

From Fine, Protomathesis, 1532

М 1 **М. Т.**

Compositio alterius annuli astronomici non universalis, sed ad certam polarem elevationem instructi authore.

Year: 1558 Place: Paris

Publisher: G. Cavellat

Edition: 1st (Collected, 2nd issue)

Language: Latin

Binding: modern vellum

Pagination: ff. 8, 159, [1] (i.e. ff. 118-127r)

Collation: A⁸a–v⁸ Size: 162x106 mm

Reference: H&L, #2589, p. 588

This work is bound, along with six others, in the volume **Beausard, Pierre**; *Anuli astronomici*, 1558. It deals with the construction and use of a small ring dial illustrated on the title page. The work contains tables defining the markings. The ring dial is suspended by a cord, and the sun shining through a small hole in the ring creates a spot on the markings telling the time. The ring dial was only correct for one latitude.



M

Illustrations available: Title page

M 2

Mabbut, George

Tables for renewing & purchasing of 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 of lives. With tables for purchasing the leases of land or houses according to several rates of interest, very necessary and usefull for all purchasers, but especially for them who are any way concerned in church or college leases.

Year: 1686 Place: Cambridge

Publisher: John Hayes, Printer to the University

Edition: 1st Language: English

Binding: contemporary leather; red leather label

Pagination: pp. [22], 39, [1] Collation: A(-A2)-D⁸ Size: 145x85 mm

See entry for **Mabbut George**; Sir Isaac Newton's tables for the renewing and purchasing of the leases of cathedral-churches and colleges, 1742.

Illustrations available None

M 3

Mabbut, George

Sir Isaac Newton's tables for the renewing and purchasing of 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, very necessary and useful for all purchasers, but especially those who are any way concerned in church or college leases.

Year: 1742 Place: London

Publisher: Thomas Astley Edition: (6th) 8th Language: English

Binding: contemporary leather Pagination: pp. [4], 108, [4], 102 Collation: A²B–K⁶A³B–I⁶K²

Size: 140x83 mm

Reference: Wal CBS; Babson, 348.08

Mabbut (Mabbot) was a manciple (steward or purchaser of provisions) at King's College in Cambridge.

These tables were not authored by Isaac Newton. While Newton was at Trinity College, the college had a dispute with a lessee, and Newton calculated tables showing the amount due when leases of college lands were renewed. Mabbut's first edition of 1686 carried an endorsement from Newton, and thereafter Newton's name became associated with this publication. When Thomas Astley took over publishing (for the third edition), he, apparently as a marketing maneuver, gave Newton's name a more prominent position on the title page. The lease tables occupy the first half of the volume, and tables of interest compose the last half of the work.

An advertisement to the reader follows the lease tables proper and serves as an introduction to a thirty-page note, in the form of a letter, considering the advantages of church and college leases. This advertisement warns the reader that the following note had been wrote and published long before the unhappy South-Sea Scheme was known; and consequently, the Writer... could not be influenced by the extravagant Price that was given for Land, whilst the public Frenzy lasted—a reference to an early market bubble and the crash that followed it.

Illustrations available: Title page

Sir ISAAC NEWTON's For Renewing and Purchasing the LEASES of Cathedral - Churches and Colleges, According to the Several Rates of INTEREST: With their Construction and Use explained. TABLES for Renewing and Purchasing the LEASES of LAND or Houses, Very necessary and useful for all Purchasers, but especially those who are any way concerned in Church or College Leases. To which is added,
The Value of CHURCH and COLLEGE LEASES confider'd, and the Advantage to the Lessees made very apparent. By a late Bishop of CHICHESTER. The SIXTH EDITION. To which are also added, TABLES of INTEREST exactly computed at 3, 3½, 4, and 5 per Cent. With other useful TABLES. LONDON: Printed ONLY for THO. ASTLEY, at the Rose in St. Paul's Church-Yard. 1742. Price Two Shillings bound.

M 4

MacColl, LeRoy Archibald (1896–)

Fundamental theory of servomechanisms

Year: 1945 Place: New York

Publisher: D. Van Nostrand

Edition: 1st Language: English

Binding: original cloth boards

Pagination: pp. 130 Size: 229x150 mm

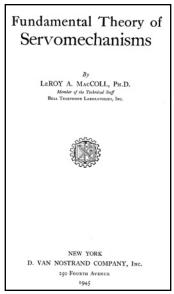
MacColl was a member of staff at Bell Telephone Laboratories.

This work started out as a paper written at the request of **Warren Weaver**, chief of the Applied Mathematics Panel of the National Defense Research Committee (NDRC) (essentially the group directing scientific research in the U.S. during World War II). It soon grew to book length, and a decision was made to publish it while it still had value for the war effort. As the title implies, it is less practical, and more theoretical, than other such publications (see, for example, **Lauer**, **Henri**, et al.; *Servomechanism fundamentals*, 1947). Warren Weaver wrote an introduction in which he makes this statement, perhaps indicative of the times:

The control art is an old one. With the broadest definition, it is a very ancient art; for one supposes that if Adam wished to control Eve's vocal output, he had simple mechanisms, such as a well-balanced club, with which he doubtless brought it down a goodly number of decibels.

Illustrations available:

Title page



M 4

M 5

Maccurdy, George Grant (1863–1947)

An Aztec "calendar stone" in Yale University Museum

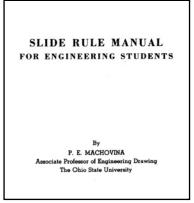
Year: 1911 Place: Lancaster, PA Publisher: New Era Edition: 1st Language: English Figures: 9 photolith plates Binding: original paper wrappers Pagination: pp. 481–496 Size: 253x170 mm

This is a description of an Aztec calendar stone that had been presented to Yale University in 1898. The stone had originally been exhibited at a traveling *Aztec Fair* and had been purchased when the fair went bankrupt. Maccurdy compares it to several other *calendar stones* as well as to Aztec sacrificial bowls.

Illustrations available: Cover page

Macdonald, William Rae, translator

See Napier, John; The construction of the wonderful canon of logarithms by John Napier, Baron of Merchiston, translated from the Latin into English with notes and a catalogue of the various editions of Napier's works by William Rae MacDonald, F.F.A.



M 6

M 6

Machovina, Paul E.

Slide rule manual for engineering students

Year: 1947 Place: Columbus, OH

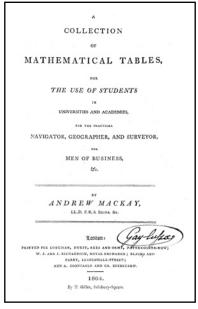
Publisher: Ohio State University

Edition: 1st Language: English

Binding: original paper wrappers Pagination: pp. [6], 40, [8] Size: 215x140 mm Machovina was an associate professor of engineering drawing at Ohio State University.

This quite standard instruction manual for the slide rule is distinguished only by slightly better than average diagrams.

Illustrations available: Title page



M 7

M 7 **Mackay, Andrew** (1760–1819)

A collection of mathematical tables, for the use of students in universities and academies, for the practical navigator, geographer, and surveyor, for men of business &c.

Year: 1804 Place: London

Publisher: Longman, Hurst, Rees and Orme ...

Edition: 1st Language: English

Binding: original paper backed boards; uncut

Pagination: pp. xvi, 64, 260, [4] Collation: a-b⁴A-H⁴A-C⁴E-2L⁴

Size: 229x139 mm

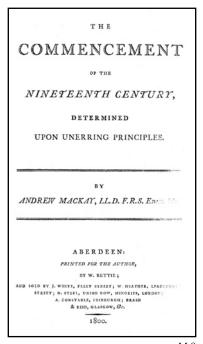
The title page is inscribed with the signature of Gay-Lussac, the famous French physical chemist, although he could not have used the tables much as they are uncut.

This volume contains a wide variety of tables, and as the title suggests, they are of potential use to several different professions. The bulk of the tables are logarithms of numbers and the trigonometric functions, but tables for navigation, some ready reckoner tables of interest rates, and tables for gauging are also included. One curious

table gives a list of *remarkable eras and events* that records the creation of the world as being in 4007 BC

An advertisement indicates that Mackay had also just published *The complete navigator*, in which many of the same tables appear (see **Mackay**, **Andrew**; *The complete navigator*, 1804).

Illustrations available: Title page



M 8

M 8 **Mackay, Andrew** (1760–1819)

The commencement of the nineteenth century, determined upon unerring principles.

b/w: **Mackay, Andrew**; *The description and use of the sliding rule*, 1799.

b/w: **Mackay, Andrew**; The theory and practice of finding the longitude at sea or land, 1801.

Year: 1800 Place: Aberdeen

Publisher: Printed for the author, by W. Rettie

Edition: 1st Language: English

Binding: contemporary leather; red leather labels

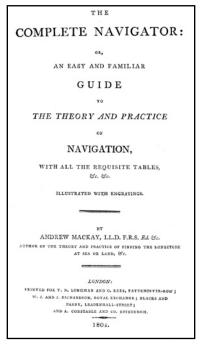
Pagination: pp. 64 Collation: A–H⁴ Size: 214x134 mm

This two-volume set contains three works, all of which had previously been published. The first work, *Theory and practice of finding the longitude at sea or land*, comprising the first volume and two-thirds of the second,

is printed on light green paper. The other two works are printed on the more usual off-white shade of paper. See entry for **Mackay**, **Andrew**; *The theory and practice*, 1801, for more information.

This short item (*The commencement of the nineteenth century* ...) was evidently written in reply to several letters appearing in British newspapers. It is concerned with the question of whether the eighteenth century ended on the last day of 1799 or 1800—a problem that seems to vex the general public at each such anniversary. As with most of the material written on this topic, Mackay's contribution does little to shed light on the subject.

Illustrations available: Title page



M 9

M 9 **Mackay, Andrew** (1760–1819)

The complete navigator: or, an easy and familiar guide to the theory and practice of navigation, with all the requisite tables, etc. etc.

Year: 1804 Place: London

Publisher: T. N. Longman and O. Rees; W. J. and J. Richardson; Blacks and Perry; and A. Constable

Edition: 1st Language: English Figures: 7 engraved plates

Binding: modern half-leather, marbled paper boards; black leather label

Pagination: pp. xxiv, 268, 40, 220

Collation: $a-c^4B-2L^42M^2A-E^4A-D^4F-2E^42F^2$

Size: 212x123 mm

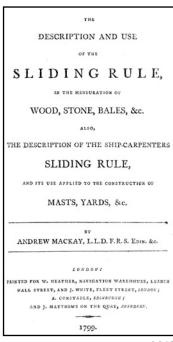
Mackay allots the first twenty pages of his preface to examples of significant errors made by earlier authors and table makers. The first part of the main text is a treatise on navigation with an explanation of the use of the latest devices (Hadley's quadrant, a sextant, azimuth compass). The examples shown are solved both with pen and ink and by using Gunter's scale. The last half of the book is a set of tables, many of which are identical to those found in Mackay's other publications.

An advertisement calls attention to the fact that seven other works by Mackay were published at the same time, most of which are in this collection.

This is a presentation copy to the Duke of Clarence to whom the book is dedicated.

Illustrations available:

Title page and presentation inscription



M 10

M 10

Mackay, Andrew (1760–1819)

The description and use of the sliding rule, in the mensuration of wood, stone, bales, &c. Also, the description of the ship- carpenters sliding rule, and its use applied to the construction of masts, yards, &c.

b/w: **Mackay, Andrew**; *The theory and practice of finding the longitude at sea or land, 1801.*

b/w: **Mackay, Andrew**; The commencement of the nineteenth century, 1800.

Year: 1799 Place: London Publisher: printed for W. Heather, J. White, A. Constable and J. Matthews
Edition: 1st
Language: English
Binding: contemporary leather; red leather labels

Pagination: pp. 54, [2] Collation: A–C⁸D⁴ Size: 214x134 mm

See also the entry for **Mackay, Andrew**; *The commencement of the nineteenth century*, 1800.

This early edition (and binding, because the illustration might have been removed when it was rebound) contains no illustration of either slide rule. The title page indicates that a description of the ship-carpenter's rule (known as *Mungo Murray's rule*) is also given. Both of these are illustrated in the 1811 edition of this work, and that entry should be consulted for more information.

Illustrations available: Title page

M 11

Mackay, Andrew (1760–1819)

The description and use of the sliding rule, in arithmetic, and in the mensuration of surfaces and solids also, the description of the ship carpenters sliding rule, and its use applied to the construction of masts, yards, &c. Together with the description and use of the gauging rule, gauging rod, & ullage rule.

Year: 1806 Place: London

Publisher: For the author by H. Teape

Edition: 2nd (1st issue) Language: English

Size: 208x127 mm

Binding: contemporary leather rebacked; red leather label

Pagination: pp. [8],138, [6] Collation: π⁴B–K⁸

See the entry for the 1811 (second edition, second issue) of this work for illustrations of the rules.

This work describes a set of slide and gauging rules. It is divided into five chapters: use of the slide rule, use of the ship carpenter's rule, the gauging rule, the gauging rod and the ullage rule. The slide rule is similar to a Coggeshall rule (see Coggeshall, Henry; The art of practical measuring, by the sliding rule, 1745), which has the usual form of a sector but with one arm being a logarithmic slide rule. In this instance the sector markings are designed for use by ship carpenters and the device is usually known as Mungo Murray's rule. The sector scales are unusual. There is a scale of eight, ten and twelve square lines, which were to be used when manufacturing items with this many sides (capstans,

multisided masts, etc.). Several other scales were of use in ascertaining, then compared with the line of numbers, the lengths of masts, yards, and the diameters of each. These are marked with symbols (Brh-extreme breadth of the ship, m-main mast, f-fore mast, etc. see illustrations for the complete markings). Because these markings are unusual, the entire section has been included in the illustrations.

Illustrations available:

Title page

Mungo Murray's rule description (12)

THE DESCRIPTION AND USE OF THE SLIDING RULE, IN ARITHMETIC, AND IN THE MENSURATION OF SURFACES AND SOLIDS ALSO. THE DESCRIPTION SHIP CARPENTERS SLIDING RULE, ITS USE APPLIED TO THE CONSTRUCTION OF MASTS, YARDS, &c. TOGETHER WITH THE DESCRIPTION AND USE GAUGING RULE, GAUGING ROD, & ULLAGE RULE. BY ANDREW MACKAY, LL.D. F.R.S. EDIN. &c. Honorary Member of the Literary and Philosophical Society of Newcastle upon Tyne, &c.—Mathematical Examiner to the Corporation of Trinity-House, the Honorable the East India Company, and Christ's Hospital, London. THE SECOND EDITION, IMPROVED AND ENLARGED. LONDON. PRINTED BY M. TEAPE, TOWER-HILL; AND SOLD BY THE AUTHOR, Nº 2, GEORGE-STREET, TRINITY SQUARE, M,DCCCVI.

DESCRIPTION AND USE SLIDING RULE. IN ARITHMETIC, THE MENSURATION OF SURFACES AND SOLIDS. THE DESCRIPTION SHIP CARPENTER'S SLIDING RULE, AND
ITS USE APPLIED TO THE CONSTRUCTION OF MASTS, YARDS, &c. THE DESCRIPTION AND USE GAUGING BULE, GAUGING ROD, & ULLAGE RULE. By ANDREW MACKAY, LL.D. F.R.S. EDIN. &c. THE HONOGRAPHE THE BAST INDIA CONTAN AND CHART'S HOSPITAL LONDON. THE SECOND EDITION. ged, and Illustrated with an of the different Rules. EDINBURGH: AN, HURST, REES, ORME 1811.

M 12

M 12

Mackay, Andrew (1760–1819)

The description and use of the sliding rule, in arithmetic, and in the mensuration of surfaces and solids. Also, the description of the ship carpenter's sliding rule, and its use applied to the construction of masts, yards, &c. Together with the description and use of the gauging rule, gauging rod, & ullage rule.

Year: 1811

Place: Edinburgh

Publisher: Oliphant, Waugh and Innes

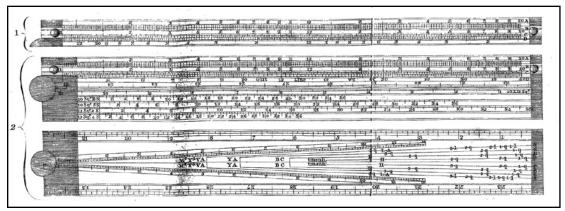
Edition: 2nd (2nd issue) Language: English

Figures: 1 folding plate of instruments Binding: modern quarter-bound boards; uncut

Pagination: pp. [8], 138, [6], 4, 16

Collation: $\pi^4B-K^8\chi^{10}$ Size: 223x135 mm

This edition (the second issue of the second edition) is apparently the first to contain illustrations of the various



M 11

Mungo Murray's rule, M 12

devices described. At least one of them, the Mungo Murray rule, is little known and would not have been a familiar object to many readers. The illustration of the rules has been hand-colored in yellow. This issue has a new title page and two catalogs: one of charts, books and instruments (but without mention of Mungo Murray's rule) available from the firm of W. Heather; the second is the general book catalog of Longman and Company.

Illustrations available:
Title page
Slide rules (color)
Mungo Murray's rule



Frontispiece, M 13

M 13 **Mackay, Andrew** (1760–1819)

The description and use of the sliding Gunter in navigation.

Year: 1812 Place: London Publisher: Leith Edition: 2nd Language: English

Figures: engraved portrait frontispiece; 1 folding plate of instrument

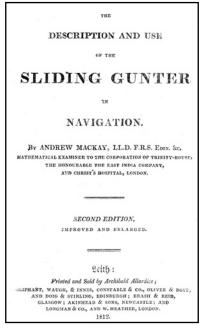
Binding: half-bound leather over marbled boards

Pagination: pp. viii, 168 Collation: A–X⁴Y–Z² Size: 212x134 mm

Unlike his other books on slide rules, in which he deals with curiosities like Mungo Murray's rule, Mackay limits this work to a description of a standard slide rule as illustrated on a hand-colored plate. The last chapter

deals briefly with a *Maritime Scale* invented by Mr. Mathew Richmond in 1786. The Maritime Scale rule is not illustrated. The frontispiece used is the same portrait of Mackay as appeared in his *The theory and practice of finding the longitude at sea*, 1801.

Illustrations available: Title page Slide rule (color) Frontispiece portrait



M 13

M 14 **Mackay, Andrew** (1760–1819)

The theory and practice of finding the longitude at sea or land: to which are added, various methods of determining the latitude of a place, and the variation of the compass; with new tables.

b/w: **Mackay, Andrew**; The description and use of the sliding rule, 1801.

b/w: **Mackay, Andrew**; *The commencement of the nineteenth century, 1800.*

Year: 1801 Place: Aberdeen

Publisher: Printed for the author, by J. Chalmers & Co.

Edition: 2nd Language: English

Figures: engraved frontispiece; 8 engraved folding plates Binding: contemporary leather; red leather labels

Pagination: v.1: pp. [4], iv, vii–xii, 336; v.2: pp. viii, 264, [2]

Collation: v.1: $\pi^3 A-2U^4$; v.2: $A-2L^4\chi^1$

Size: 214x134 mm

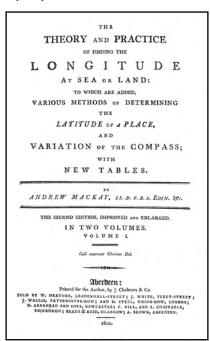
See also the entry for **Mackay, Andrew**; *The commencement of the nineteenth century*, 1800.

This work is a detailed description of the practical challenges facing a navigator. In particular, it discusses various instruments and their defects. It also covers determining longitude by taking observations of either the Moon or the eclipses of Jupiter's satellites. The second volume contains tables, many of which are repeated in Mackay's other works (e.g., *The complete navigator* or *A collection of mathematical tables*). The frontispiece is a portrait of the author.

The fact that this work, including the tables, is printed on light green paper causes one to wonder if **Charles Babbage**, who also experimented with printing tables on colored paper (see **Babbage**, **Charles**; *Table of logarithms*, 1831), might have obtained the idea from Mackay. The Crawford Library catalog (**Copeland**, **Ralph**; *The catalogue of the Crawford library of the Royal Observatory Edinburgh*, 1890), the current location of Babbage's book collection, shows that **Babbage** owned other Mackay volumes but not this one.

Illustrations available:

Title page (color showing light green paper) Frontispiece portrait



M 14

M 15 **Macmillan, Robert Hugh**

An introduction to the theory of control in mechanical engineering

Year: 1951 Place: Cambridge

Publisher: Cambridge University Press

Edition: 1st



M 15

Language: English

Figures: 1 large folding plate Binding: original cloth boards Pagination: pp. xiv, 196 Collation: $\pi^71-11^812^{10}$ Size: 265x176 mm

Macmillan was a demonstrator in the Engineering Department of Cambridge University and immediately prior to writing this book had been a visitor at MIT for a year.

As the experience with control systems grew, mainly as a result of World War II, analysis of them in a theoretical context was not far behind. This volume is one of many (see, for example, MacColl, LeRoy Archibald; Fundamental theory of servomechanisms, 1945) that were published in the immediate postwar period. This work is notable for including an analysis of the torque amplifier invented by Vannevar Bush for use on the Differential Analyzer. Part of the discussion is a question that appeared on the 1936 final examination in engineering (Mechanical Science Tripos). Maurice Wilkes (Memoirs of a computer pioneer, 1985) mentions that his interest in differential analyzers was first aroused early in that same year when he attended a lecture and demonstration in the Mechanical Engineering Department.

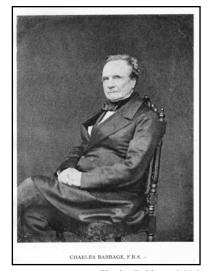
Illustrations available: Title page Exam question

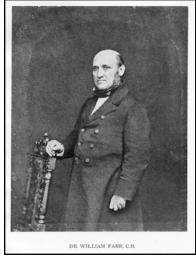
M 16

Macrosty, Henry William (1865–1941) and James Bonar (1852–1941)

Annals of the Royal Statistical Society. 1834-1934

Year: 1934







Charles Babbage, M 16

William Farr, M 16

William Stanley Jevons, M 16



Thomas Robert Malthus, M 16

Place: London

Publisher: Royal Statistical Society

Edition: 1st Language: English Figures: 8 portraits

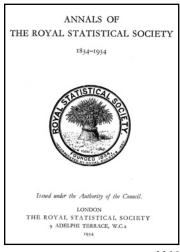
Binding: original blue cloth boards

Pagination: pp. [xii], 308 Collation: A⁶B–U⁸X² Size: 228x154 mm

Reference: Van S CBCP, #70; Babb CBLP, #71, #73; Ran ODC

Henry Macrosty, who wrote chapters 2 through 8, was the honorary secretary of the Royal Statistical Society. Dr. James Bonar, an expert on Malthus, wrote the first chapter dealing with the events that led up to the founding of the society.

When the hundredth anniversary of the founding of the Royal Statistical Society (February 21, 1934) was approaching, it was decided that a history of the society would be a suitable commemoration. Macrosty and Bonar



M 16

were asked to prepare it, and this volume is the result. It is notable in that it contains a number of portraits that are seldom seen: **Babbage**, **William Stanley Jevons**, **Thomas Robert Malthus** and **William Farr**.

Illustrations available:

Title page Portrait of Babbage Portrait of Jevons Portrait of Malthus Portrait of Farr

M 17

Magini, Giovanni Antonio (1555–1617)

Tabula tetragonica, seu quadratatorum numerorum cum suis radicibus, ex qua cuiuscunque numeri perquàm magni, minoris ramen trigintatribus notis, quadrata radix facilè, miraq; industria colligitur Year: 1592 Place: Venice

Publisher: Batistam Ciottum

Edition: 1st Language: Latin

Binding: later patterned boards

Pagination: ff. [4], 36 (misnumbered 34 as 62 and 36 as 64)

Collation: a⁴ A–I⁴ Size: 194x146 mm

Giovanni Magini earned a degree in philosophy from the University of Bologna in 1579. In 1588, he was chosen over the younger **Galileo** to occupy one of the two chairs of mathematics in Bologna. Modern comparisons with **Galileo** have often been to Magini's detriment, but he was regarded highly during his lifetime. He proved to be a reasonable scholar, corresponded with **Brahe** and **Galileo** on astronomical matters, published the first detailed atlas of Italy and made a number of original astronomical observations. It has been noted that he sided with others against **Galileo**, but such actions were not unusual at the time and were often conducted with a bitterness that seems entirely out of place today.

Even before the invention of logarithms, a number of shortcuts were available for the performance of complex arithmetic calculations. Perhaps the best known of these was the method of prosthaphaeresis (see entry for **Clavius**, **Christoph**; *Astrolabium*, Rome, 1593). Other approaches involved finding the squares and square roots of quantities. The large amount of work involved in applying these methods often obviated their use. However, they indeed proved to be useful if a table of squares could be consulted to quickly obtain an approximate value.



M 17

Magini calculated this table of squares for precisely such use. It lists the squares of each integer from 1 to 10,100. His examples (as were **Napier**'s a few years later when he invented logarithms) are oriented towards arithmetic involving sines because these were heavily used in astronomy, astrology and navigation. Magini shows that given x, one can find its square root by looking in the table for two perfect squares that bracket x, and then it is simply a matter of subtraction to find a very close approximation to its square root. In modern notation:

$$x = a^{2} + y,$$
 $x = (a+1)^{2} - z,$
 $\sqrt{x} = a + y/z$

These tables are a separate issue of the tables that are part of Magini's work *De planis triangulis* that appeared in the same year. The same setting of type was used as can be seen from the last page of the tables where the catchword *Tavola* appears in the lower corner because in *De planis triangulis* a table titled *Tabula Sinuum* followed the table of squares. This volume is dedicated to **Tycho Brahe**, but that dedication is not part of the larger work.

Illustrations available: Title page Last table page

M 18

Magini, Giovanni Antonio (1555–1617)

Primum mobile duodecim libris contentum, in quibus habentur trigonometria sphæricorum, et astronomica, gnomonica, geographicaque problemata, ac præterea magnus trigonometrius canon emendatus, et auctus, ac magna primi mobilis tabula ad decades primorum scrupulorum per utrumque latus supputata.

b/w: **Magini, Giovanni Antonio**; *Tabulæ generales* ad primum mobile spectantes, et primo quidem sequitur magnus canon mathematicus, 1609.

b/w: **Magini, Giovanni Antonio**; *Tabula proportionalis* ad usum generalis primi mobilis, 1609.

Year: 1609 Place: Bologna

Publisher: For the author by Jo. Bapt. Bellagambam

Edition: 1st Language: Latin

Figures: engraved title page

Binding: contemporary half-vellum over boards; raised bands Pagination: ff. [9], 104, [1], 106 – 290 (misnumbered 4 as 7, 110 as 109, 141 as 241, 142 as 242, 146 as 246, 233 as 236, 250 as 248, 251 as 249)

Collation: $\pi^3 b^4 c^2 A - 4B^4 4C^6$

Size: 355x238 mm

Reference: DSB IX, pp. 12-13

This is one of Magini's most significant contributions. It is an extensive work on spherical trigonometry to which is attached a large set of tables of the trigonometric functions. These tables were considered to be very accurate, and Magini, who also produced a very accurate ephemerides, was considered to be one of the best calculators of his day. The title page shows a number of scientific instruments.

The three sections of this work were produced by three different printers (two in Bologna and one in Venice), most likely because of difficulties in producing the tables.

Illustrations available: Title page Colophon



M 18

M 19

Magini, Giovanni Antonio (1555–1617)

Tabula proportionalis ad usum generalis primi mobilis

b/w: Magini; Primum mobile ..., 1609.

Year: 1609 Place: Venice

Publisher: Grazioso Perccacino

Edition: 1st Language: Latin

Binding: contemporary half-vellum over boards; raised bands

Pagination: ff. 21, [1] (misnumbered 21 as 15)

Collation: A–B⁴C²D–F⁴ Size: 355x238 mm

Reference: DSB IX, pp. 12-13

See entry for **Magini, Giovanni Antonio**; *Primum mobile..*, 1609. This is one of the tables that are part of the main work on spherical trigonometry.

Illustrations available: Title page

Colophon

M 20

Magini, Giovanni Antonio (1555–1617)

Tabulæ generales ad primum mobile spectantes, et primo quidem sequitur magnus canon mathematicus.

Year: 1609 Place: Bologna

Publisher: Heirs of Giovanni Rossi

Edition: 1st Language: Latin

Binding: contemporary half-vellum over boards; raised bands

Pagination: ff. 182 Collation: A–K⁴L⁶M–2Y⁴ Size: 355x238 mm

See entry for **Magini, Giovanni Antonio**; *Primum mobile* ..., 1609. This is the major table that is bound with the work on spherical trigonometry. Unlike the other two sections of this volume, there is no colophon.

Illustrations available: Title page

Magirus, Joannes, translator

See Schooten, Frans van, the elder; Tabulæ sinuum tangentium secantium ad radium 10000000; eorumque in triangulis planis usus...Latine reddidit Joannes Magirus.

