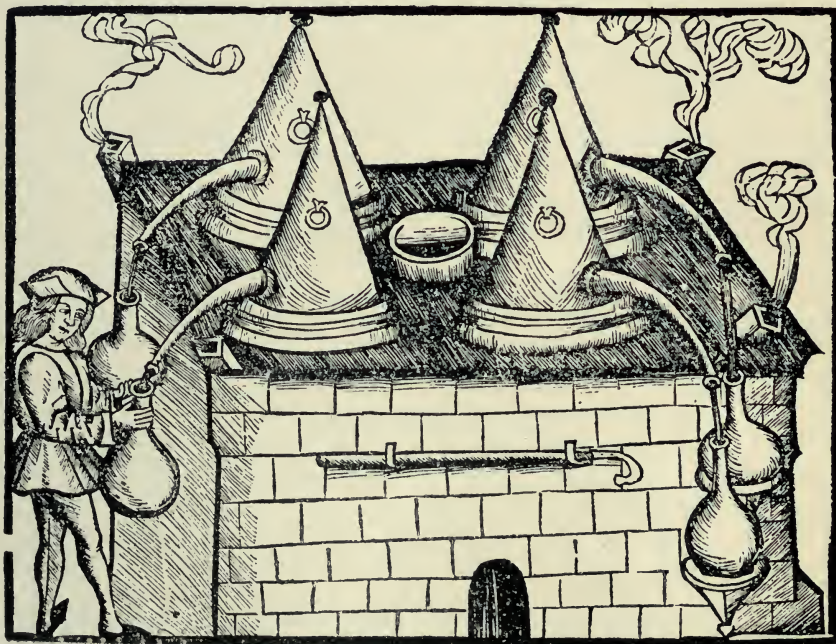
Das.xxii.capitel

sicas colericas, das seindt bleßlin vff der
her die von grosser hitz entspringen. Wie
man das bleiweiß macht ist geoffenbarer
in seruitoribus Rasis/ vnd an andern en/
den me.

Das.xxii.capitel wie man
distillieren soll per descensum / vnder sich
vnd nit ober sich.

S ich dir verheiß
sen hab in vil vñ manicherlei
weiß vñnd maß dich zū leren
wie man distillieren sol/ be/
zwingt mich solich gelübde weiter zūstrec/
ken vñnd die zū offenbare vñ zeigen wie mā
sol distillieren per descensum/ das ist vñnd
sich vñnd nit ober sich/ als sich gebürt vñnd
wol gezimpt in vil dinge / als du wol sehe
bist / so mā distilliert oder bēet oly vñswect
olter / heßlin/ od alten karch speichē holtz /
zū heilen rinnēde vñ trieffende schwādē/ ich
selber gesehen hab/ vñ muschat nüss oly/ be

neditē oly/ von eyer dotter/ vñ vil andere
der gleichē vñ kützerüg willē anderwegē
gelassen. Solich distillierüg mag gesche
hen in ein ofen gemacht von vñgebrant
ten mursteinen/ fierechtecht in weit vñnd
breit einer elen vñnd einn fierteil/ ie einn
stein flach neben den andern geleit gleich
ein herd/ zū ring omb der selbē murstein
vñfrecht gesetzt. in höhe von dem herd. iiii.
fierteil einer elen/ vñsgenommen das for/
teil/ daruff werden ysen geleit/ daruff and
stein die rün seint/ oder ziegel genāt Basel
rach im Elsaß/ gleich ein glatten bodē od
herd haben / in der mittē ein loch einer
halben elen weit / so vñ der leng gemacht
würdt ein ring/ das dar durch gon ist eins
menschen fust. Vff dem selbigen bodē
wird gemacht zūring omb / vñnd vñ alle
end ein gesetz von den steinen wie vo/ in
tieffe von dem obērn bodē/ vñ drit halb/
oder dēi fierteil einer elen. Des form ist
also.



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(col.) Augustæ Vindel., Christ. Mangus, 1603

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ibidem, 1770-1

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ibidem, durch Bartholomeū Grüniger [sic], 1537

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[Imprynted at London in the Flete Strete by me Laurens Andrewe, in the sygne of the Golden Crosse, M.CCCCXXVII, the XVIII. daye of Apryll]

The author is not mentioned by Poggenдорff or H. Kopp.

