

From Forcadel, Le second livre de l'arithmetique, 1556

P 1 **Pace, Guilio** (1550–1635)

Artis Lullianæ emendatæ libri IV. Quibus docetur methodus, per quam magna terminorum generalium, attributorum, propositionum argumentorùmque copia, ad inveniendum sermonem de quacunque re, amplificandam orationem, inveniendas quæstiones, easdèmque dissoluendas, suppetat.

Year: 1618 Place: Valence Publisher: P. Pinelli Edition: 1st Language: Latin Figures: 1 folding plate

Binding: modern marbled paper boards

Pagination: pp. [8], 34, 39-40, 37-38, 35-36, 45-46, 43-79,

[1] (39, 37, 45, 41 mis bound) Collation: *⁴A–E⁸ (Signature C misbound)

Size: 156x90 mm

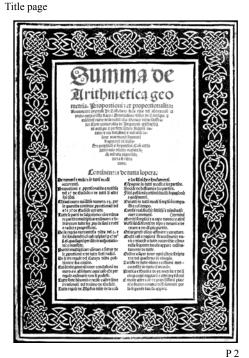
Pace was an Italian jurist and linguist who taught law at the Universities of Heidelberg, Nimes, Montpellier and Valence.



Р

Ramon Lull's 1308 manuscript *Ars magna* described a system of combinations that could be used to enumerate all the attributes of a subject (in this case God). It was the first use of mechanical (volvelles) and symbolic alphabets to ensure a systematic consideration of all the facets of an argument by reducing them to a symbolic coding scheme. This work is a commentary on Lull's *Art*. It begins by establishing the alphabet of symbols (the attributes of God) and then describes the various combinations of these attributes.

Illustrations available:



P 2 **Paciolo, Luca** (ca.1445–1517)

Suma de arithmetica, geometria. Proportioni: et proportionalita. Nouamente impressa in Toscalano su la riva dil Benacense et unico carpionista laco: Amenissimo sito: de li antique & evidenti ruine di la nobil cita Benaco ditta illustrato: cum numerosita de imp[er]atorii epitaphii di antique & perfette littere sculpiti dotato: & cum finissimi & mirabil colone marmorei: inumeri fragmenti di alabastro porphidi & serpentini. Cose certo lettor mio diletto oculata fide miratu digne sotterra se ritovano...

Year: 1523 Place: Toscalano

Publisher: Paganino de' Paganini

Edition: 2nd Language: Italian

Figures: engraved border on title page (f.p1r) and dedication (f.1r), title and dedication in red and black. Finger reckoning plate (f.36v)

Binding: leather-backed marbled paper boards; red leather label

Pagination: ff. [8], 224, 76

Collation: $\pi^8 A - Z^8 \tau^8 \zeta^8 \chi^{10} 2 A^{14} A - H^8 I - K^6$

Size: 305x212 mm.

Reference: Rcdi BMI, Vol. II, p. 62

Luca Paciolo (Paciolus, Patiulus, Pacioli) was reared in Borgo Sansepolcro in Tuscany. Little is known about his childhood. He moved to Venice while still a young man and became a tutor to the sons of a wealthy merchant. He took advantage of this position to learn bookkeeping as used in Venetian business and commerce. Paciolo also took the opportunity while in Venice to study more advanced mathematics under Domenico Bragadino. This combination of mathematical and business studies is reflected in this famous work.

After the death of his merchant benefactor (c. 1470), Paciolo traveled in Italy and spent time in several of the major cities teaching mathematics and writing books for his students. He was a compiler of information rather than an original mathematician. He had been working on this text for several years when, in 1494, he spent time in Venice supervising its printing.

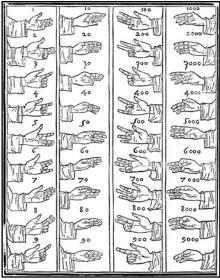
In 1497, Paciolo moved to Milan to teach at the court of the Duke of Milan, and there he met Leonardo da Vinci. The two men enjoyed working together on projects (including da Vinci's producing the drawings for Paciolo's 1509 work, *Divina proportione*).

The *Suma* was widely circulated in the seventeenth century and was referred to by mathematicians of stature such as **Cardano** and **Tartaglia**. It consists of two distinct sections (each separately numbered and with their own colophon). The first 224 leaves are a description of arithmetic operations, algebra and bookkeeping. This is the first time the Venetian double-entry bookkeeping system had been described in print. Paciolo took pains to make clear that he was not the inventor but was merely describing a system that had been in use for the previous 200 years. The final 76 leaves cover geometry. This latter work starts in the classical manner following Euclid but quickly diverges to practical matters involving volume, heights of towers, gauging, etc.

A plate in this work shows the finger numerals usually attributed to the **Venerable Bede**. Pacioli revised Bede's system so as to make the order of numerals consistent for both the right and left hands. For a succinct discussion of the Pacioli revisions, see Kusukawa, Sachiko; A

Σt h lequêti pti preipati Leo'hinis decima nouembris pohtus hierit:puic tamen pti die vigehma einsdé impolitus huit. A>cecce,ptij: Poer eosdem conectore a impessorem vt in fine Leo'hfetur-

Folio 224 colophon, P 2



Finger numerals, P 2

manual computer for reckoning time. In Sherman, Claire Richter; Writing on hands. Memory and knowledge in early modern Europe, 2000, University of Washington Press, Seattle, 2000, pp. 28–34.

This 1523 second edition is identical to the first edition of 1494, with the exception that it has been completely reset, and many of the woodcuts in the margin have changed slightly.

Et per esfo pagamino of nouo impresía. In Eufeulano fula riua oil laco Benacenfe: nel proprio luco et Sitorboue gia esfer folea la nobile cita vitta Benaco. Regnante il Serenifiumo principe. D. B. Andrea Britti Inclito duce di Genegia.

Finita adi. t. Becembre. 1523.

1 A B 5 B E 0.

Final colophon, P 2

It would appear that the first edition may have had two different issues with corrections made in the time between them. The 1989 reproduction produced by the Yushodo Co. Ltd. of Japan (which states it is reproducing the first issue of the first edition) clearly shows the gelosia method of multiplication (ff 24 v) with the incorrect number 759 (rather than 789) down the left-hand side of the upper example. **Smith**, in *Rara Arithmetica*, p. 56, shows this same illustration with the correction to 789 (the type apparently differing slightly from that used in the example being cataloged). Smith apparently took his illustration from the second issue of the first edition. It is unlikely, but possible, that **Smith** simply obtained his illustration from this second edition).

Illustrations available:
Title page (color)
Start of text (dedication) (color)
Folio 224 colophon
Final colophon

Finger numerals
Quadrilateral multiplication (and an excerpt of the diagram)
Binary fractions text
Powers of two
Multiplication table (3 pages)
Names of the number orders
Addition of money
Gelosia multiplication
Multiplication examples

P 3

Packard, Silas Sadler (1826–1898) and Bryon Horton (1851–)

The new Packard commercial arithmetic.

Year: 1891 Place: New York Publisher: S. S. Packard Edition: unknown Language: English

Binding: original cloth boards Pagination: pp. vi, 360, iv Size: 206x146 mm

Packard was the president of Packard's Business College in New York and Horton was the head of the mathematics department there.

According to the preface, an earlier edition of this work, intended for use in commercial schools, lacked the introductory material usually found in a beginner's book. In this edition the missing material has been introduced with the author's hope that it would lead to wider acceptance of the book. While the majority of the exercises are commercial in orientation, a short section on square and cube roots, averages and a few other standard arithmetic subjects have been added.

Illustrations available:

Title page



P 4

Paduani, Giovanni (ca.1512–)

Della computatione de' tempi ove si mostra l'utileita che si riceve dal moto de lumi celesti. Con la detrattione di quei dieci giorni fatta l'anno 1582.

Year: 1590 Place: Verona

Publisher: Girolamo Discepolo

Edition: 1st (Italian) Language: Italian

Figures: Title page and pp. 5-16 in red and black

Binding: later marbled boards Pagination: pp. [16], 17–97, [3]

Collation: A⁸B–L⁴M² Size: 206x149 mm

Reference: Rcdi BMI, Vol. II, p. 234

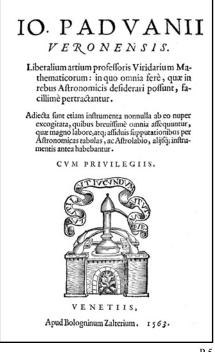
Smith (*Rara*) indicates that Paduani (Padovani) was a mathematician in the latter half of the sixteenth century. He might also have been an instrument maker, but little else seems to be known about him. Riccardi (*Biblioteca Matematica Italiana*) identifies him as a native of Verona and indicates that he published at least twelve books, the *Della computatione* being his second to last.

This is a work on the calendar. It contains the usual material on saints' days and the information needed to calculate the dates of the movable feasts, including a perpetual table at the end. It also contains information on the moon, tables of planets and other material seldom found in works on the church calendar. Single-page calendars, printed in red and black, give the significant information for each month of the year.

Illustrations available:
Title page (color)
Calendar page for December (color)
Perpetual feast day calendar



P 4



Paduani, Giovanni (ca.1512-)

Liberalium artium professoris viridiarium mathematicorum: in quo omnia ferè, quæ in rebus astronomicis desiderari possunt, facillimè pertractantur.

Adjecta sunt etiam instrumenta nonnulla ab eo nuper excogitata. quibus brevissimè omnia assequuntur, quæ magno labore. atq; assiduis supputationibus per astronomicas tabulas, ac astrolabio, alijsą; instrumentis antea habebantur.

> Year: 1563 Place: Venice

Publisher: Bolognino Zalteri

Edition: 1st Language: Latin Figures: 3 folding plates Binding: contemporary vellum Pagination: pp. [16], 208, [8] Collation: *4*4A-2D4 Size: 208x150 mm

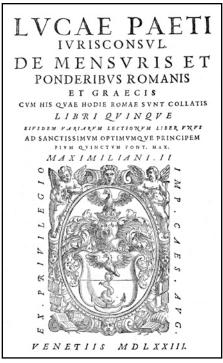
Reference: Rcdi BMI, Vol. II, p. 232

This is a work on the calendar with additional material on astrology, the planets, sexagesimal calculation and the use of the astrolabe. It contains much of the material found in his later work, Della computatione. According to H. P. Kraus, the New York book dealer, Tycho Brahe owed a copy of this book. Some copies of this work have additional folding plates bound into them illustrating the instruments that the author offered for sale. Kraus

indicates that these illustrations are different in the two copies he examined, and they do not occur at all in this copy. It would appear that they are not an integral part of the book but were simply included haphazardly. All of this information from Kraus must be considered suspect as he also describes this book as having a different dedication in each chapter (which is true) and says that all of the horoscopes appear in the fifth section (which they do not in this copy—the book actually has six sections with different dedications, and the only horoscope in the fifth section is that of the author).

Illustrations available:

Title page De sphaera illustrations Horoscope



P 6

Paetus, Lucas (-1581)

De mensuris et ponderibus Romanis et Graecis cum his quae hodie Romæ sunt collatis libri quinque. Eiusdem variarum lectionum liber unus ...

Year: 1573 Place: Venice

Publisher: [Paulus Manutius][Aldus]

Edition: 1st Language: Latin

Binding: later half-leather marbled boards Pagination: pp. [8], 56, [8], 73–93 [1] Collation: *4A-G4H2I2K-L4M3

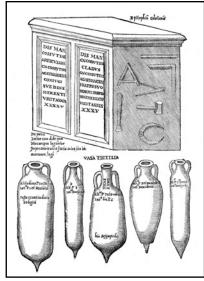
Size: 291x193 mm

Reference: Smi Rara, pp. 343-346

Paetus was a Venetian jurist interested in ancient artifacts, and this, like many books with similar titles, is a description of ancient Greek and Roman weights and measures.

There were two different editions, both issued in Venice in 1573. The easiest way to tell them apart is by noting that one has commas after *Romanis* and *Graecis* on the title page and the other does not.

Illustrations available:
Title page
Weights and measures diagrams (2)



Measures, P 6

P 7

Pagnini, Giovanni

Costruzione ed uso del compasso di proporzione...

Year: 1753 Place: Naples

Publisher: Ignazio Russo Edition: 1st

Language: Italian Figures: 15 plates

Binding: contemporary vellum

Pagination: pp. [8], 56 Collation: a⁴A-G⁴ Size: 236x173 mm

Little is known of the author other than that he wrote another book on navigation in 1750. This work on the sector was translated into Spanish in 1758.

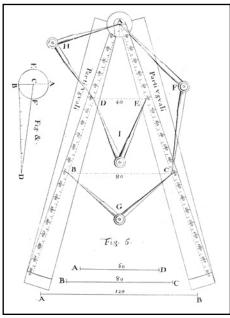
By the time this book was published, the design of the European sector had become standardized. Compare this design, for example, with that in the fourth edition of the works of Ozanam seventeen years earlier (see the entry for **Ozanam, Jacques**; *L'usage du compas de proportion*, 1736). The physical design of Pagnini's instrument is



P 7

better (with pegs and decorative tenons to hold the two legs in alignment), but the scales are essentially identical. The work is well illustrated with engravings showing exactly how a pair of dividers should be used to take the various lateral and transverse measurements.

Pagnini provides eight tables that detail the exact markings for each scale. He also provides other material for reference use, e.g., he includes not only a table for the construction of the line of metals, but also one of their relative weights and their alchemical symbols, etc.



Use of dividers with the sector, P 7

Illustrations available:

Title page

Sector

Sector in use with dividers Table of the line of metals

P 8

Paine, Albert Bigelow (1861–1937)

In one man's life. Being chapters from the personal and business career of Theodore N. Vail

Year: 1921 Place: New York

Publisher: Harper & Brothers

Edition: 1st Language: English

Figures: portrait frontispiece, 10 photolith plates Binding: original gilt-embossed cloth boards

Pagination: pp. [12, 359, [1] Collation: 1⁶2–23⁸24⁵ Size: 207x139 mm

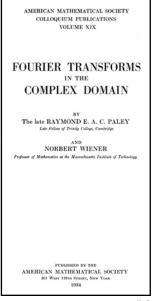
Paine was a writer who specialized in biographies of prominent Americans and who is best known for several different versions of his biography of Mark Twain.

Theodore Vail was the chief executive of the Bell Telephone system and of its successor, AT&T, from the late 1870s until his retirement in 1919. It has been said that Bell invented the telephone, but Vail created the Bell Telephone System. The frontispiece is a portrait of Vail.

Illustrations available:
Title page and frontispiece

Palevsky, Max

See **Buchholz, Werner**; The design of the Bendix Digital Differential Analyzer. In Proceedings of the I. R. E., Vol. 41, No. 10, October 1953.



P 9

Р9

Paley, Raymond Edward Alan Christopher (1907–1933) and Norbert Wiener (1894–1964)

Fourier transforms in the complex domain

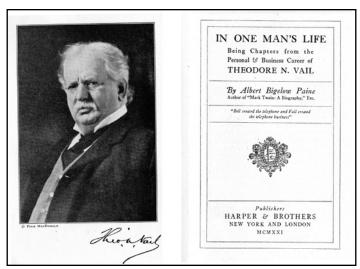
Year: 1934 Place: New York

Publisher: American Mathematical Society

Edition: 1st Language: English

Figures: portrait frontispiece of Paley Binding: original cloth boards Pagination: pp. viii, 184, [2] Size: 255x169 mm

Wiener, a mathematics professor at MIT, and Paley, a Fellow of Trinity College, Cambridge, and a Rockefeller

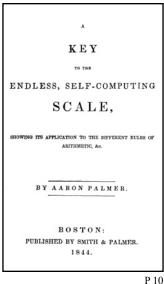


Frontispiece and title page, P 8

Fellow at MIT, were working together on the mathematics of Fourier transforms when Paley was killed in a skiing accident. This volume is a report of their work.

Illustrations available:

Title page



P 10

Palmer, Aaron

A key to the endless, self-computing scale, showing its application to the different rules of arithmetic, &c.

> Year: 1844 Place: Boston

Publisher: Smith & Palmer

Edition: 1st Language: English

Figures: engraved frontispiece

Binding: original cloth boards; gilt-embossed front cover

Pagination: pp. 50 Size: 155x94 mm

See also the entry for **Palmer**, Palmer's pocket scale, 1845. Unlike Palmer's pocket scale, this instruction booklet covers the use of his similar, larger-sized. instrument that was about 8.5 inches in diameter.

Illustrations available:

Title page

P 11

Palmer, Aaron

Palmer's pocket scale with rules for its use in solving arithmetical and geometrical problems.

> Year: 1845 Place: Boston

Publisher: Aaron Palmer

Edition: 2nd

Language: English

Figures: heavy paper circular slide rule mounted inside back

Binding: original cloth boards; embossed covers; gold-stamped front cover

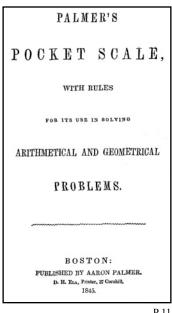
Pagination: pp. 48 Collation: 1-46 Size: 145x90 mm

Reference: Karp MWPA, pp. 461-462

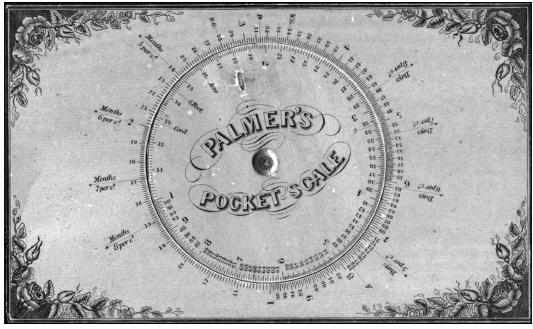
Aaron Palmer and George G. Smith (an engraver) began the first slide rule manufacturing business in the United States in 1841. While linear slide rules were known in America (although not widely used) at the time, it is likely that the circular version was a novelty. John E. Fuller joined the business in 1845, and there are no further records of Aaron Palmer's involvement. From that time on, the *computing scale* was produced under Fuller's name. The original was a cardboard square with circular logarithmic scales some 8.5 inches in diameter. The smaller instruments in these books are just over 2.5 inches in diameter.

This is a pocket circular slide rule (mounted on the inside back cover of the book) that Palmer designed for commercial calculations. It contains a number of markings not normally found on slide rules: various percentage interest rates, wine and beer gallons, timber measure, etc. The device came in two forms, one printed on thick cardboard stock and the other stamped in metal. This volume contains the thick cardboard version. A second volume in the collection has the metal rule.

Illustrations available: Title page Instrument



P 11



Palmer's circular slide rule, P 11

P 12 **Palmer, John** (fl.1631–1672)

The catholique planisphær. Which Mr. Blagrave calleth the mathematical jewel; briefly and plainly discribed, in five books ... Hereunto is added a brief description of the cros-staf. And a catalogue of eclipses, observed by the same I. P.

Year: 1658 Place: London

Publisher: Printed for Joseph Moxon

Edition: 1st Language: English

Figures: engraved frontispiece; 4 engraved folding plates Binding: contemporary three-quarter leather over marbled

boards; gilt spine; black leather label

Pagination: pp. [4], 215, [13] Collation: A²B–2F⁴2G² Size: 192x142 mm Reference: Tay *MP* I, #243

John Palmer was rector of Eaton and Ecton near Northampton. He later became archdeacon. He was a student of **Samuel Foster** and is known to have observed a number of eclipses (from 1638 onward) with his own telescope.

It was at the request of **Joseph Moxon** that he began to edit **John Blagrave**'s *Mathematical Jewel* (1585). He incorporated a number of improvements, not only his own but also those suggested by **Samuel Foster** and by the instrument maker Anthony Thompson. First the construction of the instrument is explained, and then numerous examples are given of its application in

astronomy (solution of spherical triangles), dialing, etc. The last part of the text is a description of a cross staff made by Thompson and a list of eclipses that Palmer had observed. A poem about astronomy and three pages of errata close the work. While there is no complete diagram of the instrument, it is evident that Moxon sold printed paper versions as Palmer advises:

The Catholique PLANISPHÆR. Which Mr Blagrave calleth The Mathematical Jewel; Briefly and plainly discribed, in Five Books. The first shewing The making of the Instrument. The rest shewing the manifold Vie ot it. 1. For representing inveral Specietons of the Sphere. 2. For resolving all Spherical Triangles. 3. For resolving all Froblemes of the Sphere; Astronomical, Astrological, and Geographical. 4. For making all series of Dials, both without Doors and Within 3 upon any Walls, Cielings, or Floores, be they never so Irregular, where soever the Direct or Restlected Beams of the Sun may come. All which are to be done by this Instrument, with wondrous Ease and Delight. A Treatife very usefull for Marriners, and for all Ingenious Men, who love the Arts Mathematical. By John Palmer. M.A. Hereunto is added a baies Description of the CROSSTAF. And a Catalogue of Eclifics, Observed by the same 1. P. The Heseunt description of God; anothe Firmames showed bit Heads work, Figh. 19. The Heseunt description of God; anothe Firmames showed bit Mends work, Figh. 19. London, Printed by Joseph Moscon, and sold at his Shep en Cormbist, at the Signe of Atlas. 1658.

...cut out the reet, and fit the Label to it leaving it sufficient length to reach to the out-side of the Mater.

The frontispiece shows a woman working with the instrument and being watched by portraits of both Palmer and **Blagrave**. A Harrison Horblitt book label is on the front endpaper.

Illustrations available:

Title page Frontispiece Poem Cross-staff



Frontispiece, P 12

P 13 **Parent, Antoine** (1666–1716)

Traité d'arithmetique théori-pratique en sa plus grande perfection: Divisé en deux parties. Où l'on réduit à des principes généraux les opérations numériques, qui regardent principalement les arts & le commerce, tant en entiers, qu'en parties usuelles, & aussi en logarithmes, en fractions communes, & en décimales. Par les métodes les plus courtes & les plus aisées, avec les démonstrations simples & naturelles des opérations, independamment de la géometrie & l'algébre. Le tout enrichi de quantité d'examples. Ouvage utile à toutes sortes de commerçans, banquiers, financiers, & principalement à tous ceux qui veulent entrer dans les mathematiques.



P 13

Year: 1714 Place: Paris

Publisher: Jean de Nully at Claude Jombert

Edition: 1st Language: French

Figures: 1 engraved folding plate Binding: contemporary leather; gilt spine Pagination: pp. [14], 240, 52, [2]

Collation: a⁷A–P⁸A–C⁸D³ Size: 189x112 mm

Parent was a mathematician and physician. He was elected as a member of the Académie des Sciences in 1699.

This is a book on arithmetic that begins with simple numeration and progresses quickly through the basic operations. The majority of the work consists of examples and problems ranging from simple arithmetic progressions to division of goods. A supplement gives problems in sailing and other nautical situations. One of the more interesting items shows the commercial use of

CHAPITRE V.

Contenant quelques additions aux régles de la premiere Partie.