M 21

Magnitsky, Leonty Filippovitch (1669–1739)

Arithmetika, sirech' nauka chislitelnaja

Year: 1703 Place: Moscow Publisher: unknown Edition: 1st Language: Russian

Figures: hand-tinted drawing of Peter the Great; engraved frontispiece; 2 engraved plates; 3 folding tables printed

in red and black

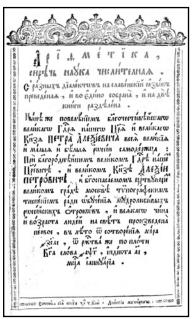
Binding: contemporary leather; red leather label

Pagination: ff. [1], 10, 306 Collation: $\pi^{1}1^{10}2^{8}1^{9}2-38^{8}39^{2}$ Size: 288x183 mm Reference: DSB IX, p. 17

Magnitsky studied for the priesthood and trained at an academy in Moscow until 1694. Upon graduation, he started his teaching career as a tutor to wealthy families in



Peter the Great, M 21



First page, M 21

Moscow. In 1701, Peter the Great gave him an allowance and appointed him to the faculty of the newly founded Navigation School. Magnitsky remained there for the rest of his life.

Magnitsky wrote this work on arithmetic in 1703. It is the first mathematics textbook printed in Russia. The work covers arithmetic, geometry, algebra, mechanics and navigation. It is the first Russian text to use Arabic numerals rather than the traditional Cyrillic notation. Dates, signatures and foliation remain numbered in Cyrillic numerals.

Illustrations available:

First page (color)
Frontispiece
Peter the Great (color)
Multiplication table (color)
Division



Frontispiece, M 21

M 22 **Malcolm, Alexander** (fl.1730–1749)

A new system of arithmetick, theorical and practical. Wherein the science of numbers is demonstrated in a regular course from its first principles, thro' all the parts and branches thereof; either known to the ancients, or owing to the improvements of the moderns. The practice and application to the affairs of life and commerce being also fully explained: So as to make the whole a complete system of theory, for the purposes of men of science; and of practice, for men of business.

Year: 1730 Place: London

Publisher: Printed for J. Osborn, T. Longman, F. Fayram & E. Symon

Edition: 1st Language: English

Binding: original marbled boards; rebacked; half-bound calf; uncut

Pagination: pp. 4, v–xx, 160, 137–296, 293–623, [1] Collation: A⁴a⁴b²B–T⁴*U–*X⁴T–2P⁴*2P²2Q¹2B³2R–4K⁴ Size: 247x185 mm

Reference: Soth/Zeit BCM, #2786; DeM AB, p. 66 (645)

Malcolm was a graduate of Edinburgh University who began teaching mathematics and bookkeeping there in 1718. In 1720, he moved to Aberdeen, where he continued to teach these same subjects. He wrote books on arithmetic, bookkeeping and music. In 1733, he



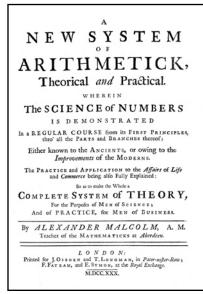
Writers to the Signet insignia, M 22

moved to New York and continued as a teacher, placing an advertisement for pupils in the *New York Gazette* January 7, 1734. However, he does not appear to have attempted to have his works printed in America.

This is a comprehensive text on arithmetic that was designed for use in Malcolm's classes. It begins with the arithmetic of integers; has a chapter on fractions; another on arithmetic and geometric progressions; one on prime, perfect, abundant and figurative numbers; and short sections on other subjects such as logarithms (but does not include tables).

The binding is stamped with the insignia of the Society of Writers to the Signet.

Illustrations available: Title page Writers to the Signet



M 23

Malconetus, Jacob

Selbst-Lehrende Geometrie, Oder Neue und Kurtze institutiones Mechanicæ, Stereometriæ, et Geodæsiæ, Bestehende In künstlichen Aussmessungen allerley weiten, breiten, und cörperlichen Grössen durch Zubereitungen 300 neuer und alter zu der Geometrie dienlicher Instrumenten oder Figuren. Nach Anleitung der Bücher Euclidis eingerichtet. Nebst einem Anhang allerhand Algebraischen Auffgaben.

Year: 1700 Place: Frankfurt

Publisher: Johann Adolph and Philipp Wilhelm Stock

Edition: 1st Language: German

Figures: engraved frontispiece; title in red and black, many figures in text

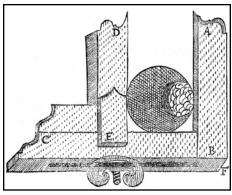
Binding: contemporary half-vellum, marbled boards

Pagination: pp. [2], 490, [2] Collation: π^1 A-3P⁴3Q² Size: 202x165 mm

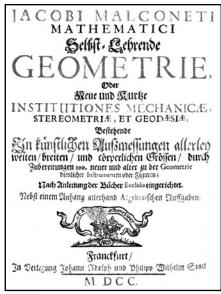
This book is a treatise on measurement, with an emphasis on surveying. The instruments shown in the illustrations were, for the most part, nearly obsolete by the date this work was published. They would have been more appropriate at least 100, if not 150, years earlier. The author does, however, cover a number of situations previously ignored, such as the volumes of church bells, and also addresses the volume of artillery pieces, a matter that would be of interest to foundry workers. The work is heavily illustrated with woodcuts on most pages.

Illustrations available:

Title page (color) Frontispiece Caliper Quadrant



Caliper, M 23



M 23

M 24

Mallock, R. R. M.

An electrical calculating machine. In Proceedings of the Royal Society of London Series A, Vol. CXL, No. A841, May 3, 1933.

> Year: 1933 Place: London

Publisher: Royal Society of London

Edition: 1st Language: English

Binding: modern buckram boards

Pagination: pp. 457–483 Size: 244x160 mm

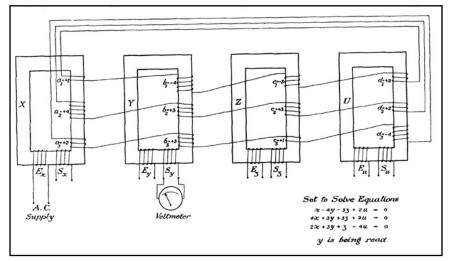
Mallock was a demonstrator at the Cambridge University Engineering Laboratories.



Frontispiece illustrating plane table, M 23

The Mallock machine was designed in 1931 to solve linear simultaneous equations. It used a series of interconnected transformers to represent the unknowns; coils on the transformers represented coefficients, with the number of turns being adjusted to indicate the value. Each set of equations was set up as a closed circuit, and an alternating current was applied. When the system reached equilibrium, the solutions to the equations were read from meters attached to the machine. The actual machine was constructed, under Mallock's supervision, at the Cambridge Scientific Instrument Company in 1933. The company had intended to market additional copies of the machine but never did so because the device proved unable to deal with ill-conditioned equations.

Illustrations available: Sample solution



Wiring for a problem on the Mallock machine, M 24



M 2

M 25 **Malombra, Giuseppe**

Practica universale facilissima e breve di misurare con la vista

Year: 1630 Place: Florence Publisher: Simone Ciotti Edition: 1st

Language: Italian

Figures: 1 engraved folding plate

Binding: later half-bound vellum marbled boards

Pagination: pp. [24], 64, 81–212, [4]

Collation: a-c⁴A-2B⁴ Size: 245x157 mm Reference: Not in Rcdi *BMI*

Malombra was an architect in the service of Ferdinand II of Tuscany, but little else is known of him.

This is the only edition of this book on surveying. After beginning with elementary plane geometry, Malombra describes a few sighting and leveling instruments, none of which have any degree of sophistication. However, most were mounted on ball-joints so that they could be easily manipulated and locked into place. Many different surveying situations are illustrated. These range from elementary tasks such as finding the heights of towers to the more complex situations of surveys of whole towns.

At least one book dealer has described this system of sighting extensions as relating to the proportional compass (sector), but this description is in error. While a proportional compass might have proved useful in calculations from the resulting survey, it is neither shown nor described in association with the equipment illustrated here.

Illustrations available:

Title page

Sighting instruments

Simple survey

Complex survey

M 26

Malthus, Thomas Robert (1766-1834)

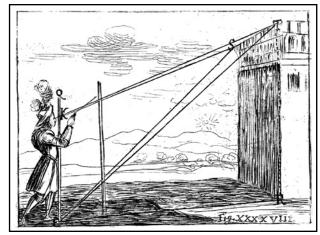
An essay on the principle of population; or, a view of its past and present effects on human happiness; with an inquiry into our prospects respecting the future removal or mitigation of the evils which it occasions.

Year: 1803 Place: London Publisher: J. Johnson Edition: 2nd Language: English

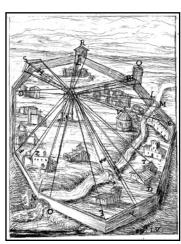
Binding: contemporary three-quarter leather over marbled

boards

Pagination: pp. viii, [4], 610 Collation: a⁴b²B–4H⁴4I¹ Size: 263x205 mm



Simple survey techniques, M 25



Major survey, M 25

Malthus suffered from a cleft palate and harelip, but these did not seem to keep him from an active social and professional life. He studied mathematics at Jesus College, Cambridge, and although religion was not his main interest, he became an Anglican minister. He traveled widely with friends in Europe—as far as Russia—and this travel provided him with some of the material he would later develop into his theories of population growth. These theories were not entirely new, and he so indicates in the very first paragraph of his preface. His careful construction of the arguments for these theories was, however, his own. In 1805, he was appointed professor of history and political economy at the East India College at Haileybury, where he remained for the rest of his life. He was elected a Fellow of the Royal Society in 1819. See also the entry for Macrosty and Bonar, Annals of the Royal Statistical Society, 1934, for a portrait of Malthus.

This second edition of the essay on population was the first that Malthus acknowledged. The first edition was published anonymously in 1798. This edition expands upon the first and provides a theoretical framework and additional examples from the Far East to strengthen its conclusions. In it, Malthus established that it is the ratio between food availability and population, and not numbers of people, that controls the rate of growth of population. The work went through several more editions, each being an expanded version of the previous one, until the sixth (1826) required three volumes. This work influenced Charles Darwin, who in 1838, read it and realized that under stress favourable variations

ON THE

PRINCIPLE OF POPULATION;

OR,

A VIEW OF ITS PAST AND PRESENT EFFECTS

ON

HUMAN HAPPINESS;

WITH AN INQUINT INTO OUR PROSPECTS RESPECTING THE FUTURE REMOVAL
OR MITIGATION OF THE EVILS WHICH IT OCCASIONS,

A NEW EDITION, FERY MUCH ENLARGED.

By T. R. MALTHUS, A. M.
FELLOW OF JESUS COLLEGE, CAMBRIDGE.

LONDON:
VAINTED FOR J. JOHNSON, IN ST. FAUL'S CHURCH-YARD,
BY T. REMIEW, BOLT COURT, RESET STIMT.
1803.

M 26

would tend to be preserved and unfavourable ones to be destroyed (Darwin; Life and letters), thus setting the stage for his work on species.

Illustrations available: Title page

M 27

[Malthus, Thomas Robert (1766–1834)] W. J. Ashley, editor

Parallel chapters from the first and second editions of An Essay on the Principle of Population

> Year: 1895 Place: New York Publisher: Macmillan Edition: 1st Language: English

Binding: original cloth boards; gilt spine

Pagination: pp. xx, 134 Collation: $\pi^{10}B-I^8K^3$ Size: 176x115 mm

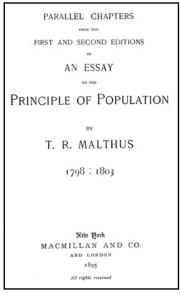
This book reprints sections from the first and second editions of *Principle of population* so that they may be compared. Some indication of the extent to which Malthus expanded the work between these two editions can be had from the fact that this reprints about one third of the first edition and only one twentieth of the second. This volume contains two plates of the title pages of the first and second editions.

Illustrations available:

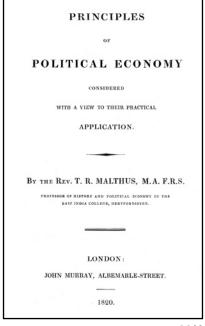
Title page of this work

Title page of first edition of Malthus

Title page of second edition of Malthus



M 27



M 28

M 28 **Malthus, Thomas Robert** (1766–1834)

Principles of political economy considered with a view to their practical application.

Year: 1820 Place: London Publisher: John Murray Edition: 1st Language: English

Binding: original buff paper boards; uncut and mostly

unopened Pagination: pp. vi, 601, [1] Collation: $\pi^3B-2P^82Q^5$ Size: 230x145 mm

In this work Malthus proposes investing in public works and increasing production of consumer goods as techniques for expanding an economy. He had become involved with proposed legislation to reform the Poor Laws, and although reform did not occur until after his death, he developed the concepts in this book as a remedy for the increasing numbers of destitute industrial workers at the beginning of the Industrial Revolution.

Illustrations available: Title page

Manby, Charles, editor

See Babbage, Henry Provost (Charles Manby,

editor); Scheutz' difference engine and Babbage's mechanical notation. In Minutes of Proceedings of the Institution of Civil Engineers with Abstracts of the Discussions, Vol. XV, May 1856.

M 29

Mandey, Venterus (1645–1701)

Synopsis mathematica universalis: or a brief system of the mathematics, for young students, and such as have not arrived to a great perfection in those studies. Containing variety of useful practices, in arithmetic, geometry, trigonometry, astronomy, dialling, chronology, geography, optics, catoprics, dioptrics, statics, together with astronomical and geographical tables with their uses, and also the use of the globes, the whole being illustrated with several mathematical sculptures on copper plates.

Year: 1729 Place: London

Publisher: For the Author

Edition: 2nd Language: English

Figures: engraved portrait frontispiece; title in red and black; 4

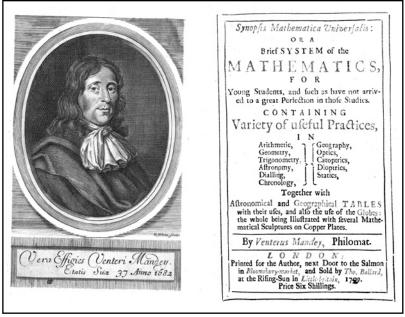
folding engraved plates; 2 folding letterpress

Binding: contemporary leather Pagination: pp. [xvi], 13–28, 787, [9] Collation: A⁸b⁸B–3B^{8*8*10*4}

Size: 190x115 mm

Mandey was a London teacher of mathematics. He is known to have written on surveying as well as on mathematical subjects. He formed a collection of rare mathematical books, which were sold at auction after he died.

This is not an original work but rather a compilation of translations of the work of others-perhaps from Mandey's own book collection. The majority are based on the work of Johann Jacob Heinlin, but Mandey also mentions a Collection of the greatest Masters in the World, I mean Heinlin, Mestlin, Kepler, &c. and never made English til now (from the dedication). Heinlin was a cleric in the town of Bebenhausan, just north of Tubingen, and there are many connections in this work to Tubingen University. The first is that Mandey indicates he used a copy of Heinlin's work that had been published in Tubin. The second is that Heinlin's original preface (a translation of which is included in this volume) mentions that mathematics had been flourishing in Europe and notes Philip Appian (sic) among others and ...not only that he was very Famous and had in great honour among us, but also among Foreigners, and is now in Heaven, VVilliam Schickard. Heinlin specifically acknowledges his debt to many others including Will. Schickhard, whose Optical Manuscript was freely communicated to use by the excellent and generous D. Joh. Ab Hobenfeld. This Optical Manuscript formed the basis of part of his section on optics, and he illustrates it with a drawing that Schickard made of the eye and how light is focused on the retina. Schickard, a professor at Tubingen, was the



Frontispiece (Venterus Mandey) and title page, M 29

first individual known to have produced a mechanical calculating machine capable of addition and subtraction with automatic carries.

This is a large work containing sections on arithmetic, geometry, trigonometry, astronomy (theory of spherical triangles and practical work on time keeping), geography and optics and a short section on balances. The text is followed by a series of very short tables of trigonometric, astronomical and geographical information.

The frontispiece is an engraved portrait of Mandey.

Illustrations available:

Title page and frontispiece (color) Optics mention of Schickard Schickard's drawing of the eye (fig 207)

M 30

Manenti, Francesco

Deliberationi astronomiche perpetue nel trovar con vero modo li giorni critici nell'infirmitadi humane, mediante l'uso di due ruote, connessioni de'giudicij in quelle; Genrali avertimenti nella flebotomia, & applicationi: natura, & andamenti delli segni ce; esti, effetti nelle congressioni, e mutue configurationi de' pianeti, moro diurno loro, e natura.

Year: 1643 Place: Mantua

Publisher: Aurelio Osanna

Edition: 1st Language: Italian

Figures: 4 engraved full-page plates

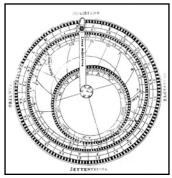
Binding: contemporary thick paper wrappers

Pagination: pp. 98, [6] Collation: A–M⁴χ⁴ Size: 230x165 mm

Reference: Not in Rcdi *BMI*

This is a book on predicting favorable and unfavorable days in the calendar. Its predictions are based on the theories of Galen and those of Petrus Albanus. It contains four volvelles: one (with one disk) to correlate critical days of the signs in the zodiac, one (two disks) to do the same with the phases of the moon, one (two disks) again involving the sun and moon and one (two disks) that is essentially the zodiac circle from the rete of an astrolabe, used for determining the position of the sun and hence the time of day. This last volvelle is unusual in that it shows both twelve-hour and twenty-four-hour notation for time. Large portions of the text are taken up with lists of days.

Illustrations available: Title page Volvelles (4)



Sun position volvelle, M 30



M 30

M 31

Mann, Margaret Flourencourt; Robert R. Rathbone and John B. Bennett

Whirlwind I operation logic. Report R-221

Year: 1954

Place: Cambridge, MA

Publisher: Digital Computer Laboratory, MIT

Edition: 1st Language: English

Binding: original printed paper wrappers Pagination: pp. x, 8, 14, 28, 2, 14, 4, 46

Size: 279x214 mm

See also the entry for **Everett, Robert**; *Whirlwind I computer block diagrams*, 1952. This volume updated the reports on Whirlwind for the Office of Naval Research, which was contractually its sponsor. It contains updated sections on the new magnetic core memory system. It also provides an overall view of the Whirlwind that was useful for the training of staff. The section on core memory is particularly noteworthy as Whirlwind was the first computer (other than a small test-bed device) to incorporate this technology.

Illustrations available:

Title page

Magnetic core photographs (3)

Printed cover

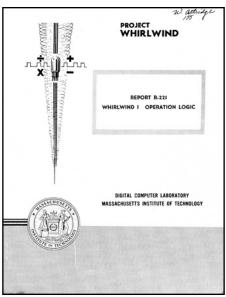
M 32

Mannheim, Victor Mayer Amedee (1831–1906)

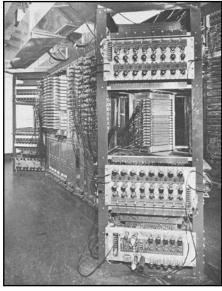
Règle a calculs

Year: 1851 Place: Paris

Publisher: Tavernier-Gravet



M 31



Magnetic core memory, M 31

Edition: 3rd Language: French Binding: disbound Pagination: pp. 4 Size: 223x180 mm

Mannheim was a French artillery officer who started his education at the École Polytechnique in Paris and graduated from the École d'Application in Metz. While he was a student at Metz, he developed a logarithmic slide rule, the so-called *Mannheim Rule*, which later became a standard. He graduated as a lieutenant and in 1859 was appointed to the École Polytechnique to teach geometry. He remained in this post, reaching the rank of colonel of engineers, before retiring in 1901. The slide

rule had been invented two centuries earlier by **William Oughtred**, but Mannheim created the version that we know today. It remained the basic standard until it was, in turn, replaced by the hand-held electronic calculator.

The Mannheim slide rule was the first to be produced in quantity. Designed about 1850, it arranged the scales in the pattern now familiar for all slide rules. Popular in France, the design was adopted by British manufacturers about 1880 and by the Americans in 1890.

This is the instruction booklet to accompany Mannheim's first rule. It contains no diagrams but does describe the operations of multiplication, division, proportion, squares, cubes, square roots, cube roots and the use of the sine and tangent scales. It is the grandfather of the many different slide rule instructional booklets in this collection.

Illustrations available: First page

Manning, Henry Parker (1859–), editor See Chace, Arnold Buffum; The Rhind mathematical papyrus. British Museum 10057 and 10058. Vol I. See Chace, Arnold Buffum; The Rhind mathematical papyrus. British Museum 10057 and 10058. Vol II. M 33

Manzoni, Domenico (16th century)

Libro mercantile ordinato col suo giornale & alfabeto, per tener conti doppi al modo di Venezia, & potrà servir in ogn'altro luogo, a giuntovi alcune cose necessarie, & utili à maggior intelligenza di ciascuno. Con alcune sorti di lettere cancellaresche, mercantesche, & bastarde, et due alfabeti di miniature bellissimi.

Year: 1574 Place: Venice

Publisher: Comin da Trino di Monserrato

Edition: 6th Language: Italian

Binding: contemporary vellum

Pagination: ff. [16], 20, [10], [1], 44, [11]

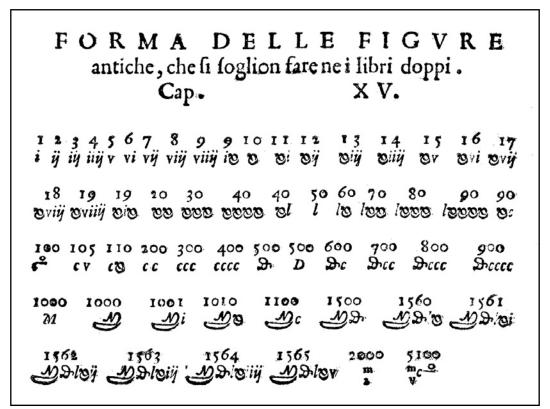
Collation: $a-b^8A-B^8C^4D^{10}E-L^8$

Size: 205x145 mm

Reference: Rcdi BMI, Vol. I, p. 98; Kress, s 211 (1573)

Manzoni was a bookkeeper and teacher of arithmetic and writing. He was born in Oderzo, Italy.

This is a treatise on double-entry bookkeeping—possibly the first ever written by a practicing bookkeeper. Earlier works such as the *Suma de arithmetica* (see **Paciolo**, **Luca**; *Suma de arithmetica*, 1523) were authored by individuals who, while knowledgeable, were not



Accountants numerals, M 33



M 3.

accountants by profession. In 1534, Manzoni published *Quaderno doppio col sue giornale*, which was the most important work on the subject since **Paciolo**'s. He included a complete set of his own business account books as an illustration. These same account books are to be found (with the notation slightly modified to account for changing practices in the intervening years) in this 1574 edition. They show that the concept of separating business and personal expenses had not yet emerged. Entries for farm expenses and cloth purchases are incorporated with others for household expenses and even for a dowry he paid upon his sister's marriage. A complete description of these accounts can be found in **Peragallo, Edward**; *Origin and evolution of double*

entry bookkeeping, 1938. To illustrate the different forms, Manzoni maintained one of his account books in Roman numerals and the other in Hindu-Arabic notation. He thoughtfully supplies a table of the accountant's form of the Roman numerals.

Illustrations available:

Title page

Table of accountant's Roman numerals

Entry (208) for dowry

M 34

Marchelli, Giovanni (713-1764)

Trattato del compasso di proporzione

Year: 1759 Place: Milan

Publisher: Giuseppe Galleazzi

Edition: 1st Language: Italian

Figures: 1 large folding plate with 5 illustrations; title in red

and black

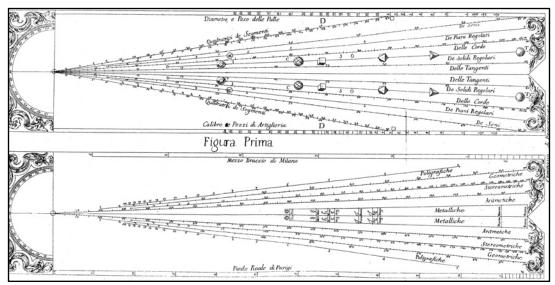
Binding: contemporary half-vellum paper boards

Pagination: pp. xxii, 352, 16 Collation: a¹¹A–Y⁸§⁸ Size: 192x130 mm

Reference: Rcdi BMI Vol. II, p. 105; Cin BG, #177

Giovanni Marchelli was a Jesuit priest born in Genoa who taught at the Jesuit college in that city.

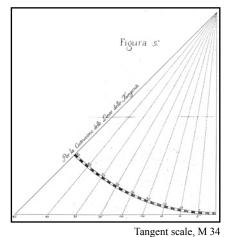
Through this work on the Gallilean sector, Marchelli sought to instruct his pupils in the fundamentals of practical geometry. By 1759, knowledge and use of the sector had become widespread, and there was no longer a need for elementary books on the subject. Marchelli describes a sophisticated sector with a full complement of scales and a quadrant arc. The sector scales are



Marchelli sector, M 34

well illustrated, and the text includes tables giving the positions of the various markings. The large folding plate also provides full-sized diagrams that show exactly how the markings on the quadrant arm and tangent, chord and sine scales are created (see the illustration of the diagram for the tangent lines). The work has thirteen chapters of which all but the final one cover the sector—its description, construction and application. The last chapter deals with military problems, primarily those encountered in gunnery such as the determining of the caliber of cannonballs and properly aiming at targets.

Illustrations available:
Title page (color)
Sector
Quadrant arm of sector
Tangent scale diagram



M 35

Mariana, Juan de (1536–1624) De ponderibus et mensuris

> Year: 1599 Place: Toledo

Publisher: Thomas deGuzmán

Edition: 1st Language: Latin

Figures: engraved title page

Binding: contemporary leather; rebacked; red leather label

Pagination: pp. [8], 192 Collation: q⁴A–2A⁴ Size: 186x132 mm

Juan de Mariana was a Spanish Jesuit historian. Born in Talavera de la Reina, he is known to have worked in Toledo. Several authors with similar names—Giovanni Mariani, who was an Italian arithmetician of the midsixteenth century, and Johann Marinoni, an astronomer and mathematician from Austria in the early 1700s—are often confused with Juan de Mariana.

This is a work on the weights and measures used in Spain during the sixteenth century. Mariana compares them with ancient Greek, Roman, Hebrew, Arabic and other systems and provides tables relating the different systems. The title page contains a large Jesuit insignia.

Illustrations available: Title page

Colophon Sample table



M 36 **Mariani, Giovanni** (16th century)

Tariffa perpetua con le ragion fatte per scontro de qualunque mercadante si voglia ...

Year: 1564 Place: Venice

Publisher: Francesco Rampazetto for the author

Edition: 4th Language: Italian

Binding: contemporary vellum with ties, 1 lacking

Pagination: ff. [6], 7–279, [21] Collation: A–Z¹²2A–2B¹²

Size: 148x83 mm

Reference: Rcdi BMI, Vol. I, p. 115; Smi $\it Rara,$ p. 180

This set of tables is a ready reckoner for the conversion of various northern Italian weights and measures. The first edition was in 1535, and editions are known as late as the end of the sixteenth century.

This is Pietro Riccardi's copy, which is described in his *Biblioteca matematica italiana*.

Illustrations available:

Title page

Illustration of different weights and measures

Colophon

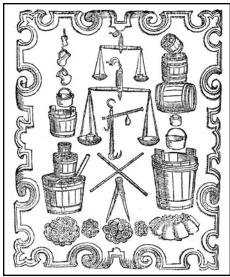
Printer's marks

Sample table page

Riccardi's bookplate







Weights and measures, M 36

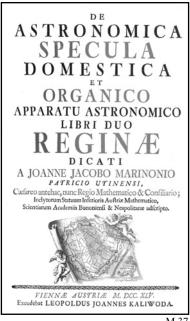
Marie, Joseph François (1732–1807)

See [La Caille, Nicolas Louis de and Joseph François Marie]; Tables de logarithmes pour les sinus & tangentes de toutes les minutes du quart de cercle, & pour tous les nombres naturels depuis 1 jusqu à 20000. Avec une exposition abrégée de l'usage de ces tables.

M 37

Marinoni, Johann Jacob von (1676–1755)

De astronomica specula domestica et organico apparatu astronomico libri duo.



Year: 1745 Place: Vienna

Publisher: Leopold Johann Kaliwoda

Edition: 1st Language: Latin

Figures: engraved frontispiece; 42 folding plates plus 9 fullpage plates in text; title in red and black Binding: modern quarter-bound over boards; gilt spine Pagination: pp. [24], 170, [2], 171–172, [2], 173–174, [2], 175–176, [2], 177–178, [1], 180–210, [2]

Collation: $a-d^2(^2)(^2(^2A-3I^2)$ Size: 366x251 mm

Reference: Rcdi BMI, Vol. I, p. 119; Pogg Vol. II, p. 53

Marinoni, born in Udine, was a mathematician, astronomer and surveyor who worked at the Austrian Imperial Court of Joseph I and Maria Theresa in Vienna. In 1726, he was appointed to direct the Academy of Geometry and Military Sciences, which he had been instrumental in founding in 1718. Earlier, he had constructed a house on the outskirts of Vienna and equipped it as an observatory with instruments of his own design. This observatory was regarded as one of the finest in Europe and is considered to have been of the same quality as those of **Tycho Brahe** and Hevelius in previous centuries, though, of course, with improved instruments. Upon his death, he left the observatory to Maria Theresa, who in turn gave it to the University of Vienna. The university constructed a new observatory, unfortunately situated within the confines of the university rather than outside the city. Today, it houses Marinoni's original instruments, and many of them can still be seen.