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15626 ——— TAFELN zur THEORETISCHEN ASTRONOMIE; with 2 plates, 4to. cl., with author's inscr. to Dr. Downing, F.R.S., 7s (p. M. 12) ibidem, 1901

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'Livre très-rare.'—*Biogr. Gén.* The author was mathematical tutor to Henry Prince of Wales, and drawing-master to the Princess Elizabeth. His best-known work is 'Les Raisons des Forces Mouvantes' (v. No. 730 ante), through which the invention of the steam-engine has been claimed for him.

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Containing also much of chemical interest. Pp. 1-187 treat of Mineralogy proper, pp. 187-283 of Colours and Pigments and pp. 541-603 of Gems. The work is not noticed by Brunet and is rare.

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The most authoritative French work on the chemistry of metalloids and metals. The author's collaborators were MM. Aloy, André, Brochet, Charpy, A. Colson, H. Gautier, Le Chatelier, Lemoine, Massol, Metzner, Sabatier, Verneuil, Vigouroux, Vogt, and other eminent chemists.

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One of the most interesting and witty books ever written, and invaluable for its history and bibliography of some scientific fallacies, e.g. 'circle-squaring'. It contains besides a large number of anecdotes, etc. on mathematical and scientific subjects. 'He had a love of puns, and all ingenious puzzles and paradoxes, which makes his 'Budget of Paradoxes' as amusing as it is learned.'—Sir Leslie Stephen.

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The work is now rendered additionally valuable by the bibliographical notes and index by Prof. D. E. Smith. The original edition has been out of print for many years, and is very scarce.

15634 [**NUÑEZ**, *Latine*] **NONIUS** (Pedro) OPERA: Problemata, Regulæ et Instrumenta Artis Navigandi, quibus varia Rerum Astronomicarum *φανόμενα* circa Cælestium Corporum Motus explorare possumus: Annotationes in Aristotelis Problema Mechanicum de Motu Navigii, in Georgii Purbachii Planetarum Theoricis Annotationes; de Erratis Orontii Fincei [*sic*]; de Crepusculis Lib. I, cum Libello Allacen de Causis Crepusculorum; with printer's device on the title and last leaf, and very numerous diagrams, folio, mottled calf (FINE COPY); very rare, £5. 5s Basileæ, Seb. Henricpetri, 1592

'Quoique le géomètre et astronome portugais Nonius n'ait pas écrit de traité de gnomonique, il mérite ici une place distinguée, par la remarque et l'explication d'un phénomène gnomonique fort singulier [*the loxodromic curve*]: c'est celui de la rétrogradation de l'ombre sur un cadran sous certaines latitudes.'—*Montrucula*.

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Of books not otherwise noted, all in English bear the imprint of London, and all in French, of Paris.

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[11237] Maclear. 1853. [15349-50] Turner.
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[2716] Ludlam. 1769. [2882] Maskelyne. 1765.
[3617] Picard. 1731. [3700] Pond. 1815-19.
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- (APPLIED): [343] Bergsma. 1821. [759] Chaptal. 1807. [775] Chevreul. 1868. [2579] Lewes. 1889. [3496] Payen. 1878. [6142] Bergsma. 1821. [8103] Frankland. 1877. [12972] Parnell. 1844. [13032-3] Payen. 1832-49. [13207-8] Phillips. 1891-1902. [14451] Roscoe. 1877. [15085] Stillman. 1905. [15169] Suckow. 1784. [S 3003-4] Blount. 1896-1905. [S 3016-17] Congress of Applied Chemistry. 1907-10. [S 3091] Martin. 1917. [SS 2742-7.] Congress of Applied Chemistry. 1902-10. [SS 2843] Runge. 1836.
- *v. Chemical Technology. Chemistry (Practical).*
- (BACTERIOLOGICAL): [8072] Fowler. 1911. [11646] Mayer. 1886.
- *v. Bacterial Decomposition. Brewing, Bacteriology of. Fermentation. Nitratin.*