Sur les Caractères Romains usitez dans le Commerce.

ART. I TE trouve qu'on marque encore 80 ainsi (IIIIxx;) 90 ainsi (IIIIxxX;) 200 ainsi (IIIC;) 300 ainsi (IIIC;) 400 (IVC;) 500 (VC on ID;) 600 (VIC on IDC, &c.) 1000 (T) 10,000 (X M on X;) 100,000 (C M on C;) 1,000,000 (M M,) 10,000,000 (X M M;) 100,000,000 (C M M.)

Commercial Roman numerals, P 13

Roman numerals that reflect the French naming of 80 as quatre-vingt, etc. Another is an illustration of the old and new methods used for division in various parts of Europe. A second edition is known from 1718.

Illustrations available: Title page Commercial Roman numerals Division examples.

P 14

Paricius, Georg Heinrich (1675–1725)

Kurtz-und richtige Auflösung Eines vierfachverknüpfften Rechen-Knopffs

b/w: Paricius, Georg Heinrich; Praxis arithmetices, oder Gründliche Anweisung zu der Im gemeinen Leben und Wesen anschicklich-und dienlichen Rechen-Kunst..., 1706

> Year: 1705 Place: Regensburg

Publisher: Johann Zacharias Seidel

Edition: 1st Language: German

Figures: double-page title in red and black Binding: contemporary leather; red leather label

Pagination: pp. [8], 88 Collation: a-f8 Size: 158x90 mm

Paricius (who is also known as *Paritius*—but it is clearly a c on the title page) was a mathematician and writing master from Regensburg who is known primarily for his books on writing. However, this is a book on arithmetic that deals mainly with commercial calculations involving grain prices, profit and loss, money changing, etc. Although published earlier (1705), it is bound following a later publication (1706) by the same author. The 1706 book is simply an extension of the same material contained in the 1705 work.



1706 title page, P 14

Illustrations available: Title page (1706) (color) Title page (1705)



IV. Gine Berechnung wie fchwer die N. Ette Berechtlittig tot figures der Becker das Brod nach obbenanden kandlaufe finnen Gefien des Getrenbes durch alle Gorten von 1 dig 11 tr. ieffern follen. Welde Gerechnung nicht allein glien der Annagen fo ihrer Anne der inligefeln hierbeite haben finne dem much einem Wertern siehen siehen mit an nehmenbeig ist. Derkasser von Georg Zeinrich Paricio.
In Verlegung Johann Zacharias Seidels /
Buchhanelers in Regensburg. 1795.

1705 title page, P 14

Paricius, Georg Heinrich (1675–1725)

Praxis arithmetices, oder Gründliche Anweisung zu der Im gemeinen Leben und Wesen anschicklichund dienlichen Rechen-Kunst. Worinen nicht allein Die Teutsch-Englisch- und Französische Manier zu numeriren. Sondern auch die vier Species in Ein, und Viefach, Gantzen auch Gebrochenen Zahlen, nebst der Regula Tri deutlich und mit überall beygefügten General - und Special - Untersichten dergestalt gezeigt wird. Dass ein Unerfahrner selsten sich daraus informiren, einfolglich ohne mündlichen Lehrmeister in der Rechen-Kunst proficiren kan ...

b/w: Paricius, Georg Heinrich; Kurtz-und richtige auflösung eines vierfach-verknüpfften rechen knopffs, 1705.

> Year: 1706 Place: Regensburg

Publisher: Johann Zacharias Seidel

Edition: 1st Language: German

Figures: double-page title in red and black Binding: contemporary leather; red leather label

Pagination: pp. [24], 256, 32, 29-170, 39-42 (repeated), [2]

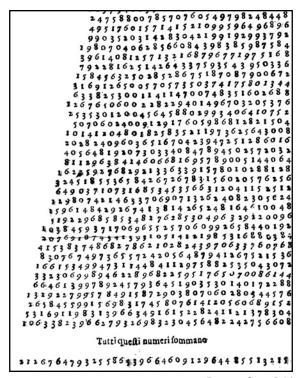
Collation: π^2)(4)()(6A-2C8D10

Size: 158x90 mm

See the entry for **Paricius**, *Kurtz-und richtige*, 1705.

Illustrations available:

None



Powers of two, P 16

P 16

Paris Da Montefano, Ludovico

Scala d'Araceli moltiplcata. Opera piena de meraviglie, dove per molte vie si mostra, come in rebus creatis non si trouva cosa, ch'in quantita numerica arrivi al numero prodotto dalla moltiplicatione dupplicativa fatta sopra tutti li 124 grandini di detta scalinata. Eccettuati li gradi della gratia santificante della Madre de Dio; li quali lo superano quasi in infinito.

Year: 1652 Place: Rome

Publisher: Ignatio de Lazzari

Edition: 1st Language: Italian

Figures: 1 letterpress long folding plate

Binding: Later speckled boards with parchment corners; red

calf spine Pagination: pp. [iv], 188 Collation: A² B–Z⁴ 2A² Size: 180x123 mm Reference: Smi *HM*, p. 33

This is a curious work based on a geometric series. Beginning with the number 1, Paris doubles it 124 times to produce a large table of the powers of 2. He then sums these powers to obtain a number of 38 digits. The body of the text is a curious commentary on these numbers.

Illustrations available:

Title page

Powers of two table (lower portion)



P 16

P 17

Parke, F. D.

Parke's one rule arithmetic, and new calculator.

Year: 1866 Place: Aurora, IL

Publisher: Knickerbocker & Hodder

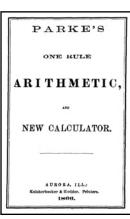
Edition: 1st Language: English

Binding: original paper wrappers

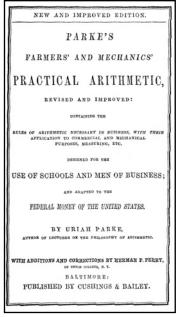
Pagination: pp. 32 Size: 114x76 mm

Parke gives a simple algorithm for several types of elementary financial and commercial calculations. He includes a number of worked examples for the student.

Illustrations available: Title page



P 17



P 18

Parke, Uriah - [Herman F. Perry]

Parke's farmers' and mechanics' practical arithmetic, revised and improved:

Year: 1854 Place: Baltimore

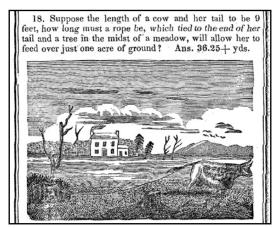
Publisher: Cushings & Bailey

Edition: new Language: English

Binding: original paper boards

Pagination: pp. 196 Collation: 1–7¹²8¹⁴ Size: 172x108 mm

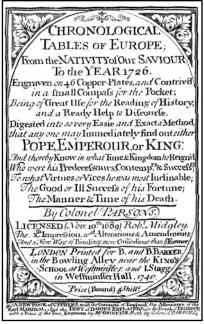
This is a typical American arithmetic book of the midnineteenth century. It begins with numeration and proceeds to give examples from commercial and trade arithmetic. Included are problems involving square



Cow problem, P 18

roots, mechanical advantage, etc. This work contains a few more unusual problems than many of the genre do—for example see the illustration of the cow tied to a tree.

Illustrations available: Title page Cow problem



P 19

P 19

Parsons, William (1658–ca.1725)

Chronological tables of Europe; from the nativity of our saviour to the year 1726.

Year: 1740 Place: London

Publisher: B. and B. Barker

Edition: 4th Language: English

Figures: 2 engraved folding plates

Binding: contemporary vellum; gilt spine and covers

Pagination: Il. 39 engraved Size: 75x118 mm Reference: Tay MP II, #100

Little is known of the author other than that he was associated with Christ Church, Oxford, and that he was a lieutenant-colonel in the British Army in 1687.

This book is engraved rather than set in type. It attempts not only to list the names of the leaders of Europe (princes, kings, popes, etc.) but also to assign them attributes that Parsons derives from astrological and other symbols (see illustrations).

The numbering of the leaves is unorthodox. The first leaf (engraved title page) is marked with what may be a

collation letter A in the upper-left corner and the Roman numeral III in the upper-right. The verso of that page is similarly marked with an A and the Roman numeral I. The recto of the second leaf is also marked A and I but its verso is signed A IV. The third sheet verso is signed *I but the recto is B I. Similar marks appear on the next two sheets (r B II v B III; r B IV v C I). All other leaves are printed only on one side. From C2 to C18 all rectos are blank and all versos are engraved while in the rest of the work it is the reverse occurs. There are thirty-eight leaves in total (seventy-eight pages), of which forty-five pages are engraved (with two additional folding engraved pages) while thirty-three are blank.

Illustrations available:

Title page Page for the 15th century Page of alphabetical listing of rulers Key to the symbols Perpetual calendar



Perpetual calendar, P 19

P 20

Parsons, William (Third Earl of Rosse) (1800–1867)

Address of the President. In Proceedings of the Royal Society, Vol. VII, No. 10, November 30, 1854.

Year: 1854 Place: London

Publisher: Royal Society of London

Edition: 1st Language: English Binding: paper wrappers Pagination: pp. 247–290 Reference: DSB X, pp. 328–329

Parsons, at the Anniversary Meeting of the Royal Society on November 30, 1854, gave a summary of the interactions

among the Royal Society, the British government and **Charles Babbage** regarding the construction of Babbage's Difference Engine. He reported that after consulting many of the leading engineers and scientists, he had asked

... the President of the Society of Civil Engineers to report whether it would be practicable to make a contract for the completion of Mr. Babbage's Difference Engine, and if so, for what sum. This was in 1852, during the short administration of Lord Derby, and it led to no result. The time was unfortunate, a great political contest was impending, and before there was a lull in politics, so that voice of Science could be heard, Lord Derby's government was at an end.

Illustrations available: Title page

P 21

Partridge, Seth (1603–1686)

The description and use of an instrument, called the double scale of proportion. By which instrument, all questions in arithmetick, geometry, trigonometry, astronomy, geography, navigation, fortification, gunnery, gaging vessels, dialling, may be most accurately and speedily performed, without the assistance of either pen or compasses.

Year: 1671 Place: London

Publisher: G. Sawbridge Edition: 3rd

Language: English
Figures: 2 folding plates

Binding: contemporary mottled leather; red leather label

Pagination: pp. [8], 6, 9–188 Collation: A⁷B–M⁸N² Size: 165x102 mm

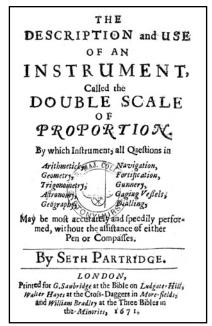
Seth Partridge describes himself as a surveyor, but according to the *Dictionary of National Biography*, he spent most of his time teaching mathematics.

He wrote this work in 1657, but it was not published until 1671. This book describes the now standard linear logarithmic slide rule. It is the one that introduced the version with two fixed scales and a sliding scale between them. It seems to have been Partridge's own invention. He describes the instrument as having three parts or rulers

These three Rulers, or pieces of this scale, are to be all of one even length and thickness, and by the edges so evenly joynted, that they may justly slide along close one by the oher, having at each end a little plate of Brasse, or Wood fitted to hold them close together and so fastened to the two outside pieces, that they may be kept steady and the middle Ruler to slide to and fro between them.

As is usual in instrument books of this era, there is no illustration of the slide rule, but explicit directions are given to the shop of Mr. Walter Hayes, where they could be purchased. After describing the use of the instrument in normal arithmetic, Partridge continues with examples of its use in astronomy, dialing, etc.

Illustrations available: Title page



P 21

P 22 **Pascal, Blaise** (1623–1662)

Oeuvres de Blaise Pascal

Year: 1779 Place: The Hague Publisher: Chez Detune Edition: 1st (Collected) Language: French

Figures: v.1: engraved portrait frontispiece; v.4: 9 folding plates; v.5: 5 folding plates

Binding: contemporary leather; red leather label; gilt spine; raised bands

Pagination: v.1: pp. 132, 426; v.2: pp. xii, 550; v.3: pp. viii, 526; v.4: pp. viii, 456; v.5: pp. viii, 462

Collation: v.1: $a-h^8i^2A-2C^82D^5$; v.2: $a^6A-2L^82M^22N^1$; v.3: $a^4A-2I^82K^7$; v.4: $a^4A-2E^82F^4$; v.5: $a^4A-2E^82F^7$

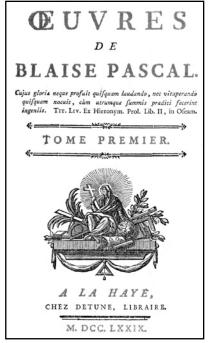
Size: v.1: 197x118 mm; v.2: 195x120 mm; v.3: 196x121 mm; v.4: 196x117 mm; v.5: 195x120 mm

Reference: Pogg, Vol. II, p. 370; DSB X, p. 340

Blaise Pascal was born in Clermont-Ferrand in the Auvergne region of France, where both his father and mother had deep familial roots. His father, Étienne, a local administrator and tax collector, soon recognized Blaise's exceptional intellect and his talent for mathematics and undertook to oversee his education at home. From 1632, when he was nine years old, until 1639, the Pascal family lived in Paris. They then moved to Rouen, where Étienne had been appointed senior commissioner of taxes for upper Normandy. They returned to Paris in the summer of 1647. **Charles Bossut**, the well-known historian of mathematics, edited these collected works.

In 1642, when Pascal was an eighteen-year-old, he invented what he called a *numerical wheel calculator* to help his father with his duties in assessing and collecting taxes. The design and production of the calculator took Pascal nearly three years. The resulting brass rectangular box, also called a *Pascaline*, had eight ten-position movable dials linked with gears such that as a wheel moved through zero, the dial to the left advanced one notch.

Previous (and even later) attempts at devising such a mechanism were of the type usually called a *single-tooth carry mechanism*. In this scheme (such as was produced by Schickard—see below), a single tooth is attached to each result wheel so that when the wheel turns through a complete revolution and passes from 9 back to 0, the tooth will engage with the next highest wheel and advance it one position. Because of the friction loads involved, these single-tooth carry mechanisms proved difficult for greater than three-column additions. For



P 22



Frontispiece (Pascal), P 22

example, the addition of 1 to the number 99,999,999 was usually not possible due to insufficient strength in the component parts (and of the operator) to execute a carry through all the eight positions.

The beauty of the Pascaline was that it avoided this problem by storing up the energy needed to perform the carry. As a result wheel rotated, it raised a weight (labeled "3, 4, 5" in figures 4 and 5 of the illustrations). When the result wheel rotated from 9 to 0, the weight would slip out of the pins (attached to the wheel labeled "viii" in Figure 6) and fall down, the foot ("1" in figures 4, 5, & 6) kicking the adjacent wheel one place around to effect the carry. Thus Pascal's ingenious carry mechanism does not require the operator to use excessive force to propagate a carry across multiple digits. The operator needed only to use enough strength to cause the first wheel to rotate from 9 to 0, and the falling weights did the rest. Unfortunately, the pins holding up the weights (and the weights themselves) were not produced to sufficient tolerances. A sharp blow such as bumping the table would often be sufficient to dislodge the weights and cause a premature carry.

The use of an analog train of gear wheels (linked so that each time one wheel completes a revolution the next wheel turns one tenth of a revolution, thus recording a carry) is very ancient and even appears in the works of Hero of Alexandria. Until recently, it was thought that Blaise Pascal was the first to design a digital calculating device capable of both arithmetic and carrying. It is now generally accepted that he was preceded by the German mathematician and astronomer Wilhelm Schickard.

Pascal invented his machine in 1642 and by 1645 had completed the prototype. Subsequently, a small number (fewer than thirty) were built. The number of examples that have survived is not certain. Seven are known to the authors: four are to be found at the Musée du Conservatoire des Arts et Métiers in Paris; another is at the Musée du Ranquet, Clermont-Ferrand; another at the Staatlicher Mathematisch-Physikaler Salon in Dresden; and one is in the collection of IBM. IBM commissioned a number of fine copies, and these occasionally appear on the market. The reproductions are good enough to deceive the unwary.

Illustrations available:

Title page

Frontispiece portrait of Pascal

Two plates showing the inner workings of the machine

P 23

Pasi, Anton Bartholomeo di

Tariffa de pexi e mesure. Con gratia et privilegio

Year: 1503

Place: Venice

Publisher: Albertin de Lisona

Edition: 1st

Language: Italian

Binding: Later three-quarter-bound leather over boards

Pagination: ff. [155] Collation: *8*** Size: 210x144 mm

Anton Bartholomeo di Pasi (Paxi) was a Venetian writer of the late fifteenth and early sixteenth centuries.

This work does not deal with arithmetic but with commercial relations between Venice and her trading partners. It details the various conversions in weights and measures, the relative value of different commodities and similar information that would have been very useful to merchants. It went through at least four editions, the last being in 1557. As pointed out by **Smith** (*Rara*), this type of information is also of great value to historians attempting to follow trade patterns or to determine the value of different goods. There is no date on the title page and no colophon—the date of 1503 comes from the entry in **Smith** (*Rara*).

Illustrations available: Title page First text pages

> TARIFFA DE PEXI E MESVRE. CONGRATIA ET PRIVILEGIO.

Patent Office - [France]

Machines a calculer [Cantini p. 17, de Souza p. 18]. In Description des Machines et Procédés pour lesquels des Brevets d'Invention ont été pris; 1874, Tome XI.

Year: 1874 Place: Paris

Publisher: Imprimerie Nationale

Edition: Extract Language: French Figures: 5 folding plates Binding: disbound Pagination: pp. 23 Size: 282x225 mm

Under the general heading of *Instruments de Précision*, this gives a brief mention of two calculating machines. The first, an adding machine by Cantini, resembles Pascal's machine in its input dials, while the second, by Suza, appears to be a counting mechanism.

Illustrations available: First page

P 25

Patent Office - [France]

Machines a calculer [Doolittle p. 1, Desnos p. 3, Davis p. 4]. In Description des Machines et Procédés pour lesquels des Brevets d'Invention ont été pris; 1875, Tome XVII.

Year: 1875
Place: Paris
Publisher: Imprimerie Nationale
Edition: Extract
Language: French
Figures: 4 folding plates
Binding: disbound
Pagination: pp. 8
Size: 282x225 mm

This extract mentions three calculating machines: a very short, and uninformative, description of a machine by Doolittle; one by Desnos that appears to be something to aid travelers in figuring distances and time; and one by Davis that is little more than a counting mechanism.

Illustrations available: First page

P 26

Patent Office - [France]

Machines a calculer [Mayer p. 3, Lorenz p. 66, Richard p. 70]. In Description des Machines et Procédés pour lesquels des Brevets d'Invention ont été pris; 1877, Tome LXIII.

Year: 1887 Place: Paris

Publisher: Imprimerie Nationale

Edition: Extract Language: French Figures: 20 folding plates Binding: disbound Pagination: pp. 100 Size: 282x225 mm

This briefly describes three calculating machines: one by Mayer has keys for the digits labeled 0 to 9 and appears to allow only the addition of single-digit numbers; the Lorenz machine appears more complex—it performs multiplication—with large vertical wheels to enter the numbers; the Richard machine appears to be more of a measuring device, recording on a rotating cylinder like a modern chart recorder. None of these machines are mentioned in any of the standard reference books such as the one by **Ernst Martin**.

Illustrations available:

None



D 27

P 27

Paulinus a Sancto Josepho, Lucensi or Chelucci, (1682–1754)

Institutiones arithmeticæ cum appendice de natura, atque usu logarithmorum

Year: 1743 Place: Rome Publisher: M. Jordan Edition: 1st Language: Latin Binding: contemporar

Binding: contemporary vellum Pagination: pp. xvi, 159, [3] Collation: a–b⁴A–T⁴V⁵ Size: 201x142 mm

Reference: Rcdi *BMI*, Vol. I, p. 346 (under Chelucci, Paolino); Pogg, Vol. I, p. 1203 (under a St. Josepho, Paulinus) Paulinus (Paolino) was a professor of mathematics at the Archigymnasium in Rome. He is known to have written a number of books on mathematics.

This book on arithmetic is distinguished by its appendix on logarithms. In it, the author provides many different examples of logarithmic arithmetic but no tables.

Illustrations available: Title page Log example

P 28

Paulus de Paulis

Liber dubiorum. "Explicit liber dubiorum utilissimus editus ab eximic artium monarca domino magistro Paulo de Paulis. Ego Petrus Filippi de Villanis de Prato scripsi dum erat studens Pisis 1474 die mono mensis madij." [f. 58 verso]

b/w: **Albert of Saxony**; *Explicit tractatus proportionum* ..., 1476

Year: 1474 Place: n/p

Publisher: Petrus Villanus de Prato

Edition: manuscript Language: Latin

Binding: contemporary wooden boards; with broken clasp

Pagination: ff. [69] Size: 247x155 mm

See the entry for **Albert of Saxony**, 1476.

Illustrations available:

Title page—explicit (color)

Payen, L.

See Calculating Machines – Payen; Arithmomètre L. Payen. Machine à calculer.

P 29

Payne, John

Tables for valuing labor and stores, by weight or by number.

Year: 1811 Place: London

Publisher: W. Winchester and Son

Edition: 1st Language: English

Binding: contemporary leather; rebacked; black leather label

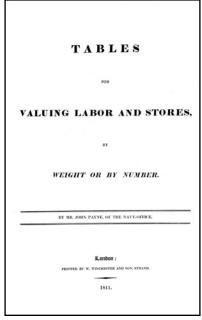
Pagination: pp. [302] Collation: A–4F²4G¹ Size: 362x255 mm

Payne was an employee of the British Navy Office. He had earlier sought to produce a set of tables that were to be limited to tables of wages for ... the different classes of Workmen in His Majesty's Dock Yards, whose labor is very generally paid for by the piece. During the construction of these limited tables, it became obvious to him that a more extensive set of tables would be useful to cover the situation when the price of labor changes. The result, after almost 200,000 calculations, are these tables for determining the value of piece work, the value of goods by weight and the value by measure. They were useful because of the mixed-radix sterling currency then in use.



They are printed on heavy paper with each table indexed by finger tabs.

Illustrations available: Title page Sample table page



P 29

P 30 **Paynter, Henry Martyn**, editor (1923–)

A palimpsest on the electronic analog art

Year: 1955 Place: Boston Publisher: Philbrick Researches, Inc. Edition: 1st

Language: English

Binding: original paper wrappers

Pagination: pp. 270 Size: 280x214 mm

This is a collection of articles on analog computing that appeared in a number of different journals. No attempt was made to reproduce them in a uniform way—they are essentially photographic copies from their original

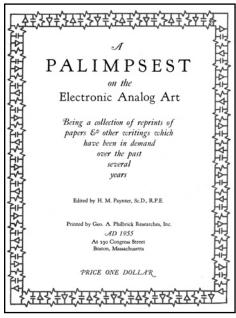


Philbrick analog computer, P 30

publications. The collection is interesting in that it gives a snapshot of analog computing technology in the early 1950s—just about the time that it was beginning to be overtaken by digital computing equipment. The publisher, George A. Philbrick Researches, Inc., was one of the leading suppliers of quality analog computers. It specialized in modular equipment, so users could purchase and interconnect only as much equipment as was necessary for the problem at hand. The company was a dominant force in the field and its modules became known as *Phil's bricks*.