This is the first edition of a strikingly illustrated description of the instruments of the Vienna Observatory. Marinoni designed and built many of the instruments himself. It is illustrated with numerous large plates showing quadrants, telescopic sights, micrometers, various clock mechanisms and the interior of the observatory. The frontispiece shows the interior of the Imperial Vienna Library, with Augusta and Minerva setting various astronomical instruments under a statue of Caesar. In keeping with Marinoni's interest in surveying, the title page shows a plan of Vienna. It clearly shows the old city walls that have since been demolished and replaced by a ring-road system. The printing is particularly fine, as is typical of the printer Kaliwoda.

Illustrations available: Title page (color) Frontispiece



Frontispiece, M 37

M 38 **Marinoni, Johann Jacob von** (1676–1755)

De re ichonographia, cujus hodierna praxis exponitur et propriis exemplis pluribus illustratur. Inque varias, quae contingere possunt, ejusdem aberrationes, posito quoque calculo, inquiritur.

Year: 1751 Place: Vienna

Publisher: Leopold Johann Kaliwoda

Edition: 1st Language: Latin

Figures: engraved frontispiece; 3 double-page maps; 2 doublepage plates; 56 full-page engravings; 72 engravings in text or margins; title in red and black

Binding: contemporary leather; gilt spine; edges stained red

Pagination: pp. [20], 294, [2] Collation: A–B⁴C²A–2O⁴ Size: 314x225 mm

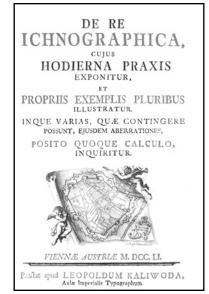
Reference: Rcdi BMI, Vol. I, p. 119; Pogg Vol. II, p. 53

Marinoni wrote this book for use in his school of Geometry and Military Sciences. It is a comprehensive work on surveying, the first part being a practical description of the use of various instruments such as a plane table and various sighting devices and the drawing of a plan with annotations. The second part is a more theoretical work on geometry to be used in calculations after the sightings are taken. The closing chapter deals with the use of **Christoph Scheiner**'s Pantograph. It, like the earlier work (**Marinoni**, *De astronomica specula*, 1745), is another fine example of the printing by Kaliwoda. The title page illustrates the same plan of Vienna as did the earlier work on astronomical instruments.

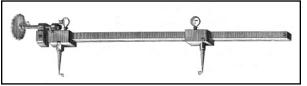
It was Marioni's intention to have this work followed by another *De re ichnometrica*. He died before his plan could be carried out, and the latter work was issued posthumously but not until 1775.

Illustrations available:

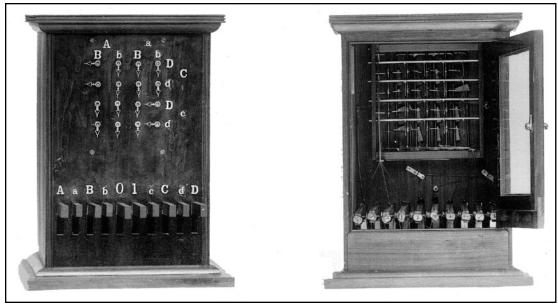
Title page (color)
Frontispiece
Plane table in use
Plane table construction
Beam dividers
Plane table in use again
Sighting vane and scale
Map annotations



M 38



Beam dividers, M 38



Marquand's logic machine, M 39

M 39

Marquand, Allen (1853–1924)

A new logical machine. In Proceedings of the American Academy of Arts and Sciences, New series XIII, Whole series XXI, Part II from October 1885 to May 1886.

Year: 1886 Place: Boston

Publisher: John Wilson and Son

Edition: 1st Language: English

Figures: plate of logical machine Binding: original paper wrappers Pagination: pp. 303–307 Size: 245x157 mm

Marquand is identified on the title page as being from *Princeton College, Princeton N.J.*

Marquand had, in 1881, constructed a machine similar to that of the **Jevons** Logical Piano for solving logic problems with as many as ten terms. This formed the basis for a more sophisticated machine, limited to just four terms, which he and a colleague constructed in 1882. He describes this latter machine, its mechanism and how it is to be used.

For further information, see George H. Buck and Stephen M. Hunka; "W. Stanley Jevons, Allan Marquand, and the Origins of Digital Computing," *IEEE Annals of the History of Computing*, Volume 21, Number 4, 1999, pp. 21–27.

Illustrations available:
Photo of the logic machine

M 40

Marsh, John (1715–a.1742)

Decimal arithmetic made perfect; or, the management of infinite decimals displayed

Year: 1742 Place: London Publisher: Author Edition: 1st Language: English

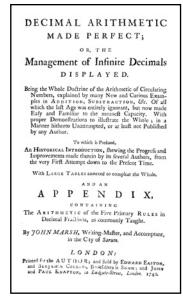
Binding: original boards; rebacked; uncut Pagination: pp. [20], xiv, 197, [1] Collation: a-b⁴ c² B-2D⁴ 2E²

Size: 243x180

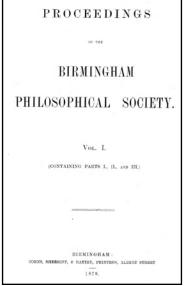
According to the title page, Marsh was Writing-Master, and Accomptant, in the City of Sarum. Sarum is the modern Salisbury.

A note on the front flyleaf states: *I am certain this book must be scarce, it is so useless*. The anonymous critic is certainly correct. Marsh's main point is that it is impossible to do accurate arithmetic with decimal fractions if they (like 1/3, 1/7, etc.) have infinitely repeating decimals. This entire volume is dedicated to teaching how to take any set of repeating decimals (the author calls them *repetends* or *circulates*) and convert these back into fractions so that accurate arithmetic may be performed. Marsh provides a table to help in the conversion. The first chapter is devoted to illustrating that earlier authors did not know the subject because they ignored this seemingly important point.

Illustrations available: Title page Table page



M 40



M 41

M 41

Marshall, William P.

Babbage's calculating machine. In Proceedings of the Birmingham Philosophical Society, Vol. 1, 1879

Year: 1879 Place: Birmingham

Publisher: Corns, Sherriff & Rattey

Edition: 1st Language: English Figures: 5 engraved plates

Binding: three-quarter-bound maroon leather; black leather

label

Pagination: pp. 33–48 Size: 214x137 mm

This paper is not another version of the many similar descriptions of Babbage's difference engine. It contains illustrations of the actual gears and describes the actual mode of operation (as compared with the usual simplified version, based on that of **Lardner** (see **Lardner**, **Dionysius**; *Babbage's calculating engines*, 1834). Because of its unique nature, the illustrations for this entry show not only the diagrams but also the full text of the article.

Illustrations available: Title page Figures Complete text

M 42 **Martin, Benjamin** (1705–1782)

The description and use of a case of mathematical instruments; particularly of all the lines contained on the plain scale, the sector, the Gunter, and the proportional compasses. With a practical application, exemplified in many useful cases of geometry, and plain and spherical trigonometry. The whole illustrated by copper-plate figures.

Year: 1790 Place: London Publisher: P. & J. Dolland Edition: 2nd Language: English Figures: 1 folding plate Binding: disbound Pagination: pp. [2], 18

Reference: Hambly DI, p. 47

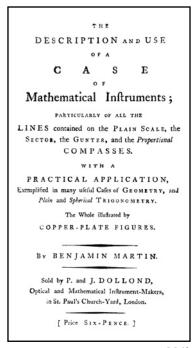
Size: 212x133 mm

Nothing is known of Martin's education, but since he was born in the small English village of Broadstreet, it is likely that he was largely self-taught. About 1730, he is known to have run a boarding school in Chichester, and by 1743 he was a traveling lecturer who became well known for his demonstrations of physical phenomena. He published a number of works, including a text based on his lectures. By 1755, he was in business with his son, as Martin and Son, in London selling scientific instruments. He seems to have functioned primarily as an instrument seller rather than as a maker, despite the fact that there are instruments that bear his name. Martin published a number of different books during this period, most of them oriented to the devices he sold. While he appears to have been willing to improve and sell almost any instrument, and was well known enough that his firm supplied Harvard University (then Harvard College) with instruments, he eventually went bankrupt. Shortly thereafter, he attempted suicide. While he survived for a few weeks, he eventually died from the attempt.

This extract is, as the title states, a description of the lines on a set of mathematical instruments.

Illustrations available:

Title page



M 42

M 43 **Martin, Benjamin** (1704–1782)

The description and use of both the globes, the armillary sphere, and orrery exemplified in a large and select variety of problems in astronomy, geography, dialling, navigation, spherical trigonometry, chronology, &c. Also a new construction of each globe, by an apparatus exhibiting the phænomena of the earth and heavens exactly as they are, and adapting the same to every age of the world.

Year: [1762] Place: London Publisher: Author Edition: 1st Language: English

Figures: engraved frontispiece; 5 engraved plates incl. frontispiece

Binding: contemporary leather; red leather label; hinges loose Pagination: pp. viii, 176, 167–185, 184–236, 235–242, 237–258 (misnumbered 258 as 257)

Collation: A–2K⁴2L³2M⁸ Size: 213x128 mm Reference: H&L, 9754

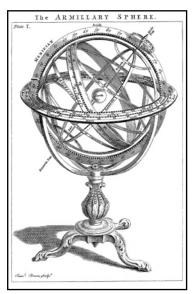
This is a work on the astronomical and geographical globes. In the preface Martin notes that

... no Globes were ever constructed with so much exquisite Skill, Taste, and Elegance as those of the

late Mr. Senex, F.R.S. (now known and celebrated to the remotest Limits of the literary World) and since it has been lately my Province to make and sell these Globes, with many Corrections and Improvements; I thought it would be very agreeable to the Public to have a Treatise on the Uses of Globes particularly adapted to them...

This edition is undated but is thought to have been published about 1762. A second edition was printed in 1773. The second edition, which contained an appendix and an additional plate, may have been in response to the publication of a similar work by **George Adams, Sr.** (see **Adams, George, the Elder**; A treatise describing and explaining the construction and use of new celestial and terrestrial globes, 1766).

Illustrations available:
Title page
Armillary sphere (frontispiece)
Celestial globe
Terrestrial globe



Armillary sphere, M 43

M 44 **Martin, Benjamin** (1704–1782)

Logarithmologia: or the whole doctrine of logarithms, common and logistical, in theory and practice. In three parts. Part I. The theory of logarithms; shewing their nature, origin, construction, and properties, demonstrated in various methods ... Part II. The praxis of logarithms; wherein all the rules and operations of logarithmical arithmetic, both common and logistical, by numbers and instruments, are copiously exemplified ... Part III. A three-fold canon of logarithms; in a new and more compendious method than any extant; ...

Year: 1740 Place: London Publisher: J. Hodges Edition: 1st Language: English

Figures: 1 large folding plate

Binding: modern quarter-leather over boards; edges stained red

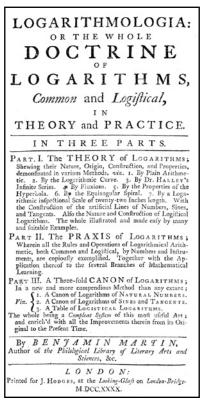
Pagination: pp. xii, 248, 64 Collation: A⁴a²B–2I⁴*A–H⁴ Size: 250x123 mm

Reference: Hend BTM, #68.0, p. 78

This work explains the application of logarithms to problems ranging from simple multiplication and division to the solution of problems in spherical trigonometry. Martin not only discusses the use of the tables but also includes logarithmic instruments such as Gunter's line of numbers and the slide rule. A large folding plate contains a graph of a logarithmic function to be used in much the same way as Gunter's line of numbers. The tables contain logarithms of numbers and of the trigonometric functions as well as *Mr Street's Table of Logistical Logarithms*—logarithms of sexagesimal numbers for use in astronomical calculation.

Part III is mislabeled as Part II and has the date 1739.

Illustrations available:
Title page
Part III half title page
Logarithmic scale (a portion)



M 44



M 45

M 45 **Martin, C. François**

Le parfait régulateur. Ouvrage methodique, pour apprendre à trouver les rapports entre les mesures anciennes et nouvelles dans une seule leçon.

Year: 1807 Place: Toulon Publisher: P. J. Calmen Edition: 1st Language: French Figures: pale green paper Binding: original marbled paper boards Pagination: pp. 123, [1]

Collation: A-P⁴Q² Size: 197x122 mm

Martin was a marine clerk at Toulouse. He devised and published tables for calculating the metric equivalents of the older French measures. He also provided tables for calculating interest. Martin's innovation was a *régulateur* that was supplied with the tables. This was a small slotted rectangular template, made of pasteboard or metal, intended to be placed on the page to isolate one set of entries.

This is a set of ready reckoner tables with a metal *régulateur* in a pocket in the front cover. The tables relate the new decimalized units of measure to the old pre-Revolutionary units. These tables were revised, expanded and republished several times, and by 1817 they were in use throughout France.

An additional copy of this work is available in the collection; this one has a handmade cardboard *régulateur* with the windows differing from the metal version.

Illustrations available:
Title page
Sample table
Cardboard régulateur
Metal régulateur

M 46

Martin, C. François

Poids et mesures de la ville de Marseille, et du departement. Reduits au nouveau système, et du nouveau à l'ancien, en se servant du parfait régulateur ... On apprend à calculer toutes les différentes mesures dans une seule leçon. Il suffit que la personne sache additioner.

Year: 1807 Place: Marseilles Publisher: Requier Edition: 1st Language: French

Figures: 2 printed folding plates

Binding: contemporary marbled paper boards

Pagination: pp. [6], 3–56 Collation: π^6 B–E⁴ F⁸ Size: 196x124 mm

This is a set of tables for converting from the various old French systems of measures to the new metric system. It comprises six major sections (weights, lengths, areas, volumes, capacities and money), each with its own set of tables. Two identical printed *regulateurs* on yellow cardboard are included to aid in reading the tables. Martin's signature is stamped on the verso of the title page.

Illustrations available:

Title page Table page Regulateur

M 47

Martin, C. François

Le régulateur universel des poids et mesures. Invention nouvelle, pour apprendre, seul et sans maitre, a trouver les rapports réciproques du nouveau système et des poids et mesures de tous les pays, ainsi que des francs, livres tournois et monnaies étrangères. Précédé d'une instruction générale. Suivi d'un Barème décimal complet en 34 pages, de tables d'intérêts depuis un huitième jusqu'a quinze pour cent, des opérations de change avec les principales villes de l'Europe, du cubage des bois équarris et jaugeage, etc. Et d'une table alphabétique et topographique. Divisé en six chapitres, précédé chacun d'une instruction particulière.

Year: 1809

Place: Bordeaux, Avignon & Paris

Publisher: J. Foulqier (Bordeaux); M. Ray (Avignon); M.

Courcier (Paris)

Edition: 2nd Language: French

Figures: 3 folding plates; with 2 cardboard regulators, 1 large

and 1 small (signed)

Binding: contemporary leather; gilt spine; red leather label

Pagination: pp. 4, [4], 5–533, [1]

Collation: $\pi^62-66^467^3$ Size: 194x121 mm

This edition contains a small printed and signed cardboard mask, or *régulateur*, inside a pocket attached to the front glued-down endpaper.

A second copy of this edition, with the same binding, exists in the collection. It contains two cardboard masks, different from the signed one above but identical to the one in the original paper wrappers binding.

Illustrations available:

Title page Cardboard mask

Signature on cardboard mask



M 47

M 48

Martin, C. François

Les tables de Martin, ou le régulateur universel des calculs en parties doubles; ouvrage par invention, pour trouver, d'une manière certaine, tous les rapports réciproques du nouveau système des poids et mesures de tous les pays, ainsi que des francs, livres tournois et monnaies étrangères. Précédé d'une instruction

générale. Suivi d'un tableau décimal complet en dix pages; de tables d'intérêt depuis un huitième jusqu'à 21 pour cent; des opérations divers changes avec les principales villes de l'Europe; de la conversion des monnaies étrangères en monnaies de la France, et vice versà; d'un tableau de nouvelle invention faisant disparaître toute les fractions, même les fractions de fractions se trouvent réduites à de simples additions. Du cubage des bois ronds, équarris et autres. etc.; divisé en 25 chapitres, précédé chacun d'une instruction particulière.

Year: 1817 Place: Paris Publisher: Author Edition: 1st Language: French

Figures: 3 folding plates; with small metal regulator and large

cardboard regulator (signed)

Binding: contemporary leather; gilt spine; red leather label

Pagination: pp. xxx, 31–844 Collation: 1–105⁴106² Size: 203x122 mm

This is an extensive revision of the earlier sets of conversion tables published by Martin beginning in 1807. This edition not only contains the previous tables relating old French measures to the new metric system but now also relates systems of weights and measures from other countries as well. As in earlier versions, there is a cardboard mask in a pocket in the front for use with the tables, but it now has a different printed design. There is also a metal (silver-colored) mask. Both the book (on the verso of the title page) and the cardboard mask are signed by Martin to guarantee authenticity—he seems

LES
TABLES DE MARTIN,

OU

LE RÉGULATEUR UNIVERSEL

DES CALCULS EN PARTIES DOUBLES;

OUTUAGE PAR INVENTOR;

Pour trouver, d'une mamière certaine, tous les rapports réciproques du nouveau système et des poids et meutres de teus les pays, s'ainsi que des france, ivres tourneis et monaises étransgères,

précéde à l'ent restruction défailles;

Serve d'un alten décinal compte en dis pages de the l'ainsité depuis en destinates par de des la carcerion des mentes des rémardes de l'entre par de des carcerion des mentes d'unes restre par de l'entre par de des carcerion des mentes des rengières en les gries de l'Entre, et view vouré, de calcage de los rends, compte en consaise de l'enne, et view vouré, de calcage de los rends, compte ne constitute de l'entre, et view vouré, de calcage de los rends, compte ne constitute de l'entre par de l'entre

M 48

to have had problems with others issuing very similar tables (see entry for **Hortolan de Linche**, *Le régulateur*, 1830).

Illustrations available: Title page Cardboard mask Silver mask

M 49

Martin, C. François

Les tables de Martin, ou le régulateur universel des calculs en parties doubles; ouvrage par invention, pour trouver, d'une manière certaine, tous les rapports réciproques du nouveau système des poids et mesures de tous les pays, ainsi que des francs, livres tournois et monnaies étrangères. Précédé d'une instruction générale. Suivi d'un tableau décimal complet en dix pages; de tables d'intérêt depuis un huitième jusqu'à 21 pour cent; des opérations divers changes avec les principales villes de l'Europe; de la conversion des monnaies étrangères en monnaies de la France, et vice versà; d'un tableau de nouvelle invention faisant disparaître toute les fractions, même les fractions de fractions se trouvent réduites à de simples additions. Du cubage des bois ronds, équarris et autres. etc.; divisé en 25 chapitres, précédé chacun d'une instruction particulière.

> Year: 1820 Place: Paris

Publisher: L'auteur & C. Ballard

Edition: 2nd Language: French

Figures: with small metal regulator

Binding: contemporary leather; gilt spine; red leather label

Pagination: pp. xxv, [891] Collation: 1–106⁴107²A–G⁴ Size: 204x125 mm

This is evidently the last edition of the tables by Martin, although they continued to be issued by others (see entry for **Hortolan de Linche**, *Le régulateur*, 1830). Like his earlier work, this volume is signed by him (verso of title page) to guarantee authenticity. It contains the same silver-colored metal mask that some of his other tables do. Ballard was the royal printer.

Illustrations available: Title page

M 50

Martin, Ernst [pseudonym for Johannes Meyer]

Die Rechenmaschinen und ihre Entwicklungsgeschichte. I Band (Rechenmaschinen mit automatischer Zehnerübertragung)



M 50

Year: 1925 Place: Pappenheim Publisher: Johannes Meyer Edition: 1st

Language: German Binding: original cloth boards Pagination: pp. 478

Collation: 1–298307 Size: 140x106 mm

Ernst Martin was a pseudonym for Johannes Meyer. It is unknown why he chose to use a pseudonym, but once he became known for these publications it would have been difficult for him to revert to his own name. He published a number of books detailing the operation of calculating machines and typewriters. His work was copyrighted under his real name in both Europe and America. Records exist to show that after World War II, Martin applied to the Allied occupation forces for permission to publish an updated version of this work, but permission was denied for reasons unknown.

After describing the basic types of machines and where they are used, Martin details the development of calculating machines from the time of Pascal to just prior to publication. The work is comprehensive in that any device that could be described as a calculating machine is noted. Martin also provided descriptions of internal machine operations. These are sometimes difficult to follow and even native German speakers who are technical specialists in the field have trouble understanding them. Despite this problem, this is a valued reference work and was reprinted in 1980 and translated into English (Martin, Ernst [Peggy Aldrich Kidwell and Michael Roy Williams, translators and editors]; The calculating

machines (Die rechenmaschinen). Their history and development, MIT Press and Tomash Publishers, 1992).

Illustrations available: Title page



M 51

M 51

Martin, Ernst [pseudonym for Johannes Meyer]

Die Schreibmaschine und ihre Entwicklungsgeschichte. [With separately bound appendix]

Year: 1934 Place: Pappenheim Publisher: Johannes Meyer

Edition: 5th Language: German

Binding: original cloth boards

Pagination: pp. 816 Collation: 1–51⁸ Size: 155x120 mm

See the entry for **Martin**, *Die Rechenmaschinen*, for information about Ernst Martin and Johannes Meyer.

This book is the same type of comprehensive reference work for typewriters as *Die Rechenmaschinen* is for calculating machines. Martin issued an appendix in 1937 that consists of loose sheets in a cloth board folder matching the original binding. The appendix is in this collection.

Illustrations available: Title page

M 52

Martin, Thomas Henri (1813–)

Les signes numéraux et l'arithmétique chez les peuples de l'antiquité et du moyen-age Year: 1864 Place: Rome

Publisher: Propaganda Fide

Edition: 1st Language: French

Binding: modern paper boards; uncut

Pagination: pp. [8], 103, [1]

Collation: π^41-13^4 Size: 305x231 mm

Martin, according to the title page, was dean of the *Faculté des lettres de Rennes* and a corresponding member of the French Institute and the Berlin Academy of Sciences.

This is a review of the book *Mathematische Beiträge* zum Culturleben der Völker that had been published by Moritz Cantor in 1863. Moritz Cantor (1829–1920) was an historian of mathematics and should not be confused with his contemporary Gregor Cantor (1845–1918), the set-theorist. Cantor's work covered the history of mathematics in Egypt, Babylon and China; other numeral systems; the work of Gerbert (Pope Sylvester II) and Leonardo of Pisa (Fibonacci). Martin's commentary is critical of Cantor in many ways (order of presentation of the material, lack of examination of other sources, seemingly describing only what he found interesting and not doing a complete survey, etc.), but the reviewer also indicates several positive aspects of Cantor' work.

Illustrations available: Title page



M 52



M 53

1 53

Martinelli, Domenico (fl.1663–1669)

Horologi elementari divisi in quattro parti. Nella prima parte fatti con l'acqua. Nella seconda con la terra. Nella terza con l'aria. Nella quarta col fuoco. Alcuni muti, & alcuni col suono. Tutti facili, e molto commodi.

> Year: 1669 Place: Venice

Publisher: Bortolo Tramontino

Edition: 1st Language: Italian

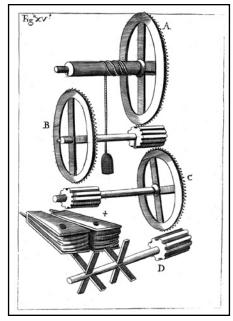
Binding: contemporary paper boards Pagination: pp. [16], 17–155, [5]

Collation: *4B-V4 Size: 206x156 mm Reference: Rcdi, p. 123

This treatise on clockwork is in the nature of a survey but does describe unusual clock mechanisms such as falling drum clepsydra, fire clocks, etc. The contents of this book were translated into French by **Jacques Ozanam** and incorporated in his *Recreations Mathematiques*, 1694 (not in this collection). Ozanam's work was, in turn, translated into English by **Charles Hutton** (see **Hutton**, **Charles**; *Recreations in mathematics and natural philosophy*, 1803), where some of the same devices can be found in Volume 2. The four sections of Martinelli's book consider the various types of devices that can be driven by water, sand, air and fire. Included is a discussion of striking mechanisms and clocks with moving figures.

Illustrations available:

Title page Striking mechanism Chain clock display Bellows Fire clock



Clock bellows mechanism, M 53

M 54

Martinez Silicaeus, Joannes Blasius (or Martinez Siliceo, Juan Guixeno or Siliceo, Juan Martinez or Martinus Blasius or Martinus, Joannes Siliceo) (1477–1557)

Ars arithmetica in theoricen & praxim scissa: omni hominum coditioni perqum utilis & necessaria

Year: 1514 Place: Paris

Publisher: Thomas Kees

Edition: 1st Language: Latin

Figures: more than 70 text and marginal woodcuts

Binding: modern marbled boards

Pagination: pp. [236] Collation: g²A–E⁸F²G²H–Q⁸

Size: 192x130 mm

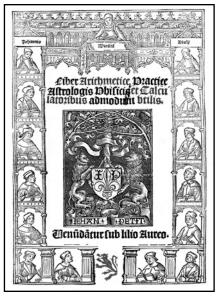
Reference: Smi Rara, p. 97, 594

In this edition of Martinez's work, the first portion is a description of the arithmetic of **Boethius** with figurative numbers, etc. The second half is a repeat of his 1513 *Liber arithmetice practice*.

According to **Smith** (*Rara*), another edition of this work was issued in 1519 with a slightly different title. He notes that there is a multiplication table with all products up to 50 times 50, but that is not in this edition. The multiplication table here is one with products up to 10 times 10 (identical with that from the 1513 volume).

Illustrations available: Title page

Explicit (colophon)



M 55

M 55

Martinez Silicaeus, Joannes Blasius or Martinez Siliceo, Juan Guixeno or Siliceo, Juan Martinez or Martinus Blasius or Martinus, Joannes Siliceo (1477–1557)

Liber arithmetice practice astrologis phisicis et calculatoribus admodum utilis

Year: 1513 Place: Paris

Publisher: Thomas Kees for John Petit & Jean Lambert

Edition: 1st Language: Latin

Binding: Full morocco by Zaehnsdorf; decorated inside covers

Pagination: ff. 26 Collation: A⁶B–F⁴ Size: 264x194 mm

Reference: Smi $\it Rara,$ p. 97; Bar $\it CCCB,$ pp. 280–292; Pul $\it HA,$

o. 116

This work on arithmetic is divided into four parts. The first deals with the usual arithmetic operations of addition, subtraction, multiplication, division, square roots, cube and even fourth roots as well a short section on mixed-radix (compound) numbers such as those used in money. The second portion deals with operations on the table abacus. The third is concerned with fractions, and the last with the rule of three. The title page shows the author lecturing to a group of fourteen pupils, all of whom are attentive and most of whom are taking notes. The printer may not have been familiar with the new Hindu-Arabic numerals when he began this work because an early addition example shows a "2" printed upside down. Some of the decorated capital letters are surprisingly modern in style (see illustrations of pages with counters).

Illustrations available:

Title page Explicit (colophon) Addition with upside down 2 Page with counters (2)

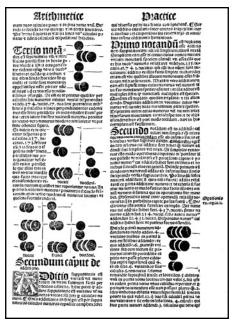


Table abacus examples, M 55

Explicit liber Arithme

tices practice magfi Joannis Martini Blash Etla lagarcifis (Partils edit? in honelissima Beluscosti palestraimpiestus vero a alcographoum espertissimo Thoma keca: Avelaliense expensis pro bistimoum viroum: Joannis Pharui et Joannis Lambet. Innodomini 1513. in vigilia diui Joannis bapuile.

Explicit, M 55

M 56

Mascheroni, Lorenzo (1750–1800)

La geometria del compasso

Year: 1797 Place: Pavia

Publisher: Heirs of Pietro Galeazzi

Edition: 1st Language: Italian

Figures: 14 folding engraved plates Binding: original green paper wrappers Pagination: pp. [2], xviii, 264, [2]

Collation: $\pi^{10}A$ – Q^8R^5 Size: 223x132 mm

Reference: Caj HM, p. 268; Rcdi BMI, Vol. I, p. 133

Mascheroni was professor of mathematics at the University of Pavia, where he spent his career. He was a formidable calculator, and in one of his works (*Annotationes ad calculum integrale Euleri*) he calculated Euler's constant to thirty-two decimal places. Sadly, only nineteen places were correct, and the remainder had to be corrected by Johann von Soldner in 1809.