CHEMISTRY (ELECTRO)—*v. Electrochemistry.*

- (ELEMENTARY): [5440] Wilson. 1860. [5938-9] Bailey. 1904-5. [7738] Fabulet. 1802. [8671] Gregory. 1808. [11101-2] Lunn. 1827. [12247] McPherson and Henderson. 1906. [12798] Odling. 1870. [14043] Rennie. 1834. [14442] Roscoe. 1888. [14773] Scapoli. 1786.
- (EXPERIMENTAL): [1083] Dossie. 1760. [1288] Faraday. 1859. [1397] Frankland. 1877. [1871] Henry. 1823. [7769] Faraday. 1859. [8092] Francis. 1842-5. [8103] Frankland. 1877. [8782] Hagen. 1786. [9153-9] Henry. 1801-29. [9172-4] Hermbstädt. 1786-1826. [9267-8] Higgins. 1795. [12314] Murray. 1833. [12354-6] Nasini. 1893-1901. [12490-1] Newth. 1892-1908. [15008] Stahl. 1731.
- (FORENSIC): [6053] Baumert, etc. 1906-7. [9718] Jago. 1909.
- (GENERAL): [26] Accum. 1807. [375-6] Berzelius. 1829-50. [440-2] Bloxam. 1867-1903. [563-4] Brande. 1821-30. [948-9] Daniell. 1843. [1078] Donovan. 1837. [1116-17] Dumas. 1828-46. [1787] Fourcroy. 1790. [1390-1] Fownes. 1844-73. [1496] Gay-Lussac. 1833. [1578-9] Gmelin. 1843-66. [1614] Graham. 1850-8. [2718] Luff and Page. 1904. [2986-8] Miller. 1863-80. [3163] Muspratt. 1854-62. [3369-70] Odling. 1861-70. [3404] Ostwald. 1890. [3461] Parkes. 1807. [3462] Parkinson. 1803. [3527] Pelouze et Fremy. 1860-4. [4079] Roscoe and Schorlemmer. 1877-93. [4797-8] Thénard. 1827-36. [4840-2] Thomson. 1807-17. [4855] Tidy. 1887. [4857] Tilden. 1897. [5268] Watts. 1889. [5425] Williamson. 1873. [6182-3] Berzelius. 1829-50. [6450] Brande. 1830. [7396] Dumas. 1828-46. [8058-60] Fourcroy. 1790-1804. [8075] Fownes. 1877. [8486-7] Gmelin. 1848-72. [8551-3] Graham. 1842-58. [8562] Graham. 1829. [8565] Göttling. 1798-1800. [8883] Handwörterbuch. 1842-50. [9988] Kämtz. 1849. [11867] Miller. 1867-78. [11951-3] Mitscherlich. 1834-47. [12312] Murray. 1867-7. [12340-1] Muspratt. 1854-62. [12795] Odling. 1861. [12844] Ostwald. 1890. [12961-5] Parkes. 1808-37. [13740] Prout. 1834. [13994-6] Regnault. 1847-51. [15226-7] Thénard. 1817-35. [15279] Thomson. 1807. [15543] Wiegand. 1786. [17322] Ostwald. 1909. [S 2617] Bayen. 1798. [S 2634-5] Berzelius. 1825-31. [SS 2406-7] Accum. 1803. [SS 2588] Nicholson. 1808.
- (HINDU): [9134] Henderson. 1803. [13944] Ray. 1902.
- (IATRO-): [79] Alessio. 1614. [674] Canepario. 1660. [858] Comtes. 1678. [898-9] Croll. 1668-57. [1053] Digby. 1669. [1409-10] French. 1652-67. [1514] Gesner. 1559. [1553-70] Glauber. 1651-67. [1858-9] Helmont. 1648-52. [1961] Hoffmann. 1722. [2527] Le Givre. 1682. [3450-3] Paracelsus. 1581-1894. [3648] Planis Campy. 1629. [4096] Rothe. 1717. [4179] Sala. 1622. [4806] Thibaut. 1672. [5067] Vigenère. 1618. [5439] Wilson. 1721. [5721-4] Alessio. 1563-78. [6031-4] Basilus Valentinus. 1646-1893. [6083] Becher. 1664. [6265] Blancard. 1700. [7296] Digby. 1658. [7911] Fioravanti. 1598. [8135-6] Freind. 1712-25. [8369] Gesner. 1599. [8463] Glaser. 1676. [8466-7] Glauber. 1689-94. [8979-81] Hartmann. 1647-63. [9119-22] Helmont. 1652-64. [9303] Hippocrates. 1690. [10111] Kerger. 1663. [10396] La Garaye. 1745. [10675] Le Febvre. 1664. [10710-11] Lémery. 1698-1710. [10717-19] Le Mort. 1687-96. [12151-2] Morley. 1684-1702. [12280] Müller. 1659. [12835] Orta. 1913. [12940-3] Paracelsus. 1650-1894. [13392-3] Plat. 1653. [13526-9]