The term *palimpsest* comes from the Greek *palimpsestos*, meaning *scraped again*. It refers to a parchment that has been used for writing, then erased and readied again for new writing. In English the term refers to documents that have been rewritten or reproduced and, as is mentioned in the Foreword to this volume, might even correspond to *rehash*.

Illustrations available: Title page Philbrick computer



P 3

P 31 **Payton, J. Y.**

Payton's method of cube root

Year: 1904 Place: Waldron, Arkansas Publisher: Author Edition: 1st

Language: English

Binding: original paper wrappers Pagination: pp. 16, [2]

Size: 150x84 mm

Payton describes an algorithm for obtaining the cube root of a number. The final page reprints a letter from **David Eugene Smith** indicating:

Your arrangements of the numbers in cube root is ingenious. It is a labor-saving device of value to those who still teach or use the old method of extracting this root.

Illustrations available:

Cover page

Payton's Method of Cube Root

PRICE 25c

FIRST EDITION, ONE THOUSAND COPIES

P 31

P 32

Peacock, George (1791–1858)

A collection of examples of the applications of the differential and integral calculus.

b/w: **Herschel, John Frederick William**; A collection of examples of the applications of the calculus of finite differences.

b/w: **Babbage, Charles**; Examples of the solutions of functional equations.

Year: 1820 Place: Cambridge

Publisher: J. Smith for J. Deighton et al.

Edition: 1st Language: English

Figures: 6 engraved folding plates

Binding: rehinged; original cloth over boards Pagination: pp. viii, 506, vi, 172, [iv], 42 Collation: *4A-3Q⁴3R³3S²*a³*A-*X⁴*Y²*2A-E⁴F¹

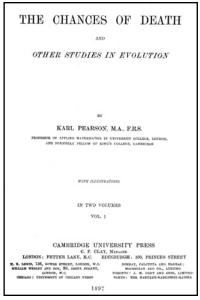
Size: 220x130 mm

Reference: DSB X, pp. 437-438

See the entry for **Babbage**, *Examples of the solutions* ..., 1820.

Illustrations available:

None



P 33

P 33

Pearson, Karl (1857–1936)

The chances of death and other studies in evolution.

Year: 1897 Place: Cambridge

Publisher: Cambridge University Press

Edition: 1st Language: English

Figures: engraved frontispiece both volumes

Binding: original cloth boards

Pagination: v.1: pp. xii, 388; v.2: pp. [iv], 460 Collation: v.1: $\pi^6B-2B^82C^2$; v.2: $\pi^2B-2F^82G^6$

Size: 220x141 mm

Karl Pearson was educated at Cambridge and spent most of his career at University College, London. In 1911, he became the first Galton Professor of Eugenics, holding that chair until 1933. He is considered to be one of the founders of modern statistics. He sought to apply statistics to biological problems such as heredity and evolution. He was the founding editor of the journals *Biometrika* and *Annals of Eugenics*. He received the Darwin medal from the Royal Society but never joined, nor was he recognized by the Royal Statistical Society.

This is a two-volume collection of essays on social and statistical subjects. In these works Pearson uses chance and statistical methods to study social problems. His stand on issues concerning women, science, politics and eugenics foreshadow some of the great debates of the twentieth century. Pearson was a committed socialist, and several of these essays attack others whom he thought were proposing misleading or retrogressive ideas. For example, in his essay on *Variation in Man and Woman*, he concludes with



Frontispiece, P 33

The numerous popular writers who have seized on this principle as a text upon which to preach various social lessons are, in my opinion, starting from either a dogma or a superstition. The 'sequacity' exhibited by the multitude of semi-scientific writers on evolution is possibly a sign of the very small capacity for intellectual variation possessed by the literary male.

The frontispiece to Volume 1 is an interesting allegory on life and death.

Illustrations available:

Title page Frontispiece

P 34

Peletier, Jacques (1517–1583)

De occulta parte numerorum, quam algebram vocant libri duo

Year: 1560

Place: Paris

Publisher: G. Cavellat

Edition: 2nd Language: Latin

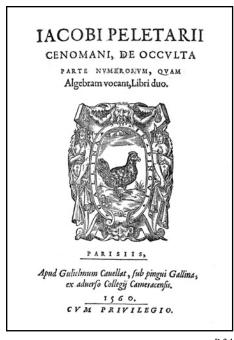
Figures: 1 large folding plate

Binding: 18th-century leather; gilt spine in compartments; red leather label; red edges; edges of boards gilt tooled

Pagination: ff. [4], 62 (misnumbering 61 as 56 and 62 as 57),

[6] Collation: *⁴A–R⁴ Size: 175x120 mm This is a simple work on arithmetic. The first few pages deal with the four basic operations, and the remainder is a series of examples. There is nothing in particular to recommend this work other than a few nicely decorated capitals.

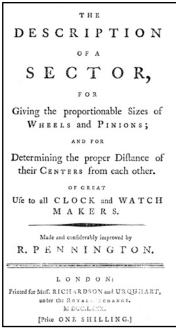
Illustrations available: Title page Decorated capitals (2)



P 34

Peletier, Jacques (1517–1583)

See Gemma Frisius, Reiner; Arithmeticæ practicæ methodus facilis ... iam recèns ab ipso authore emendata & multis in locis insigniter aucta. Huc accesserunt Jacobi Peletarij Cenomani annotationes. Eiusdem item de fractionibus astronomicis compendium et de cognoscendis per memoriam calendis, idibus, nonis, festis mobilibus & loco solis & lunae in zodiaco.



P 35

P 35

Pennington, Robert (fl.1780–1823)

The description of a sector, for giving the proportionable sizes of wheels and pinions; and for determining the proper distance of their centers from each other. Of great use to all clock and watch makers

Year: 1780 Place: London

Publisher: Richardson & Urquhart

Edition: 1st Language: English

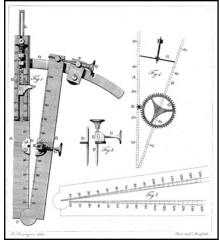
Figures: 1 large folding plate Binding: modern paper wrappers

Pagination: pp. 16 Collation: A⁸ Size: 210x135 mm Reference: Tay *MP* II, #881

Robert Pennington was a machinist who helped Thomas Mudge create an interesting clock c. 1799. An inscription on the title page indicates that Pennington lived in Camberwell, England.

Although the title identifies it as a sector, the instrument is, in reality, a machinist's measuring device having little to do with computation. It was designed to permit watchmakers to determine the size of a particular gear wheel and the depth of teeth needed to perform a particular task. The sector, which is illustrated by a drawing in the best of the English machinist/draftsman tradition, is designed so that gear wheels can be placed in special holders and the sector then used to determine the length of gear teeth for the driving pinion, etc. It was also used in the design phase of a project, allowing draftsmen to construct circles of appropriate radius for illustrating these mechanisms.

Illustrations available: Title page Sector



Pennington's sector, P 35

236

Pennisi, Luigi Legendre and Martin J. Levy

How to use the slide rule

Year: 1950 Place: Chicago

Publisher: University of Illinois

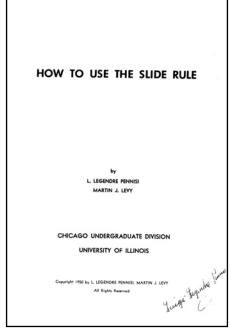
Edition: 1st Language: English

Binding: original paper wrappers

Pagination: pp. 148 Size: 226x150 mm

This instruction manual was originally produced for use by undergraduates at the University of Illinois. It is larger than similar works and contains extensive explanations and examples. While the title page is typeset, the body of the work appears to have been produced on a typewriter. One of the authors, Pennisi, has signed the title page.

Illustrations available: Title page



P 37 **Penther, Johann Friedrich** (1693–1749)

Gnomonica fundamentalis & mechanica, vorinnen geweisen wird, wie man Sonnen-Uhren regulaire, irregulaire mit Minuten und himmlischen Zeichen auf allerhand Flachen, sie mogen gleich oder hockericht, beweglich oder unbeweglich senn, verfertigen solle. Wozu noch eine neue Invention einer Universal Sonnen-Uhr kommt, welche ohne Magnet-nadel zu stellen, selbst die wahre Mitternachts-Linie, und Abweichung aller Wände von denen Haupt-Plagis Mundi, wie auch Elevationem Poli ben Tage anzeiget, und zu Solvirung noch anderer Problematum dienet ...

Year: 1768 Place: Augsburg

Publisher: Johann Michael Späth for Johann Georg Hertel

Edition: 4th Language: German

Figures: engraved frontispiece (bound at back), 15 folding

engraved plates

Binding: modern half-bound vellum and marbled boards

Pagination: pp. [4], 40, [4] Collation:)(²A–L² Size: 334x203 mm

Reference: Pogg Vol. II, p. 400

Penther was a professor of mathematics at Göttingen. He is known to have published works on geometry, surveying and architecture.

This work on creating sundials was first published in 1733 (Poggendorff mistakenly gives 1734). It was quite popular and went through four editions, this being the

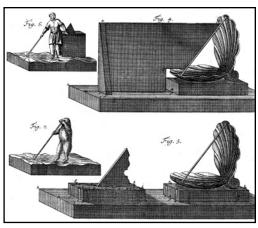
last. It clearly explains the method of projecting the dial onto any given surface, including those that are hilly or otherwise distorted (illustrated by Archimedes with his staff, a dancing bear holding a staff and two halves of a seashell, all acting as sundials)—subjects seldom found in other books on dialing. The illustrations are clear and are certainly part of the reason this work was reissued.

The engraved frontispiece showing an architectural scene is not in its usual place. In this edition it is found at the end of the work, along with the other illustrations.

Illustrations available: Title page Rough surface dials



P 37



Dials on uneven surfaces, P 37

Penther, Johann Friedrich (1693–1749)

Praxis geometriae, worinnen nicht nur alle bey dem Feld-Messen vorkommende Fälle, mit Stäben, dem Astrolabio, der Boussole, und der Mensul, in Ausmessung eintzeler Linien, Flächen und gantzer Revier, welche, wenn deren etliche angräntzende zusammen genommen, eine Land-Karte ausmachen, auf ebenen Boden und Gebürgen, die Abnehmung derer Höhen und Wasser-Fälle, nebst beygefügten practischen Hand-Griffen, deutlich erörtert, sondern auch eine gute Ausarbeitung der kleinesten Risse bis zum grösten, mit ihren Neben-Zierathen, treulich communiciret werden.

b/w: **Penther, Johann Freidrich**; *Zugabe zur praxi geometriae* ..., 1754

Year: 1755 Place: Augsburg

Publisher: Jeremiah Wolff

Edition: 5th Language: German

Figures: engraved frontispiece, 39 folding engraved plates

Binding: contemporary leather Pagination: pp. [10], 97, [5] Collation:)(⁵A–2B²2C¹ Size: 327x195 mm

This is the major German treatise on geometry and surveying of its day. It was first published in 1732 and went through eight editions. Although Penther spent most of his life as a professor of mathematics, he had practical experience in the production of surveys. Before he came to Göttingen in 1736, he had been a mining consultant



to several Counts of Stolberg; even after he took up his professorship, he was the superintendent of buildings at Göttingen University.

The book begins with a discussion of instruments, including sectors, surveyor's chains, plane tables, etc. After discussing the theory behind the geometry, it goes on to such practical matters as the drawing of accurate plans. The illustrations include some very large surveys that were obviously done by Penther himself and were not simply academic exercises.

Illustrations available:

Title page Frontispiece Survey Sector



P 39

P 39

Penther, Johann Friedrich (1693–1749)

Zugabe Zur praxi geometriae, Worinn Noch verschiedene zur ausübenden Geometria nützliche Stücke, dabey auch zweyerlen Arten Architectonische Schnecken, nach Geometrischen Gründen, in einer angenehmen proportionirlich-fortgehenden Erweiterung zu zeichnen angewiesen werden, und endlich eine Zusammenfetzung einer guten Wasser-Waage, wie auch derselben Gebrauch mitgetheilt wird.

b/w: **Penther, Johann Freidrich**; *Praxis geometriae* ..., 1755

Year: 1754 Place: Augsburg Publisher: Jeremias Wolff

Edition: 5th

Language: German

Figures: 39 folding engraved plates

Binding: contemporary mottled leather; spine embossed;

yellow leather label Pagination: pp. 56

Collation: A-O² Size: 327x195 mm

This is a continuation of the geometry and surveying work that is bound before it. It appears that this addition to the basic work was published posthumously. The title page has a fine engraving of the town of Göttingen behind a box of sighting instruments.

Illustrations available: Title page

P 40

Pepinsky, Ray (1912–)

Electronic computer for x-ray crystal structure analyses. In Journal of Applied Physics, Volume 18, No. 7, July 1947.

Year: 1947

Place: Lancaster, PA

Publisher: American Institute of Physics

Edition: 1st Language: English

Binding: original paper wrappers Pagination: pp. 601–604 Size: 269x201 mm

The technique of Fourier analysis is fundamental to finding the structure of a crystal from the scattering it produces when beamed with x-rays. Before the days of electronic computers, this Fourier analysis was a highly labor-intensive process—and consequently slow. This paper describes a process whereby a researcher can see some of the results immediately on a CRT screen. It represents the conversion into electronics of several mechanical procedures that had been developed earlier.

See also **Booth, Andrew Donald**; *Two calculating machines* ... in the same publication.

Illustrations available:

P 4

Peragallo, Edward (1908-)

Origin and evolution of double entry bookkeeping. A study of Italian practice from the fourteenth century

Year: 1938 Place: New York

Publisher: American Institute Publishing

Edition: 1st Language: English

Figures: title and colophon in red and black

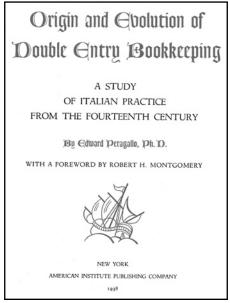
Binding: original cloth boards Pagination: pp. [12], 156, [2]

Size: 280x197 mm

This work examines some early manuscripts from Venice, Genoa and Florence as it traces the development of double-entry bookkeeping. The major interest in this volume is not its content but is the book itself. It was printed on specially made paper with a unique typeface. The book designer, William Wilson, has autographed this copy, on the colophon, to his friend Leo Cotton of Massachusetts. There is also a letter from Wilson to Cotton that describes the reception this design received:

It seems to be creating quite a stir in book circles in spite of the limited appeal of its text.

Illustrations available: Title page (color) Colophon (color)



P 41

P 42

Peraux, E.

Instruction sur la règle a calcul a deux règlettes, de E. Peraux

Year: 1893 Place: Paris

Publisher: Tavernier-Gravet

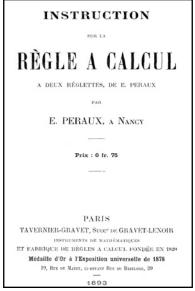
Edition: 1st Language: French

Binding: contemporary three-quarter leather over boards; original wrappers bound in

Pagination: pp. 80 Collation: 1–5⁸ Size: 172x109 mm

Little is known about the author other than the fact that he came from Nancy. He was commissioned to write this instruction booklet on the slide rule for the firm of Tavernier-Gravet (successor to Gravet-Lenoir), makers of mathematical instruments. It was published just as the popularity of the slide rule was, at long last, gaining ground.

Illustrations available: Title page



P 42



P 43

Perazich, George; Herbert Schimmel (1909-) and **Benjamin Rosenberg**

Industrial instruments and changing technology

Year: 1938 Place: Philadelphia

Publisher: Works Progress Administration

Edition: 1st Language: English

Binding: original paper wrappers

Pagination: pp. xiv, 148 Size: 255x170 mm

This is one of the reports produced by the WPA (Works Progress Administration) near the end of the Great Depression of the 1930s. The reports were essentially make-work projects and, once written, were usually filed and ignored. The WPA also sponsored the calculation of a large number of mathematical tables, very few of which were fundamental or even necessary. However, it did employ a large number of human calculators. For an interesting perspective on this subject, see Grier, David Alan; When computers were human, Princeton University Press, 2005.

Illustrations available: Title page

P 44

Pérez De Moya, Bachiller Juan (1513–1596)

Aritmetica, practica y especulativa ... Aora nuevamente corregida, y anadida por el mismo autor muchas cosas, con otros dos libros, y una tabla muy copiosa de las cosas mas notables de todo lo que en este libro se contiene

Year: 1663 Place: Madrid

Publisher: Joseph Fernandez de Buendia

Edition: late Language: Spanish

Binding: contemporary limp vellum; new endpapers; ties worn

Pagination: ff. [8], 215 Collation: ¶8A-2C82D7 Size: 207x150 mm

Reference: Pal, #221714; Smi Rara, pp. 308-310; Bar CCCB,

pp. 301–303

Little is known about Pérez De Moya except that he was born in San Stefano, studied at Alcalá and Salamanca and was a canon in Granada.

This early Spanish arithmetic was very popular, with editions appearing as late as 1784 (222 years after the first edition in 1562). Pérez De Moya (known simply as Moya in some references, e.g., Smith, Rara) covers the usual basic algorism arithmetic operations but also mentions the table abacus, some business arithmetic, elementary algebra and geometry. His geometry is limited to finding the circumference of circles ($\pi = \frac{22}{2}$) and elementary operations on triangles. His Spanish origins may have exposed him to some Arabic influences



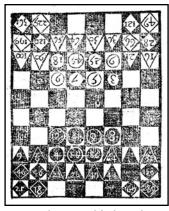
P 44

because, uncharacteristically for his time, he gives the Arabic etymological origins of the term *algebra* and even adds *almucabala*, which was part of the original title of the work from which this subject arose.

In his introduction to the methods of arithmetic, he provides a table of Roman numerals that does not use the subtractive form for 4 (IIII) but does use it for 40 (xl). Similarly, he does use it for 9 (ix) and 90 (xc) but does not use it for 900 (Dcccc).

When describing the use of the table abacus, Pérez De Moya provides one of the very rare illustrations of its use in multiplication in which he shows the problem (17 times 22), the intermediate result and finally, on the left, the canonical form of the result.

In the second half of this work, Pérez De Moya leaves practical arithmetic behind and emphasizes historical



Rythmomachia board, P 44

information about numbers and related matters. An example is the game of Rythmomachia—one involving

... the mediaeval number classification and rations, and could never have been understood by any save those who were well educated in the ancient theoretical arithmetic. (**D. E. Smith**, *Rara Arithmetica*, p. 271)

Several short sections describe numbers on the fingers, an astrological number system and the Greek and Hebrew number systems; some of these obviously gave the printer great trouble. One of the difficult printing challenges was the characters used to represent various weights and measures.

Illustrations available:
Title page
Hand numbers
Roman numerals
Rythmomachia
Abacus multiplication

Weights and measures



Weights and measures, P 44

P 45

Perez, Jose Augusto Sanchez

La aritmetica en Roma, en India y en Arabia

Year: 1949 Place: Madrid

Publisher: Consejo Superior de Investigaciones

Edition: 1st Language: Spanish

Binding: original paper wrappers; uncut

Pagination: pp. 263, [1] Collation: 1–15⁸ 16¹² Size: 255x175 mm

This is a scholarly work on the numeration and arithmetic systems of the Romans, Indians and Arabs. Since it is uncut, it is difficult to determine any precise information as to its contents.

Illustrations available: Cover page



Perrault, Claude (1613–1688)

Recueil de plusiers machines, de nouvelle invention. Ouvrage posthume ...

Year: 1700 Place: Paris

Publisher: J. B. Coignard

Edition: 1st Language: French Figures: 11 folding plates

Binding: contemporary leather; gilt spine

Pagination: pp. [12], 44 Collation: a⁴e²A–E⁴F² Size: 235x180 mm.

Reference: DSB X p. 521; Pogg Vol. II, p. 406

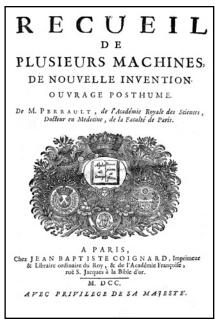
Claude Perrault was best known for his work as an anatomist. He also was part of a committee appointed to oversee the completion of the Louvre and then went on to become a respected architect designing churches, private houses and other public buildings. While working on the Louvre, he became interested in machinery, and this book is a collection of his inventions, including low-friction cranes, published posthumously by his brother Charles.

Plate IX depicts Perrault's Abaque Rhabdologique, a calculating machine of the type known as a tooth rack drive. The machine was one of the designs approved in 1699 by the Royal Academy (see entry for Gallon, Machines et inventions approuvées par l'Academie Royale des Sciences, 1735).

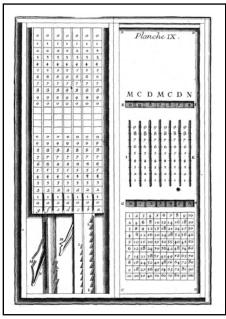
Illustrations available:

Title page

Abaque Rhabdologique



P 46



Abaque Rhabdologique, P 46

P 47

Perrault, Claude (1613–1688) and **Pierre Perrault** (1608–1680)

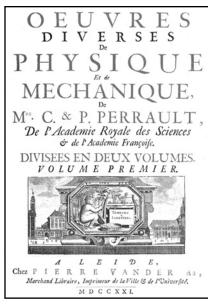
Oeuvres diverses de physique et de mechanique ...

Year: 1721 Place: Leiden

Publisher: Pierre Vander Aa

Edition: 1st Language: French

Figures: v.1: engraved portrait frontispiece, 7 folding plates; ; title in red and black v.2: 14 folding plates



P 4'

Binding: contemporary half-bound red-grained morocco leather; backs gilt; raised bands
Pagination: v.1: pp. [2], 54, [2], 55–78, 491, [1]; v.2: pp. [2],

 $\begin{array}{c} 495{-}684, [38], 687{-}876 \\ Collation: v.1: \pi^1 1^*{-}10^{*4} \, A{-}3P^4 3Q^2; \\ v.2: 3Q^2 3R{-}4R^4 4R^1 4S^4 4T^2 4V{-}5S^4 T^2 \end{array}$

Size: 250x197 mm

This two-volume set consists of inventions and discoveries of Claude and Pierre Perrault. An item of interest is the arithmetic machine of Perrault. This was first described in *Recueil de plusiers machines*, the entirety of which is reproduced at the end of volume 1 of this set.

Illustrations available: Title page (color) Portrait of Claude Perrault



Claude Perrault, P 47

P 48

Perry, David P.

Minimum access programming. Reprinted from: Mathematical Tables and Other Aids to Computation VI, No. 39, July, 1952.