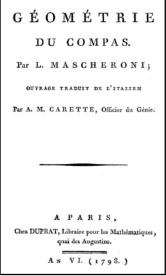
Mascheroni was also a poet, and he dedicated this work to Napoleon in verse. In this work Mascheroni proved that all Euclidean constructions can be made with compasses alone—that is without using a straight edge.`

Illustrations available:

Title page



M 56



M 57

M 57

Mascheroni, Lorenzo (1750–1800)

Géométrie du compas

Year: 1798 Place: Paris

Place: Paris Publisher: Chez Duprat Edition: 1st (French) Language: French

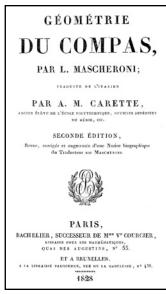
Figures: 14 folding engraved plates Binding: contemporary leather; gilt spine

Pagination: pp. xxiv, 263, [5] Collation: a⁴b⁸A–Q⁸R⁶ Size: 196x120 mm

This is the French translation of Mascheroni's work. See earlier entry for the Italian edition.

Illustrations available:

Title page



M 58

M 58

Mascheroni, Lorenzo (1750–1800) [Antoine Michel Carette (1772–1855), translator]

Géométrie du compas

Year: 1828 Place: Paris

Publisher: Bachelier, successeur de Mme. Courcier

Edition: 2nd (French) Language: French

Figures: 14 folding engraved plates Binding: modern paper boards Pagination: pp. xvi, 328, [4] Collation: a⁸1–20⁸21⁶ Size: 202x124 mm

This is the second edition of the French translation of **Mascheroni**'s *La geometria del compasso*, 1797.

Illustrations available: Title page

M 59

Maseres, Francis (1731–1824)

Elements of plane trigonometry. In which is introduced, a dissertation on the nature and use of logarithms.

Year: 1760 Place: London

Publisher: T. Parker for T. Payne and J. Whiston and B. White.

Edition: 1st Language: English Figures: 13 folding plates

Binding: contemporary leather rebacked; red leather label

Pagination: pp. [4], viii, 471, [1] Collation: π^2 A-2Q⁴2S-3P⁴ Size: 204x122 mm

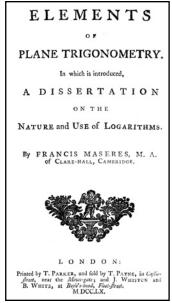
Maseres had a varied career as a lawyer and civil servant. After graduation from Cambridge, he practiced law for a few years and then was appointed Attorney General for Quebec. He returned to England in 1769 to a post in the Exchequer, which he held for the rest of his life.

Maseres wrote many mathematical texts that are uniformly undistinguished. His influence on the teaching of mathematics in Britain can be best described as unfortunate.

Illustrations available:

Title page

Napier's and Briggs' logs (2)



M 59

M 60

Massimi, Pacifico (15th century)

De componendis hexametris et penthametris opusculum rarisimu[m]

Year: 1516 Place: Wittenberg

Publisher: Joannis Grunenberg

Edition: 3rd Language: Latin

Figures: 2 volvelles and 2 illustrations of finger reckoning

Binding: modern stiff paper wrappers

Pagination: ff. [8] Collation: A–B⁴ Size: 205x151 mm

The book was once heavily annotated in ink, but the ink has faded, and it is now essentially illegible. It is unknown if the fading is usual or if it is a result of the obvious cleaning and restoration that the volume has received. The content concerns the production of hexameter and pentameter verse; the volvelles and finger notation are there as an aid in the process.

Illustrations available: Title page Colophon Volvelle and hand

Parifici Magnifici Poete Allur

lani De Componendis Hexametris & Penthametris Opufculum Rariffimű.

Title page, M 60

DE DVPLIS.

Duple funt X & Z & I in medio duatű yocalium fi confona conficiatur. Τελοσ.

AD IACOBVM SALVIATVM.

Habes mi lacobe qua potui vel arte vel ingenio in hexametro & penthametro coponedo pqui/ rere tuo; ad carmé venies pfacile: breuiq; teipm no vltimu inter poetas coperies Vale.

Vuittenburgi in officina Ioannis Grunenbergi Anno dñi M. D. XVI. Apud Augustinianos.

Colophon, M 60

M 61

Mathematical Tables and Other Aids to Computation (MTAC)

Mathematical tables and other aids to computation, Vols. 1–13, 1943–1959

Year: 1943–1959 Place: Washington, DC

Publisher: National Research Council

Edition: 1st Language: English

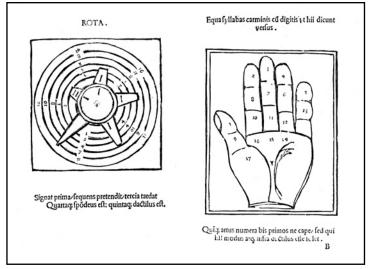
Binding: biscuit-colored buckram

Size: 13 vols.

Reference: Ran ODC, pp. 404, 412, 419

The journal Mathematical Tables and Other Aids to Computation was founded by Professor Raymond Clare Archibald in 1943. It was published by the National Research Council of the National Academy of Sciences. For a time, it was the only journal dealing exclusively with computation and computing devices. In its July 1946 issue, it published the landmark article "The Electronic Numerical Integrator and Computer (ENIAC)" by Herman H. Goldstine and Adele Goldstine, which described in detail the first large-scale electronic computer. A complete history of the journal during the years 1959 through 1965 (a period in which major changes took place, one of which was the change in the name of the journal to *Mathematics of Computation*) can be found in an article by Harry Polachek, "History of the Journal Mathematical Tables and other Aids to Computation, 1959-1965," Annals of the History of Computing, Vol. 17, No. 3, 1995, pp. 67–74.

The journal was, in its early years, the only venue in which articles and notices relating to computing machinery and methods could be readily published, and thus it contains



Aids to poetry writing, M 60

many of the seminal papers. The early volumes were concerned primarily with the evaluation of tables and the recording of errors found in them. As the field matured, more original research was reported on methods and aids to calculation—many interesting early papers are listed elsewhere in this catalog. A particular early example is

Bloch, Richard Milton; Robert Campbell, and Murray Ellis; The logical design of the Raytheon computer.

Illustrations available:

none



M 62

M 62

[Mathematical Tables]

Ordre nouveau, et plus facile que les autres, des tables des sinus, tangentes & secantes, selon le semidiamtre, divisé en 100000 parties.

Year: 1628 Place: Lyon

Publisher: Claude Rigaud & Claude Obert

Edition: 1st Language: French

Binding: contemporary vellum

Pagination: pp. [188] Collation: A–L⁸M⁶ Size: 119x70 mm

This is a small table of sines, tangents and secants. There is no indication of the author, but the publishers dated and signed the introduction, with the result being that this volume is sometimes cataloged under *Rigaud and Obert*.

Illustrations available:
Title page
End of the introduction

M 63

[Mathematical Tables]

Tabula numerorum quadratorum decies millium, una cum ipsorum lateribus ab unitate incipientibus & ordine naturali usque ad 10000 progredientibus ... A table of ten thousand square numbers, namely, of all the square numbers between 0 and 100 millions; and of their sides or roots, which are all whole numbers between 0 and ten thousand

Year: 1672 Place: London

Publisher: Thomas Ratcliffe and Nathaniel Thompson

Edition: unknown Language: English

Binding: contemporary vellum

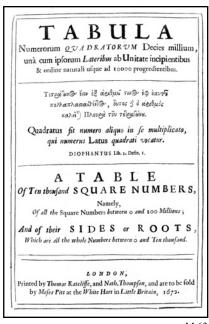
Pagination: pp. 32 Collation: A–D⁴ Size: 287x185 mm

There is no indication of why this table was published and whether it can also be found associated with other explanatory text material. It consists mainly of a table of the squares of integers from 1 to 10,000. Two additional small tables at the end give the last four and five digits of any perfect square.

Illustrations available: Title page

Sample page from main table

Sample page from endings of squares table



M 63

M 64

[Mathematical Tables - Logarithms]

Shubiao [chinese logarithmic tables]

Year: ca.1800 Place: Peking? Publisher: unknown Edition: 1st Language: Chinese

Binding: dark blue silk wrappers

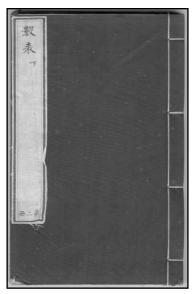
Pagination: n/p Size: 261x167 mm

This is the second volume of a two-volume set of logarithms. The binding is uncommon: the work is held together by silk threads (see illustration). The tables are printed in red and black.

This work was in the Phillipps-Philip Robinson sale of books held at Sotheby's, London, 22 November 1988, lot 232.

Illustrations available:

Back cover and binding (color) Sample table page (first in volume) (color) Sample table page (last in volume) (color)



Binding, M 64

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				五〇一五四				
					四七の			
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	四千〇〇				四十〇			
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Sample table page, M 64

M 65

[Mathematical Tables - Logarithms]

De tafelen sinuum, tangentium, en secantium, ofte der hoekmaten, raaklynen en snylynen. Als mede de tafel der vergrootende breete: Achter dezelve de logarithmi der hoekmaten, raaklynen en snylynen. Als ook de logarithmus numeri van 1 tot 10000. Met welke logarithmische tafelen alles ligt door toevoeging en aftrekking gerekrnd word: En agter dezelve volgt de tafel der kromstreeken van myl tot myl uytgerekent tot 80. graden breete. Zynde in desen druk veel fouten by andere ingestoopen, verbetert en gusuvvert

Year: ca. 1775 Place: Amsterdam

Publisher: Joannes van Keulen en Zoonen

Edition: unknown Language: Dutch Binding: later vellum Pagination: pp. [256] Collation: A–2I⁴ Size: 200x109 mm

Reference: Not in B de H BNHS

This set of tables comprises logarithms of numbers, both plane and logarithmic trigonometry tables and a collection of miscellaneous tables useful in navigation, etc. The major tables were, according to the preface, copied from the earlier publications of **Vlacq** and **Briggs**, and we are assured that they are the most accurate available. Cutting down the original tables to only eight places made it possible to produce these *small size tables*, which were much more convenient to use than the larger folio versions. Such sets of tables (usually all from the same original sources) were published regularly until people like **Bauschinger**, **Peters** and **Comrie** published even more convenient versions in the early twentieth century.

The publishing firm started by Johannes van Keulen was active in Amsterdam for over two centuries. It specialized in maps, charts, pilot guides, sea atlases and the like. The firm used the imprint of Johannes van Kuelen and Zoonen in the second half of the eighteenth century (1756 - 1799).

Illustrations available: Title page

M 66

Matz, Adolph

Electronics in accounting. In The Accounting Review, Vol.XXI, no. 4, October 1946.

Year: 1946 Place: Chicago

Publisher: American Accounting Association

Edition: 1st

Language: English

Binding: original paper wrappers Pagination: pp. 371–380

Size: 255x167 mm

Adolph Matz was a member of the accounting faculty at the University of Pennsylvania in Philadelphia. He thus had an opportunity for contact with members of the ENIAC team from the Moore School, and, in fact, he acknowledges the technical assistance of John H. Davis (once with the Moore School but at the time of this article with the Institute for Advanced Study).

After a very short history of calculating machines, Matz describes the development of the electronic ENIAC and its role in solving problems that would otherwise be impossible to solve. He has obviously learned of the stored program concept EDVAC machine because he mentions this as a possible advance. He also speculates that computers will one day be ...somewhat larger than the present electric bookkeeping and accounting machine known as the printer. No actual problems or machines are described.

Illustrations available: Title page

M 67

Mauchly, John William (1907–1980)

A scientific research bureau is needed

Year: 1955 Place: Philadelphia Publisher: Remington Rand Edition: mimeograph Language: English

Binding: original paper wrappers

Pagination: pp. 6 Size: 282x218 mm

John Mauchly was a seminal figure in the early stages of electronic computing in the United States. Although he was a physicist (he was educated at John Hopkins University where he received the Ph.D. degree in 1932), he had a strong interest in engineering matters. The electronic computer seemed to offer an opportunity to combine his interest in engineering and physics. Mauchly's interest in computation was aroused as he worked on meteorological problems following the line of early work of **Lewis F. Richardson**. The amount of computation involved was overwhelming, and Mauchly soon diverted his attention to the development of electrical circuits for doing calculation.

In 1941, Mauchly took a training course in electronics at the Moore School of Engineering at the University of Pennsylvania, where he met **J. Presper Eckert** and

introduced the notion of computing by digital electronic circuits to him. The story of the ENIAC project that resulted from their collaborative efforts has been recounted on numerous occasions, as has the formation of the Eckert-Mauchly Computer Company. Because Eckert was the stronger electronic engineer, Mauchly soon decided to concentrate on the programming of applications.

This paper, written while John Mauchly was the senior executive at Remington Rand for what we have come to call *software*, deals with a proposal to set up a UNIVAC service bureau.

This company confidential report had originally been written in July of 1952 and was reproduced with some added notes in May, 1955. In these pages Mauchly argues that UNIVAC needs to establish a research bureau in order both to head off challenges from IBM and to keep the company in the forefront of developments in information processing. He suggests two areas that might make suitable subjects: weather and cancer research. It is not surprising that he included weather research as it had been an interest of his for many years. The cancer research topic was perhaps a competitive response to IBM, which was then receiving large amounts of publicity about a punched card system it had recently installed at the Chemical and Biological Coordination Center in Washington, D.C. Mauchly ends this version of the report with ... research pays high dividends if guided by a director who is himself research-minded. This last part was an effort to put himself forward for the position because it was about this time that he had run afoul of the McCarthy hearings into un-American activities, and he could see the possibility, which soon came to pass, of his being eased out of the UNIVAC organization.

Illustrations available: First page

M 68

Maurel And Jayet

Arithmaurel invente par MM. Maurel et Jayet. Rapport a l'académie et opinions des journaux sur l'arithmaurel.

> Year: 1849 Place: Paris

Publisher: Maurel et Jayet

Edition: 1st Language: French

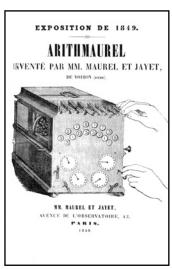
Binding: original paper wrappers

Pagination: pp. 44 Size: 214x136 mm This is an advertising brochure created by the firm of Maurel and Jayet for their multiplication machine. The first part consists of a reprint of a report recommending the machine to the French Academy. This is followed by reprints of glowing testimonials from the press and private citizens.

The Arithmaurel was designed especially to do multiplication. As the drawing on the front cover indicates, a multiplicand of up to eight digits is set on the uppermost bars extending from the front of the machine. Four lower keys (one for units and others for tens, hundreds and thousands) are then turned to enter the multiplier. Answers may be read from the lower set of result dials while an upper set keeps a running total of the series of multiplications.

The machine was not popular, and today only a few examples survive in the collections of the Conservatoire des Arts et Métiers and in private hands.

Illustrations available: Cover page



M 68

M 69

Maurer, Paul Jean Baptiste (1885-)

Machines automatiques méchaniques et électiques

Year: 1934 Place: Paris

Publisher: Armand Colin

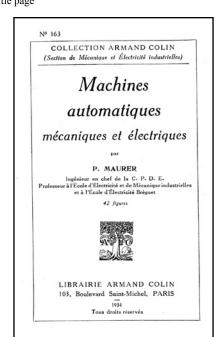
Edition: 1st Language: French Figures: 42 figures in text Binding: original paper boards Pagination: pp. [2], 185, [3], 12

Size: 160x99 mm

The author was a professor at the School of Electrical and Mechanical Engineering in Paris.

This small volume surveys automatic machines of many different types. It begins with simple devices such as lathe followers and ends with discussions of linotype machines and devices for automatically making light bulbs and a short section on calculating machines.

Illustrations available: Title page



M 69

M 70 Maxwell, James Clerk (1831–1879)

On governors. In Proceedings of the Royal Society of London, Vol. XVI.

Year: 1868 Place: London

Publisher: Taylor & Francis

Edition: 1st Language: English

Binding: purple buckram over boards; spine worn
Pagination: pp. xii, 534, lxxxii, pp. 270–283
Collation: π⁶B–E⁸F⁴G–L⁸M¹N⁴O¹P⁸Q¹R²S¹T–U⁸X⁴Y⁸Z²
2A⁸2B²2C–2D⁸2E⁴2F²2G⁸2H⁴ 2I¹2K–2X⁸2Y²b–e⁸f⁸g⁴h²

Size: 211x132 mm

Maxwell was born in Edinburgh and was educated at Edinburgh Academy before going on to Cambridge. His remarkable mathematical and scientific aptitude was evident even as a boy. At the age of fourteen, he read his first paper, *On the description of oval curves* ... to the Royal Society of Edinburgh. He is, of course, best known for his work on electricity, magnetism and the electromagnetic theory of light. He was, however, interested in many other branches of physics and mathematics. Maxwell taught in Cambridge and Aberdeen

before accepting the chair of Natural Philosophy at King's College, London in 1860. This paper was read to the Royal Society of London after Maxwell had left King's College and retired to his estate in Scotland. His retirement lasted only a few years, for in 1871 Maxwell agreed to return to accept an appointment at Cambridge as the first Cavendish Professor of Physics.

This is a seminal paper in the field of control systems and servomechanisms. The paper covers the theory of a class of governors that increase their resistance as the speed of a mechanical machine increases. Maxwell does not discuss the actual construction of these devices but sets out a series of differential equations that model the responses of the system. To quote Norbert Wiener (*Cybernetics*, page 9):

We have decided to call the entire field of control and communications theory, whether in the machine or in the animal, by the name Cybernetics, which we form from the Greek 'kubernetes' or steersman. In choosing this term, we wish to recognize that the first significant paper on feed-back mechanisms is an article on governors which was published by Clerk Maxwell in 1868, and that governor is derived from a Latin corruption of 'kubernetes.'

Illustrations available: Title page of journal

M 71

Mays, W.; C. E. M. Hansel and D. P. Henry

Note on the exhibition of logical machines at the joint session, July 1950. In Mind, Vol. LX, No. 238, April 1951.

Year: 1951 Place: Edinburgh

Publisher: Thomas Nelson & Sons

Edition: 1st Language: English

Binding: original paper wrappers Pagination: pp. 262–264

Size: 215x140 mm

The University of Manchester arranged to have an exhibition of logic machines for the joint meeting of the Aristotelian Society and the Mind Association held in Bristol, July 7–10, 1950. They showed **Jevons**' logical piano and several machines based on relay technology. The report gives brief descriptions of these and a few other machines not actually on exhibit. The entire issue of this journal is in the collection.

Illustrations available: Cover page Title page M 72

Mazzei, Francesco

Tavole geometriche e breve dichiarazione circa l'uso di quelle per misurare la capacità e scemo di qualsivoglia botte, tino, tinaccio, o altro corpo di figura cilindrica, per regolare vino, olio, grano, ed altro. E dietro di dette tavole il 3., 5., e8 per cento, con i prezzi di qualsivoglia valuta, e il modo per regolare per tutto questo regno, e fuori.

Year: 1724 Place: Leece

Publisher: Sta(m)pa Mazzéi

Edition: unknown Language: Italian

Binding: contemporary boards

Pagination: pp. 14, 11–14, 12, 66, 70–75, 73–113, [16], 10–14,

7-16

Collation: a8(-A8)b2a6x8B-E4E4-Q4

Size: 146x100 mm Reference: Not in Rcdi *BMI*

This set of tables was used in calculating the capacity of cylindrical containers (tubs, barrels, kegs, etc.) for the wine, oil, wheat and other trades. It also includes a short table of interest rates.

Illustrations available: Title page Table page

TAVOLE GEOMETRICHE

E BREVE DICHIARAZIONE

Circa IUso di quelle per misurare la Capacità, e Scemo di qualsivoglia Botte,
Tino, Tinaccio, o altro corpo di
Figura Cilindrica, per regolare
Vino, Olio, Grano, ed altro.
E dietro di dette Tavole il 3.,5., e 8.
per cento, con i prezzi di qualsivoglia
valuta, e il modo per regolare per
tutto questo Regno, e suori.
CONSECRATE

ALL' ILLV.STRISS. SIG. IL SIG.

PANAREO SINDACO ATTVALE

De' Nobili Dell' Illustriss., e Fedeliss. Città di LECCE.

In 'ecce dalla Stapa del Mazzéi 1724. E dal med. stamp. a sue propr. spese. Con licenza de' Superiori.

M 72

M 73

McCarthy, James H.

The American digest of business machines

Year: 1924 Place: Chicago Publisher: McCarthy Edition: 1st Language: English

Figures: free endpapers printed and figures in text

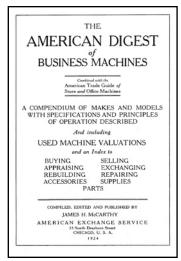
Binding: original limp boards

Pagination: pp. 640 Size: 164x107 mm

James McCarthy (like **Jacob**, **Martin**, and others—see entries for **Louis Jacob** and **Ernst Martin**) recognized that the growing business community needed information on office products. This reference work lists calculating machines, typewriters, label makers, tape-sealing machines and tabulating machines from both Hollerith and Powers. He describes the models, gives prices for new and used machines and lists the features of each machine. Apparently McCarthy found a good source of revenue in the sale of advertising space to accompany his descriptions.

Illustrations available:

Title page Tabulating machines section



M 73

M 74 McGee, W. J.

Primitive numbers. In Nineteenth annual report of the Bureau of American Ethnology to the Secretary of the Smithsonian Institution.

Year: 1901

Place: Washington, DC Publisher: USGPO Edition: 1st Language: English

Binding: original gilt-embossed cloth boards

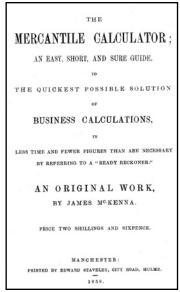
Pagination: pp. [2], 853-955

Size: 285x190 mm

See entry for **Powell, John Wesley**, *Nineteenth annual report of the Bureau of American Ethnology*

Illustrations available:

None



M 75

M 75 **McKenna, James**

The mercantile calculator; an easy, short, and sure guide, to the quickest possible solution of business calculations, in less time and fewer figures than are necessary by referring to a "ready reckoner." An original work

Year: 1858 Place: Manchester Publisher: Edward Staveley

Edition: 1st Language: English

Binding: original blind-stamped cloth boards

Pagination: pp. 84 Collation: $\pi^1B-J^4K^5$ Size: 180x112 mm

Little is known of McKenna other than his authorship of this book. This is the first and only edition of a book on business arithmetic. Rather than use ready reckoners, McKenna explains how to deal with mixed mode arithmetic (usually involving sterling currency) in a series of non-trivial examples.

Illustrations available: Title page

McPherson, James L. (1908–) and Samuel Nathan Alexander (1910–1967)

See AFIPS; Performance of the Census UNIVAC System. In Proceedings of the Joint AIEE-IRE Computer Conference. Review of electronic digital computers. Papers and discussions presented at the Joint AIEE-IRE Computer Conference, Philadelphia, PA, December 10–12, 1951.

M 76

McPherson, John C.

Mathematical operations with punch cards. In Journal of the American Statistical Association Vol. 37, No. 218, June 1942.

Year: 1942

Place: Washington, D.C.

Publisher: American Statistical Association

Edition: 1st Language: English

Binding: original paper wrappers

Pagination: pp. 275–281 Size: 235x157 mm

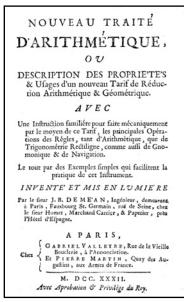
Reference: reprinted in *Annals of the History of Computing* Vol. 7, No. 4, pp. 368–371; Ran *ODC*, p. 427

McPherson was a senior engineering executive with IBM. As a consequence, he was familiar with the application of punched cards to mathematical problems by people such as **Wallace Eckert** at Columbia University. In this paper he describes how the IBM multiplier, reproducer, sorter, collator and accounting machines could be used to solve problems ranging from creating simple tables to evaluation of determinants.

Illustrations available: Title page

Meagher, Ralph and J. P. Nash (1915–)

See **AFIPS**; The ORDVAC. In *Proceedings of the Joint AIEE-IRE Computer Conference. Review of electronic digital computers. Papers and discussions presented at the Joint AIEE-IRE Computer Conference, Philadelphia, PA, December 10–12, 1951.*



M 77

M 77

Méan, Jean Baptiste de

Nouveau traité d'arithmétique, ou description des propriétés & usages d'un nouveau tarif de réduction arithmétique & géométrique. Avec une instruction familière pour faire mécaniquement par le moyen de ce tarif, les principales opérations des régles, tant d'arithmetique, que de trigonométrie rectiligne, comme aussi de gnomonique & de navigation. Le tout par des exemples simples qui faciletent la practique de cet instrument.

Year: 1732 Place: Paris

Publisher: Chez Gabriel Valleyre et Pierre Martin

Edition: 1st Language: French

Figures: engraved folding plates

Binding: contemporary speckled leather; spine gilt; red leather

label; gilt arms on covers; gilt edges Pagination: pp. vi, [ii], vii–xvi, [iv], 207, [1]

Collation: a⁴a⁷A–N⁸ Size: 195x121 mm.

Little is known of the author other than that he was an engineer working in Paris.

Méan had devised a chart to be used in solving problems in arithmetic, geometry, astronomy and navigation. The chart was produced in three different sizes: a large wall version, the size found in the folding plate in this book and a small *pocket* version. This book appears to be a marketing aid for his charts in that it first describes the chart, then illustrates its use on different problems. All of the problems deal with arithmetic, and Méan may have planned a second volume to cover problems in trigonometry, navigation and dialing, but no record of its publication has been found.

Illustrations available: Title page Chart (2 scans - color)

M 78

Mechanics Magazine

Economy of machinery and manufactures. Review of book by Charles Babbage. In The Mechanics Magazine, Museum, Register, Journal, and Gazette, Vol. XVII, No. 464, June 30, 1832.

Year: 1832 Place: London Publisher: M. Salmon Edition: 1st Language: English

Binding: contemporary half-bound leather over marbled boards

Pagination: pp. 213–220 Size: 212x129 mm

This lengthy anonymous review of Charles Babbage's Economy of machinery and manufactures is not entirely complimentary. While long sections are quoted in praise of individual portions, the overall tone of the review is negative. It may be summarized in the reviewer's statement:

Mr. B. has produced upon the whole, a very clever, entertaining, and instructive book; one which deserves to be generally read, and will doubtless be so. Its chief defects are a parade of arrangement and generalization, whereas, in reality, there is very little of either.

This volume contains several other short items concerning Babbage. Some of them are less than complimentary, particularly regarding the construction of his Difference Engine.

Illustrations available:

First page

Medler, Nicolaus (1502–1551)

Facilima et exactissima ratio extrahendi radicum quadratam & cubicam

> Year: 1550 Place: Wittenberg Publisher: Viet Creutzer

Edition: 1st Language: Latin

Binding: modern calf-backed marbled boards

Pagination: ff. [8](A8 blank)

Collation: A8 Size: 148x92 mm

Reference: Smi Rara, pp. 223, 496

Medler is reputed to have studied theology under Luther and Melanchthon. He then taught in several different cities before finally settling in Braunschweig. He is known to have written at least two books on elementary arithmetic and one on ecclesiastical calendar calculations. This work, his last, discusses how to calculate cube roots.

Illustrations available:

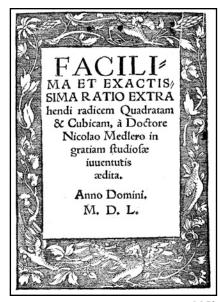
Title page Colophon

FINIS.

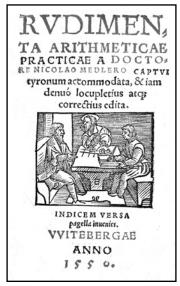
4 pag. 2 in infima ferie superioris exema pli retrabatur 9 ex millenario loco in centenarium.

IMPRESSVM VVITEM BERGAE, PER VI tum Creutzer

Colophon, M 79



M 79



M 80

M 80

Medler, Nicolaus (1502–1551)

Rudimenta arithmeticae, practicae ... capitui tyronum accommodata & iam denuo locupletius atq[ue] correctius edita.

> Year: 1550 Place: Wittenberg Publisher: Viet Creutzer?

Edition: 2nd Language: Latin

Figures: Title in red and black with woodblock of counting

house scene Binding: recent boards Pagination: ff. [56] Collation: A-G8

Size: 145x100 mm

The first edition of this work was published in 1543. **Smith** (*Rara*) makes passing mention of a 1550 edition but Poggendorff only lists a second edition in 1556. It covers elementary arithmetic up to the extraction of roots. Despite the fact that it illustrates a table abacus on the title page woodcut, all the examples are done using pen-and-ink methods.

Illustrations available: Title page (color) Multiplication

M 81

Meichsner, Georg

Arithmetica. Das ist Rechenkunst in Drey unterschiedene Bücher abgetheilt und genant Practica, Poetica und Historica.

b/w: **Remmelin, Johann**; *Sphyngis victoris. Triumphi* splendide ab eius victore triumphante adornati, remora

b/w: [**Rudolff, Christoff**]; *Compendium cossicum ex arithmeticâ algebraicâ* ...