CHEMISTRY (IATRO-), continued:

- Porta. 1608-9. [13535] Porta Leone. 1584. [15912-3] Tachen. 1669-71. [15233] Thibaut. 1668. [15396] Vigenère. 1642. [15621-3] Brunshwyg. 1519-37. [15629] Cesi. 1638. [15630] Croll. 1669-70. [S 2681] Boyle. 1685. [SS 2450] Brendel. 1671. [SS 2566] Libavius. 1613-15.
- *v. Alchemy. Distilling.*
- (INDUSTRIAL AND TECHNICAL)—*v. Chemistry (Applied).*
- (INORGANIC): [1191] Erdmann. 1898. [1769] Handbuch. 1892-4. [2184] Jones. 1903. [2323] Kolbe. 1884. [2330] Krafft. 1891. [2977] Michaelis. 1878-89. [2990] Miller. 1876-87. [3229] Newth. 1903. [3958-60] Remsen. 1886-1901. [4000] Richter. 1895. [4779] Taylor. 1892. [4848] Thorpe. 1896. [8116] Frankland and Japp. 1884. [8370] Geubel. 1847. [9301] Hinds. 1902. [9102] Holleman. 1902. [9717] Jago. 1895. [12845] Ostwald. 1904. [14019-20] Remsen. 1886-9. [14453-60] Roscoe. 1887-1907. [14776] Scoffern. 1856. [14939] Smith. 1906. [17330] Werner. 1909. [S 2789] Inorganic Chemistry. 1914. [S 2902] Roscoe. 1911. [S 2912] Smith. 1907. [S 2920] Stewart. 1912.
- *v. Gases, C. of.*
- (MEDICAL): [9395] Holland. 1905. [9715] Jacquin. 1785. [12791-2] Odling. 1869-76. [15486] Weber. 1780.
- (MINERAL): [13858-60] Rammelsberg. 1841-75. [15632] Moissan, etc., 1904-6.
- ('MOLECULAR'): [4327] Selmi. c. 1850.
- (NEW): [1122] Duncan. 1905. [4373] Shennstone. 1906. [9374-5] Hofmann. 1865. [7007-8] Cooke. 1876-96. [7398] Duncan. 1907. [17330] Werner. 1909.
- (ORGANIC): [159] Armstrong. 1884. [316-17] Beilstein. 1886-1902. [355] Bernthsen. 1895. [359] Berthelot. 1872. [1479] Gattermann. 1896. [1509-10] Gerhardt. 1853-6. [1971] Holleman. 1903. [2253] Kekulé. 1863-83. [2626] Liebig. 1841-4. [2976] Meyer and Jacobson. 1893-1903. [2989] Miller. 1880. [3354] Noyes. 1897. [3548] Perkin. 1894-5. [3901] Raspail. 1833. [3961-2] Remsen. 1885-1906. [3998-9] Richter. 1894-1901. [4267] Schorlemmer. 1874. [4637] Strecker and Wislicenus. 1881. [6159] Berthelot. 1860. [6161] Berthelot et Jungfleisch. 1881. [6978] Cohen. 1902. [8365] Gerhardt. 1853-6. [8675] Gregory. 1852. [9403] Holleman. 1903-6. [10042-4] Kekulé. 1861-87. [10363] Lachman. 1899. [10847] Liebig. 1840-4. [11819] Meyer and Jacobson. 1893-1903. [11868] Miller. 1880. [13083] Pelouze et Fremy. 1864. [13121-2] Perkin. 1897-1902. [13823] Radcliffe and Sinnatt. 1905. [14021] Remsen. 1896. [14461-3] Roscoe and Schorlemmer. 1881-8. [15271] Thomson. 1838. [17310] Keane. 1909. [S 2688] Cohen. 1909. [S 2901] Richter. 1907. [S 2919] Stewart. 1911.
- *v. Alkyl. Aliphane. Amido-Compounds and Amines. Amyl. Carbon Compounds. Cyanogen Compounds. Hydrocarbons. Nitrogenous Organic Compounds. Organic Compounds. Organo-Metals. Radicals (Organic). Volatile Organic Bases.*
- (PHARMACEUTICAL): [629] Buchner. 1849. [3072] Morelot. 1809. [6052] Baumé. 1762. [8391] Giese. 1811. [9287] Hill. 1751. [11061] Ludwig. 1671. [11327] Malouin. 1754. [12070] Morelot. 1803. [12308] Murray. 1776-84. [12735] Nollet. 1787. [14773] Scapoli. 1786. [S 2699] Dunstan. 1892. [SS 2481-2] Dioscorides. 1518-98. [SS 2599] Pomet. 1748.
- *v. Drugs.*