Year: 1952

Place: St. Paul, MN

Publisher: Engineering Research Associates

Edition: reprint Language: English

Binding: original paper wrappers Pagination: pp. 172–182

Size: 235x155 mm

Perry was a programmer at ERA, where early work was done on magnetic drum storage technology.

This describes a technique for minimum access (optimal) programming on a drum memory computer. Before truly random access memory was available, the delays in accessing the next instruction on a drum or mercury delay line memory could slow down a program execution by a large factor. Perry reports that his technique, when used on an ERA 1101 (drum memory) computer, sped up the execution by a factor of 20 on average and by a factor of 100 in certain special cases.

Illustrations available:

Title page



P 48

Perry, Herman F., editor

See Parke, Uriah; Parke's farmers' and mechanics' practical arithmetic, revised and improved.

P 49

Pescheck, Christian (1676–1747)

Allen dreyen Haupt-Ständen nöthige Rechen-Stunden, darinnen So wohl die gedoppelte Regel Detri, nehmlich Regula quinque directa und indirecya vel conversa, als auch Zinsz-Oder Interesse Rabatt Zeit-Oder Termin Licitation oder Subhastation-Thara-Fusti-Gewinn und Verlust-Stich oder Baratt Gesellschafft, Erbtheil, Factorey, Cassir, Reduction, Gemeine, und Haupt, Wechsel, Alligation, Coeci, und Falsi Rechnung

b/w: **Pescheck, Christian**; *Italiänische Rechen-Stunden*Darinnen die Fünf Species der Rechen-Kunst mit

unbenahmten und benahmten gantzen als auch

gebrochenen Zahlen...

b/w: **Pescheck, Christian**; Allgemeine Teutsche Rechen-Stunden, Darinnen Die 5 Species der Rechen-Kunst, Mit unbenahmten und benahmten gantzen als auch gebrochenen Zahlen...

> Year: 1738 Place: Zittau

Publisher: Jacob Schöps

Edition: 3rd Language: German

Figures: title in red and black Binding: contemporary vellum boards

Pagination: pp. [16], 568

Pagination: pp. [16], 366 Collation: $\pi^8A-2M^82N^4$ Size: 169x101 mm

See comments and illustrations in the entry for **Pescheck**, **Christian**; *Allgemeine Teutsche* ..., 1741

Illustrations available:

None



Frontispiece and title page one, P 50



Frontispiece and title page two, P 50



Frontispiece and title page three, P 50

P 50

Pescheck, Christian (1676–1747)

Allgemeine Teutsche Rechen-Stunden, Darinnen Die 5 Species der Rechen-Kunst, Mit unbenahmten und benahmten gantzen als auch gebrochenen Zahlen. Nebst der regula de-tri Directa und indirecta, ohne und mit Brüchen. Samt der Progression Rechnung

b/w: **Pescheck, Christian**; *Italiänische Rechen-Stunden*Darinnen die Fünf Species der Rechen-Kunst mit

unbenahmten und benahmten gantzen als auch
gebrochenen Zahlen...

b/w: **Pescheck, Christian**; Allen dreyen Haupt-Ständen nöthige Rechen-Stunden, darinnen So wohl die gedoppelte Regel Detri...

Year: 1741 Place: Zittau

Publisher: Jacob Schöps

Edition: 3rd Language: German

Figures: engraved frontispiece; title in red and black

Binding: contemporary vellum boards

Pagination: pp. [16], 576 Collation:)(8A–2N8 Size: 169x101 mm

Pescheck was a mathematics teacher in Zittau, a city in Germany south of Berlin near the Czech border, from about 1704 on. He is known to have published other arithmetic books, the first in 1721. This series was evidently his last publishing effort.

This is a three-work sammelband. All three are arithmetic books with different orientations. The first of the three is designed for students and begins with numeration, progressing through the elements of arithmetic and ending with arithmetic, geometric and harmonic (music) series—with most of its examples coming from trade and banking. The style is pedantic in the extreme. For example, in the section on numeration, Pescheck lists all the integers from 1 to 100 (plus a random selection of integers from there up to 2*10¹⁴) and then repeats the

entire set in Roman numerals, together with the written value of each number.

The second book repeats the same material over again, but this time it places much more emphasis on the manipulation of monetary values.

The third book forgoes the elementary material and begins with the rule of three. It is certainly no less pedantic that the other two volumes.

The most unusual aspect of the three works are the small vignettes of school situations that act as frontispieces for the first two volumes.

Illustrations available:

Title page 1 (color) and Frontispiece 1

Roman numerals

Title page 2 (color) and Frontispiece 2

Title page 3 (color) and Frontispiece 3

P 51

Pescheck, Christian (1676–1747)

Italiänische Rechen-Stunden Darinnen die Fünf Species der Rechen-Kunst mit unbenahmten und benahmten gantzen als auch gebrochenen Zahlen. Nebst der regula de-tri, ohne und mit Brüchen, nach der so genannten Italiänischen practica.

b/w: **Pescheck, Christian**; Allgemeine Teutsche Rechen-Stunden, Darinnen Die 5 Species der Rechen-Kunst, Mit unbenahmten und benahmten gantzen als auch gebrochenen Zahlen ...

b/w: **Pescheck, Christian**; Allen dreyen Haupt-Ständen nöthige Rechen-Stunden, darinnen So wohl die gedoppelte Regel Detri ...

Year: 1736

Place: Leipzig & Zittau Publisher: Jacob Schöps

Edition: 3rd Language: German

Figures: engraved frontispiece; title in red and black

Binding: contemporary vellum boards

Pagination: pp. [16], 464 Collation:)(8A–2F8 Size: 169x101 mm

See comments and illustrations in the entry for **Pescheck**, **Christian**; *Allgemeine teutsche* ..., 1741.

Illustrations available:

None

P 52

Pescheck, Christian (1676–1747)

Selbstlehrender trigonometra, oder DreyeckMässer, Welcher Aller gradlinichten Triangul, ihre Winckel und Linien, vermittelst derer Tabularum Sinuum, Tangentium und Secantium, als auch Logarithmorum. Dergestalt leicht und gründlich aufzulösen und zuberechnen lehret; dass auch ein jedweder, der nur zu dieser Mathematischen Scientz einige Beliebung trägt, solche von sich selbst erlernen und fassen kan.

> Year: 1730 Place: Budissin Publisher: David Richter

Edition: 1st Language: German Figures: 1 engraved plate

Binding: contemporary vellum boards

Pagination: pp. 7, [1], 134 Collation: $\pi^8A-H^8I^3$ Size: 154x97 mm

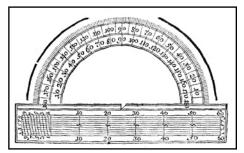
This is an elementary work on plane trigonometry. Fortunately, it does not appear to be quite as pedantic as Pescheck's works on arithmetic. Although it uses logarithms in some of the examples, it contains no tables. The only instrument illustrated is a protractor with a proportional scale attached.

Illustrations available:

Title page Protractor



P 52



Protractor, P 52

Petit, Pierre (1594–1677)

Dissertations academiques sur la nature du froid et du chaud. Avec un discours sur la construction & l'usage d'un cylindre arithmetique, inventé par le meme autheur.

b/w: **Petit, Pierre**; *Usage et construction du cylindre arithmetique.*

Year: 1671 Place: Paris

Publisher: Olivier de Varennes

Edition: 1st Language: French Figures: 1 plate

Binding: contemporary leather; spine gilt; worn Pagination: pp. [22], xl, 237, [3], [6], 22, [24] Collation: π¹å8è⁴¹8ò⁴ù6A8B⁴—T8V⁴A8B⁴C²¶⁵¶⁴

Size: 144x90 mm

See comments and illustrations in the entry for **Petit**, **Pierre**; *Usage et construction du cylindre arithmetique*, 1671.

Illustrations available:

None

P 54

Petit, Pierre (1594–1677)

Usage et construction du cylindre arithmetique.

b/w: **Petit, Pierre**; *Dissertations academiques sur la nature du froid.*

Year: 1671 Place: Paris

Publisher: Olivier de Varennes

Edition: 1st Language: French Figures: 1 plate

Binding: contemporary leather; spine gilt; worn Pagination: pp. [22], xl, 237, [3], [6], 22, [24] Collation: $\pi^{t} \hat{a}^{s} \hat{e}^{t} \hat{a}^{s} \hat{o}^{t} \hat{a}^{s} A^{s} B^{4} - T^{8} V^{4} A^{8} B^{4} C^{9} |^{9} |^{9} |^{4}$

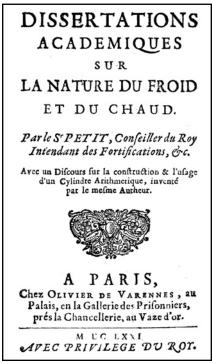
Size: 144x90 mm Reference: DSB X, p. 547

Pierre Petit was a major scientific figure in French society. He worked with **Blaise Pascal**, Martin Mersenne and many of the other great French scientists of the day. He is known mainly for his works on astronomy.

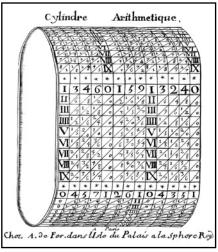
This volume includes two different subjects—a discussion of heat and cold and Petit's *cylindre arithmetique*—a version of Napier's bones. There were many attempts to modify Napier's bones at this period (see, for example, the entry for **Schott, Gaspar**; *Organum Mathematicum*, 1668), but most were less successful than Petit in arriving at a working system. His cylindre arithmetique

consists of a number of bands (see illustration), each engraved with a complete set of bones for the digits 0–9. By rotating the bands, it was possible to line them up to represent any twelve-digit number. While still more inconvenient to use than a standard set of bones, they at least had the advantage of the bones for adjacent digits having a common edge—a space between the bones (such as in the device created by **Gaspar Schott**) makes it difficult to add together digits on adjacent bones.

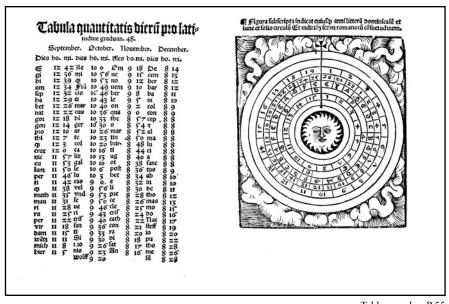
Illustrations available:
Title page
Cylindre arithmetique

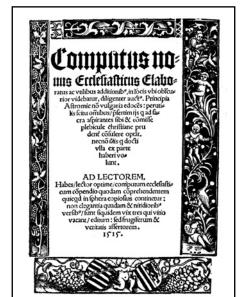


P 54



Petit's version of Napier's bones, P 54





P 55 **Petrus, De Cracovia**

Computus novus. Ecclesiasticus elaboratus ac utilibus additionib[us], in locis vbi obicurior videbatur, diligenter auctus. Principia astromie no[n] vulgaria edoce[n]s: perutilis scitu om[n]ibus p[er]sertim ijs q[u]ad sacra aspirantes sibi & co[n]misse plebicule Christiane prudent co[n]sulere opta[n]t ...

Year: 1515 Place: Leipzig Publisher: (V. Schumann) Edition: 1st Language: Latin Table samples, P 55

Binding: paper wrappers Pagination: ff. [12] Collation: A–B⁶ Size: 180x134 mm

Reference: Zin GBAL, #1022

This computus, by Peter of Cracow, was designed to teach the rules of how to calculate the date of Easter and the other movable Christian feasts. It is known by various titles (beginning in 1487, it was called *Computus Cracoviennsis*, and from 1494, it was often known as *Computus Norimbergensis*), but the content was essentially the same. Like the computus of **Anianus** (see entry for **Anianus**, 1488), this one also contains many of the algorithms in the form of Latin verses. A preface indicates that a calendar reform is about to start and that Pope *Sixto iiii* (Sixtus IV) had appointed *Joãnes d'Mõte regio Vienna* (**Regiomontanus**) to lead the effort. For a book of this period, it is interesting that no colophon is present although the publication date does appear on the title page.

Illustrations available: Title page Tables

P 56

Petrus, De Cracovia

Computus novus et ecclesiasticus totius fere astronomie fundamentu[m] pulcherrimum co[n]tinens. Clerico no[m] minus utilis qua[m] necessarius: cum additionibus dam noviter apressis.

Year: 1513 Place: Vienna

Publisher: H. Victor & J. Singriener

Edition: 1st Language: Latin

Binding: 19th-century paper wrappers

Pagination: ff. 12 Collation: A-B⁶ (B6 blank) Size: 201x155 mm

Reference: H&L, #13718, p. 1454; Zin GBAL, #979, p. 145

The material in this edition is essentially identical to that of the 1515 work, but it is slightly rearranged and has different woodcuts. This edition also contains the preface that mentions **Regiomontanus**.

Illustrations available:

Title page Colophon



Dienne Dannonie in eoibus Bieronymi Wietozis z Joannis Singrenij, Anno. 1513.

Colophon, P 56

Petrus, deacon in Pisa (8th Century)

De eadem re ad conradum primum imp. Ro[manorum].

b/w: **Probus, Marcus Valerius**; *De notis Romanor(um)* ex codice manuscripto castigatior, auctiorque, quam unquam antea, factus.

b/w: Alabaldus, Demetrius; De minutiis. Idem de ponderibus. Idem de mensuris.

b/w: Bede; De computo per gestum digitorum. Idem de loquela. Idem de ratione unciarum.

b/w: Leges XII tabularum, leges pontificiæ Ro(manorum). Variæ verborum conceptiones, quibus antiqui cuz in rebus sacris, ...

Year: 1525 Place: Venice Publisher: J. Tacuino Edition: 1st Language: Latin

Figures: title in red and black

Binding: stamped vellum over wooden boards

Pagination: ff. [4], XXIIII Collation: a4A-C Size: 218x149 mm

Reference: Ada CBCE, P2122; Smi Rara, p. 140

This work is a listing of common Latin abbreviations and is part of the collection simply because it was bound with the work by Bede on finger numerals.

Illustrations available: Title page (color) Sample page

HOC IN VOLVMINE HÆC CONTINENTVR:

M: VAL. PROBVS DE NO TIS ROMA. EX CODICE MANY SCRIPTO CASTIGATIOR, AV

CTIORQ VE, Q VAM VN/ Q VAM ANTEA, FACTVS.

PETRVS DIACONVS DE EADEM RE ad Conradum Primum Imp. Ro. DE METRIVS ALABALDVS de Minutiis. Idem de Ponderibus.

Idem de Mensuris. VEN.BEDA De Computo per gestum digitorum. Idem de Loquela. Idem de Ratione vnciarum.
LEGES XII TABVLARVM,

LEGES PONTIFICIÆ RO. Varia verborum conceptiones, quibus Antiqui cu3 in rebus

facris, tum prophanis vterentur, sub titulo deR ITIBVS ROMANORVM Collectæ. Phlegontis Trallani Épittola De Moribus Ægyptiorum. Aureliani Cafaris Epittola De Officio Tribuni Militum. Ifcriptiones Antiquæ variis in locis repertæ,atqaliæ, qquæ in Romano Codice continentur.

Hæc omnia nunc primum edita.

P 57

P 58

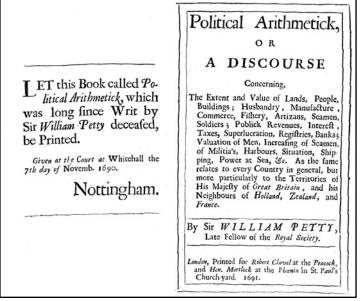
Petty, William (1623–1687)

Political arithmetick, or a discourse concerning the extent and value of lands, people, buildings, husbandry, manufacture, commerce, fishery, artizans, seamen, soldiers; publick revenues, interest, taxes, superlucration, registries, banks; valuation of men, increasing of seamen, of militia's, harbours, situation, shipping, power at sea, &c. As the sames relates to every country in general, but more particularly to the territories of his majesty of Great Britain, and his neighbours of Holland, Zealand, and France.

Year: 1691 Place: London

Publisher: Printed for Robert Clave ... and Henry Mortlock

Edition: 2nd



Language: English

Binding: contemporary tree calf; gilt spine; dentelle; two black and one red leather labels

Pagination: pp. [xxiv], 117, [3]

Collation: π⁴a–H⁸I⁴ Size: 160x101 mm

William Petty was a founding member and Fellow of the Royal Society. He had a varied career, starting as a cabin boy in the merchant navy; studying medicine in Utrecht, Leiden, Amsterdam, Paris and Oxford; being a professor of music in Gresham College and being a surveyor for Cromwell's army in Ireland.

Petty, who coined the phrase political arithmetic, was a founder of the then-infant science of statistics. He encouraged his friend John Graunt in his study of demographics using the death notices in London. In this book Petty examines the economies of Britain, Holland and France and develops arguments as to why the various countries will or will not dominate the others. He sets forth an early version of the concept of income tax when he notes that a tax of 10 percent levied systematically on everyone in Britain would be enough to maintain an army of 10,000 soldiers, 40,000 cavalry and 40,000 seamen as well as meet any other financial obligation of the British government. He also examines the economy of the whole world and notes that there is enough money, goods and shipping in Britain to drive the trade of the entire commercial world. His arguments are not entirely sound and are based on only the crudest estimates of money, goods and trade, but they were the beginning of the scientific basis of economics. Although written between 1661 and 1676 and circulated in manuscript

form, this work was not actually printed until after Petty's death. The first edition was in 1690.

Illustrations available: Title page

P 59

Peuerbach, George von (1423–1461)

Institutiones in arithmetica[m]: cum alis tum in primis adulesce[n]tibus necessariae.

Year: 1511 Place: Vienna

Publisher: Hieronymus Vietor Edition: 3rd (Austrian) Language: Latin

Binding: modern half-bound calf

Pagination: ff. [10] Collation: A⁶B⁴ Size: 200x140 mm

George (Georg) Peuerbach (real surname unknown) was born in Peuerbach, Austria (about 40 kilometers west of modern-day Linz). He attended the University of Vienna, but it is not certain under whom he studied. Some authorities state he was a student of Nicolaus Cusa, and others think he studied with Johann von Gmünden. Peuerbach certainly knew Cusa in Rome in later years, but it is not clear that Cusa ever taught in Vienna. The connection with Gmünden is even more problematical as Gmünden died a year before Peuerbach came to Vienna.

After receiving his bachelor's degree, Peuerbach spent time traveling and lecturing on astronomy and astrology in Germany, France and Italy. He then returned to Georgii Peurbachii/ Mathematici omniú acutilsimi/institutiones in Arithmetrica: cum aliis tum in primis adulescetibus necessariæ.

Title, P 59

Finis.

Impressum Vienne Pannoniæ ab Hieronymo Philoualle.
Anno. M.D.XI, decima die Martii.

Colophon, P 59

Vienna, where in 1453 he received the master's degree and joined the arts faculty at the university. There he seems to have devoted most of his teaching to non-mathematical subjects. His fine reputation as an astrologer and astronomer caused him to be offered a number of appointments as court astrologer.

In 1450, Johannes Müller von Königsberg, known as **Regiomontanus**, then 13 years old, was admitted to the University. He graduated in two years and in 1453, after Peuerbach received his master's degree, young Regiomontanus became Peuerbach's student and collaborator.

This is a popular classical arithmetic that covers addition, subtraction mediation, duplation, multiplication and progression. It is known by various names, *Opus Algorithmi*, *Institutiones in arithmeticam*, *Elementa arithmetices*, and *Introductorium in arithmeticam* being the most common. **Smith** (*Rara*) points out that Peuerbach was too profound a mathematician to have considered this a work of true significance. The work did, however, go through numerous editions and was very popular as an elementary text. Perhaps it was written for students not yet ready to deal with Peuerbach's more advanced concepts.

The contents vary slightly from edition to edition; some include a discussion of fractions, and others, as in this volume, have a section on the rule of three (here called regula aurea or golden rule). The text indicates Finis Algorithmi Magistri Georgii de Peurbachii prior to the description of the rule of three, leaving it unclear if the last four pages were written by Peuerbach. A similar, but not identical, section is also present as part of the extensions in another edition in this collection (see Peuerbach, George von; Opus algorithimi, 1503).

Illustrations available: Title page Multiplication Colophon Golden Rule

P 60

Peuerbach, George von (1423–1461)

Opus algorithimi iuccundissimi magestri Georgij Peurbachij wiennensis (preceptoris singularis magestri Joannis de Monteregio) sacreque mathematice inquisitort subtillissimi summa cu[m] utilitate exemplis ac cubice radicis extractione alleviatoque p[rae]cedendi modo nuper digestum.

Year: 1503 Place: Leipzig

Publisher: Martin Landsberg

Edition: 1st Language: Latin

Figures: illuminated title and paragraph headings; title ruled

in red

Binding: recent half-vellum boards

Pagination: ff. [8] Collation: A⁸ Size: 215x154 mm

Reference: Smi Rara, pp. 53, 504

See comments in the entry for **Peuerbach**, *Institutiones in arithmetica*, 1511. This earlier edition does not have a remark indicating the end of the Peuerbach "algorism" after the basic operations, but it does have a remark, *Sequitur de ultima speci Arithmetice*, before the beginning of a section on square and cube roots. A section on the golden rule follows the one on roots. This volume contains red and blue decorated capitals.

Illustrations available:
Title page (color)
First page (color)
Golden rule (color)
Colophon (color)

Drug Algozichmi incundillimü

Magistri Georgi Peurbachti wiennense (preceptoris singula tis Magistri Joannis de Monteregio) sacreg Mathematice inquistrori subtilissimi simuna cii vallitate eremplis ac cubice ra dicis extractione alleviator, peedendi modo nuperdigestum.

Title, P 60

Et tantum de hoc opere Algoristico Anno
Christi Siesu Willesimoquingentesimoterrio

Baccalaris Martins Serbipoles impresso.

Colophon, P 60

Dpus Algorichmi incundillimű

Magistri Georgi Pentbachi Wiennensis (pieceptoris singu laris Magistri Joannis de Monteregio Jacrecp mathematice inquisitoris subtississimi sunna cum valifate exemplis a cubice tadicis extractione allemiatog predendi modo nuper digestum.

Mumeratio.

Meri ppositi repsesentacionem cognoscere. L'umera mathematici tripartiunt. Lucnda em vocat digitum qui minos est dentaci Allum vero articula qui in decem pattes equales secari pores mullo superstite. Allumga mememm compositas qui ex digito et articulo 9 stat Vonteas a en os est nume tuo si principis numeri Vondeipsa habet se in Acidemetica sicute puncta in Geometria ad magnitudine Inhacasis scienta suria stronsenta qui solemose arabum qui signos primi extretti innativos qua qui solemose arabum qui signos primi extretti sunt tronsenta qui solemose arabum qui signos primi extretti sunta sunta quantum in primo In ettrio centies tantum In quat comillese tantis es siconsequente elucate sunta quantum in primo In ettrio centies tantum In quat comillese tantis es siconsequente elucate suntile sunta su

Moditio.