Year: 1625

Place: Rothenberg o/Tauber Publisher: Hieronymus Körnlein

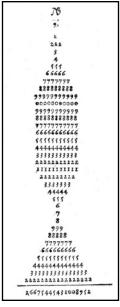
Edition: 1st Language: German

Figures: engraved frontispiece; repeated as half title page in red and black; engraved portrait frontispiece in red and black; title page in red and black

Binding: contemporary manuscript paper over boards Pagination: pp. [4], [8], 94, [3], 39, 39–70, [4], 99, [3]

Collation: $(2)^2(0)^4A-M^4A-H^4J^5A-N^4$

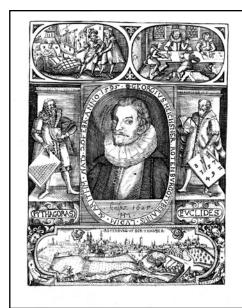
Size: 196x144 mm



Addition problem, M 81

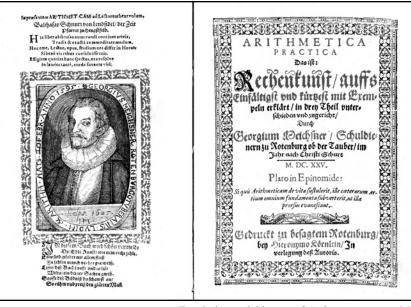
Meichsner is little known except for this trilogy of mathematical books.

The first book (*Practica*) is concerned with elementary rules of arithmetic up to and including the extraction of roots. At the very end is a five-page section on the use of the table abacus ("Rechenpfenningen auff den Linien"). The *Arithmetica Poetica* book goes over the same basic arithmetic material but with different examples (a poem is used in describing each of the arithmetical rules), and he provides examples of extreme problems (see illustrations). The final work, *Arithmetica Historica*, takes its examples from classical works and the Bible.





Frontispiece and title page, M 81



Frontispiece and title page of Arithmetica practica, M 81



Title page of Arithmetica historica, M 81

Illustrations available:

Title page and frontispiece (color)
Title page of Arithmetica Practica
Title page from Árithmetica Poetica
Addition problem from Poetica
Title page from Arithmetica Historica

M 82

Menabrea, Luigi Federico (1809–1896)

Sur la machine analytique de Charles Babbage. In Bibliotheque Universelle de Geneve, Nouvelle Serie, Vol. 41, #82, October, 1842. Year: 1842 Place: Geneva

Publisher: Bibliotheque Universelle

Edition: facsimile Language: French Binding: n/a Pagination: pp. 352–376

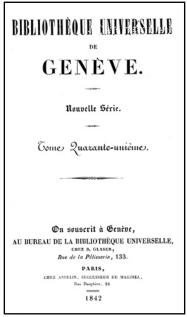
Size: n/a

Luigi Menabrea was born in the Savoy region of presentday France. He was of Italian heritage in a region that had formerly been a part of the Italian kingdom of Savoy. He studied engineering at the University of Turin and, after a short career in the Italian army, was professor of mechanics there. In addition to his academic activities, Menabrea had an active political career and rose to the position premier and foreign minister of Italy in 1867.

This is one of the most famous papers in the history of computing. Menabrea was in attendance when Charles Babbage, then on a trip to Italy, presented a paper on the Analytical Engine at a seminar in Turin in the autumn of 1841. Menabrea wrote a summary of what Babbage described and published this article in French. He first notes that this Analytical Engine is not the same as the Difference Engine described in Babbage's del l'Economie des machines (see entry for Babbage, On the economy of machinery and manufacture). He then proceeds to describe the Difference Engine in order to set the stage for a subsequent lengthy description of the Analytical Engine. This is the only original description of the Analytical Engine ever published. A greatly extended translation of this paper was later published by Ada, Lady Lovelace, and provides even more detail on Babbage's proposed machine (see the entry for

Menabrea, Luigi Federico - [Augusta Ada Lovelace, translator]; Sketch of the Analytical Engine).

Illustrations available: Title page



M 82

M 83

Menabrea, Luigi Federico (1809–1896) [Augusta Ada Lovelace, translator]

Sketch of the Analytical Engine invented by Charles Babbage, Esq... with notes by the translator. Extract from the Scientific Memoirs Vol. III.

> Year: 1843 Place: London

Publisher: Richard and John E. Taylor

Edition: 1st Language: English

Figures: 1 engraved folding plate; 1 plate in text

Binding: contemporary cloth boards Pagination: pp. [1], 666-731, [1]

Collation: $\pi^3 2Y - 3A^8 3B^7$ (misnumbered 3B2 as 3B3)

Size: 221x134 mm

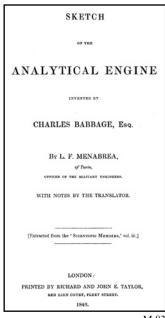
See the entry for **Menabrea**, Sur la machine analytique.

This is the best contemporary description of the Analytical Engine. It began as a report by L. F. Menabrea (an Italian military engineer and later to be the first prime minister of Italy) of a series of lectures given by Charles **Babbage** while he was in Turin. This was published, in French, in the Bibliothèque Universelle de Genève in 1842. Ada Lovelace translated it into English and, at Babbage's suggestion, added a large number of notes. As a result, the translation is about three times as long as the original. The only indication of the identity of the translator and annotator are the initials A. L. L. on the last page.

On page 373 of the original Menabrea paper, le cas n =[infinity] (case n = infinity) was misprinted as le cos n = [infinity]. Lady Lovelace translated this as when the $cos\ of\ n = [infinity]$, which, of course, is not possible and has been cited by some authorities as casting doubt on the depth of her mathematical ability. This article contains seven explanatory notes that were added by Ada at Babbage's suggestion. Two of these are essentially programs for the Analytical Engine. This inclusion has given rise to the claim that Ada was the first computer programmer. While she was undoubtedly an able mathematician who very likely understood the workings of the engine better than anyone else except Babbage, modern scholarship usually attributes the programs to Babbage himself. There is evidence to suggest that these programs were the ones he used to illustrate the engine in his original lecture in Turin.

Although she is almost universally described as Ada Lovelace, daughter of the poet Byron (and consequently sometimes known as Ada Byron), that was not her proper name. Both Byron and Lovelace are titles, not names. The poet Byron was actually George Gordon, the Lord Byron, thus Ada, his daughter, was Ada Gordon. When she married George King, she took the name Ada King. When King was later given the title Earl of Lovelace, Ada became Ada King, Countess of Lovelace. Thus, her name was never either Byron or Lovelace.

Illustrations available: Title page



M 83

[Menabrea, Luigi Federico (1809–1906)]

See Babbage, Charles; Addition to the memoir of M. Menabrea on the analytical engine. In The London, Edinburgh and Dublin Philosophical Magazine, and Journal of Science. Third Series, Vol. 23, No. 151, September 1843, pp. 235–239.

M 84

Mendelson, Myron J.

An introduction to programming a high speed digital computer

Year: 1953

Place: Hawthorne, CA

Publisher: Computer Research Corp.

Edition: 1st

Language: English

Binding: original paper wrappers

Pagination: pp. 20 Size: 280x215 mm

Jerry Mendelson was a founder of the Computer Research Corporation (CRC) in Hawthorne, California.

This is an expository paper on the problems, principles and techniques of programming a hypothetical computer. It was presented at the February 1953 meeting of the Professional Group for Computers of the IRE (later to become the IEEE Computer Society). It is indicative of the lack of knowledge at this early stage of electronic computers that this very elementary information would be presented at such a meeting. Rather than taking a three-address machine that he must have known well, the CRC 102A, he devised a single-address machine that was complex enough to be realistic. He describes the instruction set, gives examples of subroutines and their relocation in memory and briefly mentions subroutine libraries and interpretive routines.

Illustrations available: Title page

An Introduction
To Programming a
High Speed Digital Computer

Computer Research Corporation of California
3348 W. El Segundo Blvd., Hawthorne, California

M 84



M 85

M 85

Mendizabal Tamborrel, Joaquin de (1852–1926)

Tables des logarithms a huit décimales des nombres de 1 a 125000 et des fonctions goniométriques sinus, tangemte, cosinus et cotangente de centimilligone en centimilligone et microgone en microgone pour les 25000 premiers microgones

Year: 1891

Place: Paris

Publisher: Librairie A. Hermann

Edition: 1st Language: French

Binding: original paper wrappers, loose; uncut

Pagination: pp. x, [60] Collation: $\pi^51-7^48^2$ Size: 382x280 mm

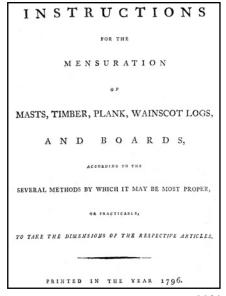
Reference: Hend BTM, #187.0

These tables have a subscription list that includes a number of well-known individuals from the period (e.g., **d'Ocagne**, Wada, etc.). They are also unusual in that they have a second subscription list of individuals and organizations from Mexico. The title page lists Mendizabal Tamborrel as belonging to a Mexican scientific society, and he is thought to be of Mexican extraction.

The trigonometric tables are unusual (and perhaps unique) in that the circle was divided into one million parts, and these were used as the basic unit of tabulation.

Illustrations available: Title page

Mercator, Nicolaus



M 86

M 86

[Mensuration - Great Britain, Customs]

Instructions for the mensuration of masts, timber, plank, wainscot logs, and boards, according to the several methods by which it may be most proper, or practicable, to take the dimensions of the respective articles.

Year: 1796 Place: [London] Publisher: n/p. Edition: unknown Language: English

Binding: contemporary leather Pagination: pp. iv, 65, [1] Collation: A²B–I⁴K¹ Size: 153X119 mm Reference: Gold, #16698

INSTRUCTIONS FOR THE Landing Clas Deputy King & Was EMPLOYED IN THE MENSURATION OF MASTS, TIMBER, PLANK, WAINSCOT LOGS, AND BOARDS, · Bristos IN THE PORT OF Juesday April I. YOU are accurately and truly to take the Dimensions of all forts of Masts and other articles of Wood, that are to be admeasured out of any Ship to which you may be appointed, and to compute the contents thereof according to the following Rules and Examples: II. In taking the Dimensions of every Mast or other piece of Timber, you are to afcertain the diameter,

Receipt page, M 86

This book of rules and regulations for the measuring of timber was used in assessing customs duties. It has a special first page (just after the table of contents) in which the user acknowledged its receipt and indicated which port it was associated with. On April 30, 1799, J. Shearer acknowledged receipt of this copy for use in the port of Bristol. Although it is never illustrated, the instructions mention a *rule* that contained a slide. There is no indication of the markings on this rule other than occasional references to *line C* or *line D*.

Illustrations available: Title page Receipt page



M 87

M 87

Mercator, Nicolaus [Niklaus Kauffman] (1620–1687)

Logarithmo-technia: sive methodus construendi logarithmos nova, accurata, & facilis; scripto antehàc communicata, anno sc. 1667. Nonis augusti: cui nunc accedit. Vera quadratura hyperbolæ, & inventio summæ logarithmorum ... Huic etiam jungitur Michaelis Angeli Riccii exercitatio geometrica de maximis & minimis; hic ob argumenti præstantium & exemplarium raritatem recusa.

b/w: **Gregory, James**; Exercitationes geometricæ

Year: 1668 Place: London

Publisher: William Godbid & Moses Pitt

Edition: 1st Language: Latin Figures: 2 folding plates

Binding: modern half-bound leather marbled boards

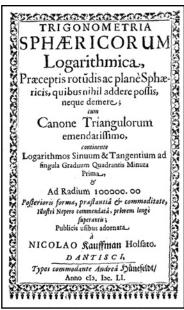
Pagination: pp. [4], 34, [2], 14, [8], 27, [1] Collation: π^2 B–F⁴G⁵A–D⁴E²

Size: 198x148 mm

Nicolaus Mercator, not to be confused with Gerardus Mercator, was born in Cismar, Holstein (then part of Denmark). He attended the University of Rostock and after graduation held a teaching post there. He then received an appointment at the University of Copenhagen. That institution was closed in 1660 due to the plague, so Mercator moved to London. There, in 1666, he was one of the founding members of the Royal Society. He remained in London until 1682, when he moved to France to design the waterworks at Versailles.

Mercator is known for his writings on cosmography, trigonometry and logarithms and for editing an edition of Euclid's *Elements*. In this work he shows how logarithms may be calculated and introduces the series $(\log(1+x) = x - x^2/2 + x^3/3 - x^4/4 \dots)$ that is now known as the Mercator series. It is said that this work inspired Mercator's contemporary **Isaac Newton** to write his famous paper *De analysi* giving an account of infinite series.

Illustrations available: Title page



M 88

M 88 **Mercator, Nicolaus [Niklaus Kauffman]** (1620–1687)

Trigonometria sphæricorum logarithmica, præceptis rotüdis ac planè sphæricis, quibus nihil addere possis, neque demere; cum canone triangulorum emendatissimo, continente logarithmos sinuum & tangentium ad singula graduum quadrantis minuta prima, & ad radium 100000.00. Posterioris formæ, præstantiâ & commoditate, illustri Nepero commendatâ, priorem longè superantis

Year: 1651 Place: Danzig

Publisher: Andreas Hünefeldt

Edition: 1st Language: Latin

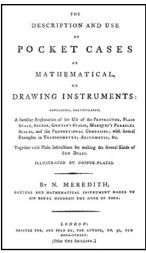
 $\begin{aligned} & Binding: contemporary \ vellum \ boards \\ & Pagination: pp. \ [4], \ 12, \ [4], \ [94] \\ & Collation: A^{10}B-F^8G^7 \ (A9-A10 \ blank) \end{aligned}$

Size: 162x94 mm

This is Mercator's logarithm table. After a short introduction explaining the use of logarithms in the solution of triangles, it gives values for the sine, cosine, tangent and cotangent function at one-minute intervals. Two blank pages are bound between the introduction and the tables that were evidently supposed to contain the figures referred to in the text. Whether these pages were originally blank or a later introduction is not clear. The two blank pages are of different paper than the others in this volume, and they have a watermark that is not seen elsewhere.

Illustrations available:

Title page Colophon Table page



M 89

M 89 Meredith, Nicholas (1770–1801)

The description and use of pocket cases of mathematical, or drawing instruments ...

Year: [1790] Place: London Publisher: Author Edition: 1st Language: English

Figures: 3 engraved plates (1 folding)

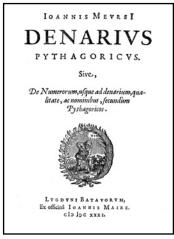
Binding: three-quarter bound leather over marbled boards

Pagination: pp. iv, 47, [1] Collation: π^2B-D^8 Size: 210x128 mm Meredith was a well-known British instrument maker. In his preface he indicates that

... there is no book extent, from which a learner of common capacity may, without much labour, collect the use of the several Instruments which these Cases usually contain.

He then proceeds to describe the basic uses of each instrument in his largest case (compass, protractor, plane scale and sector), with the majority of the work describing the different sector lines and their use from simple tasks such as dividing a line to more complex chores such as creating sundials. The title page indicates that there are copper-plate illustrations, but none of these show the sector.

Illustrations available: Title page



M 90

M 90

Mersius, Joannis

Denarius Pythagoricus. Sive, de numerorum, usque ad denarium, qualitate, ac nominibus, secundum Pythagoricos.

Year: 1631 Place: Leyden

Publisher: Joannis Maire

Edition: 1st Language: Latin

Binding: contemporary vellum Pagination: pp. 112, [12] Collation: A–O⁴P⁶ Size: 185x140 mm

This work describes the so-called Pythagorean numbers (1 through 10). One chapter is devoted to each integer and its properties, both mathematical and mystical. The author provides quotations (in Latin, Greek and occasional other languages) from more than sixty ancient authors.

Illustrations available: Title page

M 9

Mesange, Mathias (1693–1758)

Calculs tout faits, depuis 1 denier jusqu'à 59 sols 11 den. & depuis 3 liv. jusqu'à 50000 liv. Avec le tarif par jours et par mois pour les pensions depuis 1 livre jusqu'à 100000 livres; et des tarifs pour les intéréts, l'escompte, le change, & la vente des marchandises à tant pour 100 de gain. On a joint d'autres tarifs pour le sol ou marc la livre, avec le pair des aunages & des poids de l'Europe, la réduction des Louis d'or & des ecus en livres, &c.

Year: 1757 Place: Paris

Publisher: Chez Vincent

Edition: new Language: French

Binding: contemporary leather; spine gilt; edges red

Pagination: pp. xxiv, 552 Collation: a-b⁶A-2Z⁶ Size: 167x94 mm Reference: Kress #5632

This ready reckoner was designed to compete with those being published by **François Bertrand de Barreme**. The preface mentions **Barreme** in several places and attempts to point out deficiencies in his tables. While there were undoubtedly places where **Barreme** tables could be improved, it was **Barreme** who gave his name to this class of publication and none of the standard works on ready reckoners seem to mention Mesange.

Illustrations available: Title page



M 91

M 92 **Metius, Adriaan Adriaansz** (1570–1635)

Manuale arithmeticæ et geometriæ practicæ: in het welcke beneffens de stockrekeninge ofte Rhabdologia I. Nepperi, kortelijck endeduydelijck 't gene den landmeters ende ingeniuers, nopende het land-meten ende sterckten-bouwen nootwendich is, geleert wordt ende exemplaerlicjk aengewesen

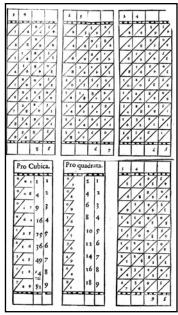
Year: 1646
Place: Franeker
Publisher: Ulderick Balck
Edition: 2nd
Language: Dutch
Figures: 4 folding plates
Binding: contemporary vellum
Pagination: pp. [8], 48, 47–254, 254–285, 285–377 [i.e. 381],

[11]
Collation: **4A–2A*2B*
Size: 136x85 mm
Reference: Hymn AC, #2222; B de H BNHS, #3204, p. 190

Adriaan Metius and his father, also named Adriaan, were known for their calculation of approximations to π . The father, whose family name was actually Van Schelvan, evidently had some connection with the town of Metz (he was born in Alkmaar), from which he became known as *Adriaan Metius*, a name adopted by his sons. Adriaan Metius, the son, studied both law and medicine and became the professor of mathematics and medicine in the University of Franeker in 1598. He wrote on mathematics but is best known for his contribution to astronomy.

This is a book on arithmetic and surveying. After a quick review of the elementary operations, including mixed-

Napier's bones, M 92

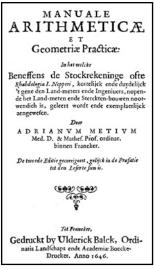


Napier's bones, M 92

radix examples, he describes **Napier**'s bones in detail. He includes the use of the square root and cube root bones—an early and unusually complete account. The binder mistakenly included two copies of the two foldout plates illustrating the bones.

The majority of the work is taken up by the surveying section that begins with a description of simple sighting devices and includes discussions of finding areas and volumes, using complex practical examples. He uses the same illustrations as he did in his earlier work, *Praxis nova geometrica*.

Illustrations available: Title page Napier's bones



M 92



M 93

M93

Metius, Adriaan Adriaansz (1570–1635)

Praxis nova geometrica per usum circini et regulæ proportionalis

Year: 1623 Place: Franeker

Publisher: E. D. Balck for Jan Janssz

Edition: 1std Language: Latin

Figures: 1 engraved folding plate of rule

Binding: 18th-century leather; gilt spine; red leather label; red

edges; edges of boards gilt tooled

Pagination: pp. [8], 47, [1] Collation: *⁴A-F⁴ Size: 190x140 mm

This work covers some of the same material as Metius' *Manuale arithmetic*... (q.v.). Unlike the arithmetic, this work does not include **Napier**'s bones but does describe a ruler and a beam compass that was to be used with it to do calculations. The last section describes a sector and gives tables of the positions of the major markings on various scales.

Illustrations available:

Title page
Beam compass
Ruler with scales

M 94

Meyer, Jacob (1614–1678)

Arithmetica decimalis, Das ist Rechen-Kunst der Zehenden Zahl

b/w: **Meyer, Jacob**; *Compendium geometriæ practicæ,* sive, planimetria. Kurtzer bericht vom feldmessen und veldt-theilen.

Year: 1669 Place: Basel

Publisher: Johann Rudolph Genath for Johann König

Edition: 1st(?) Language: German

Figures: 1 engraved folding plates Binding: contemporary vellum

Pagination: pp. 142 Collation: A–I⁸ Size: 75x90 mm

Meyer was a paymaster in Basel.

This pocket-sized book provides elementary instruction in decimal arithmetic. Meyer uses a vertical bar rather than a period to denote the decimal point. It contains chapters on notation, the four basic operations, proportion and the extraction of square and cube roots. He provides simple examples of each operation and occasionally a practical example taken from elementary surveying or similar areas.

Illustrations available:

Title page



M 94

M 95

Meyer, Jacob (1614–1678)

Arithmetica practica. Herren Antonii Newdörffer's seel. des berühmten Rechenmeisters in Nürnberg. Nutzliche und Sinn-reiche Aufgaben in der Rechen-Kunst nach der newen kurtzen und behanden Manier Practiciert und deutlich erklärt.

Year: 1695 Place: Basel

Publisher: Johann Rudolph Genath

Edition: 2nd Language: German

Binding: 19th-century paper boards

Pagination: pp. [16], 224 Collation:)(⁸A–O⁸ Size: 77x95 mm

Like Meyer's other works in this collection, this is a pocket-sized book. It only covers the four basic arithmetic operations, but it does discuss mixed-radix and fractions.



ARITHMETICA PRACTICA.

Herren Antonij Newdorffers feel. des berühmten Rechemmeifters in Natunberg Mugliche und Ginn-reiche Aufgaben / in des

Rechen Bunft/

Nach ber newen/ furgen und behanden Manier Dracticiert

bind deutlich erkläres durch, Jacob Menern.

(0)38

Gedruckt ju Bafel/ ben Johann Rusolph Genath/

The examples are, as the title indicates, practical and taken mostly from the business world.

The frontispiece shows businessmen bargaining over goods.

Illustrations available: Title page and frontispiece



M 96

M 96

Meyer, Jacob (1614–1678)

Compendium Geometriæ Practicæ, sive, planimetria. Kurtzer Bericht vom Feldmessen und Veldt-theilen

b/w: **Meyer, Jacob**; *Arithmetica decimalis, das ist Rechen-Kunst der Zehenden Zahl*, 1669.

Year: 1663 Place: Basel

Publisher: Johann Rudolph Genath for Johann König

Edition: 1st (?) Language: German

Figures: 1 engraved folding plates Binding: contemporary vellum Pagination: pp. [16], 250, [4] Collation:)(8 A–Q8 (-Q8)

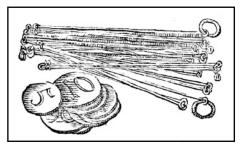
Size: 75x90 mm

This is a pocket-sized work explaining the rudiments of geometry as applied to surveying. The work is quite Frontispiece and title page, M 95

practical, with very irregular fields being used as example problems. The work begins with elementary instruction as to the size of a man's pace, surveyor's chain, etc.

Illustrations available:

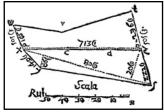
Title page
Pace size
Survey chain
Survey problems



Survey chain, M 96



Pace size, M 96



Survey problem, M 96

Meyer, Johannes

See Martin, Ernst [pseud. for Johannes Meyer]; Die rechenmaschinen und ihre entwicklungsgeschichte. 1 Band (Rechenmaschinen mit automatischer zehnerübertragung).

See Martin, Ernst [pseud. for Johannes Meyer]; Die schreibmaschine und ihre entwicklungsgeschichte. With separately bound appendix.

M 97

Meyer Zur Cappellen, Walther

Leitfaden der Nomographie

Year: 1953

Place: Berlin, Göttingen & Heidelberg

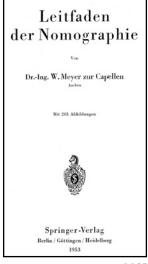
Publisher: Springer-Verlag

Edition: 1st
Language: German
Figures: 203 figures in text
Binding: original buckram boards
Pagination: pp. [4], 178, [2]
Collation: π²1–11812²
Size: 232x154 mm

Reference: Ran ODC, p. 428

Nomography is the science of creating graphical representations of functions that can be used to quickly find approximate solutions. The greatest exponent of the art was **Maurice d'Ocagne**, who developed it some fifty years prior to this publication (see the essay on nomography for further information). While nomography remained a useful technique in the 1950s, it was beginning to be replaced by the easily portable mechanical calculators such as the Curta and would soon be entirely eclipsed by the electronic pocket calculator.

Illustrations available: Title page



M 97

M 98

Meyer Zur Cappellen, Walther

Mathematische Instrumente

Year: 1949 Place: Leipzig

Publisher: Akademische Verlaggesellschaft

Edition: 3rd Language: German Figures: 250 figures in text

Binding: original quarter-bound boards

Pagination: pp. x, 339 Size: 212x144 mm

This is part of a series of works about mathematics and its applications in physics and technology. This third edition was ready for the press by 1945, but because of the defeat of Germany and its subsequent occupation by Allied forces, the work was not actually published until 1949. In the preface to this edition, the author explains that the following difficulties resulted in a delay and that a number of alterations became necessary. These were impossible to make (paper was rationed, and strict publishing rules were in effect in Germany), so other than one change on page 249/250, the rest were dealt with by simply blacking out the offending passages. Examples of this blacking out can be seen throughout the work. A short appendix was also added to illustrate more modern devices; however, none of the appendix material is included in the index. The preface pleads that ... the reader is asked to excuse the imperfections of such an addendum.

This book is an attempt at creating a reference work for machines (both digital and analog) intended for scientific calculation. It starts with simple adding devices and progresses through complex analog calculators and slide



M 98

rules (particularly those of the Faber Castell *System Darmstadt*), then deals with both electric and hand-cranked calculating machines. The illustrations for these machines are obviously taken from the manufacturer's service books—yet another example of the difficulties of publishing immediately after World War II. The final two thirds of the work concerns analog devices of various kinds ranging from planimeters to differential analyzers.

Illustrations available: Title page

M 99

Michaelis, Johann Friedrich

Die Arithmetik oder das bürgerlich-kaufmännische Rechnen in seinem ganzen Umfange.

Year: 1809
Place: Berlin
Publisher: G. C. Nauck
Edition: 3rd
Language: German
Binding: original boards
Pagination: pp. x, 469, [1]
Collation: π⁵[1]–[29]⁸[30]³
Size: 165x101 mm

This arithmetic book begins with the basic operations and then consists of a large number of problems of interest to merchants such as mixed-radix arithmetic (usually money, weights and measures).

Illustrations available: Title page

M 100

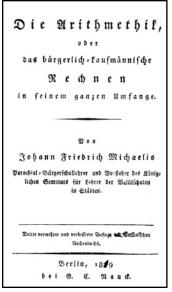
Michel, Henri (1885–)

Introduction a l'etude d'une collection d'instruments anciens de mathematiques

Year: 1939
Place: Antwerp
Publisher: De Sikkel
Edition: 1st
Language: French
Figures: engraved portrait frontispiece
Binding: original paper wrappers
Pagination: pp. 105, [6]
Size: 288x221 mm

This copy is #155 of an edition of 300.

Michel was born in Liège, Belgium. He was a civil and mining engineer in his early career but later turned his interest to the history of mathematical, astronomical and other instruments. He collected a substantial number of these devices, and they now are in the collection of the



M 99

Museum of the History of Science in Oxford. He was influential in historical societies and held the presidencies of the Centre Belge d'Histoire des Sciences, Société Belge d'Astronomie and the Fédération Belge des Sociétés Scientifiques. From the frontispiece photograph of him in eastern costume holding a spherical astrolabe, one gathers he was also somewhat idiosyncratic.

This is a description of a collection of instruments that are useful in astronomy, navigation, surveying and calculation. The photography is excellent, although it predates the easy use of color. Color photographs of many of these same devices can be found in later works by Michel and their translations into German and English (e.g., *Scientific Instruments in art and history*, translated by R. E. W. Maddison and F. Madison, Viking Press, 1967).

Illustrations available: Title page Frontispiece Front cover



Frontispiece (Henri Michel), M 100

HENRI MICHEL

INTRODUCTION A L'ETUDE
D'UNE COLLECTION
D'INSTRUMENTS ANCIENS
DE MATHEMATIQUES



DE SIKKEL, ANVERS, MCMXXXIX

M 100

M 101

Michelson, Albert Abraham (1852–1931) and Samuel Wesley Stratton (1861–1931)

A new harmonic analyzer. In The London, Edinburgh and Dublin Philosophical Magazine, and Journal of Science Fifth Series, Vol. 45 No. 272, January 1898.

Year: 1898 Place: London

Publisher: Taylor and Francis

Edition: 1st Language: English Figures: 8 lithograph plates Binding: original paper wrappers

Pagination: pp. 85–91 Size: 225x146m

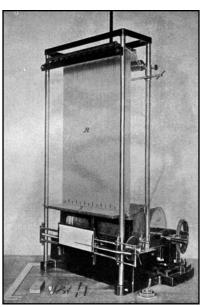
Michelson was born in Poland but emigrated to the United States with his parents while still a child. He applied for an appointment to the U.S. Naval Academy in competition with two other applicants. One of the others was appointed; however, in 1889, Michelson visited Washington D.C. and managed to see President Grant, who arranged his entry to the Annapolis school. After graduation he went to sea for a short time but was soon given an appointment as an instructor in science. He later held positions at the Case School of Applied Science in Cleveland, the University of Chicago and the California Institute of Technology. He had a passion for precision measurements in physics and won the Nobel Prize for his work in 1907. He is best known for his experiments in measuring the speed of light.