CHEMISTRY (PHLOGISTIC): [300] Baumé. 1778. [302-3] Becher. 1719-38. [446-7] Boerhaave. 1733. [451] Bohne. 1685. [2539] Lémery. 1756. [2967] Meurdrac. 1687. [3206-7] Neumann. 1759. [3790-5] Priestley. 1774-90. [4229. 4231] Scheele. 1785-6. [4530] Speth. 1712. [4550] Stahl. 1746-7. [6050-2] Baumé. 1757-73. [6082. 6084] Becher. 1738-55. [6290-1] Boerhaave. 1732-41. [8055-6] Fourcroy. 1785. [9264] Higgins. 1786. [11073-4] Ludolf. 1752. [11248-56] Macquer. 1751-77. [11419] Marggraf. 1767-8. [11854] Millar. 1754. [12452] Neumann. 1773. [13166] Petermann. 1750. [13549] Pott. 1738. [13654-8. 13669-70] Priestley. 1772-90. [14626-7] Sage. 1773. [14697-9] Scheele. 1780-6. [14715] Scheffer. 1779. [14995-6] Spielmann. 1763-6. [15008-10] Stahl. 1723-71. [15356] Tychem. 1787. [15412-13] Vogel. 1757-75. [15445-6] Wallerius. 1766-80. [15577-8] Wilson. 1699. [S 2654-5] Boerhaave. 1727-53. [SS 2422] Baumé. 1786. [SS 2437] Boerhaave. 1735. [SS 2530] Harrington. 1804.

— *v. Phlogiston Theory.*

— (PHOTOGRAPHIC): [1777-8. 8900-2] Hardwick. 1859-83. [10608] Leaper. 1891. [11729] Meldola. 1889-1901. [14596] Russell. 1904. [14698] Scheele. 1780. [S 2792] Kühne. 1878.

— *v. Photographic Chemicals.*

— (PHYSICAL): [861] Cooke. 1886. [974-5] Davy. 1812. [1957-8] Hoff. 1899-1903. [4531] Speyers. 1897. [7006] Cooke. 1886. [8103] Frankland. 1877. [9364] Hoff. 1902. [12420] Nernst. 1896. [13176] Petterson. 1879. [15431] Walker. 1903. [15446] Wallerius. 1776-80. [17308] Hoff. 1899-1901. [17328-9] Walker. 1904-7. [S 2710] Findlay. 1914. [S 2779] Hoff. 1898-9. [S 2790] Jones. 1903. [S 2860] Morgan. 1914. [S 2876] Perrin. 1903. [S 2920] Stewart. 1912.

— *v. Acids. Affinity. Allotropism. Atomic Theory. Catalysis. Chemistry. Principles of. Colloids. Molecular Volumes. Organic Radicals. Periodic Law. Phase Rule. Polyatomic Compounds. Radical Theory. Solubilities. Solution, Theory of. Stoichiometry. Substitution Theory. Transpiration (Liquid). Types, Theory of. Valency.*

— (PHYSIOLOGICAL): [525] Boyle. 1669. [1776] Hammarsten. 1899. [2529] Lehmann. 1851-4. [2617-19. 2623-5. 2627] Liebig. 1842-70. [3143] Mulder. 1849. [3368] Odling. 1866. [4180] Salkowski. 1893. [6404-6] Boyle. 1661-9. [6453] Brasch. 1901. [8256] Gamgee. 1880. [8277] Garnier. 1896. [8697-8] Griffiths. 1846-53. [9452] Hoppe-Seyler. 1877-81. [9561] Humboldt. 1797. [10149] Kingzett. 1878. [10619] Lehmann. 1851-4. [10835-9. 10848] Liebig. 1842-7. [11262] Macvicar. 1871. [11403] Marchand. 1842-4. [13396] Plenck. 1797. [13740-1] Prout. 1827-34. [13840] Raffe. 1873. [13988] Rees. 1842. [14006] Reid and Hambly. 1895. [14968] Snyder. 1903. [15283] Thorpe. *n.d.* [15540-1] Widmer. 1751-3. [S 2638. 2642] Berzelius. 1813-31.