First page, P 60

P 61

Peuerbach, George von (1423–1461)

Quadratum geometricum præclarissimi mathematici ...

Year: 1516 Place: Nürnberg Publisher: Johann Stuchs Edition: 3rd (Austrian) Language: Latin Figures: title in red and black Binding: modern vellum

Pagination: ff. [10] Collation: A6B4 Size: 285x202 mm

The geometric square has been known from at least the time of Pope Gerbert (ca.1000) and was well known to the Arabs. It seems, however, to have been little known in Europe and almost never described until this work by Peuerbach. In sixteenth century Europe, the geometric square became popular as a surveying instrument, and descriptions of it or of closely related instruments can be found in the works of Gemma Frisius, Orance Fine, Leonard Digges and Latino Orsini.

To increase accuracy, Peuerbach's instrument had 1,200 divisions along each edge (see title page illustration).

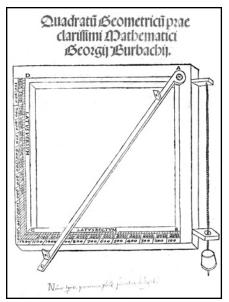
Explicit Quadratti Geometricti Georgii Burbachii. Impressum Nurenberge per Ioannem Stuchs. Anno domini. M.ccccc.xvi.xvii.die Mensis lunii.

Colophon, P 61

This suggests that the instrument was quite large, perhaps as much as a meter or more on each side. When one uses it to determine the angle of the sun, the sine of the angle is required for further computation. Peuerbach provides these values in tables, printed in red and black, giving the angle in degrees, minutes and seconds for each of the 1,200 divisions.

The work goes on to describe the use of the square in common applications such as surveying. Two neatly drawn ink diagrams (contemporary?) are on a blank section of the page just prior to the tables.

Illustrations available: Title page (color) Diagrams Table page (color) Colophon



Survey square, P 61

P 62

Peuerbach, George von (1423–1461)

Theoricæ novæ planetarum

b/w: Regiomontanus, Johannes; Disputationum Johannis de Monte Regio contra Cremonensia in planetarum theoricas deliramenta præfatio.

b/w: Sacrobosco, Johannes; Spæræ mundi *co(m)pendiu(m) foeliciter inchoat.*

> Year: 1488 Place: Venice

Publisher: Johannes Lucilius Santritter and Hieronymous de

Sanctis Edition: 3rd Language: Latin

Figures: woodcut frontispiece, full-page woodcuts, numerous woodcut diagrams, 8 hand tinted

Binding: blue morocco by Leighton; gilt edges

Pagination: ff. [69]

Collation: A¹⁰B⁸BB¹²C⁸D⁹E-F⁸G⁶

Size: 208x152

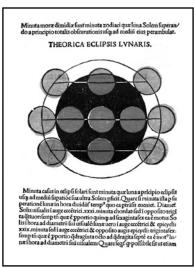
Most of Peuerbach's works were published posthumously by his student **Regiomontanus**, who can be said to be the first publisher of astronomical and mathematical literature.

This *New Theory of the Planets* was the first of Regiomontanus' publications (1474) and thus lays claim to being the first printed astronomical work. The work shows the influence (indirectly, through Latin translations) of Arabic astronomers, including Ibn Al-Haytham and Al-Battani. Peuerbach wrote this work some time prior to 1454, for a manuscript copy of it is the first item in a notebook dated August 1454 that was kept by Regiomontanus.

This is an elementary textbook on planetary movements written to replace the *Theorica planetarum Gerardi* which had been in use for the previous hundred years. It contains a description of the *solid-sphere* planetary model of Ptolemy and remained the standard description of the universe until the works of **Tycho Brahe** and Copernicus more than a hundred years later.

A number of editions of this work were published in the 1480s and 1490s and contained (as does this volume) the works of **Regiomontanus** and **Sacrobosco**. These formed the standard text of astronomy for the era. The diagrams are printed in color—rather than being tinted by hand—a very early example of multi-colored printing.

Illustrations available:
Title page (color)
Eclipse diagram (color)
Colophon



Eclipse diagram, P 62



P 62



Colophon and printer's mark, P 62

P 63

[Peuerbach, George von (1423–1461)] - Johannes Regiomontanus (1436–1476)

Tractatus Georgii Peurbachii super propositiones Ptolemæi de sinubus & chordis. Item compositio tabularum sinuum per Joannem Regiomonte. Adiectæ sunt & tabulæ sinuum duplices per eundem Regiomontanum. Omnia nunc primum in utiltatem astronomiæ studiosis impressa.

> Year: 1541 Place: Nürnberg

Publisher: Johann Petreius

Edition: 1st Language: Latin

Binding: modern paper wrappers

Pagination: ff. [27] Collation: A–F⁴G³ Size: 304x193 mm

Reference: Zin GBAL, #1781, p. 198; Caj HM, pp. 131-132

This work, written by Peuerbach but edited and published by his student **Regiomontanus**, is a description of how to calculate the values of sines and chords. The first few pages are an explanation, essentially Arabic in origin, of calculating them using a Kardagarum or arc of 15 degrees as the basic unit. The rest of this short treatise is an alternative explanation based on Ptolemy's Almagest, and this is followed by the tables themselves.

According to C. R. G. Cosens in the Catalogue of an Exhibition of Printing at the Fitzwilliam Museum (6 May to 23 June 1940, #499) These are probably the earliest printed tables now extant.

Illustrations available: Title page Sample table page



P 63

P 64 Peuerbach, George von (1423–1461)

Tractatus super propositiones Ptolemaei de sinubus & chordis.

b/w: **Regiomontanus**, **Johannis**; De triangulis planis et sphæricis libri quinque, unà cum tabulis sinuum, in quibus tota ip forum triangulorum scientia ex primis fundamentis geometricarum, 1561

Year: 1561 Place: Basel

Publisher: Henricus Petrus & Petrus Perna

Edition: 3rd Language: Latin

Binding: 17th-century mottled leather; original spine gilt;

rebacked; raised bands

Pagination: pp. [8], 146, [38], [20], 284, 277–296

Collation: $*^4a-o^6p^8*^6A^4B-2A^62B^42B^42C^6$ (signature 2B bound in twice)

Size: 302x194 mm

Reference: Ada, R-281; DSB XI, pp. 348-352; H&L, #2257; Tho HMES, Vol. V, pp. 375-377; Zin GBAL, 3162; Pogg Vol. II, p. 422

This work is bound with the sine tables of **Regiomontanus**—see entry for his *De triangulis planis* et sphæricis libri quinque, unà cum tabulis sinuum, in quibus tota ip forum triangulorum scientia ex primis fundamentis geometricarum, 1561. This copy belonged to Thomas Digges and has his signature on the title

Illustrations available: First page

TRACTATVS GEOR-

GII PEVRBACHII SVPER PROPO-SITIONES PTOLEMARI DE 31/ nubus & Chordis, Chordarum & Arcus

P 64

Peverone, Giovanni Francesco (1509–1559)

Arithmetica e geometria

Year: 1581 Place: Lyon

Publisher: Jean de Tournes

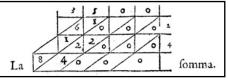
Edition: 2nd Language: Italian

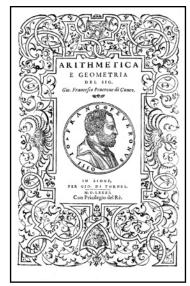
Binding: contemporary calf; spine gilt

Pagination: pp. 132, [4] Collation: a-r4 Size: 220x146 mm

Reference: Smi Rara, p. 290; Car PPM, #622; Rcdi BMI, pp. 265-266; Hymn AC, #2470; Van E PMIR, p. 328

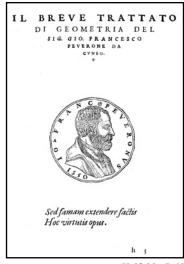
Peverone was a teacher of mathematics. He was born in Cuneo in the Piedmont district of Italy. His portrait is on the title page.





The first half is a very simple textbook on arithmetic divided into four sections. The first section deals with elementary operations (including gelosia multiplication as well as the more modern form), the second with fractions, the third with business arithmetic (the rule of three, rule of false position, etc.) and the last with square and cube roots.

The second half is a work on geometry and surveying. It has its own half-title page. It describes the use of a large geometric square (compare this with the illustration of **Peuerbach**'s geometric square in his *Quadratum* geometricum, 1516) and a leveling and sighting instrument. It is interesting that Kiely's work Surveying Instruments does not mention either Peverone or his book. The geometry is certainly a more sophisticated work than the arithmetic.

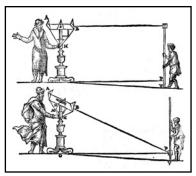


Half title, P 65

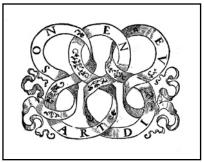
This is actually the second edition of his work titled *Due* brevi e facili trattati. The last page contains a decorative printer's mark that is evidently the only difference from the first edition.

Illustrations available:

Title page Gelosia multiplication Half-title page Geometric square Square in use Leveling instrument Level in use Printer's mark



Leveling instruments in use, P 65



Printer's mark, P 65

Peverone, Giovanni Francesco (1509–1559)

Due brevi e facili trattati, il primo d'arithmetica: l'altro di geometria: ne i quale si contengono alcune cose nuove piacevoli e utili, si à gentilhuomini, come artegiani.

> Year: 1558 Place: Lyon

Publisher: Jean de Tournes

Edition: 1st Language: Italian

Binding: contemporary calf; spine gilt; covers gold embossed;

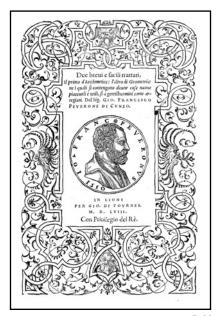
raised bands Pagination: pp. 132, [2] Collation: a-q4r3

Size: 221x152 mm

Reference: Smi Rara, p. 533; Car PPM, #414; Rcdi BMI, I, pp. 265-266; Hymn AC, #2469; Van E PMIR, p. 328; BM STC, #349; Ada CBCE, p. 943

This is the first edition of Peverone's work. See comments in the entry for the second edition titled *Arithmetica e geometria*.

Illustrations available: Title page



P 66

Pézénas, E.; **J. Dumas** and **J. B. Blanchard** See **Gardiner**, **William**; *Tables de logarithmes*.

P 67

Phélippeaux, L. M.

Du compas de proportion dans la practique de la perspective, ou recherche des différens cas dans lesquels l'emploi du compas de proportion peut abréger les opérations de perspective; et particuliérement dans celui des points accidentels. Ouvrage dans lequel il east démontré qu'à l'aide de cet instrument on peut faire, avec sûreté, toutes les opérations générales et partielles de perspective, dans le tableu mème, sans sortir de son champ et sans avoir recours aux plans et coupes géométrales, ainsi qu'on l'a practiqué jusqu'a présent.

Year: 1819 Place: Paris

Publisher: Goeury & l'auteur

Edition: 1st Language: French

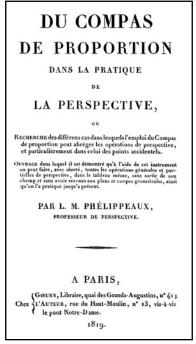
Figures: 6 engraved folding plates Binding: modern half-calf by Marc Ollivier

Pagination: pp. 31, [1] Collation: 1–2⁸ Size: 205x125 mm

Phélippeaux describes himself as a professor of perspective.

This is a work on perspective and how it can be created by using a sector scale, evidently of Phélippeaux's own invention. The work is illustrated by several plates showing increasingly complex perspective drawings ranging from line drawings through architectural renderings.

Illustrations available: Title page



P 67

P 68

Phillippes, Henry (fl.1648–1677)

A constant kalendar or, an almanack for 300 years, but more exactly serving for the next XIX years, being the circle of the moon, or the golden number, beginning in the year of our Lord, 1656.

b/w: **Phillippes, Henry**; *The purchasers pattern* ..., 1656

Year: 1656 Place: London

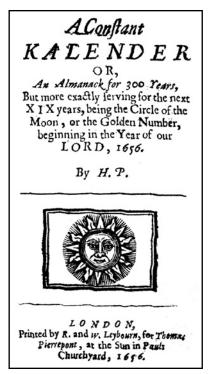
Publisher: Printed by R. and W. Leybourn for Thomas

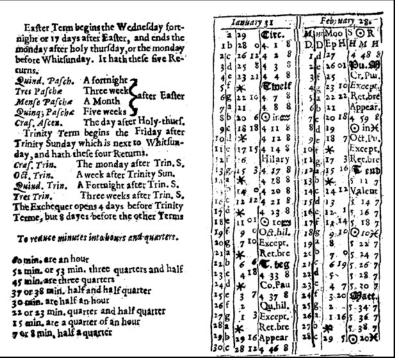
Pierrepont
Edition: 1st
Language: English
Binding: contempo

Binding: contemporary leather Pagination: pp. [10], 38 Collation: A–B¹² Size: 125x87 mm

Reference: Win ESTC, P.2108

This is a calendar noting the major saints days, etc. as well as the times of sunset and sunrise for London. Phillippes gives several examples of calculations that can





P 68

Note on fractions and calendar, P 68

be done from it, e.g., determining the times of the new and full moon, which would also give a good estimate for the times of high tide in London. The work ends with a twenty-two-page listing (about 700 entries) of every place in England and Wales with a fair and the date on which it was held. A curious note preceding the calendar indicates that Phillippes was reluctant to use fractional or decimal notation: he notes that an eighth of an hour (which he calls *half a quarter*) is 7 or 8 minutes (rather than $7\frac{1}{2}$ or 7.5), and this same convention is used several other times (e.g., 52 or 53 minutes [are] three quarters and half)—see illustrations.

Illustrations available: Title page Calendar and note

P 69

Phillippes, Henry (fl.1648–1677)

A mathematical manual; containing tables of logarithms for numbers, sines, and tangents with the manifold use thereof briefly explained and applied in arithmetick, geometry, astronomy, geography, surveying, navigation, dailling, gunnery, and gauging.

Year: 1669
Place: London
Publisher: E. Cotes for G. Hurlock, W. Fisher, E. Thomas and
D. Page
Edition: 1st

Language: English

Figures: 3 engraved plates (1 folding) Binding: contemporary leather Pagination: pp. [6], 205, [1], [174] Collation: $\pi^2A-2C^4B-Y^4Z^3$ Size: 150x87 mm

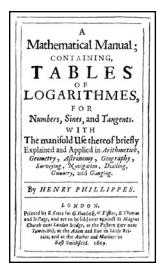
Reference: Win *ESTC*, P-2049B; Tay *MP* I, #229, p. 234, 379; Hend *BMT*, #47.0, p. 68

Phillippes was a teacher of mathematics, navigation, surveying and gauging. He also wrote several books on these subjects. It is reported by **William Leybourn** that he lived in a house on London Bridge which gave him ample opportunity to study the tides in the Thames and he presented several papers on the subject to the Royal Society and others. Hooke (secretary to the Royal Society and the man after whom Hooke's law, of springs, is named) mentions that Phillippes had created a *tide ring*, which suggests some form of instrument, but no record of it can be found. It is possible that this is only a reference to Phillippes tide prediction diagram (reproduced in **Harris, John**; *Lexicon Technicum*, 1704) and not an instrument.

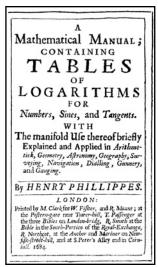
Although the title page describes this as a table of logarithms of trigonometric functions and the natural numbers, the work contains a large amount of other information. The explanation of the use of the tables in the subjects mentioned on the title page is an understatement. For example, the chapter on geometry also includes a large section on both plane and spherical

trigonometry. The section explaining the use of the table in gunnery also details the different artillery pieces, the proportion of the ball to the bore for each, the creation of loading ladles, and ranges for guns and mortars, etc.

Illustrations available: Title page



P 69



P 70

P 70

Phillippes, Henry (fl.1648–1677)

A mathematical manual; containing tables of logarithms for numbers, sines, and tangents with the manifold use thereof briefly explained and applied in arithmetick, geometry, surveying, navigation, dialling, gunnery, and gauging.

Year: 1684
Place: London
Publisher: M. Clark for W. Fisher, R. Mount, T. Passenger, R. Smith, R. Northcot.

Edition: 3rd Language: English

Figures: 4 engraved plates (1 folding)

Binding: modern leather Pagination: pp. [6], 202, [176] Collation: A–I¹²K–Z⁶

Size: 147x80 mm Reference: Win *ESTC*, P-2049B; Tay *MP* I, #229, p. 234; Hend

BTM, #47.0, p. 68

See the comments in the entry for the first edition of the work.

Illustrations available: Title page

P 71

Phillippes, Henry (fl.1648–1677)

The purchasers pattern. In two parts. The first shewing the true value of the purchase of any parcel of land or houses, by lease or otherwise. Also new tables of interest and rebate at 6 per cent. The second part, shewing the measuring of land, board and timber, and the false rules and deceits of many therein. Also the gauging of all vessels, with many other rules about weights and measures, and several tables of accounts, with many other rules and tables of daily use for most men.

b/w: **Phillippes, Henry**; A constant kalendar.

Year: 1656 Place: London

Publisher: Printed by R. and W. Leybourn for Thomas

Pierrepont Edition: 3rd Language: English Binding: contempo

Binding: contemporary leather

Pagination: pp. [16], 120, 121–146 (greatly misnumbered),

145-240 Collation: $A^8B-F^{12}G^{13}H-L^{12}$ Size: 125x87 mm

Reference: Win ESTC, P.2052

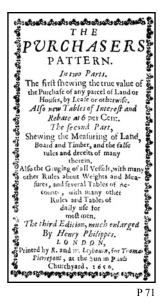
This little book was the first in English to contain an in-depth discussion of interest rates for transactions involving land and dwellings. Phillippes points out that there are good reasons for considering different interest rates (as well as legal limits on them) for different transactions. He even notes:

In point of Piety, many men had rather lay out their money in Land, though with lesser profit; than let it out to Interest: Because Usury, through the ill practices of many, hath gotten such an odious name, and been so generally condemned by many godly men.

He devotes a section to procedures on how to make sure land deals are both fair and legal—including obvious

advice such as making sure you have seen the land you are purchasing, etc. This work also contains elementary sections on the measurement of land and how to draw crude surveys. It would have been very useful for a gentleman who was about to make a land purchase but had little experience in such transactions.

Illustrations available: Title page



P 72 **Phillippes, Henry** (fl.1648–1677)

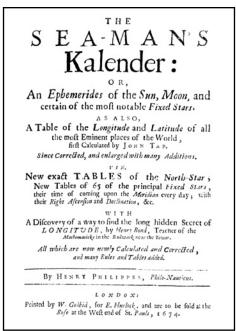
The sea-mans kalendar: or, an ephemerides of the sun, moon, and certain of the most notable fixed stars. As also, a table of the longitude and latitude of all the most eminent places of the world, first calculated by John Tap. Since corrected, and enlarged with many additions. Viz. new exact tables of the North Star; new tables of 65 of the principal fixed stars, their time of coming upon the meridian every day, with their right ascension and declination, &c. With a discovery of a way to find the long hidden secret of longitude, by Henry Bond, teacher of the mathematicks in the Bulwark.

Year: 1674
Place: London
Publisher: W. Godbid for E. Hurlock
Edition: late
Language: English
Binding: contemporary leather rebacked
Pagination: pp. [iv], 41, 40–41, [25] tables, 71–166, 165–179,

[1]
Collation: A–Z⁴
Size: 185x135 mm

This work includes much of the information that would be needed by a navigator. It begins with a description of how to calculate, using a volvelle, the times of high tide in various ports. This volvelle was used together with a table giving information for the British Isles and the coasts of Europe from Norway to Portugal. Other tables show the positions of the sun, several visible stars, the latitude and longitude of about a thousand cities and a table of sines, to a radius of 10000.

Illustrations available: Title page



P 72

Phillippes, Henry (fl.1648–1677), editor See Baker, Humphrey; Baker's arithmetick: teaching the perfect work and practice of arithmetick.

P 73 **Picard, Jean** (1620–1682)

Traité du nivellement ... avec une relation de quelques nivellemens faits par ordre du Roy. Et un abbregé de la mesure de la terre du meme auteur. Mis en lumiere par les soins de M. de la Hire ...

> Year: 1684 Place: Paris

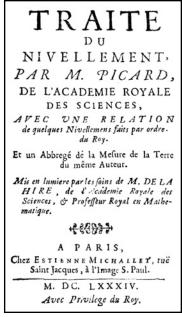
Publisher: Estienne Michallet

Edition: 1st Language: French Figures: 4 plates

Binding: contemporary leather; spine gilt; worn Pagination: pp. [12], 204, 241–248, [4]

Collation: à⁶A⁴B⁸-R⁴S⁸ Size: 156x90 mm

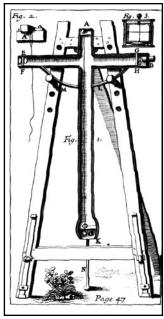
Picard was an astronomer and surveyor who received his education at the Jesuit college at La Flècheand and



his M.A. from the University of Paris in 1650. He was considered the finest French astronomer of his time for the next two centuries, but his work has now been overshadowed by that of Cassini, with whom he worked. He was part of the survey team that created the water fountains of Versailles and is remembered for his use of leveling instruments with telescopic sights at a time when few, if any, instruments were so equipped. He also created new instruments and techniques for use in the definitive measurement of the distance between Amiens and Malvoisine that established the accurate measurement of a degree on the Earth's surface. In 1671, he published this result in a book (Mesure de la terre). It was this volume that gave **Newton** the information he needed to complete his work on universal gravitation (De motu). Picard also spent part of 1671 with Tycho Brahe at Hven Island to work on an accurate location for the island and thus permit Tycho's observations to be compared with those of others.

This volume on leveling instruments grew out of Picard's surveying work. It was written before his death but was seen through the press by his pupil and colleague **Philippe de La Hire**. **La Hire** also included a twenty-nine-page summary of Picard's *Mesure de la terre* at the end. Picard illustrates his own leveling instrument with telescopic sights and a long plumb bob (housed in a box so that it cannot be disturbed by wind), and he includes instruments by **La Hire**, Romer and Huygens

Illustrations available: Title page Picard's instrument



Picard's leveling instrument, P 73

[Picarte, Ramon]

See **Oyon, J. B.**; *Tables de multiplication a l'usage de mm. les géomètres, de mm. les ingénieurs.*

P 74

Pickworth, Charles Newton (1861–a.1955)

Instructions for the use of A.W. Faber's improved calculating rule

Year: 1901

Place: Stein near Nürnberg Publisher: A.W. Faber

Edition: 3rd

Language: English

Figures: 14 folding plates

Binding: original cloth-backed printed heavy paper wrappers

repaired

Pagination: pp. iv, 5–55, [1]

Size: 239x163 mm

Reference: Otnes JOS, Vol. 10, No. 1, Spring 2001

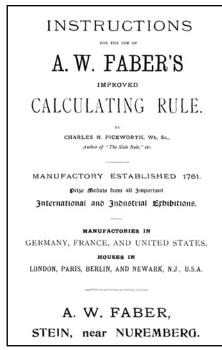
Pickworth was an English mechanical engineer and technical writer. In 1889 he joined the staff of *Mechanical World* and two years later was appointed its editor. He left there to accept the position of editor of *The Textile Manufacturer* in 1895. He became well known as the author of instructional books on the slide rule. He began with this volume for the Faber instrument, producing new versions each time the design changed, but later authored a generic text simply called *The slide rule*. This later publication went through at least twenty-four editions. The twenty-fourth was issued in 1955 by which time Pickworth was ninety-four and relied on family members for editorial assistance.