In this paper Michelson and Stratton describe a harmonic analyzer capable of reducing any curve to the sum of eighty cosines or sines. Eighty was far in excess of any contemporary instrument and much larger than was necessary for most problems however, it illustrates Michelson's passion for accuracy. The authors illustrated the accuracy achieved by showing some of the input curves and the output the machine produced. It was not only capable of analyzing a curve into the approximating sum of cosines, but could also sum the cosines to generate a curve.

Illustrations available:

Title page Harmonic analyzer

Example of use of increasing number of cosines in approximating a square wave



Harmonic analyzer, M 101

M 102

Middlemiss, Ross Raymond

Instructions for Post-trig and Mannheim-trig slide rules

Year: 1945 Place: n/p

Publisher: Frederick Post Company

Edition: 1st

Language: English

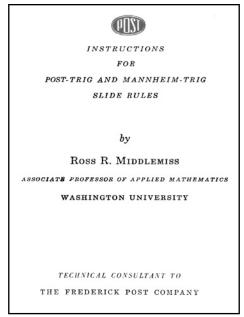
Binding: original printed stiff paper wrappers

Pagination: pp. [6], 81, [7] Size: 177x122 mm

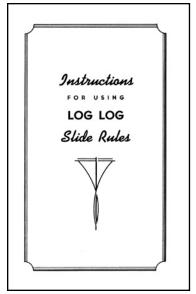
Middlemiss was an associate professor of applied mathematics at Washington University in St. Louis.

This is a standard instruction booklet for the Post slide rules.

Illustrations available: Title page (color)



M 102



M 103

M 103 **Middlemiss, Ross Raymond**

Instructions for using log log slide rules

Year: 1946 Place: n/p

Publisher: W. J. Boos Edition: 1st Language: English

Binding: original paper wrappers

Pagination: pp. 16 Size: 210x137 mm

Printed on rose-colored paper, this is a standard instructional booklet for the log-log slide rule. Unlike

other Middlemiss works, this booklet does not appear to be directed to a particular manufacturer's instrument.

Illustrations available: Title page

PROCEEDINGS

of

STMS-OGIUM

on

INCOMPILAL APPLICATIONS OF

AUTOMATIC COMPUTED EQUIPMENT

Sponsored by

MIDWEST RESEARCH INSTITUTE

In Cooperation with the

Kansas City Sections of

American Institute of Chemical Engineering
American Institute of Chemical Engineers

American Society of Civil Engineers

American Society of Civil Engineers

Institute of Endio Engineers

Institute of Radio Engin

M 104

M 104 **Midwest Research Institute**

Proceedings of symposium on industrial applications of automatic computing equipment. January 8–9, 1953, Kansas City, Missouri

Year: 1953

Place: Kansas City, MO

Publisher: Midwest Research Institute

Edition: 1st Language: English

Figures: engraved frontispiece

Binding: boards

Pagination: pp. [18], 19-191, [1]

Size: 275x207 mm

The Midwest Research Institute was a privately endowed scientific research institution established in 1943 to conduct pure and applied scientific studies and to act as a technological clearinghouse for Middle America.

This seminar attracted over 200 attendees who listened to presentations by thirteen people from major computing centers and manufacturers. The most notable presenter was **Grace Murray Hopper** (see entry for **Hopper, Grace**; *The education of a computer*). While the attendees received an overview of the current state of computer developments, there seems to have been nothing new presented. See also entries for **Arthur A. Katz**, 1953, and **Rex Rice**, 1953.

Illustrations available:

Title page

Card-Programmed Calculator (CPC) (Chrysler) Card-Programmed Calculator (CPC) (Northrup)



CPC, Northrup, M 104

ELEMENTS OF ARITHMETIC

FOR PRIMARY AND INTERMEDIATE CLASSES IN PUBLIC AND PRIVATE SCHOOLS

BY

WILLIAM J. MILNE, Ph.D., LL.D.
PRESIDENT OF NEW YORK STATE NORMAL COLLEGE, ALBANY, N.Y.

NEW YORK : CINCINNATI : CHICAGO

AMERICAN BOOK COMPANY

M 105

M 105

Milne, William James (1843–1914)

Elements of arithmetic for primary classes in public and private schools

Year: 1893

Place: New York

Publisher: American Book Company

Edition: unknown Language: English

Binding: original cloth boards; gilt-embossed spine

Pagination: pp. 240 Collation: 1–15⁸ Size: 185x115 Milne was principal of the State Normal School in Geneseo, New York, in 1878, but by the time this book was published he had moved on to become the president of the New York State Normal College in Albany. He wrote several different arithmetic texts, all of them typical of their day containing many exercises for the student. This volume was obviously intended for younger students because after covering basic arithmetic, it ends with sections on elementary fractions, decimal fractions, areas and volumes.

Illustrations available
Title page

M 106

Milne, William James (1843–1914)

The practical arithmetic on the inductive plan, including oral and written exercises.

Year: 1878

Place: Cincinnati, OH

Publisher: Van Antwerp, Bragg

Edition: unknown Language: English

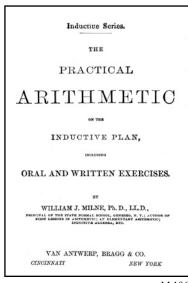
Binding: original paper wrappers

Pagination: pp. vi, 7–391, [1] Collation: 1⁴2⁸–31⁴32⁸33⁴

Size: 185x115

This volume is typical of the late-nineteenth-century American arithmetics. The first half is devoted to the four basic arithmetic operations and the second half to operations (e.g., percentage, interest, etc.) of value to merchants. Each section contains many different exercises and test problems.

Illustrations available: Title page



M 106

M 107

Milne-Thomson, Louis Melville (1891–1974) and Leslie John Comrie (1893–1950)

Standard four-figure mathematical tables. Including many new tables, trigonometrical functions for radians, inverse trigonometrical and hyperbolic functions and an extended table of natural logarithms. Edition B with negative characteristics in the logarithms

Year: 1931 Place: London

Publisher: Macmillan and Co.

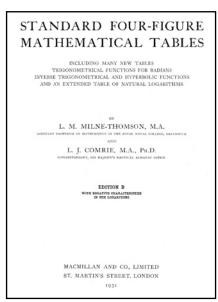
Edition: 1st

Language: English

Binding: original cloth boards Pagination: pp. xvi, 246 Collation: Ba–Bq*Br³ Size: 267x170 mm

Some of these four-figure tables were simply copied from other sources, but others were recalculated from their differences using a Burroughs adding machine. **Comrie** was a highly regarded specialist in the use of mechanical calculators for the production of tables. Milne-Thomson also became well known for his work in both mathematical tables and number theory.

Illustrations available: Title page



M 107

M 108

[MIT] - Massachusetts Institute of Technology

Digital computers and their application

Year: 1952

Place: Cambridge, MA

Publisher: Digital Computer Laboratory, MIT

Edition: 1st

Language: English

Binding: original printed paper wrappers

Pagination: ff. 5, 3, 5, [1], 5, [7], 4, 4, 5, 3, 4, 3, 8, 8, 12, 3, 7,

3, [1], 3, [4], 6, [3], 3, 3, [2], 5, 4

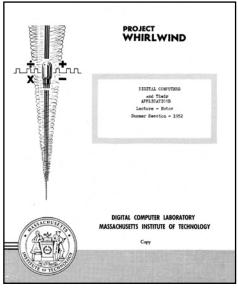
Size: 281x215 mm

This is a mimeographed set of course notes for a summer session course at MIT. This was one of the very early courses on digital computers, and it attracted a large number of lecturers from both America and England. The syllabus makes fascinating reading, and one wonders what it must have been like to learn about subroutines from the inventor of the subroutine jump (**David Wheeler**) and the organization of a computer from the operations manager of the Cambridge EDSAC (Eric Mutch), etc.

A course announcement is bound in.

Illustrations available:

Cover page



M 108

M 109

[MIT] - Massachusetts Institute of Technology

A short guide to coding using the Whirlwind I code of October 1949

b/w: **Saxenian, Hrand**; *Programming for Whirlwind I,* 1951. Report R-196; ditto reproduction.

Year: 1951

Place: Cambridge, MA Publisher: MIT Edition: 1st Language: English

Figures: 8 plates (3 printed, 5 diazo) Binding: original paper wrappers Pagination: ff. [1], 61, vii

Size: 282x218 mm

This is a three-page printed card giving the instruction set for the Whirlwind I as it was in October of 1949. This is typical of the cards found on the desk of every programmer (then known as *coders*) until higher-level languages replaced the majority of machine and assembly language programming.

Illustrations available: Title page

A SHORT GUIDE TO CODING

Using the Whirlwind I Code of October 1949

Electronic Computer Division
Servomechanisms Laboratory

Massachusetts Institute of Technology
Cambridge, Massachusetts

M 109

MIT - Massachusetts Institute of Technology See Saxenian, Hrand; Programming for Whirlwind I.

M 110

Mitchell, Donald V.

Streamlined methods of computing with slide rule and mathematical tables

Year: 1947 Place: Seattle

Publisher: Craftsman Press

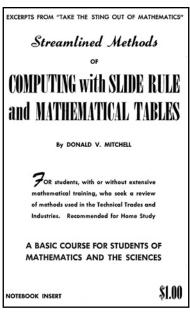
Edition: new Language: English

Binding: original paper wrappers

Pagination: pp. 80, [2] Size: 218x138 mm

This is an instruction booklet that was prepared for use in the Boeing aircraft factory in its *War Production Training Program*. It shows its wartime origins (first edition in 1942) in that it is mostly typewritten with various tables and diagrams pasted in.

Illustrations available: Title page Sample page



M 110

M 111

Mithob, Burchard (1504–1565)

Stereometria, ars oeconomica, docens certas dimensiones corporum solidorum, ratione mathematica, ac virga stereometrica, dimensore, æquatore'q; de super affabré confectis. Unácum tabulis radicis quadratæ, iuxta præcepta Euclidis, & Eratosthenis.

Year: 1544 Place: Frankfurt

Publisher: Christianum Egenolphum

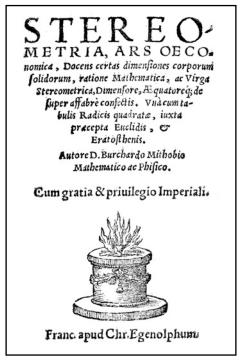
Edition: 1st Language: Latin Binding: later vellum Pagination: ff. 32 Collation: A–D⁸ Size: 149x94 mm

Reference: Pogg Vol. II, pp. 159-160

Mithob (Mithobius) was a professor of mathematics at the University of Marburg. He is known to have written several works on mathematics, astronomy and medicine.

This is a work explaining how to find areas and volumes of complex shapes by breaking them up into simple sections. This pre-calculus technique was often used, for example, in attempting to find the volume of an irregularly shaped wine barrel. Not only did **Kepler** use these techniques to estimate the capacity of his own wine cellar, but they inspired him to develop the method further and eventually to publish his *Nova stereometria doliorum vinariorum* in 1615 and *Ausszug auss der uralten messekunst* in 1616. Mithob includes tables and drawings to help his readers with their estimations.

Illustrations available: Title page Barrel estimation



M 111

M 112

Mithob, Burchard

Structura et usus annuli sphærici

Year: 1558 Place: Paris

Publisher: G. Cavellat

Edition: 1st (Collected, 2nd issue)

Language: Latin

Binding: modern vellum

Pagination: ff. 8, 159, [1] (i.e. ff. 127v–152)

Collation: A8a-v8 Size: 162x106 mm

Reference: H&L, #2589, p. 588

This work is bound, along with six others, in the volume Beausard, Pierre; Anuli astronomici, 1558.

It deals with the sighting device, known as Astronomer's Rings (See Dryander, Johannes; Annulorum trium, 1558), shown on the title page. Other works in this volume deal with this same topic (see Dryander, Johannes; 1558, and Fine, Orance; 1558). At the end of this work, the ring dial by M. T. is described again (see M. T., 1558)—this is not a printer's error but rather a redescription by Mithob of the same device, using some of the same illustrations.

Illustrations available: Title page



M 112

Moivre, Abraham de (1667–1754)

Annuities upon lives: or, the valuation of annuities upon any number of lives; as also, of reversions. To which is added, an appendix concerning the expectations of life, and probabilities of survivorship.

b/w: **Richards, John**; A gentlemen's steward and tenants of manors instructed. Containing rational, easy, and familiar rules and tables ... To which is added, an appendix: containing the description and use of an instrument for discovering the number of feet contained in any timber-trees before they are cut down, by inspection only.

b/w: Richards, John; Annuities on lives, and for limited terms of years, considered:

b/w: H. B. and I. T. S.; Observations on an essay to ascertain the value of leases and annuities for years and lives, by Weyman Lee, Esq; wherein Dr. Halley's method is particularly consider'd, and rules laid down for estimating the chances of the duration of lives, and the value of annuities for years and lives. In a letter to a friend.

> Year: 1725 Place: London

Publisher: Printed for W. P. and sold by Francis Fayram ...

Benjamin Motte and W. Pearson

Edition: 1st Language: English

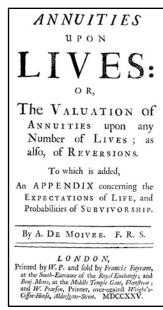
Binding: contemporary paneled leather Pagination: pp. [2], 4, viii, 108, [4]

Collation: π³A-P⁴ Size: 193x123 mm Reference: Kress 3595

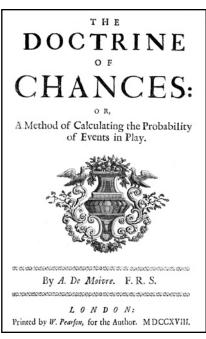
Abraham de Moivre pioneered the then newly emerging field of probability and statistics. He was born in France into the Protestant family of a provincial surgeon of modest circumstances. He received his formal education in France at the local Catholic school and continued at the Protestant Academy at Sedan and at the University of Saumur. He received a thorough grounding in mathematics in Paris, where he studied under the tutelage of Jacques Ozanam in 1684. As Protestants, the de Moivre family was forced to leave France soon after 1685 when the French government revoked the Edict of Nantes (which gave Protestants protection in Catholic France). The family moved to England, where young Abraham became a mathematics tutor. He remained a mathematics teacher for the rest of his life, often complaining about the low income and the hours wasted walking between his pupils' houses. In due course, he met and impressed Edmond Halley, then assistant secretary of the Royal Society. Halley read de Moivre's first paper to the Royal Society and sponsored his election as a Fellow in 1697.

Halley had produced a table of lives in 1693 as part of his work for the Royal Society and de Moivre used this table to investigate the mathematics underlying the values of annuities. Halley's table was soon out of date, but the general principles that guided its compilation were sound. De Moivre's assumptions of a uniform death rate after the age of twelve and uniform interest rates became the basis for annuity and insurance rates for the next 150 years. This landmark volume is de Moivre's major work in the area.

Illustrations available: Title page



M 113



M 114

M 114

Moivre, Abraham de (1667–1754)

The doctrine of chances: or, a method of calculating the probability of events in play.

Year: 1718 Place: London

Publisher: Printed by W. Pearson for the author

Edition: 1st Language: English

Figures: engraved vignette on title; engraved head and tail

Binding: contemporary paneled leather; red leather label; spine

gilt Pagination: pp. [4], xiv, 175, [1] Collation: $\pi^2A^2a-b^2c^1B-2y^2$

Size: 252x196 mm

De Moivre's book on chances is considered the foundation for the field of probability and statistics. The work had its origins about 1811 when Francis Robartes asked de Moivre about a recent French publication on the game of Hazard (Montmort, Pierre Rédmond de: Essay d'analyse sur les jeux de hazard). De Moivre solved a number of the problems posed by Robartes, and his accomplishment led to the Royal Society's asking about the way these questions in probability had been solved. A Latin version of this book was published as De mensura sortis in the Philosophical Transactions in 1811. This first English edition was followed by expanded versions in 1738 and 1756. This first edition is essentially a gambler's handbook. It was in the second edition (1738) that de Moivre proposed an approximation to the binomial probability distribution of events (the socalled *normal distribution*). This distribution remained the basis of the science of statistics for the next two hundred years.

Illustrations available: Title page

M 115

[Moll, Gerritt] (1785–1838)

On the alleged decline of science in England. By a foreigner.

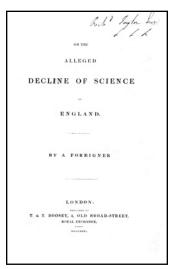
Year: 1831
Place: London
Publisher: T. & T. Boosey
Edition: 1st
Language: English
Binding: original paper wrappers; uncut
Pagination: pp. [4], 33, [1], 8
Collation: π^2 B–C⁸ D¹ χ^4 Size: 223x141 mm

Moll was a professor at the University of Utrecht who is known to have visited **Charles Babbage.** They went down a mine together to investigate firedamp.

This was Moll's answer to the charge by **Charles Babbage** that science was in decline in England (see entry for **Babbage**, *Reflections on the decline of science in England*). Moll did not challenge any of **Babbage**'s facts; however, he did try to point out that science was no more in decline in England than it was elsewhere. Moll had sent his remarks in the form of a long letter to **Michael Faraday**, who had it published.

This copy is inscribed by Faraday to R. Taylor, the publisher.

Illustrations available: Title page



M 115



Frontispiece, M 116

M 116

Möller, Andreas

Tyrocinium methodicæ arithmetices bipertitò novum. Das ist: Ein gantz newes in zwey Theil abgefastes, zu leicht, kurtz und grundmässiger Erlernung der Edlen Zahl. Oder Rechen-Kunst, Sehr zutraeg und nützliches Schul-Hauss und Handels Büchlein.

Year: 1664 Place: Bremen

Publisher: Ehrhard Berger

Edition: 1st Language: German

Figures: engraved frontispiece

Binding: 19th-century quarter-bound vellum, marbled paper

boards; gold-stamped red leather label Pagination: pp. [20],100, [4], [8], 128. 139–154, [4]

Collation: A-G⁸H⁴I²2A⁴2B-2K⁸L²

Size: 163x96 mm

Möller was a writing and reckoning teacher at the Church of St. Peter in Bremen.

This is an arithmetic (*rechenbuch*) that was designed to be used in schools (possibly for Moeller's own pupils). It seems not to have been a great success because no other copy of this book is known to us. It not only deals with the usual paper-and-ink methods but also describes the table abacus and provides exercises for addition, subtraction, multiplication and division *auff Linien* (although the table abacus is never properly illustrated as all problems are worked using Hindu-Arabic numerals).

The work is in two parts with a separate title page for part two.

Illustrations available:

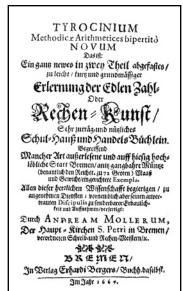
Title page

Title page of second part

Frontispiece

Roman numerals

Multiplication



Title page 1, M 116



Title page 2, M 116

M 117

Monroe Calculating Machine Co., Inc.

Instruction book. Monroe adding-calculator

Year: 1928

Place: Orange, NJ

Publisher: Monroe Calculating Machine Co., Inc.

Edition: 1st

Language: English

Figures: title in red and black Binding: original paper wrappers Pagination: pp. 35, [1]

Pagination: pp. 35, [1] Size: 230x151 mm

This is an instruction booklet for the Monroe adding machine.

Illustrations available:

Title page Monroe in use

INSTRUCTION BOOK

MONROE

Adding-Calculator

MONROE CALCULATING MACHINE CO., INC. ORANGE, NEW JERSEY

Sales and Service Available in all Principal Cities of U. S. A. and Throughout the World

M 117



Monroe adding machine, M 117

M 118

Monroe Calculating Machine Co., Inc.

Instruction book. Monroe adding-calculator LA - X or series O models. Form 809-S

Year: 1947

Place: Orange, NJ

Publisher: Monroe Calculating Machine Co., Inc.

Edition: 1st

Language: English

Binding: original paper wrappers

Pagination: pp. 39, [1] Size: 229x153 mm

This is an instruction booklet for the Monroe calculator.

Illustrations available:

Title page Monroe in use

INSTRUCTION BOOK

Monroe Adding-Calculator

LA-X or Series 0 Models

Form 809-8

Copyright 1947

MONROE

CALCULATING MACHINE COMPANY, INC.

General Office and Factory
ORANGE. NEW JERSEY

Monroe Sales and Service Available in all Principal Cities of the United States and throughout the World

M 118



Monroe calculator, M 118

M 119

Montanari, Geminiano (1633–1687)

Manualetto de bombisti, overo ristretto delle Auvertenze più necessarie per ben maneggiare i mortari: Aggiontoui le tavole delle inclinazione di essi mortari per fare i tiri giusti: Calculate secondo la dottrina del Galileo, e d'altri matematici, e ridotte ad uso facile, da feruirsene senza far conti.

Year: 1690 Place: Venice Publisher: Poletti Edition: 3rd Language: Italian Figures: 4 folding plates Binding: paper-covered boards Pagination: pp. 122 Collation: A–G*H5

Size: 165x104 mm Reference: Not in Rcdi *BMI*



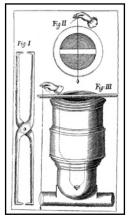
M 119

Montanari was born in Modena, Italy. He obtained doctorates in jurisprudence and medicine before practicing law in Florence. He later held positions in mathematics and astronomy at the universities of Bologna and Padua.

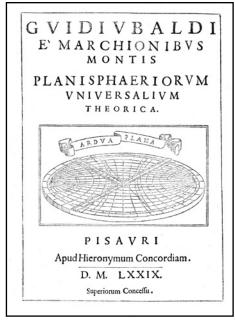
This is a manual designed to help artillerymen aim their guns. It is based on the ballistic analyses of **Galileo** and others such as Torricelli and Mersenne. It contains a set of ballistic tables based on the parabolas of **Galileo** rather than on the segments of circles of earlier ballistics theoreticians such as **Tartaglia**. Folding plates illustrate a mortar, a gunner's quadrant (not a sector, as some have assumed) and the parabolic flights of canonballs.

Illustrations available:

Title page Mortar Gunner's quadrant Parabolic ballistics



Motar, M 119



M 120

M 120 **Monte, Guidobaldo** (1545–1607)

Planisphaeriorum universalium theorica

Year: 1579 Place: Pesaro

Publisher: Hieronymus Concordia

Edition: 1st Language: Latin

Binding: contemporary leather; rebacked

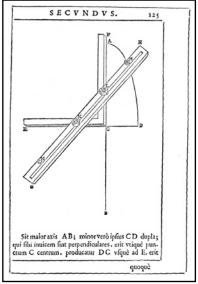
Pagination: pp. [8], 128 Collation: *4A–Q4 Size: 258x184 mm

Guidobaldo Monte was born into a noble family and inherited the title of *Marchese*. He studied mathematics at the University of Padua and at the University of Urbino. His work *Liber mechanicorum* represented a return to classical Greek rigor in contrast with the work of **Tartaglia**, **Jordanus** and **Cardano**. Monte befriended **Galileo** and was his patron for over twenty years. He helped **Galileo** obtain his first appointment at the University of Padua, and the two men remained friends and co-experimenters for the next twenty years. It is said that Monte was the single biggest influence on the mathematics and physics of **Galileo**.

Monte was interested in devices of many types and invented a number of mathematical instruments and compasses. He may have been responsible for Galileo's interest in the sector. In this volume, the first modern work on stereographic projection, Monte first discusses the planisphere of **Gemma Frisius** and indicates how it was to be used. After demonstrating how the celestial

sphere can be projected onto a plane, Monte goes on to describe the universal astrolabe of **Juan de Rojas**. The whole work is illustrated with woodcuts showing not only the various lines on the planispheres but also the tools required to produce them.

Illustrations available
Title page
Drawing and instruments (3)



Drawing instrument, M 120

M 121

Montmort, Pierre Rédmond de (1678–1719)

Essay d'analyse sur les jeux de hazard.

Year: 1708 Place: Paris

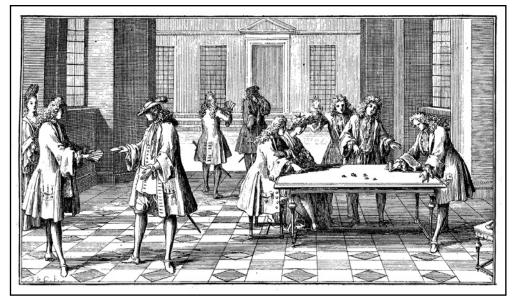
Publisher: Jacque Quillau

Edition: 1st Language: French

Binding: contemporary leather Pagination: pp. xxiv, 189, [3] Collation: *-3*4A-2A⁴ Size: 250X173 mm

Montmort (his family name was actually Rédmond, but he took the title *de Montmort* from the name of his estates) was born to a wealthy family and thus had the opportunity to study law and philosophy without the need to find employment. He was made a canon of Notre-Dame when, as **Smith** (*History of Mathematics*) indicates, *piety was not the chief qualification*. He eventually left the church, married and devoted the rest of his life to travel and mathematics.

This work made Montmort's reputation. It is one of the earliest treatments of statistics and probability, though perhaps not the first. The only other contender for that honor would be a 1657 publication by Huygens.



Gaming illustration, M 121

ESSAY

D'ANALYSE

SUR

LES JEUX DE HAZARD.

A PARIS,

Chez Jacque Quillau, Imprimeur-Juré-Libraire de l'Université, rue Galande.

M D C C V II I.

AVEC APPROBATION ET PRIVILEGE DU ROY.

M 121

This work by Montmort stimulated **Abraham de Moivre** to produce his seminal works that laid the foundation for the study of probability (*De mensuris sortis*, 1711, and *The doctrine of chance*, 1718). The work also aroused the interest of Nicolaus Bernoulli, and this stimulus in turn led him to publish the *Ars Conjectandi* of his uncle, Jacob Bernoulli, in 1713,.

A second edition published in 1713 contains a long historical preface by Montmort, a series of letters to and from Johann and Nicolaus Bernoulli and an attack on **de Moivre** accusing him of failing to acknowledge Montmort's priority in the field.

This volume also contains analyses for a number of different games for both cards and dice, including backgammon. The printer has added some lovely vignettes of gaming scenes from French salons as decorations for chapter heads.

Illustrations available: Title page Gaming vignettes (3)

M 122

Montucla, Jean Étienne (1725–1799)

Histoire des mathematiques, dans laquelle on rend compte de leurs progrès depuis leur origine jusqu'à nos jours; ou l'on expose le tableau & le développement des principales découvertes, les contestations qu'elles ont fait naitre, & les principaux traits de la vie des mathematiciens les plus célebres.

Year: 1758 Place: Paris Publisher: Jombert Edition: 1st Language: French

Figures: v.1: 5 folding plates; v.2: Title page, 10 folding plates Binding: contemporary leather; red leather label; gilt spine

Pagination: v.1: pp. xxxvi, 638; v.2: pp. 680 Collation: v.1: a–d⁴e²A–4K⁴4L³; v.2: A–4Q⁴

Size: 251x193 mm

Reference: Pogg Vol. II, p. 198; DSB IX, p. 500; Cre CL, p.106

Montucla was a member of a middle-class Lyonaisse family. He acquired a good education in both mathematics and ancient languages from the Jesuit college in Lyons. After graduation he moved to Paris where he met a number of prominent mathematicians such as **Lalande**,

Diderot and **d'Alembert**. He held several royal posts, which, not surprisingly, he lost during the Revolution.

Shortly after moving to Paris, Montucla began an organized study of the history of mathematics. Prior to his time, work on the subject had been mostly conjectural and contained much folklore. He was the first to write a systematic work detailing all that was then known on the subject. This resulting two-volume set seems a little unbalanced in that the first volume deals with everything up to the seventeenth century, and the second volume considers only the seventeenth century. In his later years Montucla considered producing a third volume dealing with the eighteenth century, but he died before it could be completed (**Lalande** and others finished it). The history includes not only traditional mathematics but also the practical mathematics of mechanics, optics, astronomy and music.

Illustrations available: Title page, Vol. 1

Title page, Vol. 2 Illustrations of optics

HISTOIRE

DES

MATHEMATIQUES,

DANS laquelle on rend compte de leurs progrès depuis leur origine jusqu'à nos jours; où l'on expose le tableau & le développement des principales découvertes, les contestations qu'elles ont fait naître, & les principaux traits de la vie des Mathématiciens les plus célebres.

Par M. MONTELLA, de L'Académic Royale des Sciences & Belles-Leures de Profit.

Multi pertransibunt & augebitur scientia. Bácon.

TOME PREMIER.

A PARIS,

Chez Ch. Ann. Jombert, Imprimeur-Libraire du Roi pour l'Artillerie & le Génie, rue Dauphine, à l'Image Notre-Dame.

M. DCC LVIII.

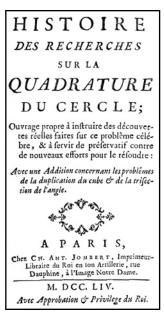
Avec Approbation & Privilege du Roi.