— *v. Albumen. Alkaloids. Blood. Butyric Acid. Caloric Action. Capillary Tubes, Chemical Effect of. Carbon Dioxide absorbed by Plants. Cell (Living), C. of the. Chlorophyll. Coagulation. Cooking. Digestion. Fermentation. Food. Lactic Acid. Metabolism. Milk. Nitrogen absorbed by Plants. Osmosis. Oxygen given off by Plants. Plants, C. of. Poisons (Animal). Proteids. Respiration. Starch. Urine. Wood, C. of.*

— (POPULAR): [2172-5] Johnston. 1855-9. [2613-16] Liebig. 1844-78. [3842] Prout. 1834. [4382] Sibson. 1861. [7526] Ellis. 1852. [9834-5] Johnston. 1859-79. [10552-3]

CHEMISTRY (POPULAR), continued:

Lassar-Cohn. 1905-9. [10840-1] Liebig. 1851-9. [11396-7] Marcet. 1813-53. [14777] Scoffern. 1848. [SS 2618] Scoffern. 1839.

— (PRACTICAL): [443] Bloxam. 1886. [514] Bowman. 1861-2. [1636] Gray. 1828. [1775-6] Harcourt. 1872-87. [3366-7] Odling. 1854-65. [3935] Reid. 1830. [6963] Clowes. 1890. [8895] Harcourt and Madan. 1897. [11203-4] Mackenzie. 1823-5. [13986] Reece. 1814. [14837] Shaw and Hawksbee. 1731. [SS 2406-7] Accum. 1803.

— *v. Chemistry (Applied).*

— (STEREQ.): [423] Bischoff. 1904. [1959] Hoff. 1892. [2975] Meyer. 1890. [4590] Stewart. 1907. [5536] Wurtz. 1876. [8924] Harper's Scientific Memoirs. 1901. [15604] Wislicenus. 1889. [17297] Bischoff. 1894. [17307] Hoff. 1892. [17313] Mamlock. 1907. [17326] Stewart. 1907. [S 2998] Asch. 1913.

— *v. Chemical Structure Theory. Isomerism. Metamerism.*

— (SYNTHETIC): [357-8] Berthelot. 1864-97. [609] Brown. 1870. [6159] Berthelot. 1860. [11730] Meldola. 1904. [13120] Perkin. 1908. [SS 2529] Hanriot, etc. 1914.

— *v. Alcohol (Synthetic). Coal Tar Colours.*

— (THEORETICAL): [2973] Meyer. 1892. [3200] Nernst. 1900. [3963] Remsen. 1892. [14022] Remsen. 1877. [17308] Hoff. 1899-1901. [17319] Meyer. 1907. [S 2779] Hoff. 1898-9. [S 2864] Nernst. 1911. [S 2906] Scherer. 1795. [SS 2046-7] Accum. 1803.

— *v. Chemical Theories. Salts, Theory of. Solutions, Theory of.*

— (THERMO-): [3139] Muir and Wilson. 1885. [3192] Naumann. 1882. [6160] Berthelot. 1879. [12256] Muir and Wilson. 1885.

— *v. Cryometry. Explosion.*

— BIBLIOGRAPHY OF: [5464] Wolff. 1845. [7014] Cooper. 1675. [7598] Erxleben. 1784. [7831] Ferguson. 1906.