Faber was a German firm (later named *Faber-Castell*) that began as a pencil manufacturer in 1761 and branched into drawing instruments and eventually into slide rules. It stopped producing slide rules in 1975.

None of these instruction books by Pickworth has a date of publication. They can, however, be approximately dated by noting the change in contents to reflect the Faber line of slide rules. Roger Shepherd has produced such a table in *Journal of the Oughtred Society*, Vol. 10, No. 1, Spring 2001.

Illustrations available:

Title page



P 74

P 75

Pickworth, Charles Newton (1861-a.1955)

Instructions for the use of A. W. Faber's improved calculating rule

Year: ca.1903 Place: London Publisher: A.W. Faber Edition: 2nd Language: English Figures: 14 folding plates

Binding: original cloth-backed printed heavy paper wrappers

Pagination: pp. 42 Size: 238x165 mm

See comments in the entry for the earlier edition of this work.

Illustrations available:

none

P 76

Pickworth, Charles Newton (1861-a.1955)

Instructions for the use of A.W. Faber's improved calculating rule

Year: ca.1906 Place: London Publisher: A.W. Faber Edition: 3rd Language: English Figures: 14 folding plates

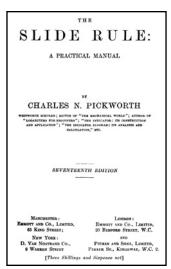
Binding: original cloth-backed printed heavy paper wrappers;

spine binding loose Pagination: pp. iv, 5–53, [3] Size: 237x163 mm

See comments in the entry for an earlier edition of this work.

Illustrations available:

None



P 77

Pickworth, Charles Newton (1861–a.1955)

The slide rule

Year: 1920 Place: London Publisher: Emmot Edition: 17th Language: English

Binding: original brown cloth boards, worn Pagination: pp. [6], 5–132, [2], viii

Circ. 190v.121 mm

Size: 180x121 mm

Reference: Otnes JOS, Vol. 10, No. 1, Spring 2001

See also the comments in the entry for the 1901 edition of **Pickworth**'s *Instructions for the use of A.W. Faber's improved calculating rule.*

This was the standard manual on the use of the slide rule until well into the later half of the twentieth century. At least one, and sometimes several, editions could be found in the library of every technical school, and many were sold to individuals when they bought their slide rules.

Illustrations available: Title page

P 78

Pickworth, Charles Newton (1861-a.1955)

The slide rule. A practical manual

Year: 1938 Place: London Publisher: Pitman Edition: 21st Language: English

Binding: original brown cloth boards Pagination: pp. [6], 5–132, [2], [viii]

Collation: A–I⁸ Size: 180x120 mm

Reference: Otnes JOS, Vol. 10, No. 1, Spring 2001

See comments in the entry for an earlier edition of this work.

Illustrations available: Title page

P 79

Pickworth, Charles Newton (1861–a.1955)

The slide rule

Year: 1955 Place: London Publisher: Pitman Edition: 24th Language: English Binding: original brown cloth boards

Pagination: pp. 126, [4] Size: 185x120 mm

See comments in the entry for an earlier edition to this work.

Illustrations available: Title page

P 80

Pico Fonticolano, Geronimo, dall' Aquila (1541–1596)

Tesoro di matematiche considerationi dove si contiene la teorica e la practtica di tutta la geometria, il trattato della trasformatione, circoscrittione, & iscrittione della figure piane e solide, con la maniera d'aumentarle, ó diuidere, secondo qualsiuoglia sorte di proportione.

Year: 1645 Place: Rome Publisher: Andrea Fei Edition: 1st Language: Italian

Binding: contemporary vellum, lower front corner repaired

Pagination: pp. [14], 256, [2], 257-278

Collation: a⁴¶¶³A–B⁶C–2L⁴ Size: 290x207 mm

Reference: Rcdi BMI, Vol. I, p. 275

The author was a prominent architect in Aquila in the Abruzzi region of Italy. This book was published posthumously in Rome.

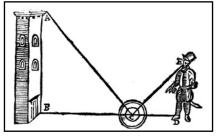
This is a work on elementary mathematics and surveying with emphasis on the needs of the military surveyor. Pico illustrates the use of many different instruments, including the Jacob's staff, geometric square, quadrants, radio latino and others. The work is dedicated to Latino Orsini (see entry for **Danti, Egnatio**; *Trattato del radio Latino*, 1583).

Illustrations available:

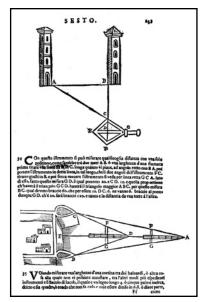
Title page
Ladders and towers
Radio latino and Jacob's staff
Survey instruments
Heights of towers via mirrors



P 80



Mirror surveying, P 80



Radio latino and Jacob's staff, P 80



P 81

Pifferi, Francesco (ca.1548–)

Monicometro instromento da misurar con la vista stando fermo

Year: 1595 Place: Siena

Publisher: Luca Bonetti

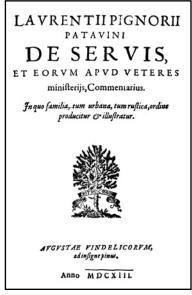
Edition: 1st Language: Italian Figures: 22 woodcuts in text Binding: modern vellum Pagination: pp. 67, [1]

Collation: A–H⁴I² Size: 208x152 mm

Reference: Ada CBCE, P-1175; Rcdi BMI, Vol. II, p. 277

Francesco Pifferi was a Camaldulian friar and professor of mathematics at Siena. He is known to have produced a translation of **Sacrobosco**'s *Sphaera* as well as this work on surveying. The work is a description of the construction and use of a variation on the plane table. It is used horizontally when surveying land and vertically when determining heights of towers, etc. The illustrations are common for this type of book: finding heights of objects, distances between buildings, etc. There is no complete illustration of the instrument, but there are three poor woodcuts showing portions of it.

Illustrations available: Title page



P 82

P 82

Pignoria, Laurentii (Lorenzo) (1571–1631)

De servis, et eorum apud veteres ministeriis, commentarius. In quo familia, tum urbana, tum rustica, ordine producitur & illustratur.

Year: 1613 Place: Augsburg

Publisher: Augustæ Vindelicorum

Edition: 1st Language: Latin

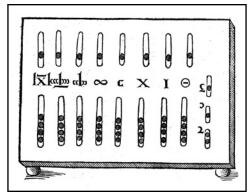
Binding: blue paper wrappers Pagination: pp. [12], 280, [10] Collation:)(⁶A–2N⁴2O¹ Size: 201x151 mm

This book comes from the *ad insigne pinus* (at the sign of the pine tree) press in Augsburg. The press was run by a group of scholars centered on the St. Anna Gymnasium there. They specialized in the production of Greek and Latin texts, not by producing copies of material already in circulation but by printing from original manuscripts

whenever possible. The press was active for only a short time from 1594 to 1619.

This book is a description of everyday Roman items. It includes razors, locks, the duties of slaves, jewelry, etc. Of particular interest to this collection is the description of the Roman abacus. The British Museum has a similar abacus in its collection, but that example is small (the size of a hand), with counters fixed in the slots. In this instance the pictured abacus is larger, with feet (i.e., to be used on a table, rather than being hand held), and the counters are small round pebbles (calculi).

Illustrations available: Title page Abacus section (2)



Roman abacus, P 82

P 83

Pigri, Giuseppe (1728–1804)

Nouve tavole degli elementi dei numeri dall' 1 al 10000 ... con le quali si abbreviano le più difficili operazioni dell' Aritmetica, molto più facilmente e sicuramente si faccia con quelle dei logaritmi.

Year: 1758 Place: Pisa

Publisher: Paolo Giovannelli

Edition: 1st Language: Italian

Figures: 2 large folding plates Binding: modern paper boards

Pagination: pp. 196 Collation: A–B⁸C–X⁴Y⁶ Size: 214x140 mm

Reference: Glais *RCMT*, p. 35

Pigri was first a professor of mathematics, first in Livorno and later in Florence, where he was also the director of a museum.

This is a table of all the prime factors of integers less than 10,000.

Illustrations available: Title page Sample table page



P 83

	EMENTI.	N.	ELEMENTI.
961 MU 962 2.12		991	
962 2.13		992	2'. 31
954 2. 2.		993	3. 331
955 5. 19		994	2. 7. 71 5. 199
966 2. 3.	2. 22	996	
967	/· -3	990	2. 2. 3.83
968 2. 2.	2. 11. 11	998	2. 499
969 3. 19		999	3. 3. 3. 37
970 2. 5.	97	1000	aaa. ccc
971		1001	7-11. 12
972 2. 2.		1002	2. 2. 167
973 7. 13		1003	17. 59.
974 2. 48 975 5. 5.		1004	2. 2. 251
	3. 17	1005	5. 3. 67
976 2. 6		1006	2. 503
977 2. 2. 2.	.6.	1007	19. 53
970 11.8		1008	24. 3.7. 3
	5. 7. 7	1010	2. 5. 101
981 3. 3.		1011	
982 2. 491		1012	3. 337 2. 2. 11. 22
983		1013	11. 23
	2. 3. 4t.	1614	2. 3. 13. 13
985 5. 19	7	1015	5. 7. 29
986 2. 17		1016	2. 2. 2. 127
987 7. 3.	47	1017	3. 3. 113
088 2. 2.	13. 19	1018	2. 509
989 23. 4	3. 3. 11	1019	

P 8

P 84

Pike, Nicholas (1743–1819)

A new and complete system of arithmetic composed for the use of the citizens of the United States:

Year: 1788

Place: Newburyport, MA Publisher: John Mycall

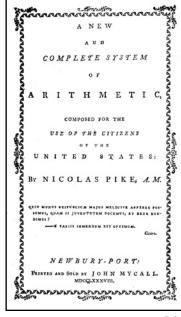
Edition: 1st Language: English

Binding: contemporary calf; red leather label; upper spine torn

Pagination: pp. 512 Collation: A-3S⁴ Size: 201x123 mm

Reference: Evans CDPUS, 21394

Newburyport, Massachusetts, where this book was published, was a thriving center of commerce in the



eighteenth century. The author, a graduate of Harvard University, is often erroneously credited as the first person in the United States to publish an arithmetic text. That honor belongs the publisher of an earlier American arithmetic (Anon. 1729, Boston). Unlike this work by Pike, the 1729 Boston work was not well received and was not successful. As well as writing his own arithmetic books, Pike is known to have edited others, e.g., **Daniel Fenning**'s *Ready Reckoner*, 1794 edition.

This is the first edition of the first successful American arithmetic textbook. It went through many editions—at least eighteen editions of this work or its abridged version are known. The material in this volume is comprehensive but often not well explained. For example, the currency in the American colonies was in disarray at the time. Each of the former colonies had a different exchange rate with the others and Pike spends twenty-two pages discussing the various combinations of exchange of colonial currency with the new federal money. A contrasting situation occurs in the discussion of logarithms, in which fewer than two pages are used to give a brief example of multiplication, division, powers, roots and compound interest. Pike gives no explanation of what logarithms are, no tables, and no indication of logarithms' history. A similar situation exists in the section on gauging, where he devotes one long awkward sentence to explaining how a particular computation may be done on a slide rule with no discussion of the instrument itself or how it may be applied. The book discusses all types of problems, from calendar situations that would have been familiar to a medieval monk to the length of pendulums vibrating at different frequencies.

A second copy of this work is in the collection.

Illustrations available: Title page Sample problem page

P 85

Pinsky, Leonard

Do machines think about machines thinking? In Mind, Vol. LX, No. 239, July 1951.

Year: 1951 Place: Edinburgh

Publisher: Thomas Nelson & Sons

Edition: 1st Language: English

Binding: original paper wrappers Pagination: pp. 397–398

Size: 215x140 mm

This is a short contribution to the discussions section of the journal *Mind*. The author comments on **Alan Turing**'s recent paper ("Computing Machinery and Intelligence," *Mind*, Vol. LIX, Oct. 1950), in which he posed the question "Can machines think?" Pinsky, noting that some problems involve the use of "metaphysical" sentences, could not resist humorously suggesting that if a computer were given a copy of Turing's paper, it might be forced to use "metamechanical" statements to avoid its own mental breakdown.

Illustrations available: None

P 86

Pitiscus, Bartholomeo (1561–1613)

Canon triangulorum sive tabulae sinuum tangentium et secantium. Ad partes radij 100000 & ad scrupula prima quadrantis

b/w: **Pitiscus, Bartholomeo**; *Trigonometriæ sive* ..., 1600.

Year: 1600 Place: Augsburg

Publisher: Michael Manger for Dominicus Custodis

Edition: 1st Language: Latin

Figures: engraved colophon

Binding: contemporary limp boards; ties; uncut Pagination: pp. [8], 213, [3] 215–370, [2]

Collation: A-3A⁴3B³ Size: 215x165 mm

Bartholomeo Pitiscus (Petiscus) was born in Grunberg, Silesia (today know as Zielona Góra in Poland). He was a Calvinist clergyman who preferred to spend his time in mathematical pursuits. He studied theology in Heidelberg, and for at least the last twenty years of his life, he was the court chaplain for Elector Frederick IV of the Palatinate. He wrote several books on mathematical subjects. **Smith** (*History*) indicates that Pitiscus' book *Trigonometriae* was the first satisfactory text on the subject and that Pitiscus coined the word. He published several mathematical tables, and although neither naming the secant nor cosecant, his 1613 tables containing them began the trend of their inclusion in sets of trigonometric tables. A comprehensive note on the life and table-publishing activities of Pitiscus can be found in *Mathematical Tables and Other Aids to Computation*, Vol. 3, 1948–1949, pp. 390–397.

This is a table of all six trigonometric functions for an interval of one minute of arc. See the comments and illustrations in the entry for **Pitiscus, Bartholomeo**; *Trigonometriae Sive*, 1600.

Illustrations available:



P 87

P 87 **Pitiscus, Bartholomeo** (1561–1613) **- Denis Henrion** (ca.1580–1632), editor

Canon manual des sinus, touchantes, et couppantes. Supputé par B. Pitiscus, & corrigé en ceste edition, en laquelle sont adioustées toutes les choses principales & necessaires á la trigonometrie, extraictes des traictez de la doctrine des triangles, tant rectilignes, que spheriques, faits

Year: 1619

Place: Paris

Publisher: Abraham Pacard

Edition: 1st Language: French

Binding: contemporary vellum; back cover torn

Pagination: ff. [130]. Collation: a³A–H¹²L–M¹²N⁷ Size: 154x81 mm

These are the Pitiscus tables as reproduced by **Denis Henrion**. See also the entry for **Henrion**, **Denis**; *Sinuum...*, 1623 for the same work in Latin.

Illustrations available:

Title page

P 88

Pitiscus, Bartholomeo (1561–1613)

Canon triangulorum emendatissimus, et ad usum accommodatissimus; pertinens ad trigonometriam

b/w: **Pitiscus, Bartholomeo**; *Trigonometriæ sive ...*, 1608.

Year: 1608

Place: Augsburg

Publisher: N. Hofmann for J. Rosa

Edition: 2nd Language: Latin

Binding: contemporary limp vellum; gilt tooled; replaced ties

(1 missing)
Pagination: pp. 219, [5]
Collation: A-2E⁴
Size: 196x155 mm

See the entry for **Pitiscus**, **Bartholomeo**; *Trigonometriæ sive* ..., 1608, for comments and illustrations.

Illustrations available:

None

P 89

Pitiscus, Bartholomeo (1561–1613)

Thesaurus mathematicus. Sive canon sinuum ad radium 1.00000.00000.00000. Ed ad dena quæque scrupula secunda quadrantis. Una cum sinibus primi et postremi gradus, ad eundem radium, et ad singula scrupula secunda quadrantis. Adiunctis ubique differentiis primis et secundis; atq, ubires tulit, etiam tertijs. Iam olim quidem incredibili labore & sumptu à Georgio Joachimo Rhetico supputatus. At nunc primum in lucem deitus. & cum viris doctis communicatus.

Year: 1613

Place: Frankfurt

Publisher: Nicolaus Hoffman for Jonæ Rosæ

Edition: 1st Language: Latin

Figures: title in red and black

Binding: Later vellum-backed marbled boards Pagination: pp. viii, 272, 62, 16

Collation: (:)⁴A–Y⁶Z⁴a–d⁶e⁷2A⁸

Size: 339x235 mm

Reference: Glai RCMT, pp. 44, 158

Pitiscus was editing a table of natural sines to ten decimal places that had earlier been calculated by Georg Joachim Rheticus and his assistants. During the editing process he realized that to make the corrections, he really needed a table to more than ten digits and this realization led him to believe that Rheticus must have calculated them to more than ten places. He contacted Valentin Otho, the man who had edited the Rheticus papers after his death, and Otho confirmed that Rheticus did have a manuscript table to fifteen decimal places but that it had been misplaced when Otho had moved. Pitiscus searched for the missing manuscript, but he had to wait until after **Otho**'s death when it was discovered among his papers. The complete story of this search is told by Pitiscus in the preface to this work. This manuscript calculation by **Rheticus** formed the basis for the tables in this volume. It contains several tables: a fifteen-digit table of sines to every ten seconds with first, second and third differences (by Rheticus), a fifteen-digit table of sines to every second of arc for the first and last degree of the quadrant (by **Rheticus**), a table of chords to twenty-five digits for selected angles (by Pitiscus), and a table of sines to twenty-two digits for selected angles with first, second, third, fourth and sometimes fifth differences.



P 89

The work has been described by **Glaisher** (*Report on Math. Tables*) as

[This table], the 'Opus Plantinum' [by Rheticus], Vlacq's 'Arithmetica Logarithmica,' 1628, and 'Trigonometria Artificialis,' 1633 may be

said to be the four fundamental tables of the mathematical sciences.

This collection boasts all of them!

There is an error on the first title page where the publication date is given as 1513; other section titles carry the correct date of 1613.

Illustrations available:

Title page Thesaurus mathematicus (color) Title page for Sinus primi Title page for Principia sinuum Title page for Sinus decimorum



P 89



SINUS PRIMI
ET POSTREMI
CRADUS
AD SINGULA SCRUPULA SECUNDA,
Ad Partes Rady
L. 0000.0000.0000.0000.

Whitem differency points broads.
FRINTS ET 9 03 T READY NY MEDIS 9 NPP2
conspigned School of the Control of the Co

P 89

Pitiscus, Bartholomeo (1561–1613)

Sinuum, tangentium et secantium canon manualis accommodatus ad trigonometriam.

Year: 1613 Place: Heidelberg

Publisher: Johan Lancelloti for Jonæ Rosæ

Edition: 2nd Language: Latin

Binding: contemporary vellum

Pagination: ff. [100] Collation: A–H¹²I⁴ Size: 132x74 mm

Reference: Glais RCMT, p. 44

This is an abridged set of tables that Pitiscus published in his *Trigonometriae*. They include entries for sin, tangent and secant (and, by reading the table backwards, the co-functions). This was published in the year that Pitiscus died. They may well have been an unauthorized truncation (by dropping off four decimal places) to make the tables a more convenient size.

Illustrations available: Title page Sample table page



P 91

Pitiscus, Bartholomeo (1561–1613)

Sinuum tangentium et secantium canon manualis accommodatus ad trigonometriam.

Year: 1620 Place: Heidelberg

Publisher: J. G. Geyder for Jonæ Rosæ

Edition: 2nd Language: Latin Binding: contemporary vellum over boards, "I.I.H.S. 1628" embossed on front cover; ties lacking

Pagination: ff. [96] Collation: A–H¹² Size: 130x75 mm

This is the second edition of Pitiscus' tables. Although superficially identical to the first, they were actually reset for this edition.

Illustrations available: Title page Sample table page



P 91

P 92 **Pitiscus, Bartholomeo** (1561–1613)

Trigonometriæ sive, de dimensione triangulorum libri quinque. Problematum varioru[m] nempe geodæticorum, altimetricorum, geographicorum, gnomonicorum, et astronomicorum: libri decem. Trigonometriæ subjuncti, ad usum eius demonstrandum.

Year: 1600 Place: Augsburg

Publisher: Michael Manger for Dominicus Custodis

Edition: 1st (Separate) Language: Latin

Figures: engraved colophon

Binding: contemporary limp boards; ties; uncut Pagination: pp. [8], 213, [3] 215–370, [2]

Collation: A-3A⁴3B³ Size: 215x165 mm

Reference: Zin GBAL, 3861; Ada CBCE, P-1331

This book, in which the term *trigonometry* first appeared, also contained the table of sines, tangents and secants that set the standard for subsequent tables of the trigonometric functions. The work was originally



published as part of Abraham Scultetus' Sphaericorum libri tres methodice, 1595, in a slightly modified form. This is the first separate edition of this publication.

The first section discusses plane and spherical trigonometry. The second is Pitiscus' tables that actually list all six trigonometric functions, but the columns are only headed with the terms sine, tangent and secant. The last third of the book contains a section, Problematum Variorum, that is divided into ten books dealing with problems in surveying, geography, geodesy, astronomy and geometry. The title page for the Problematum Variorum section has an incorrect date of 2000 (in Roman numerals), the printer having incorrectly repeated the Dfor 500 in place of the C for 100.



Colophon, P 92

Illustrations available:

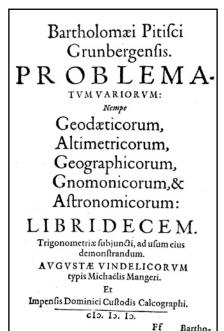
Title page

Title page for tables

Table page

Title page for Problematum variorum

Engraved colophon



P 92

P 93

Pitiscus, Bartholomeo (1561–1613)

Problematum variorum: nempe geodæticorum, altimetricorum, geographicorum, gnomonicorum, & astronomicorum: libri decem. trigonometriæ subjuncti, ad usum eius demonstrandum

b/w: Pitiscus, Bartholomeo; Trigonometriæ sive ..., 1600

Year: 1600

Place: Augsburg

Publisher: Michael Manger for Dominicus Custodis

Edition: 1st (Separate) Language: Latin

Figures: engraved colophon

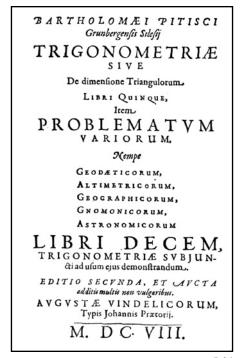
Binding: contemporary limp boards; ties; uncut Pagination: pp. [8], 213, [3] 215–370, [2]

Collation: A-3A43B3 Size: 215x165 mm

This section is in ten parts and deals with typical problems in astronomy, geodesy, geography, geometry, surveying, etc. See the entry for **Pitiscus**, **Bartholomeo**; Trigonometriæ sive ..., 1600 for comments and illustrations.