M 122

M 123 **Montucla, Jean Étienne** (1725–1799)

Histoire des recherches sur la quadrature du cercle; ouvrage propre à instruire des découvertes réelles faites sur ce problème célébre, & à servir de préservatif contre de nouveaux efforts pour le résoudre: Avec une addition concernant les problèmes de la duplication du cube & de la trisection de l'angle.

Year: 1754 Place: Paris Publisher: Jombert



M 123

Edition: 1st Language: French

Figures: 8 engraved folding plates

Binding: contemporary leather; gilt spine; red leather label

Pagination: pp. xliii, [v], 304, [4] Collation: $\hat{a}^{12}\hat{e}^{12}A-M^{12}N^{10}$ Size: 168x96 mm

Reference: DSB IX, p. 500-501; Cre CL, p. 118

Before Montucla published Histoire des mathématiques, he wrote this history of three ancient mathematical problems: quadrature of the circle, duplication of the cube and trisection of an angle. This work was very well received, and as a consequence he was elected to a corresponding membership in the prestigious Berlin Academy. The acclaim for his work encouraged Montucla, and he announced his intention to undertake his monumental two-volume history of mathematics that same year. This work gathers together all the strands of the numerous prior attempts to solve the circle-squaring problem. In addition to the writings of antiquity, the author covers relevant material from Bernoulli, Descartes, Euler, Huygens, Newton and Viète. Montucla hoped that bringing all the information together in one place would discourage others from wasting time on this fruitless endeavor.

Illustrations available: Title page

M 124

Moore, Jonas (1617–1679)

Moores arithmetick. In two bookes: Discovering the secrets of that art, in numbers and species, after a

more exact, plaine, and easie way, then ever. The first teaching (by precept and example) the ordinary operations in numbers, whole or broken; the rules of practise, interest, and performed in a more facile manner by decimalls, then hitherto hath been published; the excellency, and new practise and use of the logarithmes, Nepayres bones, together with many new propositions, touching the quantities, qualities, resultments, and rules of medicines, fitted for mathematitians, merchants, and tradesmen. The second, the great rule of algebra in species, resolving all arithmeticall questions by suppositions with trigonometry, planimetry, steriometry, and all other parts of the art military. With a canon of the powers of numbers. Fitted to the meanest capacity, and published for the generall good of this nation.

Year: 1650 Place: London

Publisher: Thomas Harper for Nathaniel Brookes

Edition: 1st Language: English

Figures: portrait frontispiece; 3 folding charts

Binding: contemporary leather; hinges at foot slightly cracked;

red leather label

Pagination: pp. [xvi], 128, 272, [iv], 148

Collation: A-S⁸2A²2B-2K⁸2L²

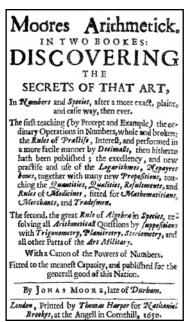
Size: 146x93 mm

Reference: Win ESTC, M 2563

Moore was originally from Durham and took up the study of mathematics at the age of thirteen. Little is known of his formal education other than that he seems to have been greatly influenced by **William Oughtred**. His talent was soon recognized, for at the age of twenty he became mathematics tutor to the Duke of York, brother



Frontispiece, M 124



M 12/

of the future King Charles II. At the age of thirty-five, he became a teacher of mathematics operating out of the London residence of the famous instrument maker Elias Allen. Although Moore later became famous as a teacher and was appointed as governor of the mathematical school at Christ's Hospital, his first attempt at teaching was a failure, and it was only through the generosity and patronage of Colonel Giles Strangways that he was able to continue.

Moore lived and worked at a time of political instability, indeed, turmoil, in England. Moore lost his royal tutorial post and in 1649 took up work as a surveyor. This is the first edition of the arithmetic textbook he published while engaged in survey work for the draining of the fens between Lincoln and Cambridge. It was this survey that helped him gain future patrons and that ultimately led to his appointment to the Christ's Hospital post. From there, he was able to repay his mentor's good deeds by becoming patron to people such as John Flamsteed, to whom he provided instruments and eventually securing the position of astronomer at Greenwich for him.

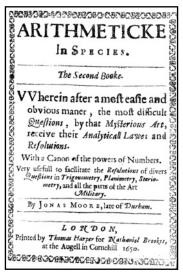
This book was written during Moore's first attempt at teaching and was likely intended by him both to act as a text and to advertise his services. Moore obviously had second thoughts about the title page and had it reset with additional descriptive phrases, but the binder has included both the original (often called a *cancel*, *cancelland*, or *cancellandum*) and the reset version (called the *cancellans*). The first book contains the material on arithmetic, including fractions, logarithms (although no

table is given) and interest calculations. The section on multiplication has a short description of **Napier**'s bones. Book two is concerned with algebra and equations and has a table of powers (2–5, which he denotes as Aq, Ac, Aqq, Aqc and Acc) of integers from 1 to 300 and the square and cube for integers from 301 to 1,000. The frontispiece is a portrait of Moore in a study with books and what appear to be two quasi-mathematical devices.

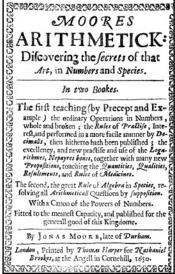
This volume is preserved in a morocco slip case, with the Horblit book label on the front paste down.

Illustrations available:

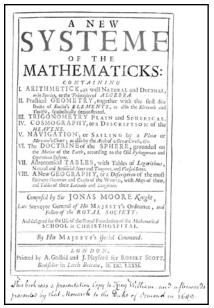
Title page (cancellans)
Cancellandum
Frontispiece portrait
Half title page for second book
Napier's bones, square and cube roots



Book 2, M 124



Cancellandum, M 124



M 125

M 125 **Moore, Jonas** (1617–1679)

A new systeme of the mathematicks containing I. arithmetick, as well natural and decimal, as in species, or the principles of algebra. II. practical geometry, together with the first six books of Euclid's elements, as also the eleventh and twelfth, symbolically demonstrated. III. trigonometry plain and spherical. IV. cosmography, or a description of the heavens. V. navigation, or sailing by a plain or Mercator's chart; as also by the arch of a great circle & c. [by Peter Perkins]. VI. the doctrine of the sphere, grounded on the motion of the earth, according to the old Pythagorean and Copernican systeme. [by John Flamsteed]. VII. astronomical tables, with tables of logarithms, natural and artificial sines and tangents, and versed sines. [by John Flamsteed]. VIII. a new geography, or a description of the most eminent countries and coasts of the world, with maps of them, and tables of their latitude and longitude. [by Edmund Halley].

Year: 1681 Place: London

Publisher: A. Godbid and J. Playford for Robert Scott

Edition: 1st Language: English

Figures: v.I, pt 1: engraved frontispiece, general title in red and black, correction slip pasted on p. 185, 23 folding engraved plates (1 with volvelle with two attached pieces. v.I, pt 2: title page, 6 folding engraved plates v.I, pt 3: title page, 6 folding engraved plates v.2, pt 1: title page, half title, tables v.2, pt 2: title page, 61 maps on 52 sheets

Binding: fine English restoration binding of red morocco; richly tooled in gilt on backs and sides Pagination: v.I: pp. [18], 288, [12], 104, [2], 161, [1]; v.2: pp. [2], 144, 364, 373–384, [4], 56, 32

Collation: v.1: π^1 a-b⁴B-2O⁴A^{-b²B-O⁴A-V⁴X² v.2: π^1 A-S⁴A-2H⁴2I²2K-3A⁴3B²a²A-G⁴3A-3D⁴}

Size: 280x211 mm

Reference: Win ESTC, M2578-9; Tay MP I, # 413, p. 395

When Moore was associated with the mathematics school at Christ's Hospital, he obviously was concerned with matters pertaining to the curriculum. After his death this two-volume work was published for use as a text at the school. According to the title page, it was composed by Moore, but exactly what that means is unclear. Certainly some of the later sections were the work of others, as shown in the title above (the indication of the authors of each of the later sections not being part of the actual title). As can be seen, Flamsteed repaid part of the debt he owed Moore (see **Moore**, **Jonas**; *Moore's arithmetic*, 1650). The entire work is comprised of two volumes. It represents the best mathematical education available in England at the time. The second volume is composed mostly of tables, which are well set and easy to read. The last portion of the second volume contains a section on geography including nicely engraved maps of the Old World and of what had been explored in the New World. The frontispiece shows a mathematical gathering complete with books, charts, globes and various sighting instruments.

This copy, in the binding of the Office of Ordnance and with the bookplate of the library of the Royal Artillery Institution, has an inscription on the title page that reads *This book was a presentation Copy to King William*,



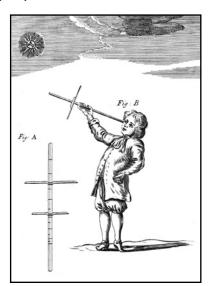
Frontispiece, M 125

and afterwards presented by the Monarck to the Duke of Ormond in 1689.

Illustrations available:

Map sample

Title page (color) with inscription Frontispiece Binding (color) Cross staff (Jacob's staff) Quadrant Backstaff



Jacob's staff, M 125

M 126

Moore School Staff

Progress report on the EDVAC (Electronic Discrete Variable Computer) [2 volumes]

Year: 1946 Place: Philadelphia

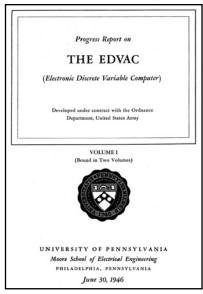
Publisher: University of Pennsylvania

Edition: 1st Language: English Figures: many figures Binding: original wrappers

Pagination: v.1: pp, [6], v, 114; v.2: pp. ix, 121

Collation: no collation Size: 280x217 mm

The EDVAC computer project was an outgrowth of the work on the ENIAC during World War II. It had become obvious to the project leaders (**Presper Eckert** and **John Mauchly**) that the control mechanism of ENIAC was cumbersome and should be reconsidered. The result was the invention of the concept of the stored program computer. Wartime pressures, however, clearly gave priority to completion of the ENIAC rather than permitting research into this new control concept. At the end of the war, the Moore School received a contract with the Ordnance Department of the United States Army



M 126

to investigate the EDVAC concept, but very little was done on it before the Moore School group broke up to go back to their former university appointments or, as in the case of Eckert and Mauchly, to start their own business. Those remaining at the Moore School found themselves in the difficult position of attempting to create EDVAC without the intellectual resources that had been there during the development of the ENIAC. This difficulty is apparent from this report, in which a number of different techniques are examined for each aspect of the machine (e.g., a considerable section is devoted to a discussion of electrostatic memory when the EDVAC had, from the outset, been planned as a machine that would use mercury delay line memory). The report is in two volumes.

The EDVAC was eventually built, but it was unreliable and badly outclassed by other contemporary machines (see M. R. Williams, "The Origins, Uses and Fate of the EDVAC," *Annals of the History of Computing*, Vol. 15, No. 1, 1993, pp. 22–38).

Illustrations available: Title page (color)

M 127

Morello, Teodorico (fl.1520)

Enchiridion ad verborum copiam haud infrugiferum, denuo multò quàm antea auctius emaculating in lucem datum.

b/w: **Gemma Frisius, Reiner**; *Arithmeticæ practicae methodus facilis*

Year: 1546 Place: Cologne Publisher: Martin Gymnic

Edition: 4th Language: Latin

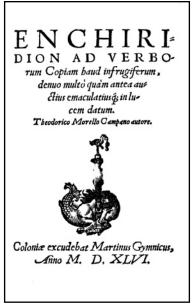
Binding: contemporary blind-stamped leather

Pagination: pp. [16], 175, [1]

Collation: +8 A–L8 Size: 149x96 mm

Morello is known to have taught at the Collège de la Marche in Paris and to have written several textbooks, of which this is the best known. It is included in this collection simply because it is bound with the work of **Gemma Frisius**. It is a Latin phrase book designed to give students some examples of sophisticated ways to express common ideas.

Illustrations available: Title page



M 127

M 128

Morellon, P.

Pour calculer facilement avec rapirite et precision. Methode de vulgarisation simple et detailee pour l'emploi de la régle a calcul.

> Year: ca. 1950 Place: Paris Publisher: Marc Edition: new Language: French

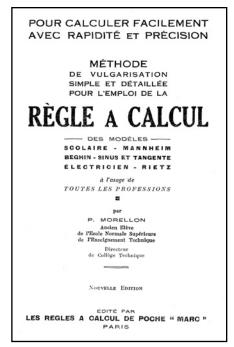
Binding: original paper wrappers

Pagination: pp. 132 Size: 209x134 mm

This is a standard manual on the use of the slide rule.

Illustrations available:

Title page Cover page





Cover, M 128

M 129

Morgan, Brian Stanford

Total to date: The story of Burroughs

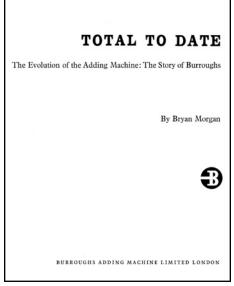
Year: 1953 Place: London Publisher: Burroughs Edition: 1st Language: English

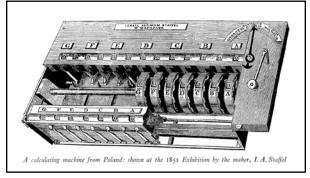
Binding: original paper boards Pagination: pp 65, [7] Size: 236 x 175 mm The British division of Burroughs published this book partly as a general history of the Burroughs calculator firm and partly to help celebrate the fact that Queen Elizabeth and Prince Phillip visited the Dumbarton (Scotland) factory on April 16, 1953. The record of the visit, complete with photographs, comprises the last chapter.

Besides giving a capsule history of calculating devices (the most unusual being an engraving of a little-known machine from Poland made by I. J. Staffel) and emphasizing the contribution of William Seward Burroughs, it illustrates via drawings and photographs the working of several different types of Burroughs machines. In a nod to the future, the authors briefly mention ENIAC and the binary number system.

Illustrations available:

Title page Patent drawing of an 1888 Burroughs machine Modern version of that machine. Staffel machine





Staffel's machine, M 129

Morin, Henri de

Les appareils d'intégration. Intégrateurs simples et composés. Planimètres; intégromètres; intégraphes et courbes intégrales; analyse harmonique et analyseurs.

Year: 1913 Place: Paris

Publisher: Gauthier-Villars

Edition: 1st Language: French

Binding: original paper wrappers

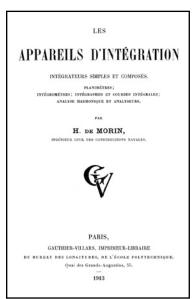
Pagination: pp. [6], 208 Collation: π^31-13^8 Size: 228x142 mm

The author was a naval engineer.

This information on integrating instruments is of high quality and compares well with that to be found in **Cargill Gilston Knott**'s *Napier Tercentenary Handbook*. It provides a good view of the state of the art just prior to the beginning of World War I.

Illustrations available:

Title page



M 130

1 131

Morin, Jean-Baptiste (1583–1656)

Trigonometriæ canonicæ libri tres. Quibus planorum et sphæricorum triangulorum theoria atque praxis accuratissimè brevissimèque demonstrantur. Adiungitur liber quartus, pro calculi tabulis logarithmorum; earum scilicet constructione atque usu amplissimo, facillimoque; ne in hoc opere quidquam desideretur.

Year: 1633 Place: Paris

TRIGONOMETRIÆ CANONICÆ LIBRI TRES. QVIBVS PLANORVM ET SPHÆRICORVM Triangulorum Theoria atque Praxis accuratissimè breuissiméque demonstrantur. ADIVNGITUR LIBER QUARTUS, PRO calculi Tabulis logarithmorum ; earum scilicet constructione atque vsu amplissimo, facilimóque; ne in hoc opere quidquam desideretur. AD EMINENTISSIMVM CARDINALEM Archiosysm Lynovicym ny Plessis ne Richelley, Archiepifcopum & Comitem Lugdunenfem, Galliarum Primatem, Magnú Franciæ Eleemofynarium, &c. Authore IOANNE BAPTISTA MORINO, apud Gallos è Bellejocensibus Francopolitano, Doctore Medico, & Regio Parisis Mathematum Professor. Capucins Scres PARISIIS, Marais Sumptibus Authoris, apud quem venales funt. Tum apud IOANNEM LIBERT, via D. Ioannis Lateranensis, è regione Auditorij Regij. CVM PRIVILEGIO REGIS. M. DC. XXXIII.

M 131

Publisher: Jean Libert for the author

Edition: 1st Language: Latin

Binding: contemporary leather; gilt-stamped front cover; spine;

gilt edges

Pagination: pp. [8], 108, [59], [1]

Collation: a⁴A–X⁴ Size: 238x174 mm

Reference: Hend BTM, #29.0, p. 61

Morin studied philosophy and medicine in Aix and Avignon in his native Provence. His main interest in the earlier years of his career seems to have been astrology. He was appointed professor of mathematics at the College Royal in 1630 and held the post until his death.

Morin had a difficult personality and is remembered not only as an opponent of **Galileo** (and his Copernican ideas) but also as a fervent opponent of Descartes. He should, however, be given credit for his attempts to solve the longitude problem. His solution was based on measuring absolute time by the position of the moon relative to the stars. Morin recognized that better instruments and better lunar tables were required to implement his solution, and he sought to make some advances in these areas. As a practical matter, his method, though theoretically sound, did not achieve the required accuracy.

Morin is remarkable in that these logarithm tables are among the earliest anywhere and certainly are the first published in France by a Frenchman. He was obviously a capable mathematician and seems to have grasped the usefulness of logarithms when many of his contemporaries did not.

The leather binding of this volume seems unusual as it is from the library of a Capuchin monastery (part of the Franciscan order). Capuchin monks lived in austerity, simplicity and poverty with their daily needs usually met by begging. It is surprising to find a finely bound mathematical book coming from a Capuchin library. As has been pointed out elsewhere in this catalog, the life in the church of this period was not always quite as advertised.

Illustrations available: Title page Book binding Table page

M 132

Morland, Samuel (1625–1695)

The description and use of two arithmetick instruments. Together with a short treatise, explaining and demonstrating the ordinary operations of arithmetick. As likewise, a perpetual almanac and several useful tables.

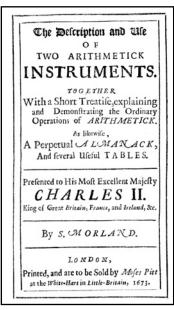
Year: 1673
Place: London
Publisher: Moses Pitt
Edition: 1st
Language: English
Figures: folding plates
Binding: contemporary gilt-paneled leather, gilt spine, upper
hinge loose

Pagination: ff. [2], 7, 9–10, pp. 11–23, [1], 24–29, [1], 30–50 (mis# 48 as 50, 50 as 48), 49–78, [6], 5, [43], 16

Collation: A-F8G2A9G7B8*8

Size: 149x90 mm

Reference: Win ESTC, M2777 (M2781); Tay MP I, #219

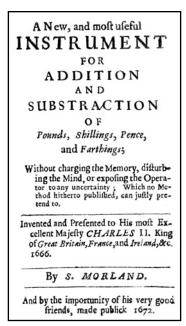


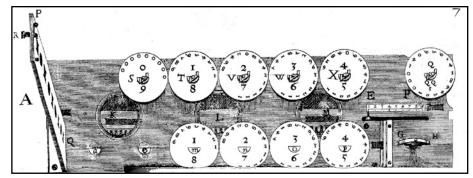




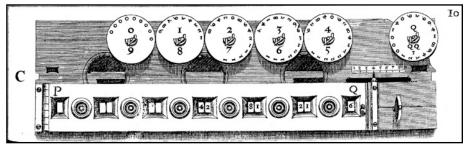
Frontispiece (Samuel Morland), M 132

Samuel Morland led a full and interesting life (see Dickinson, H. W.; *Sir Samuel Morland, Diplomat and Inventor*, Cambridge, 1970). He was caught up in the turmoil surrounding the assumption of power by Oliver Cromwell and did not get a chance to attend university until he was much older than most of the other students. He eventually became a Fellow of Magdalene College in Cambridge, just in time to sign Samuel Pepys enrollment forms in 1650. He joined a diplomatic mission to Sweden, where at the court of Queen Christina he probably saw a copy of Pascal's adding machine. A later diplomatic mission to France and Italy gave him the opportunity to





Napier's bones machine, gate open, M 131



Napier's bones machine, fourth multiple, M 132

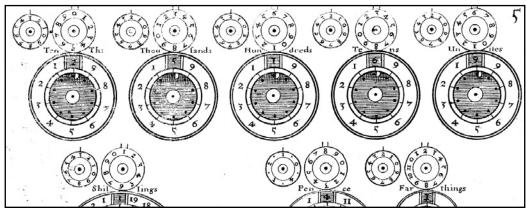
further study calculating machines as inventors such as **Rene Grillet** were active in the French Court (see **Grillet**, **Rene**; *Curiositez mathematiques*, 1673). Morland was able to maintain these contacts in later life because he married a French woman and made frequent trips back to the Continent. His calculating machines resemble those of **Grillet** in concept. Like **Grillet**'s, they were not a great advance, and in his diary Samuel Pepys described them as being *very pretty but not very useful*.

Morland, while acting as a diplomat for Cromwell, was also a spy for the exiled King Charles II. Upon Charles' return to the throne Morland was rewarded with honors and wealth, allowing him the leisure to invent several calculating aids (a mechanical sector, an adding

machine, a circular disk form of Napier's bones) as well as barometers, speaking trumpets and water pumps.

Morland had advertised his adding machine in the London press, but only a few seem to have been purchased. Fortunately, a few have survived in museums. He presented a copy of his machine that uses a circular version of Napier's bones to the Duke of Tuscany, but no other examples are known to us.

The adding machine is simply a set of dials without a mechanism for carrying between digits. A single-tooth carry mechanism advances small subsidiary dials (seen above the main dials in the illustrations) every time the main dial passes from 9 to 0. After adding a column of figures, the user would have to add these carries onto the



Adding machine with double carry dials, M 132

next digit manually. Morland even illustrates a version of his machine with carry dials for the carry dials. Samuel Pepys' tart observation may have been correct!

Morland's circular Napier's bones device avoided the disadvantage of similar devices constructed by **Schott** and others (see entry for **Schott**, **Gaspar**; *Organum mathematicum*, 1668). The device has a set of Napier's bones engraved on brass circles (see illustration) with the units and tens digits on opposite ends of a diameter. By placing the appropriate circles into the machine and turning a key to the correct multiple, the digits showing through adjacent windows could be added together to create the product (see explanation for this operation in the essay on Napier's bones). The device was complex to produce and would have been enormously expensive to build when compared with the cost of a standard set of boxwood bones.

The descriptions of these two machines occupy about the first 15 percent of the volume. The remainder is a discourse on arithmetic (up to roots and geometric series) and a description of a perpetual almanac that Morland invented in 1650. The almanac shows his political bias in that in his list of kings of England, Charles I (1625–1648) is followed by Charles II (1649–) with no mention of the Cromwell years or the exile of Charles II—but this was common after the restoration of the monarchy.

Illustrations available:

Title page 1

Title page 2

Frontispiece portrait

Adding machine

Adding machine with carry-carry dials

Napier's bones machine with gate open showing how circular disks are mounted on pegs

Napier's bones machine with gate closed (second disk shown as a 7 rather than a 2 as in the previous illustration)

Napier's bones machine with knob turned to show the fourth multiple (correct bones in the machine)

Napier's bones machine with 2s multiple showing

M 133

Morland, Samuel (1625–1695)

The description and use of two arithmetick instruments. Together with a short treatise, explaining and demonstrating the ordinary operations of arithmetick. As likewise, a perpetual almanac and several useful tables. (lacks this title page).

Has the second title page:

A new, and most useful instrument for addition and subtraction of pounds, shillings, pence, and farthings. Without charging the memory, disturbing the mind, or exposing the operator to any uncertainty: which no method heretofore published, can justly pretend to.

Year: 1673 Place: London Publisher: Moses Pitt Edition: 1st (another issue) Language: English Figures: folding plates

Binding: contemporary panelled calf

Pagination: ff. [1], 6, 8–10, pp. 11–24, 24–29, 29–49 (mis# 48

as 50) 48–78, [4], 5, [37], 16 Collation: $A^7B-E^8F^7G^2A^7G^6B^{8*8}$

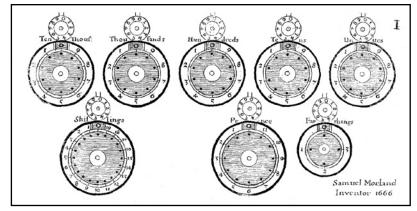
Size: 141x91 mm

See the entry for **Morland, Samuel**; *The description and use of two arithmetick instruments*, 1673. This is a reissue of that same first edition. The major difference is that the plates for the adding machine are now printed directly onto pages of the book rather than being printed separately and then glued onto to blank pages.

This particular example lacks the first title page and engraved portrait frontispiece.

Another copy of this version, with the first title page but not the portrait frontispiece, is also available in the collection.

Illustrations available: Adding machine plate



Adding machine with single carry dials, M 133

Morland, Samuel (1625–1695)

The description and use of two arithmetick instruments. Together with a short treatise, explaining and demonstrating the ordinary operations of arithmetick. As likewise, a perpetual almanac and several useful tables.

Second title page:

A new, and most useful instrument for addition and subtraction of pounds, shillings, pence, and farthings; without charging the memory, disturbing the mind, or exposing the operator to any uncertainty: which no method heretofore published, can justly pretend to.

Year: 1673 Place: London Publisher: Moses Pitt Edition: 1st (another issue) Language: English

Figures: lacks frontispiece?, 6 plates printed in text; starting

with Sig B, both texts identical. Binding: contemporary paneled calf

Pagination: ff. [2], 6, 8–10, pp. 11–24 (misnumbered 17 as 71, 18 as 81), 24–29, 29–49 (misnumbered 48 as 50) 48-78,

[4], 8, [34], 16 Collation: A–E⁸F⁷G²A⁷G⁶B^{8*8}

Size: 150x88 mm

Reference: Win ESTC, M2777; Tay MP I, #358; ESTC, R30529

This is another copy of the Morland work on calculating machines. In this version the first signature has been reset and reprinted, and the illustrations of the calculating machine have been printed in place rather than glued in. It can be distinguished from the other similar copy because it is lacking the frontispiece portrait of Morland and contains the bookplate of Benjamin Sampson.

Illustrations available: Title page

Morsianus, Christiernus Torchillus, editor See [Boethius, Anicius Manlius Severinus] - Faber Stapulensis, Jacobus; Fabri Stapulensis in arithmetica Boëthi.

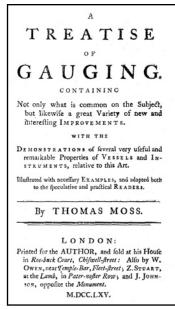
Mose, Henry, editor

See **Hodder, James**; Hodder's arithmetick or, that necessary art made most easie. Being explained in a way familiar to the capacity of any that desire ...

M 135

Moss, Thomas (1730–1792)

A treatise of gauging. Containing not only what is common on the subject, but likewise a great variety of new and interesting improvements ...



M 135

Year: 1765 Place: London

Publisher: for the Author

Edition: 1st
Language: English
Figures: 1 folding plate
Binding: contemporary leather
Pagination: pp. [xii], 268
Collation: π⁴a²B–2L⁴2M²
Size: 209x125 mm

Moss was the inspector general of imported liquors in Deptford, Kent, and was most likely an expert gauger.

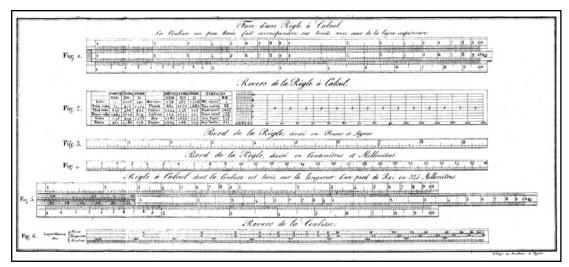
His book is written on two levels. The first is for the gauger involved in everyday work who simply follows a clear set of instructions when performing his duties. The second level is provided by extensive footnotes to the main text. These footnotes provide the theoretical background for the instructions and are often quotations from famous mathematicians such as **Isaac Newton**. For example, when giving instructions on how to obtain a square root via a *sliding rule*, the footnotes describe how the distances measured on the slide rule really correspond to logarithms and explain that the addition and subtraction of these logarithms is really the same as multiplication and division, etc.

Illustrations available: Title page

M 136

Mouzin, Ph.

Instruction sur la manière de se servir de la règle a calcul, dite règle Anglaise, ou sliding rule.



Mouzin's slide rule, M 136

INSTRUCTION SUR LA MANIÈRE DE SE SERVIR

DE L

RÈGLE A CALCUL,

DITE

RÈGLE ANGLAISE,

oυ

SLIDING RULE,

INSTRUMENT à l'aide duquel on peut obtenir à vue, par le simple mouvement d'une Coulisse, le résultat de tous les Calculs relatifs au commerce, aux arts, à l'arpentage, à la mesure des solides, à l'évaluation du volume des corps d'après leurs poids ou réciproquement, à l'extraction des racines de tous les degrés, à la résolution des triangles, etc., etc.



A DIJON,

CHEZ DOUILLIER, LIBRAIRE, IMPRIMEUR EN CARACTÈRES ET EN LITHOGRAPHIE, RUE PORTELLE.