— HISTORY OF: [863-4] Cooke. 1874-84. [2327] Kopp. 1843-7. [2968] Meyer. 1891. [3405] Ostwald. 1908. [4837] Thomson. c. 1833. [5529-30] Wurtz. 1868-9. [7068] Crell. 1786. [7822] Fechner. 1832-3. [8538] Gorton. 1910. [9361. 9363] Höfer. 1842-72. [10005] Kastner. 1814. [10053] Kemp. 1855. [10110] Kerckhoff. 1858. [10276-81] Kopp. 1843-73. [11808] Meyer. 1891. [14383] Rodwell. 1874. [14739] Schorlemmer. 1894. [15274-5] Thomson. 1830-1. [15285] Thorpe. 1902. [17323] Ostwald. 1906. [S 2853] Meyer. 1906. [S 2919-20] Stewart. 1911-12. [S 2954] Yeats. 1798. [SS 2423] Bergman. 1788-91. [SS 2622] Schorlemmer. 1879.

— *v. Chemistry (New). Drugs, H. of. Elements (Chemical), H. of.*

— PRINCIPLES AND ELEMENTS OF: [933-4] Dalton. 1808-27. [974-5] Davy. 1812. [1383-6] Fourcroy. 1792-1806. [1451] Galloway. 1888. [1669] Gren. 1800. [1916] Higgins. 1786. [2215] Kane. 1842. [2497-2500] Lavoisier. 1789-1802. [2945] Mendeléeff. 1891. [3138] Muir. 1884. [3321-2] Nicholson. 1790-6. [3514] Peart. 1789. [5245-6] Watson. 1768. [6426] Boyle. 1661. [7153-5] Dalton. 1808-27. [7161] Daniell. 1839. [7598] Erxleben. 1784. [8059. 8062-5] Fourcroy. 1795-1806. [8482] Gmelin. 1780. [8678] Gren. 1800. [9574] Hunt. 1887. [9861] Jones. 1912. [10005] Kastner. 1814. [10598-10605] Lavoisier. 1789-99. [10645] Leboulenger. 1624. [10878] Link. 1795-7. [11748] Mendeléeff. 1890.

CHEMISTRY, PRINCIPLES AND ELEMENTS OF, *continued* :

- [11885] Mills. 1876. [12255] Muir. 1884.
[12348-9] Naquet. 1867-8. [12656-8] Nicholson. 1790-2. [13395] Plenck. 1801. [13420] Playfair. 1858. [14004] Reid. 1839. [15269] Thomson. 1825. [17300] Carnegie. 1894.
[17317-18] Mendeléeff. 1891-1905. [17327] Tilden. 1901. [S 2668-70] Boyle. 1661-80.
[S 2910] Shaw. 1730. [SS 2495] Fourcroy. 1807. [SS 2563-4] Lavoisier. 1802. [SS 2627] Swedenborg. 1847.
— *v. Chemical Analysis, P. of. Radical Theory. Substitution Theory. Types, Theory of. Valency.*
—, RETARDING ACTION IN : [11886] Mills. 1877.
—, TEACHING OF : [600] Brodie. 1880. [4442] Smith and Hall. 1902. [6701] Cannizzaro. 1872. [7917] Fischer. 1897.
—, USES OF : [6138] Bergman. 1783. [S 2625] Bergman. 1784.

CHESS, MATHEMATICS OF : [5125] Vospicelli. 1850. [S 3861] Jaenisch. 1862-3.

— PLAYER ('AUTOMATON') : [5445] Windisch. 1784.

- CHIMNEYS AND STOVES : [168] Arnott. 1855. [1481-4] Gauger. 1713-36. [4936] Tredgold. 1824. [5842] Arnott. 1838. [6400] Boyers. 1807. [6935] Clavering. 1779. [8129] Franklin. 1793. [8358] Gérard. 1828. [9080] Hébrard. 1756. [13935] Rawlinson. 1858. [14954-5] Smith. 1854.

— *v. Smoke Abatement. Ventilation and Heating.*

CHLADNI'S FIGURES—*v. Acoustic Figures.*

CHLORATE INDUSTRY (ELECTROLYTIC) : [10124] Kershaw. 1905.

CHLORIDE PROCESS (VINCENT'S) : [14445] Roscoe. 1879.

— OF NITROGEN : [11743] Mémoires. 1807-17.

- CHLORINE AND ITS COMPOUNDS : [978-9] Davy (J.). 1812. [1288] Faraday. 1859. [4492] Société Chimique. 1889-92. [6856] Chevallier. 1829. [7769-70] Faraday. 1823-59. [8163] Fritzsche. 1860. [8554] Graham. 1837. [9152] Henry. 1810. [14473] Rose. 1832. [14697] Scheele. 1786.