Illustrations available:

None



P 94

Pitiscus, Bartholomeo (1561–1613)

Trigonometriæ sive de dimensione triangulorum libri quinque, item problematum variorum, nempe geodæticorum, altimetricorum, geographicorum, gnomonicorum, astronomicorum. Libri decem, trigonometriæ subjuncti ad usum eius demonstrandum. Editio secunda, et aucta additis multis non vulgaribus.

Year: 1608 Place: Augsburg

Publisher: Johannis Prætorius

Edition: 2nd Language: Latin

Size: 196x155 mm

Binding: contemporary limp vellum; gilt tooled; replaced ties

(1 missing)
Pagination: pp. [8], 334, [2]
Collation: (a)⁴A-2T⁴

This is the second edition of the first book to use the term *trigonometry*. See also the entry for the first (1600) edition for comments. In this edition the tables have been moved to the end of the book and, according to their title page, have been corrected. There have been a few additions to the text and examples, but this edition has essentially the same content as the first.

Illustrations available: Title page Table title page Colophon



Table title page, P 94



Printer's mark and colophon, P 94

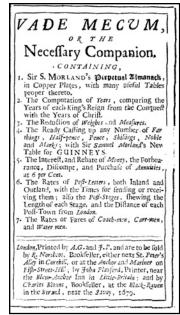
Pitiscus, Bartholomeo (1561–1613)

See Trigonometria: sive de solutione triangulorum.
Tractatus brevis & perspicuus. An appendix to:
Scultetus, Abraham; Sphæricorum libri tres.
Methodicé conscripti & utilibus scholiis expositi.
Accessut de solutione triangulorum tractatus brevis & perspicus Bartholomæi Pitisci ...

P 95

Playford, John (ca. 1655–1685/6)

Vade mecum, or the necessary companion, containing, 1. Sir S. Morland's Perpetual almanack, in copper plates, with many useful tables proper thereto. 2. The



computation of years, comparing the years of each king's reign from the conquest with the years of Christ.

3. The reduction of weights and measures. 4. The ready casting up any number of farthings, half-pence, pence, shillings, nobles and marks; with Sir Samuel Morland's new table for guinneys. 5. The interest, and rebate of money, the forbearance, discompt, and purchase of annuities, at 6 per cent. 6. The rates of post-letters, both inland and outland, with the times for sending or receiving them, also the post-stages, shewing the length of each stage, and the distance of each post-town from London. 7. The rates or fares of coach-men, carr-men and water men.

Year: 1679 Place: London

Publisher: Printed by A[nne] G[odbid] and J[ohn] [Playford]

Edition: 1st Language: English

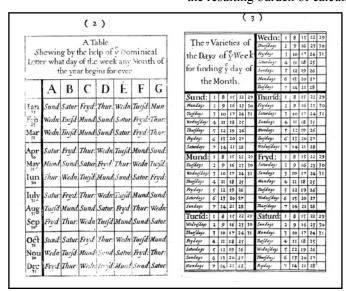
Figures: Additional dedication leaf follows A1. Additional

engraved portrait of Morland follows A4. Binding: modern half-bound leather over marbled paper boards

Pagination: pp. [8], 200 Collation: A–N⁸ Size: 144x88 mm

John Playford, in partnership with Anne Godbid (widow of William Godbid), were music printers. They had previously published Morland's *Doctrine of interest*, 1679. Music printers relied heavily on engraved printing, and thus it is not surprising that this work contains several pages of engraved tables.

This ready reckoner contains tables for weights and measures, interest payments, postage rates by distances and other items suitable for business calculations. It went through twenty-two editions, eight prior to 1700, and was in print for almost 100 years. Part of Morland's perpetual almanac had been printed in his earlier work on calculating machines (see entry for Morland, Samuel; The description and use of two arithmetic instruments, 1673), where parts of them are labeled as having been invented by Morland in 1650. The portrait of Morland, bound just prior to his almanac, is a re-engraving of the frontispiece of **Morland**'s *The description and use of two* arithmetic instruments, 1673. Sir Samuel Morland's table for the casting up any number of guinneys... appears here in print for the first time. The gold guinea was created in 1663 and fluctuated in value with the price of gold. With these tables, Morland sought to ease the resulting burden of calculation. This irritant was not



Sample engraved almanac page, P 95



Samuel Morland and his almanac, P 95

completely resolved until 1717, when on the advice of **Sir Isaac Newton**, the value of the gold guinea was set at twenty-one shillings.

Illustrations available:

Title page Morland portrait Engraved almanac pages

P 96

Poblacion, Juan Martin (fl.1530)

De usu astrolabi compe[n]dium, schematibus commodissimis illustratum ...

Year: 1546 Place: Paris

Publisher: Jacobum Gazellum

Edition: 6th Language: Latin Binding: modern vellum Pagination: ff. 58 Collation: A–G⁸H² Size: 154x93 mm

Reference: H&L, # 766, p. 394; Cro CL, #38, p. 64

Juan Martinez Poblacion, a Spanish priest, was a professor at the new College Royal in Paris. He is known by a variety of surnames: Silecius, Guijeno and Blasius, as well as sometimes being known as Johannes Martinus. He later became the Cardinal Archbishop of Toledo. Some authorities have identified Juan Martin Poblacion as the same person as Martinez Silicaeus or Joannes Blasius, but the question remains open and unresolved.

This era was one in which the large books on the astrolabe were beginning to appear (see the appendix essay on the astrolabe for more information). However, the smaller versions, such as this volume and the one by **Köbel**,

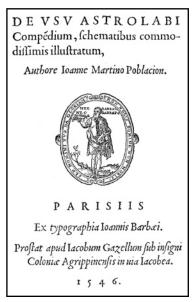
filled the need for basic information without requiring that a person read the larger, more technical, volumes (see entry for **Köbel**, **Jacob**; *Astrolabii*, 1545, which is very similar).

Like the **Köbel** volume, this one opens with the astrolabe, but then the majority of the work concentrates on the use of only the shadow scales in terrestrial surveying. This volume, like the one by **Oronce Fine**, contains the interesting example of finding the height of a tower by noting its reflection in a mirror (see **Fine**, **Oronce**; *De re & praxi geometrica*, 1556).

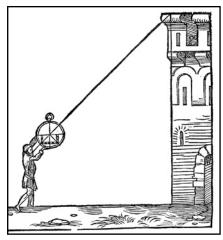
Illustrations available:

Title page

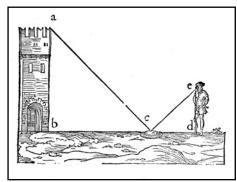
Height of tower via astrolabe shadow scales Height of tower using reflection in a mirror.



P 96



Usage of astrolabe shadow scales, P 96



Mirror surveying, P 96

Poblacion, Juan Martin (fl.1530)

De usu astrolabi compendium, schematibus commodissimis illustratum, ac mendis quamplurimis repurgatum. Cui accessit Procli Diadochi fabrica, ususq[ue] astrolabi, Georgio Valla Placentino interprete. Praeterea Gregoræ Nicephori astrolabus eodem interprete.

b/w: Stöffler, Johann; Elucidatio fabricæ ususque astrolabii... Cui multa & diligens accessit recognito, unà cum schematum negotio accommodatorum, exactissima expressione. Adiectus est index rerum & verborum copiosissimus.

Year: 1557 Place: Paris

Publisher: Guillaume Cavellat

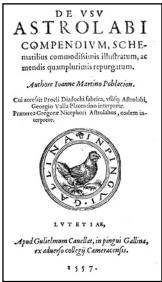
Edition: 10th Language: Latin

Binding: contemporary vellum

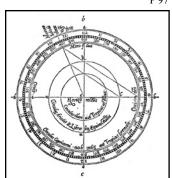
Pagination: ff. 52 Collation: A–F⁸G⁴ Size: 166x116 mm Reference: H&L, #3258 See the first (1546) edition of this work for information on the author.

This edition covers the same material as the earlier edition, but in a slightly different order. It also has more sophisticated diagrams.

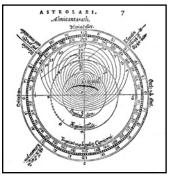
Illustrations available:
Title page
Equator and tropics on plate
Horizon lines on plate
Printer's mark (chicken)



P 97



Astrolabe equator and tropic lines, P 97



Astrolabe horizon lines, P 97



P 98

Poland, John C.

The quick and easy Lawrence slide rule instruction book. How to get answers instantly without pencil and paper.

Year: 1939 Place: Peru, IN

Publisher: Engineering Instruments, Inc.

Edition: 1st Language: English

Binding: original printed paper wrappers

Pagination: pp. 28 Size: 218x145 mm

Poland was a professor of mechanical engineering and air conditioning at the Chicago Technical College.

This is a short introduction to the use of the Lawrence slide rule. It appears identical in content to the one issued in 1930 (see entry for **Poland, John C.**; *The quick and easy slide rule instruction book*, 1930), with the exception that the Lawrence name is now prominent on the front cover and an advertisement for the Lawrence rule is on the inside of the back cover.

Illustrations available: Title page (color)

P 99

Poland, John C.

The quick and easy slide rule instruction book. How to get answers instantly without pencil and paper.

Year: ca.1930 Place: Peru, IN Publisher: Engineering Instruments, Inc.

Edition: 1st Language: English

Binding: original printed paper wrappers

Pagination: pp. 28 Size: 210x140 mm

This is an introductory instruction book for a slide rule. An additional sheet describing trigonometric and logarithmic scales is laid in. Gaps have been left on the front and back covers for insertion of the brand name of the slide rule into the title and for the generic advertisement on the back page.

Illustrations available:

Title page (front and back covers) (color)



P 9

P 100

Poleni, Giovanni (1683–1761)

Miscellanea

Year: 1709 Place: Venice

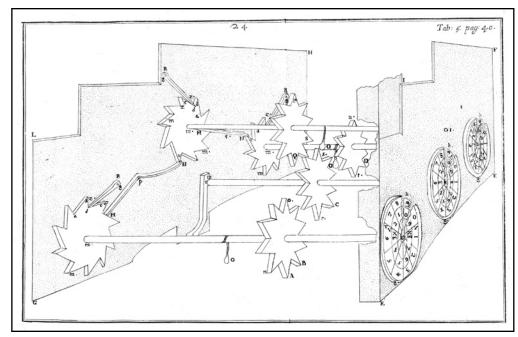
Publisher: Aloysium Pavinum

Edition: 1st Language: Latin Figures: 9 folding plates

Binding: contemporary heavy paper boards

Pagination: pp. [8], 56 Collation: π^4 A–G⁴ Size: 222x157 mm

Giovanni Poleni was a remarkable polymath who studied and made contributions to several technical fields. After completing his studies in the classics, philosophy and theology in Venice, he selected a career in physics and mathematics. Appointed professor of astronomy at the University of Padua at the age of twenty-six, he also became professor of physics six years later. After a few more years, he added the position of professor of mathematics, succeeding the second Nicolaus Bernoulli. He occupied a position on the faculty of the University of Padua for fifty-three years. Poleni made his early reputation as an ingenious hydraulic engineer, but he soon

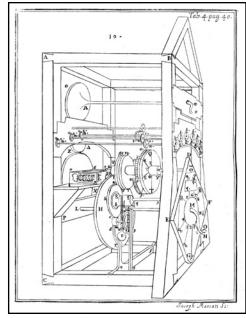


Poleni's machine, plate two, P 100

demonstrated expertise in a number of associated fields. For example, because of his thorough understanding of architecture, he was called upon by Pope Benedict XIV to recommend a remedial program for the cupola of St. Peters, which had badly deteriorated. Besides his engineering expertise, he was well known as a classical scholar, historian and archeologist.

This is Poleni's first work. It contains some of his work on barometers, thermometers, conic sections and dialing, but the section of most interest is the treatise on his arithmetic machine. Having heard and read of the machines of **Pascal** and **Leibniz**, Poleni designed a calculating machine based on the principle of the pinwheel to overcome the shortcomings of these earlier calculators. He built a hardwood model, intended as a gift for the emperor, but decided to destroy it when he learned that a Viennese mechanic named Brauer had anticipated him by presenting the Emperor with a somewhat simpler machine.

The diagrams (see illustrations) show the basic form of the calculator but do not provide sufficient detail to make its operation obvious. The mechanism is driven by falling weights, shown in the diagrams as token icons, (see the item labeled "o" in the second plate for an example). The central portion of the device consists of the variable tooth gear system that actually performs the addition. A number is set up on the machine, the large central dial is changed to indicate the multiplier digit (which will control the number of teeth interacting in the central mechanism), and the device is unlocked. The



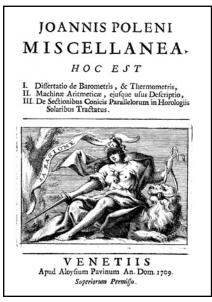
Poleni's machine, plate one, P 100

falling weights drive the central gearing which, in turn, adds the multiplicand the required number of times to the small dials arranged in a semicircle at the top of the machine.

Although lacking in important detail, the information Poleni provided was sufficient for IBM to build a replica for display purposes. While the IBM model appears identical to the original, the authors were not able to determine if it is functional. Some of IBM's replicas, e.g., its copy of Babbage's first Difference Engine, are known to be decorative rather than functional.

Illustrations available:

Title page Plate 1 Plate 2 Descriptive text



P 100

Pollard, Brian W.

See AFIPS; The design, construction and performance of a large-scale general-purpose digital 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.

Poorte, Glen E.

See AFPS; The operation and logic of the Mark III electronic calculator in view of operating experience. 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.

P 101

Porta, Giambattista della (1535–1615)

De furtivis literarum notis vulgo. De ziferis libri iiii

Year: 1591 Place: London

Publisher: Johann Wolpher

Edition: 2nd

Language: Latin

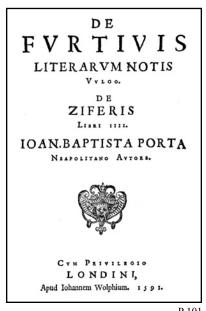
Figures: 3 volvelles unmounted Binding: contemporary vellum Pagination: pp. [20], 228, [2] Collation: $\P^{6*4}A-2D^42E^7$ Size: 193x140 mm

Reference: Gal BLC, p. 146; Win ESTC, 20118

Giambattista della Porta was born into a well-connected ancient and noble family of southern Italy. His father was a trusted member of the court of Charles V, Holy Roman emperor and king of Spain and Naples. He was educated at home by tutors and, after traveling widely, returned to spend the remainder of life on his estate near Naples. From there he published a number of works on natural magic, mathematics and physics.

Porta's first book, Magiae naturalis, was published in 1558, when he was only twenty-three years old. It deals with the secrets of nature and is indicative of his life-long concern with natural magic and the occult. It is not surprising that the second work he published was on the subject of cryptography. Nor is it surprising that Porta soon found himself in difficulty with the church authorities. A society he formed, the Accademia dei Segretti (or Academy of Secrets), was banned by the Inquisition as were all his publications. With this background, it is almost predictable that Porta would become expert in the subject of cryptography. In fact, many of his works on natural science contain recipes for secret ink and techniques on how to hide messages.

This treatise ranks as one of the earliest and most important works on cryptography (after Johann Trithemius' Polygraphie). It was first published in Naples in 1563

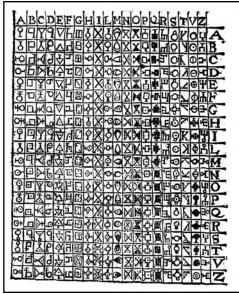


as De furtivis leteratum notis. According to David Kahn (The codebreakers, p. 142), the work was later pirated by the Englishman John Wolfe, who in 1591 issued two versions at the same time, one falsely imprinted as Naples. 1563, and the other correctly identified as London, 1591. Both issues were unauthorized and circumvented the rights of the author and the regulations of the Stationers' Company.

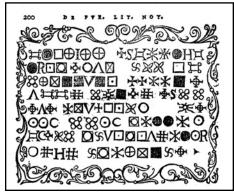
The work consists of four sections explaining ancient ciphers, modern ciphers, cryptanalysis and peculiarities in languages that aid in breaking ciphers. In this work Porta is the first to describe a two-letter substitution scheme. David Kahn (The Code Breakers) gives an extensive analysis of Porta's contributions to cryptography.

Illustrations available:

Title page Coding volvelle Volvelle centers Two-letter diagram Cipher sample



Two-letter substitution matrix, P 101



Cipher example, P 101

P 102

Porter, Arthur (1910-)

Basic principles of automatic control systems. In Proceedings of the Institution of Mechanical Engineers, Vol. 159 (War Emergency Issue No. 38)

b/w: **Rose**, **H. E.**; *The mechanical differential analyser*,

Year: 1948 Place: London

Publisher: Institution of Mechanical Engineers

Edition: 1st Language: English

Binding: original paper wrappers

Pagination: pp. 25–45 Size: 280x220 mm

Arthur Porter is best known for his work with Douglas Hartree in building from Meccano parts the first British differential analyzer at Manchester University. (Meccano is a toy set using perforated strips and plates fastened together by nuts and bolts, similar to the Erector set available in the USA.) After spending time at the British Military College of Science, he moved to Canada, where he became head of research at Ferranti Electric Ltd. (also known as Ferranti Packard), where several differnt computer systems were being developed for government and industry. He remained in Canada, occupying positions of importance in Canada's technological industry. In 2004, Porter published his memoirs: So many hills to climb.

Porter did not intend for this paper to break new ground but rather expected it to present an overview covering the basics of control systems. It was well received, and a lively discussion is recorded in the last eight pages.

Illustrations available: Title page

P 103

Porter, Arthur (1910-)

Introduction to servomechanisms

Year: 1950 Place: London Publisher: Methuen Edition: 1st Language: English Binding: original cloth boards Pagination: pp. [8], 154, [2] Collation: A-H8I10K8

Size: 167x103 mm

This is an introduction to analog servomechanisms. It is based on Porter's work with the differential analyzer and its subsequent development. After describing the basic mechanical and electrical equipment, the remainder of the work is a discussion of both linear and non-linear problems that can be solved by these devices.

Illustrations available:
Title page
Diagram of torque amplifier

Introduction to SERVOMECHANISMS

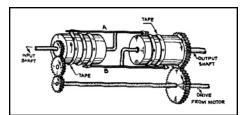
A. PORTER M.Sc., Ph.D.

Head of Research Department, Ferranti Electric Ltd., Toronto, Canada (formerly Professor of Instrument Technology, Military College of Science, Shrivenham)

WITH 70 DIAGRAMS

LONDON · METHUEN & CO. LTD. NEW YORK · JOHN WILEY & SONS, INC.

P 103



Torque amplifier, P 103

P 104

Porter, J. G.

Obituary: Leslie John Comrie, M. A., Ph.D., F. R. S. In Journal of the British Astronomical Association, Vol. 61, No. 5, April 1951.

Year: 1951 Place: London

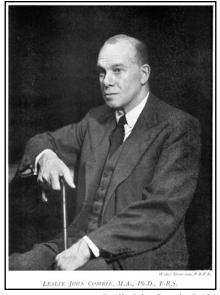
Publisher: British Astronomical Association

Edition: 1st Language: English

Binding: original paper wrappers Pagination: pp. 132–134 Size: 245x150 mm

See the entries for **Leslie John Comrie**. This is a thoughtful obituary of Comrie. A portrait of Comrie acts as a frontispiece to the issue.

Illustrations available: Title page Portrait



Leslie John Comrie, P 104

P 105

Portis, Leonardo de (fl.1500)

De sestertio, tale[n]tis, pecuniis, po[n]deribus, me[n]suris, stipe[n]diis militaribus antiquis ac provinciarum, regum, populi Romanii, Cæsaru[m]que, redditibus, libri duo, in quibus complura loca scriptoru[m] clariss[imorum]. Plinii, Columellæ, Celsi, Livii, Juvenalis, tum acri juditio, tu[m] exquisitiori doctrina, castigantur, aperiu[n]tur, illustrantur. Præterea additus est index rerum & verborum, quae hoc in opere digniora scitu visa sunt.

Year: 1524 Place: Rome

Publisher: Francesco Minizio Calvo

Edition: 4th
Language: Latin
Binding: modern vellum
Pagination: ff. [40]
Collation: A-I⁴2a⁴
Size: 198x140 mm

Reference: Rcdi BMI, Vol. II, p. 314; Smi Rara, p. 70; Hymn

AC, #2524, #2525

Portis was a lawyer from Venice.

This is a description of ancient weights and measures. Unlike some similar works in this collection, it does not illustrate any of the ancient artifacts. The first edition was in 1500, and five other editions are known, the last being 1534.

This book is a good example of the development of different concepts in book design. **Smith** (*Rara*) indicates that the 1500 edition used Roman numerals throughout except in the index. This edition contains an alphabetical index with folio numbers noted in Roman

numerals (rather than page numbers); however, there are no numbers on the pages themselves, a situation that makes the index difficult to use. A previous owner had attempted to rectify the situation by noting folio numbers on the first nine leaves, but then seemed to have given up.

Illustrations available: Title page



P 105

P 106

Pott, August Friedrich (1802–1887)

Die quinare und vigesmale Zählmethode bei Völkern aller Welttheile. Nebst ausführlicheren Bemerkungen über die Zahlwörter Indogermanischen Stammes und einem Anhange über Fingernamen.

> Year: 1847 Place: Halle

Publisher: C. A. Schwetschke und Sohn

Edition: 1st Language: German

Binding: original paper boards; red label

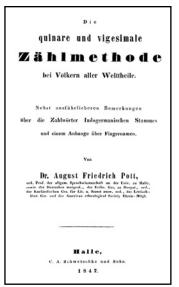
Pagination: pp. viii, 304 Collation: ⁴1–18⁸19–20⁴ Size: 215x130 mm

Pott was a professor of languages at the University of Halle.

This is an in-depth investigation of number systems and number names, including finger reckoning systems, from various societies. It contains many tables giving names of numbers from, for example, the Celtic languages of Irish, Erse, Breton and Cornish, together with their potential derivation from the original Sanskrit. Pott does not limit himself to European languages but also considers

number forms in Kurdish, Persian, Hebrew, Arabic, Coptic, languages from Siberia and many others.