1823.

M 136

Year: 1823 Place: Dijon

Publisher: Chez Douillier

Edition: 1st Language: French

Figures: 13 engraved plates (1 folding) bearing numbered figs.

1-20

Binding: original paper wrappers

Pagination: pp. viii, 76 Collation: $\pi^41-3^{12}4^2$ Size: 155x102 mm

Nothing is known about the author other than that he published this instruction book for the slide rule for many years. Except for its early date, it differs little from other instruction books on the slide rule, most of which date from the late nineteenth or early twentieth century. The

work evidently found favor in France as it went through multiple editions.

Illustrations available:

Title page

Slide rule illustration



SUR LA MANIÈRE DE SE SERVIR

DE LA

RÈGLE A CALCUL,

DITE

RÈGLE ANGLAISE, OU SLIDING RULE,

INSTRUMENT à l'aide duquel on peut obtenir à vue, sans plume, crayon ni papier, sans barrème, sans compte de tête, et même sans savoir l'arithe métique, le résultat de toute espèce de Calculs;

Utile à MM. les Ingénieurs, Architectes, Géomètres, Officiers de Marine et d'Artillerie, Mécaniciens, Négocians, Marchands, et à toutes personnes obligées de calculer.

(Avec 21 Figures représentant l'Instrument dans la plupart des opérations.)

SECONDE ÉDITION , CORRIGÉE ET AUGMENTÉE.



A DIJON,

CHEZ DOUILLIER, LIBRAIRE, IMPRIMEUR EN CARACTÈRES ET EN LITHOGRAPHIE, RUE PORTELLE.

1824.

M 137

M 137

Mouzin, Ph.

Instruction sur la manière de se servir de la règle a calcul, dite règle Anglaise, ou sliding rule.

Year: 1824

Place: Dijon

Publisher: Chez Douillier

Edition: 2nd

Language: French

Figures: 14 engraved plates (1 folding) bearing numbered figs.

1–19, 19–21

Binding: original paper wrappers Pagination: pp. [8], 9–120 Collation: $\pi^41-4^{12}5^8$ Size: 190x110 mm

In this, the expanded second edition of his manual on the slide rule, Mouzin has used many of the same engravings that he did in the first edition. Many are modified (sometimes crudely) to change the figure number or to correct errors (such as where the cube root of 216 is given as 16, rather than 6, on figure 16 of the first edition—figure 18 of the second).

Illustrations available: Title page

M 138

Mouzin, Ph.

Instruction sur la manière de se servir de la règle a calcul, instrument à l'aide duquel on peut obtenir à vue, sans plume, crayon ni papier, sans barrême, sans compte de tête, et même sans savoir l'arithmétique, le résultat de toute espèce de calculs.

Year: 1825

Place: Paris & Dijon

Publisher: Bachelier - Paris; Douillier - Dijon

Edition: 3rd Language: French

Figures: 14 plates (1 folding)

Binding: contemporary half-leather marbled boards

Pagination: pp. viii, 9-121, [1]

Collation: $\pi^41-4^{12}5^9$ Size: 170x103 mm

None of the first three editions reveal the name of the author; however, it was given in the edition of 1837. This 1825 edition would appear to be identical to the 1824 edition, with the exception of the title page and a page of errata bound at the end.

Illustrations available: Title page

M 139

Mouzin, Ph.

Instruction sur la manière de se servir de la règle a calcul dite règle Anglaise, ou sliding rule, instrument a l'aide duquel on peut obtenir a vue, sans plume, crayon ni papier, sans Barrême, sans compte de tête, et même sans savoir l'arithmétique, le résultat de toute espèce de calcul.

Year: 1837

Place: Paris & Dijon

Publisher: Bachelier - Paris; Douillier - Dijon

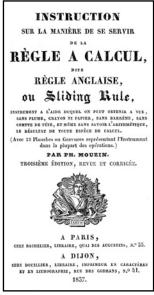
Edition: late Language: French

Figures: 14 engraved plates (1 folding) Binding: contemporary decorated paper boards

Pagination: pp. viii, 9–112 Collation: 1–4¹²5⁸ Size: 170x100 mm

For this later edition of Mouzin's slide rule instruction manual, the plates were re-engraved, resulting in a much more professional appearance. The folding illustration of the slide rule was also re-engraved but is identical except for the signature of the engraver.

Illustrations available: Title page



M 139

M 140

Moxon, Joseph (1627–1691)

A tutor to astronomie and geographie: Or an easie and speedy way to know the use of both the globes, celestial and terrestrial. In six books. The first teaching the rudiments of astronomy and geography. The 2. shewing by the globes the solution of astronomical and geographical probl. The 3. shewing by the globes the solution of problemes in navigation. The 4. shewing by the globes the solution of astrological problemes. The 5. shewing by the globes the solution of gnomonical problemes. The 6. shewing by the globes the solution of spherical triangles. More fully and amply then hath ever been set forth either by Gemma Frisius, Metius, Hues, Wright, Blaew, or any others that have taught the use of the globes: And that so plainly and methodically that the meanest capacity may at first reading apprehend it; and with a little practise grow expert in these divine sciences.

Year: 1659 Place: London

Publisher: Joseph Moxon

Edition: 1st Language: English

Figures: engraved frontispiece

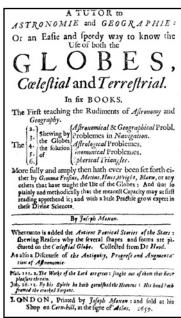
Binding: contemporary vellum recased

Pagination: pp. [16], 224, 40 Collation: *⁴A-2F⁴B-F⁴ Size: 191x140 mm

Reference: Win ESTC, M 3021; Tay MP I, #256

Moxon was born in Yorkshire but moved to London and established himself as a skilled maker of globes and maps. He evidently had experience in crafts such as smithing, foundry work, drawing, joinery, turning, engraving and printing. He included all of these in his most famous publication, *Mechanick Exercises, or the Doctrine of Handy-works*, which was published in parts between 1677 and 1678. He was appointed Royal Hydrographer (map maker) in 1670 and elected F. R. S. in 1678.

This present volume is designed as a sales tool for the globes, maps and instruments available at his London establishment. In the preface he carefully states that his globes are the most up-to-date available in that they incorporate the latest geographic findings (he specifically mentions the recent Dutch discoveries of Hollandia Nova, Zelandia Nova and Van Dieman's Land), although he errs when he indicates that *California is found to be an Iland, though formerly supposed to be part of the main Continent, whose North West shoar was imagined to thrust itself forth close to the Coasts of Cathaio...*







Frontispiece, M 140

The work is divided into six books. The first is an introduction to the globe while the others cover its use in astronomy, geography, navigation, creating sundials, astrology and similar topics. A final section, separately paginated, is *A Discourse of the Antiquity, Progress, and Augmentation of Astronomie*, which is a largely hypothetical history of the subject (e.g., it attributes the Egyptians' knowledge of astronomy to their having been taught it by Abraham) and a glorification of **Tycho Brahe**.

Another book is sometimes confused with this one. Moxon had, in 1654, published a translation of Blaeu's *Institutio astronomica* and used *The Tutor to Astronomy*



Globe, M 140

as the English title. In the preface to this volume, he begins by explaining that although his 1654 work was simply a translation, the English title was of his own invention ... and therefore I hope I may be the bolder to use it when and where I list.

The frontispiece shows a picture of London just prior to the Great Fire in 1666.

Illustrations available: Title page

Frontispiece

Globe Quadrant usage

Moxon, Joseph (1627–1691)

See Addenda entry: [Napier, John]; Enneades arithmeticæ: the numbring nines. Or, Pythagoras his table extended to all whole numbers under 10000. And the numbring rods of the Right Honourable John Lord Nepeer, enlarged with 9999 fixt columns or rods, of single, double, triple, and quadruple figures, and with a new sort of double and moveable rods, for the much more sure, plain and easie performance of multiplication, division, and extraction of roots. The whole being very useful for most persons, of whatever calling and employment, in all arts and sciences. All having frequent occasions of accompts, numbring, measuring, surveying, gauging, weighing, demonstrating, &c. The Devine wisdom having from the beginning disposed all things in measure, number and weight, Sap. 11.21

M 141

Mubashshir Ibn Ahmad Al-Razi (1135/1136–1193)

Kitab fihi[?] Sharb ma amla'ahu al-Wazir 'Awn al-Din Abu'l Muzaffar Yahya Ibn Muhammad Ibn Hubayra rahimahuy Allah fi 'ilm sina'at al-h[isab] al-'alim Burhan al-Din Abi'l Rashid Mubashshir Ibn Abi 'Amr Ahmad Ibn al-Razi al-Hasib

Year: 1180 Place: Baghdad (?)

Edition: manuscript Language: Arabic

Figures: 21 lines per page in neat Naskhiu script; numerous diagrams

Binding: thirteenth-century blind-tooled brown morocco binding with flap

Pagination: ff. 102 Size: 232x170 mm

When this manuscript was sold at Sotheby's, it was described (by David A. King) as a previously unrecorded copy of a hitherto-unknown treatise on mathematics by



Page 1, M 141

Mubashshir Ibn Ahmad al-Razi (1135/1136-1193). It is a commentary on pronouncements by the celebrated Hanbali vizier known as Ibn Hubayra and was written during his lifetime. The manuscript was copied from one in the hand of the author in 1180, possibly in Baghdad, although later remarks on the title folio indicate that the manuscript passed through Damascus. It is a remarkable specimen of an extremely rare genre of Islamic literature, a scientific commentary on sections of a treatise dealing with the Hadith (sayings) of the Prophet Muhammad. The text follows the traditional pattern of first quoting the original (our master said ...) and then providing the commentary (the commentator said ...). The first part of the text deals with arithmetic, multiplication of compound numbers, fractions, units of weight and measure, proportions (including sexagesimal), roots, financial transactions and the division of wealth, war booty and estates among debtors. The last part of the work is concerned with finding areas and volumes of various geometric figures and then goes on to procedures for leveling ground. While there are diagrams in the text, some that are referred to are not present.

This is not a sophisticated mathematical manuscript. Its interest lies in the fact that it was prepared for an audience preoccupied with religious matters. It does begin by discussing various numbers that appear in the Qur'an—including the value of prayer said individually or in a group—but it quickly moves on to other areas of simple arithmetic.

The first page contains some repairs that obliterated a portion of the text. Judging from nearby material, none of the original has been lost. Rather, that portion of

the text is in another (later?) hand and simply gives a prohibition (from the Qur'an) against certain couples marrying. Another indicates that one may solve problems by following these examples in much the same way that one may find fire by following the smoke.

Illustrations available:

Page 1 Pages 2–3

Mathematical diagrams



Elementary trigonometry, M 141

M 142

Mulich, Johann

Künstlich und zuuer nie in Truck aufzgangenes Rechenbüchlein auff dess H: Romischen Reichs (auch anderer ausslandischen Konigreich unnd Herzschafften) nicht alein Gülden oder Silbern Müntzsorten im Wechsel, sondern Kauff, Verkauff, Frücht, Stück, Elen, Mass, Pfund ...

> Year: 1613 Place: Mainz Publisher: Johan Albin Edition: 3rd

> Language: German
> Binding: contemporary

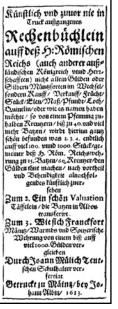
Binding: contemporary vellum

Pagination: pp. [356] Collation: A-O¹²P¹⁰ Size: 145X63 mm Reference: H&J *II*, M48.2

This is a ready reckoner for money matters. The tables give the value of various units of currency (1–10 in units, 20–90 in tens, 100–1000 in hundreds) in other units (e.g., 4 pf. = 1 Re).

Illustrations available:

Title page Table page



M 142

M 143

Mullaney, Frank C. (1922–2001)

Design features of the ERA 1101 computer. In Proceedings of the Joint AIEE-IRE Computer Conference. Review of electronic digital computers. Papers and discussions presented at the Joint AIEE-IRE Computer Conference, Philadelphia, PA, December 10–12, 1951.

Year: 1952 Place: New York

Publisher: American Institute of Electrical Engineers

Edition: 1st Language: English

Binding: original printed paper wrappers

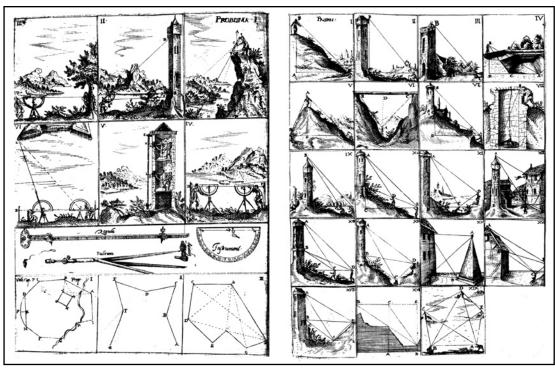
Pagination: pp. 43–49 Size: 277x214 mm

The author was an engineer on the ERA 1101 computer and project engineer for the ERA 1103.

The ERA 1101 was a general-purpose stored program computer built by Engineering Research Associates in Saint Paul, Minnesota, and delivered to the National Security Agency in Washington, D.C., in December 1950. ERA machines were notable for their reliability and maintainability. The company operated under tight security restrictions, and this carefully sanitized paper was one of the first cleared by the authorities. For more detail on ERA, see E. Tomash and A. A. Cohen, "The Birth of an ERA: Engineering Research Associates, Inc., 1946–1955," in the *IEEE Annals of the History of Computing*, Vol. 1, No. 2, 1979, pp. 83–97.

Illustrations available:

None



Problem illustrations, M 144

M 144 **Müller, Jacob** (1594–1637)

Praxis geometrica universalis, Das ist: Wie man alle Lineen und Figuren in corporibus Physicis aussmessen soll, beneben völligem Bericht von der Proportion, und auss was Grund der Canon Trigonometicus erfunden. So wol auch, Wie man alle Triangula aufflösen soll, mit kurtzen Regulis verfasset.

b/w: Galilei, Galileo; De proportionum instrumento a se invento, quod meritò compendium dixeris universæ geometriæ, tractatus, rogatu philomathematicorum a Mathia Berneggero ex Italica in Latinam liguam nunc primùm translatus: adjectis etism notis illustratus, quibus & artificiosa instruemnti fabrica, & usus ulterior exponitur.

Year: 1621 Place: Giessen

Publisher: Caspar Chemlin

Edition: 1st Language: Latin Figures: 2 engraved

Figures: 2 engraved plates Binding: contemporary vellum boards

Pagination: ff. [26]

Collation: A² B⁴ C⁴ (-C3&C4))(⁴ C⁴ (-C1&C2) D-E⁴ F-G²

Size: 189x148 mm

Müller began his career as a military engineer in Giessen. After being awarded the degree of doctor of medicine in 1620, he became the professor of mathematics and medicine in Marburg.

This is a work on the solution of triangles, usually in surveying problems. It contains a small table of sines, tangents and secants (to a radius of 100,000) for every ten minutes of arc. The problems are illustrated by a series of vignettes at the end of the work.

Illustrations available: Title page Problem illustrations



M 144

Müller, Johann Helfrich von (1746–1830)

Beschreibung seiner neu erfundenen Rechenmaschine, nach ihrer Gestalt, ihrem Gebrauch und Nutzen. Herausgegeben und mit einer Vorrede begleitet von Ph. E. Klipstein.

b/w: 6 other unassociated works:

Courrejolles, Françis Gabriel; Corrections des moulins a sucre, 1790, pp. 39, [1].

Fourcroy, Vauquelin, & Seguin; Memoire sur la combustion du gaz hydrogene dans vaisseaux clos, 1790, pp. 6, 99, [1].

Seguin, Armand; Abrégé des pricipaux phénomènes qui dependent de l'action du calorique, 1790, pp. 6, 31, [1].

Seguin, Armand; Observations générales sur les sensations, et particularment sur celles que nous nommons chaleur & froid, 1790, pp. 28.

Swediauer, Francis Xavier; *Mémoire remis aux comites* des monnoies et de finances de l'Assemblée Nationale.

Prevost, Pierre; Recherches physico-mécaniques sur la chaleur, 1792, pp. xvi, 232.

Year: 1786 Place: Frankfurt

Publisher: Barrentrapp Sohn und Wenner

Edition: 1st Language: German

Figures: 1 large engraved folding plate of machine

Binding: contemporary half-bound leather over marbled paper boards; red leather label "Tracts Technical"

Pagination: pp xii, [2 blank], 50

Pagination: pp xii, [2 blank], Collation: *8(-*7)A-C8D1 Size: 185x112 mm

Reference: Pogg Vol. II, p. 223

Johann Helfrich Müller was a military engineer employed by the governor in Giessen, Germany.

This volume is noteworthy on two accounts. It is from the library of James Watt and it describes a difference engine conceived before the time of **Charles Babbage**.

Many of the eighteenth-century mechanical calculating machines were constructed on a one-off basis and as such were prone to problems. Many of these were overcome once they began to be produced on a commercial scale in the nineteenth century. One of the very early machines (perhaps the first that could be said to work even reasonably reliably) was produced by the German clergyman Philipp Matthäus Hahn in 1774. This device was typical in that it had mechanical difficulties that prevented it from being easily used. While Hahn and his son made several different versions of this device,

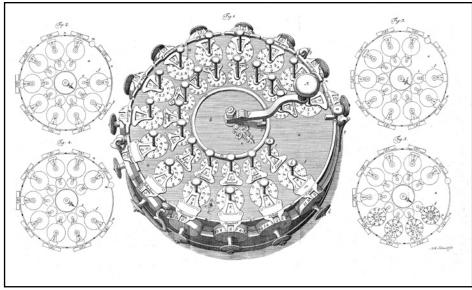


M 145

Hahn certainly could not be said to have been in the commercial production of them.

When Müller heard about Hahn's machine and its difficulties, he built his own version. This was a modest four-function calculating machine based on a design first created by **G.W. Leibniz** over a hundred years earlier. It apparently worked well enough that a friend, Philipp Engel Klipstein, edited and published this user's manual in 1786. It consists of forty-seven pages of instruction for Müller's simple machine and three pages, evidently written by Müller himself, giving very sketchy descriptions of his ideas for improved devices, mainly a printing mechanism for a calculating machine. A small portion of Müller's appendix is devoted to an entirely different machine, that he claims he designed to produce sequences of calculations by the method of differences.

Almost nothing is known of Müller's design (if indeed it was anything other than just the concept), but he indicates that if someone were willing to finance its construction, he was willing to make the machine. He claimed that the machine would print a single copy of the table being calculated, very likely by using the printing mechanism he had in mind for the simple calculator noted above, but that it was certainly possible to create additional copies by employing an ordinary workman to turn the handle of the machine. He estimated that a table of x^3 ($1 \le x \le 100,000$) could be produced in just over ten days of effort, even if one only worked for eight hours per day. Other than mentioning the fact that the machine would



Muller's calculating machine, M 145

be capable of dealing with three orders of differences (which would have been required for a cubic function), no other details are mentioned.

Klipstein's book is quite rare, perhaps an indication that it was not widely circulated in his own day. It is notable, for example, that **Charles Babbage** (who had a collection of books on all aspects of calculation) was unaware of its existence until his friend **John Herschel** brought him a copy that he had found on a trip to the Continent. It would appear that no one answered Müller's plea for financial support and that nothing came of this idea until **Babbage** independently thought of it about thirty-five years later. It is purely conjectural to wonder whether nobody was actually interested in such a device at the time or whether the limited circulation of Klipstein's book did not bring it to the attention of the appropriate people.

Illustrations available:

Title page Müller's simple machine Müller's complete appendix (2)

M 146

Muller, John

Indian tables for the conversion of Indian mun into factory and bazar maunds, Madras and Bombay commercial weight, troy and avoirdupois weight, and the different maunds in use in the Bengal presidency. For the conversion also of factory into bazar maunds, troy weight into tola, and sicca rupees into company's, and vice versa. Containing likewise a table of exchange between London and British India. A table of the assay produce of silver bullion. Also tables of the minimum

legal weight of the company's rupee and the old and new standard Calcutta and Furruckabad rupees. Together with an appendix containing a variety of useful information.

> Year: 1836 Place: Calcutta

Publisher: Commercial Press

Edition: 1st Language: English

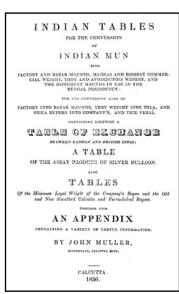
Figures: many fold-out tables

Binding: contemporary three-quarter leather rebacked and

recornered over marbled boards Pagination: pp. xi, 4–13, 16–294, 15, [1] Collation: π⁶B–O²P–U⁴W–Z⁴2A–2T⁴U²g⁸

Size: 201x125 mm

Muller was an accountant at the Calcutta Mint.



M 146

These tables were badly needed because the Indian currency at the time was different in each part of India. Even within a single locale, the official weights of coins and the weights of those actually being circulated often differed. The system was in the process of revision, but change was occurring very slowly. This revision, of course, led to a very difficult situation for the British tax collectors, and these tables were a welcome addition to their resources.

The appendix contains a letter from James Prinsep (who helped create the tables) to the Calcutta Mint Committee advocating the establishment of a single system of coins and measures.

Illustrations available: Title page

M 147

Muncker, Phillip

De intercalatione variarum gentium, et præfertim Romanorum, libri quatuor; ...

> Year: 1680 Place: Leiden Publisher: Jacob Hack Edition: unknown Language: Latin

Binding: contemporary vellum Pagination: pp. [32], 410, [16] Collation: *****A–2C*D⁵ Size: 175x112 mm

This volume examines the calendar calculations of the ancient Egyptians, Hebrews, Greeks and Romans. It also



Illustrations available: Title page

contains sections on the calendar reform from the Julian

M 148

Murhard, Wilhelm August (1779–1853)

Litteratur der mathematischen Wissenschaften.

Year: 1797–1803 Place: Leipzig

to the Gregorian system.

Publisher: Breitkopf und Härtel

Edition: 1st Language: German

Binding: contemporary marbled paper boards

Pagination: v.1: pp. [2], xvi, [6], 256; v.2: pp. [2], xii, [6], 436; v.3: pp. xii, [4], 360; v.4: pp. [8], 344; v.5: pp. [4], vi,

 $\begin{array}{l} Collation: v.1:)(^8)()(^4A-Q^8; \ v.2: \ a^8)()(^2A-2D^82E^2; \ v3: \ ^*8A-Y^8Z^4; \ v.4: \ ^*^4A-X^8Y^4; \ v.5: \ ^*^5A-P^8Q^2 \end{array}$

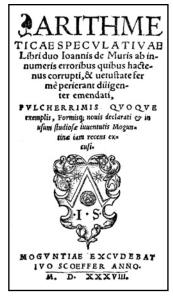
Size: 202x116 mm

Reference: Bru MLAL, #31738

Murhard was born in Kassel and, after studying mathematics in Göttingen, was appointed as the librarian of the Kassel Museum. Later in life he became a journalist specializing in legal affairs.

This two-volume set (which actually incorporates five volumes of material, each separately paginated) is one of the earliest bibliographies of mathematical subjects. It contains about 10,000 entries arranged chronologically in subject groups. The term *mathematics* is treated broadly, and this bibliography includes works on bookkeeping,





M 149

physics, astronomy, fortification, ballistics, architecture, instruments and many other fields. While this is an interesting reference work even today, it is difficult to use because of its organization.

Illustrations available: Title page

Muris, Joannes de (ca.1290-ca.1360)

Arithmeticæ speculativæ libro duo Joannis de Muris ab innumeris erroribus quibus hactenus corrupti, & vetustate fermè perierant diligenter emendati. Pulcherrimis quoque exemplis, Formisq; novis declarati & in usum studiosæ ivventutis Moguntinæ iam recens excusi.

Year: 1538 Place: Mainz Publisher: Ivo Scoeffer

Edition: 1st Language: Latin

Binding: contemporary paper wrappers

Pagination: pp. 88, [2] Collation: A-E8F5 Size: 162x95 mm

Reference: Pogg Vol. II, p. 132; Smi Rara, p. 119

Joannes de Muris (Murs or Muria) was born in Normandy. He studied at the Sorbonne and later taught there. He is known to have written on arithmetic (usually the arithmetic of **Boethius** rather than practical arithmetic), astronomy and music.

This is a typical work on figurative numbers and other concepts usually associated with Boethius. De Muris



Colophon, M 149

seems to have been the source of several other derivative works in the sixteenth century. **DeMorgan** (Arithmetical Books) indicates that the first section of Margarita Philosophica by Gregor Reisch is a summary of the works of **Boethius** in the words of John de Muris.

Illustrations available: Title page Arithmetical diagram Colophon

Murray, Francis Joseph (1911–)

The theory of mathematical machines

Year: 1947 Place: New York Publisher: King's Crown Edition: 1st Language: English Binding: ring bound Pagination: pp. viii, 116 Size: 280x215 mm Reference: Ran ODC, p. 429



M 150

Murray was a professor of mathematics at Columbia when he wrote this work. He later moved to Duke University and worked with such early computer notables as **John von Neumann** and **Herman Goldstine** at the IAS.

Murray had a deep and lasting interest in easing calculation by mechanical or electrical devices. In this book, which was produced in postwar conditions and thus is more akin to a spiral-bound, typed manuscript than to a properly published book, he investigates the complete range of mechanical, electro-mechanical and electric devices that had been developed for doing calculation. He begins with a discussion of the abacus and progresses through the attempts at creating digital calculating machines to sophisticated analog devices developed during World War II. The diagrams of the devices and circuits are clear; however, Murray assumes the reader has a good mathematical background, and the theory descriptor in the title should not be taken lightly. His descriptions of the mechanical instruments are particularly complete with, for example, one of the few descriptions of anti-backlash gears available in the general literature.

Illustrations available: Title page Anti-backlash gears

M 151

Murray, Francis Joseph (1911-)

The theory of mathematical machines

Year: 1948 Place: New York Publisher: King's Crown

THE THEORY OF MATHEMATICAL MACHINES

FRANCIS J. MURRAY

ASSOCIATE PROFESSOR OF MATHEMATICS, COLUMBIA UNIVERSITY

REVISED EDITION

KING'S CROWN PRESS . NEW YORK

Edition: 2nd Language: English Binding: ring bound

Pagination: pp. x, 15, 65, 38, 16, 135–139

Size: 280x215 mm

This second edition of Murray's work was produced to add new material about the developing electronic calculators (no stored program computers were then operational, and the Manchester "Baby" machine was still a few months away). He also took the opportunity to correct some errors in the first edition. As he indicated in his preface:

Books and mathematical devices have one regrettable aspect in common. Initially, they have "bugs." It is hoped that in the second edition, we have eradicated most of the errors. Planographing should at least make the fumigation monotonic.

Illustrations available: Title page

M 152

Musalo, Andreas (1670–1721)

Uso de'logaritmi nella trigonometria piana, e nelli tiri dell'artiglierie, e de'mortari. A cui sono annesse le tavole d'essi logaritmi, tanto per i seni, e tangenti, quanto per i numeri dall'unita al 10000

Year: 1702 Place: Venice

Publisher: Gio. Domenico Nanti

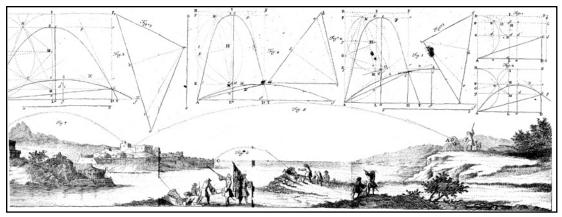
Edition: 1st Language: Italian

Figures: 3 plates (1 folding)

Binding: contemporary mottled leather; rebacked



M 151



Mortar ballistics, M 152

Pagination: pp. [10], 108, [4], 91, [99] Collation: π^5 a-g⁸A-F⁸G⁶H-M⁸N¹

Size: 168x100 mm

Reference: Rcdi BMI, Vol. I, p. 189

This is a work on the mathematics of gunnery. The last two thirds is taken up by a table of logarithms of secants and tangents and another of logarithms of integers. Both tables are to eight figures.

Illustrations available:

Title page Mortar ballistics

M 153

Myers, William Alexander

The quadrature of the circle, the square root of two, and the right-angled triangle

Year: 1873 Place: Cincinnati

Publisher: Wilstach, Baldwin & Co

Edition: 1st Language: English

Figures: engraved frontispiece; 16 plates

Binding: original cloth boards; cover gilt-embossed; spotted

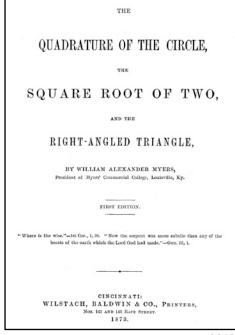
Pagination: pp. [2], viii, 9-150, 16

Collation: $\pi^{1}1-10^{8}11^{3}$ Size: 217x144 mm

As indicated on the title page, Myers was president of Myers Commercial College in Louisville, Kentucky.

The author points out in the preface that the problems considered here ...have heretofore been regarded by mathematicians as impossible. This is another of many such books that have been published by well-meaning amateurs. Myers could have saved himself a lot of time and trouble by reading **Jean Étienne Montucla**'s Histoire des recherches sur la quadrature du cercle.

Illustrations available: Title page



Erwin Tomash Library