— *v. Hydrochloric Acid. Hypochlorites. Iron, Perchloride of.*

- CHLOROPHYLL : [2084-5] Ingenhousz. 1779-85. [14817] Senebier. 1783. [S 2946] Willstätter und Stoll. 1913. [SS 2619] Senebier. 1782.

CHROMATICS—*v. Colours, Theory of.*

CHROMIUM AND ITS COMPOUNDS : [14473] Roscoe. 1832. [S 2808] Le Blanc. 1904.

- CHRONOLOGY : [142] Arbutnot. 1900. [2081] Ideler. 1825-6. [2269] Kepler. 1615. [3240-1] Newton. 1728. [4692] Swan. 1653. [5451] Wislicenus. 1895. [6207-8] Beveridge. 1669-1705. [7544] Emerson. 1770. [9069] Heath. 1760. [9356] Hodgson. 1747. [9455] Hopton. 1616. [10512] La Prise. 1780. [11612] Matzka. 1844. [12249] Mulerius. 1630. [12574-5] Newton. 1728. [12924] Padovani. 1563. [14166] Riccioli. 1669. [14628-9] Saigey. 1834. [15515] Wetherald. 1760. [16866] Ideler. 1825-6. [S 1496] Ideler. 1831. [SS 980] Albumasar. 1489. [SS 1024] Calvisius. 1685. [SS 1286] Scaliger. 1658. [SS 1333] Warren. 1825.

— *v. Almanacs. Calendar.*

- CHRONOMETERS : [1155] Eiffe. 1842. [3133] Mudge. 1799. [5979] Barlow. 1821. [6170-2] Berthoud. 1773. [7111] Croucher. c. 1810. [7437-8] Earnshaw. 1808. [7474] Eiffe. 1842. [8891] Hansen. 1836. [8955, 8958-9, 8962, 8964-6, 8970] Harrison. 1737-1869. [8985] Harvey.

CHRONOMETERS, *continued* :

1823. [9977-8] Kaiser. 1868-87. [11542-3, 11550] Maskelyne. 1767-92. [12240-3] Mudge. 1781-99.
— *v. Horology.*
CHRONOMETRICAL OBSERVATIONS : [4649] Struve. 1844.
CHRONOMETRY : [1965] Holden. 1694. [2010] Houzeau. 1853. [2187] Jordan. 1885. [3525] Pellizer. 1800. [4216] Saunier. 1858. [5220] Warner. 1869. [5933] Baily. 1824. [6672] Calandrelli. 1850. [8312] Gautier. 1894. [8992] Harzer. 1899. [9761] Janvier. 1821.
— *v. Day, Length of.*
CIDER : [4361] Shannon. 1805. [8903] Hardy. 1785. [10231-2] Knight. 1813. [10302] Krebs. 1887. [10751] Le Sourd. 1892.
CIRCLE (REPEATING) : [SS 1554] Borda. 1802.
—, DIVISION OF THE : [5654] Adamson. 1815. [5905, 15702] Bachmann. 1872. [S 727] Gauss. 1801.
—, GEOMETRY OF THE : [748] Ceulen. 1619. [1664] Gregory. 1668. [2062] Huygens. 1654. [2396] La Loubère. 1651. [2874] Maseres. 1758. [3693] Poleni. 1712. [4362] Sharp. 1717. [4601] Stewart. 1746. [5739] Alvord. 1855. [5820] Archimedes. 1676. [6676] Caldani. 1782. [6768] Cataldi. 1612. [7038-9] Cotes. 1722. [7305] Dodt van Flensburg. c. 1835. [7984] Floryn. c. 1814. [9094] Hellins. 1794. [9626] Huygens. 1654. [10727] Léotaud. 1663. [11532] Maseres. 1758. [11989-91] Moivre. 1730. [14028] Renalchini. 1655. [14500] Rothe. 1805. [14750] Schöttel. 1754-6. [14959] Snell. 1621. [15991] Fiedler. 1882. [16133-4] Hesse. 1881-1906. [16337] McClelland. 1891. [16523] Richter. 1908.
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- OZONE: [955] Daubeny. 1867. [7773. 7789] Faraday. 1853-9. [8078] Fox. 1873. [10386] Ladenburg. 1901. [14727] Schönbein. 1840. [14784] Scoutetten. 1856.
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