Illustrations available:
Title page
Tables showing base 20 influence



P 106

P 107

Powell, John Wesley (1834–1902)

Nineteenth annual report of the Bureau of American Ethnology

Year: 1900

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

Pagination: 2 volumes: v1: pp. Xcii, 576; v2: pp. [2], 571–1160 Collation: v1: i–v⁸ vi⁶ 1–36⁸ v2: 1–4⁸ 5⁶ 6–13⁸ 14⁶ 15–27⁸ 28⁷ 29⁸

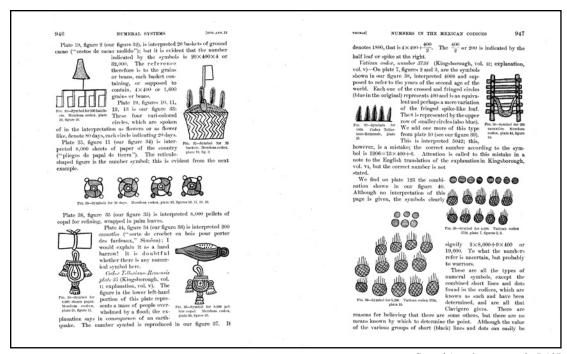
30⁷ 31–37⁸ 38⁶ Size: 286x195 mm

Powell was director of the Bureau of American Ethnology of the Smithsonian Institution. This is his report on the activities of the bureau for the years 1897–1898.

The main interest here is in the reports contained in the second volume. **Cyrus Thomas** gives a description of the Mayan calendar systems and the numeral systems of Mexico and Central America. **W. J. McGee** has papers dealing with number systems and number beliefs. These papers have since been superseded by more modern discoveries and decipherment of other texts, but they do represent the foundations upon which all this work rests.

Illustrations available: Title page

Central American numerals



NINETEENTH ANNUAL REPORT

OF HER

BUREAU OF AMERICAN ETHNOLOGY

TO THE

SECRETARY OF THE SMITHSONIAN INSTITUTION

1897-98

ST

J. W. POWELL

DESERVORS
IN TWO PARTS-PART 1

WASHINGTON
GOVERNMENT PRINTING OFFICE
1900

P 107

P 108

Prasse, Moritz von (1769–1874)

Usus logarithmorum infinitinomii in theoria aequationum

Year: 1796 Place: Leipzig Publisher: Rabenhorst Edition: 1st Language: Latin

Figures: 1 large folding plate

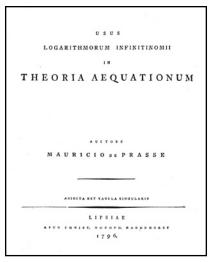
Central American numerals, P 107

Binding: contemporary paper Pagination: pp. [2], 46, [2] Collation: π^1A – F^4

Size: 263x207 mm

Prasse was a docent and later professor of mathematics at the University of Leipzig. He published a number of works on different subjects in mathematics. This volume is his first publication, appearing just as he took up his first appointment as docent in Leipzig. It is a theoretical mathematical work and has little or nothing to do with calculation using logarithms.

Illustrations available: Title page



P 108

Pressler, Maximilian Robert (1815–1886))

Mathematische Brieftasche mit ingeniur-messknecht zur Erleichterung, Belebung und Befruchtung der Wissenshaft, des Unterrichts und der Praxis.

Year: 1860 Place: Dresden Publisher: W. Turk Edition: 2nd Language: German

Figures: instrument in pouch inside front cover

Binding: original leather cover repaired; embossed, goldstamped front cover; instrument in pouch inside front cover; text in original printed paper wrappers

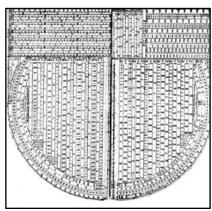
Pagination: pp. iv, 72 Collation: $\pi^2 1-6^6$ Size: 195x113 mm

Pressler was an engineering instructor at the Royal Technical College at Zittau (a German city near the Czech border) and was subsequently professor of forestry and agricultural mathematics at the Royal Academy at Tharand. He invented a number of aids to engineering measurement and computation and authored works describing them.

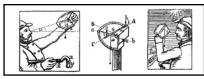
This is a manual describing the use of a printed folding card (present in a pocket in the front cover) for calculations, surveys, dialing, etc. The card, which folds up into a compact form for storage, contains a multitude of scales (linear, circular, etc.) on both sides.

Illustrations available:

Title page
Card, side 1
Card side 2
Diagrams of card in use



Card instrument, P 109



Card instrument in use, P 109



P 109

P 110 **Pressler, Maximilian Robert** (1815–1886)

Mathematische und Polytechnische Brieftasche mit ingeniur-messknecht zur Erleichterung, Belebung und Befruchtung von Wissenshaft, Unterricht und Praxis für höhere und mittlere, humanistische wie gewerbliche Schulen und messungs-, schätzungs- und rechnungsbeflissene Stände aller Art

Year: 1864 Place: Dresden

Publisher: Woldemar Türk

Edition: 3rd Language: German

Figures: instrument in pouch inside front cover

Binding: original leather cover; embossed, gold stamped front cover; instrument in pouch inside front cover; text in

original printed paper wrappers

Pagination: pp. xxvi, 184_ Collation: $\pi^{6**7}1-14^{6}15^{4}16^{4}$

Size: 191x112 mm

See the comments and illustrations in the entry for the 1860 edition of this work. By this third edition, the card itself had not changed but the instruction manual had more than doubled in size. This example has the thin metal plumb bob (stored in a slit in the folding card) that was lacking in the earlier edition.

Illustrations available: Title page



P 111 **Preston, Lyman** (1795–)

Premium on exchange; or, paying a larger debt with a smaller sum.

Year: 1836 Place: New York Publisher: n/p Edition: unknown Language: English

Figures: printed on yellow paper

Binding: original marbled paper boards; three-quarter leather

bound Pagination: pp. 16 Collation: 1–2⁴ Size: 240x155 mm

See entry for **Preston**, *Preston's complete time table*, 1836.

Illustrations available:

None

PREMIUM ON EXCHANGE;

On.

PAYING A LARGER DEBT WITH A SMALLER SUM.

Thus doing at the following Tables, saided "Promission to Markenge," in a shore the large all fill of Markenge in colors, increpand, or any other design market, when now of evaluating and sopply the property of the pr

Premium on exchange title page, P 112

P 112

Preston, Lyman (1795–)

Preston's complete time table: Showing the number of days from any date in any given month to any date in any other month: Embracing upwards of one hundred and thirty thousand combinations of dates.

Year: 1836 Place: New York

Publisher: Stereotyped by A. Chandler. Printed by R. & G. S.

Wood Edition: unknown Language: English

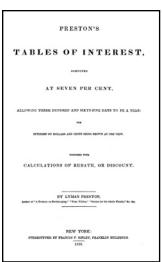
Binding: original marbled paper boards; three-quarter leather

bound Pagination: [28] Collation: 1–3⁴ 4² Size: 240x155 mm

This work comprises three different tables, all designed for commercial use. See other entries for Preston.



P 112



P 112

The first table lists the number of days between any two dates; the second lists, by day, the interest at 7 percent for amounts from \$1 to \$9,000 and the last table indicates exchange rates. Table 1 has its own title page, place and date and gives the names of both the printer and the stereotyper. Table 2 has its own title page, place and date, but lists only the stereotyper. Table 3 is printed on different paper (yellow) and has no date, place, or printer. The first table is known from other editions in 1828, 1831, 1834 and 1846. The 7 percent interest table is known from an edition in 1829 (first?).

Illustrations available:
Title page of first table
Title page of second table
First page of third table

P 113

Preston, Lyman (1795–)

Preston's tables of interest, computed at seven percent, allowing three hundred and sixty-five days to be a year. The interest on dollars and cents being shown at one view. Together with calculations of rebate, or discount.

Year: 1836 Place: New York

Publisher: Stereotyped by Francis F. Ripley

Edition: unknown Language: English

Binding: original marbled paper boards; three-quarter leather

bound

Pagination: pp. 105, 218-219, 214-215, 106-108

Collation: 1–14⁴ Size: 240x155 mm

See entry for **Preston**, *Preston's complete time table*, 1836

Illustrations available:

None

P 114

Price, Derek John de Solla (1922–1983)

The equatorie of the planetis

Year: 1955 Place: Cambridge

Publisher: Cambridge University Press

Edition: 1st Language: English

Figures: photolith frontispiece; 13 photolith plates Binding: original cloth boards; with dust jacket

Pagination: pp. xvi, 214 Size: 178x194 mm

See Chaucer, Geoffrey; The equatorie of the planetis.

Illustrations available:

None

P 115

Probus, Marcus Valerius (fl. last half of the 1st century)

De notis Romanor[um] ex codice manuscripto castigatior, auctiorque, quam unquam antea, factus.

b/w: **Petrus, Diaconus**; *De eadem re ad conradum primum imp. Ro(manorum).*

b/w: **Alabaldus, Demetrius**; *De minutiis. Idem de ponderibus. Idem de mensuris.*

b/w: **Bede, Venerabilis**; *De computo per gestum digitorum. Idem de loquela. Idem de ratione unciarum.*

b/w: Leges XII tabularum, leges pontificiæ
Ro(manorum). Variæ verborum conceptiones,
quibus antiqui cuz in rebus sacris, tum prophanis
uterentur, sub titulo de Ritibus Romanorum
collectæ. Phlegontis Trallani epistola de moribus
Ægytiorum. Aureliani Cæsaris epistola de officio
tribuni militum. Iscriptiones antiquæ variis in
locis repertæ, atq(ue) aliæ, q. quae in Romano ...

Year: 1525 Place: Venice Publisher: J. Tacuino Edition: 1st Language: Latin

Figures: title in red and black

Binding: stamped vellum over wooden boards Pagination: ff. [4], LXXXI (mis# LXXXI as LXXIX)

Collation: a⁴A–I⁸K⁴L⁵ Size: 218x149 mm

Reference: Ada CBCE, P2122; Smi Rara, p. 140

Marcus Valerius Probus was a Roman scholar and critic.

This is a secondary item in the collection and was added simply because it was bound with the **Bede**, *De computo per gestum digitorum*, 1525.

Illustrations available: None

P 116

Prony, Gaspard Clair François Marie Riche de (1755–1839)

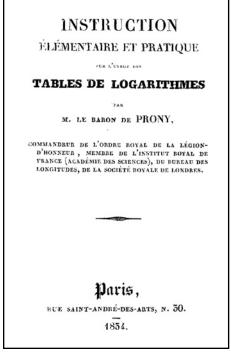
Instruction élémentaire et practique sur l'usage des logarithmes.

Year: 1834 Place: Paris Publisher: A. Barbier Edition: 1st Language: French Binding: original page

Binding: original paper wrappers Pagination: pp. [2], xiv, 5–74, [2]

Size: 145x90 mm

Reference: DSB XI, pp. 163-166



Gaspard de Prony was first educated at the Benedictine College at Toissei in Doubs (near the French/Swiss border). He had intended to follow his father in a legal career, but he switched to engineering in 1776 when he began studies at the École des Ponts et Chaussées. He graduated in 1779 at the head of his class. He was so highly regarded that the director of the school brought him to Paris in 1783 as his assistant.

Prony's first assignment was to defend the design of the bridge at Neuilly—which had been criticized because of its slim pillars and arches. His successful defense led to other similar assignments and to publications in which Prony applied rational mechanics to engineering practice. These publications were noteworthy in that they gave formulae that engineers could use rather than requiring them to work from first principles.

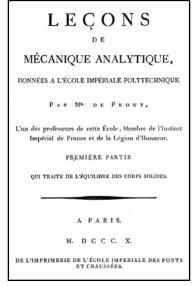
After the French Revolution, Prony rose in the scientific establishment. He was appointed to direct a new survey of France and later to direct a huge new project for the calculation of logarithms and trigonometric functions for the decimal division of the quadrant, known as the *Cadastre*. In this initiative, by far the most ambitious calculation project undertaken up to that time, he set up control systems and a hierarchical supervisory structure that permitted employment of hundreds of calculators to generate the tables. Many of them knew little mathematics and were competent only at addition. It is said that many

of his calculators were people thrown out of work by the revolution, particularly hairdressers and wig makers.

In 1794, Prony was appointed the first professor of analysis at the new École Centrale des Travaux Publics (now known as the École Polytechnique). In 1798, he became director of the École des Ponts et Chaussées, a position he held until his death.

This is an instruction booklet for a table of logarithms. An introduction explains arithmetic and geometric series (given two such series, an entry in the arithmetic series is the logarithm, to some base, of the same entry in the geometric). De Prony begins the major text with the basics: simple arithmetic operations, decimal fractions, etc. Although the work does not contain a table of logarithms, two folding sheets of the logarithms of Callet are bound in to provide material for his examples. He shows how to use logarithms to do multiplication, division, the rule of three, squares, cubes, etc. The last few pages contain a description of how to use the *petites Tables de Lalande* (see the entry for Lalande, Joseph Jérôme Lefrançais de; *Tables de logaritmes*, 1802).

Illustrations available: Title page

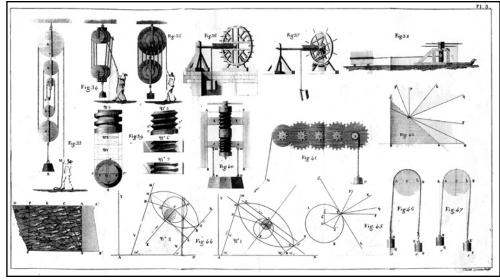


P 117

P117 **Prony, Gaspard François Clair Marie Riche de** (1755–1839)

Leçons de mécanique analytique, données a l'école Impériale polytechnique. [two parts in one volume]

> Year: 1810–1815 Place: Paris Publisher: Imprimerie de l'École Impériale des Ponts et Chausees



Mechanical devices, P 117

Edition: 1st Language: French

Figures: v.1: 3 large engraved folding plates; v.2: 1 large engraved folding plate

Binding: modern half-bound calf; marbled boards; gilt spine Pagination: v.1: pp. [iv], 6, 306, vi; v.2: pp. [iv], 530, xii

Collation: v.1: π^51-39^4 ; v.2: $\pi^21-67^4\gamma^3$

Size: 261x199 mm

Reference: DSB XI, pp. 163-166

This volume was written as a text for the students at the École Polytechnique. It attempts to reduce the design of civil engineering works to a series of standards with formulae that an engineer can apply to ensure the safety of his design.

Illustrations available:

Title page

Engraved plate

P 118

[Prony, Gaspard François Clair Marie Riche de (1755–1839)] - Lagrange; Laplace and Delambre

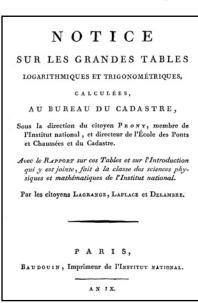
Notice sur les grandes tables logarithmiques et trigonométriques, calculées. au bureau du cadastre, sous la direction du citoyen Prony, membre de l'Institut National, et directeur de l'ecole des Ponts et Chausées et du Cadastre. Avec les rapport sur ces tables et sur l'introduction qui y est jointe, fait à la classe des sciences physiques et mathématiques de l'Institut National. Par les citoyens Lagrange, Laplace et Delambre.

b/w: Lagrange, Joseph Louis; Pierre Simon Laplace, Marquis de and Jean-Baptiste Joseph Delambre; Rapport sur les grandes tables trigonometriques decimales du cadastre Place: Paris
Publisher: Baudouin
Edition: 1st
Language: French
Binding: modern paper boards

Pagination: pp. [2], 26 Collation: π^1 A-C⁴D¹ Size: 235x177 mm

Reference: MTAC, Vol. I, 1943, pp. 33-44

Lagrange, **Laplace** and **Delambre** were the mathematicians Prony selected to establish the formulae to be used for the calculation of the new logarithm and trigonometric tables. It was, however, Prony who organized and oversaw the actual work. These tables were known as the *Cadastre Tables* (Survey Tables)



because their primary application was to be in the new survey of all of France. The tables were produced in two large manuscript copies, but because of the unstable political situation, they were never published. The full story of these tables can be found in the article by I. Grattan-Guinness, "Work for the Hairdressers," *Annals of the History of Computing*, pp. 177–185, Vol. 12, No. 3, 1990.

See also the entry for **Prony**, *Tables des logarithmes a huit décimales*, 1891.

Illustrations available:

Title page



P 119

P 119

Prony, Gaspard François Clair Marie Riche de (1755–1839)

Recueil de cinq tables, 1. pour faciliter et abréger les calculs des formules relatives au mouvement des eaux dans les canaux découverts et les tuyaux de conduite; 2. pour présenter les résultats de cent soixante-sept expériences employées pour l'establishment de ces formules. Précedé d'une introduction et de l'exposition d'un procédé nouveau pour déterminer très-exactement, sans calculs ni opérations graphiques, et dans une grande longueur, une suite de points situés sur une méme surface horizantale.

Year: 1825 Place: Paris

Publisher: Imprimerie Royale

Edition: 1st Language: French

Binding: modern paper wrappers

Pagination: pp. 59, [1] Collation: A–G⁴H² Size: 260x197 mm

Reference: DSB XI, pp. 163-166

Prony's experience in bridge design and his studies in Italy on water movement and hydraulics had made him an expert in what we would now call hydraulic engineering. These tables were prepared as part of his effort to improve the safety of civil engineering design.

Illustrations available: Title page Sample table page

o:	00"	10"	20"	3o"	40"	50"	60"	70"	80"	90"	. 1
00° 01 02 03 04	- 00 4.19611988. 49714987. 67324112. 4.79817984.	5'19611988. 4'23751256 51833916 68748155 4'80890370	5.49714987 4.27530112 53854255 70126984 4.81936914	\$\overline{6}7324113\$ \$\overline{3}1006323.\$ \$55784770 \$71463380.\$ \$\overline{4}82958830.\$	\$79817987. \$34224791. \$7633111. 72759877 \$83957252.	5.89508988 4.37221113 59405987 74018790. 4.84933235	5-97427113. 4-40023986. 61109321 75242235 4-85887767	4:04121792 . 42656879 62748363 . 76432158 . 4:86821770 .	4:09920986 45:39238. 64327789 77590345. 4:87736:07	415036239. 47487347 65851786. 78718446. 488631591	419611988. 49714987. 67324112. 79817984. 489508984.
05 06 07 08	4.89508984. 4.97427106 3.04121783. 09920975. 3.15036224	4.90369001 . 4.98144965 . 3.04737814 . 10460478 . 3.15516112	4.91212317 4.98851150. 3.05345228 10993361. 3.15990755	4.92039570. 4.99546036. 5.05944264 11519785. 5.16460265	4-92851358 3-00229978. 06535150. 12039904. 3-16924757	4-93648251 3-00903316. 07118104. 12553867 3-17384332	4-94430785. 3-01566373 07693337. 13061820. 3-17839095.	4.95199467 3.02219460. 08261050. 13563899 3.18289144	4'95954781 3'02862871. 08821437 14060241 3'18734578	4:96697183. 3:03496888 09374686. 14550974 3:19175490.	4'97427106 3'04121783. 09920975. 15036224 3'19611970.
10 11 12 13	3-19611970. 23751235. 27530087. 31006293. 3-34224756	5-20044107. 24144264. 27890499. 3:339087. 5-34533863	3-20471986 24533768. 28247944 31669350. 3-34840786	3-20895691 24919809 28602472. 31997120 3-35145555.	3-21315302 25302450 . 28954129 . 32322435 3-35448200 .	3-21730898. 25681748 29302961 32645332 3-35748750	3-22142554 26057763. 29649014. 32965846. 3-36047235	3-22550345 26430549 29992331 . 33284011 . 3-36343683 .	3-22954342 26800164 - 30332955 33599862 3-36638120	3-233 _{5,4} 616 27166659 - 30670929 33913433 3-36930575 -	3-23751235. 27530087. 31006293. 34224756 3-37221073
15 16 17 18	3:37221073 40023940 42656828 45139180 3:47487283	\$-37509642. 40294529 42911547. 45379787. 3-47715259	3·3 ₇₇₉ 6305 40563442 43164780. 45619067 3·47942045.	3-38081089. 40830701. 43416545. 45857037. 3-48167652	3-38364017 41096324 43666858 46093710. 3-48392093.	3-38645115. 41360334. 43915738. 46329099 3-48615381.	3-38924404 41622747 44163199 46563220 3-48837526	3-39201909 . 41883585 44409258 46796086 . 3-49058541	3·39477652 . 42142865 44653931 47027710 . 3·49278437 .	3-39751655 - 42400607 44897234 - 47258104 3-49497225 -	3-40023940 42656828 45139180 47487283 3-49714916.
20 21 22 23 24	3:49714916. 51833838 53854169 55784677. 3:57633009	3-49931521 52040154 - 54051128 - 55973090 3-57813588	\$-50147052. 52245494. 54247197 56160690 \$-57993420.	3-50361518. 52449867 54442385 56347483. 3-58172510.	3·50574930 52653283 54636700. 56533476. 3·58350864	3-50787299. 52855751 54830149 56718675 3-58528489.	3-50998634. 53057279 55022740 56903089. 3-58705390	3·51208946. 53257877. 55214481 57086722. 3·58881574	3,51418244. 53457552 55405380. 57269582 3,59057046.	3-51626538 53656314 - 55595442 57451676 - 3-59231812 -	3-51833838 53854169 55784677 . 57633009 3-59405877 .
		90"	8o"	70"	60"	50"	40"	3o"	20"	10"	00"

Sample table page, P 120

[Prony, Gaspard François Clair Marie Riche de (1755–1839)] - Service Géographique De L'Armée

Tables des logarithmes a huit décimales des nombres entiers de 1 a 120000 et des sinus et tangentes de dix secondes en dix secondes d'arc dans le système de la division centésimale du quadrant publiées par ordre du ministre de la guerre.

Year: 1891 Place: Paris

Publisher: Imprimerie Nationale

Edition: 1st Language: French

Binding: Later pigskin-backed cloth boards; original heavy

paper wrappers bound at end

Pagination: pp. [4], iv, [628] Collation: $\pi^41-78^479^2$ Size: 355x270 mm

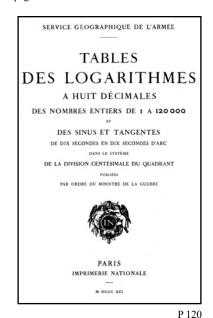
Reference: DSB XI, pp. 163–166; MTAC, I, 1943, pp. 33–44;

Kno *NTMV*, p. 71

These tables are a reduced version (to eight decimal places) of the famous Prony *Cadastre Tables*. The manuscript copy of the original tables in the Paris Observatory was used to create these, one of the few printed tables that deal with a decimal division of the quadrant (one quarter of a circle is 100 degrees). These tables were commissioned by the French Army because the ones it had been using (*Tables trigonométriques décimales* published by **Charles de Borda** and **Delambre** in 1801) were only seven-decimal digit tables and were not sufficiently accurate for more modern requirements.

Illustrations available:

Title page Table page



Protector Life Assurance Society

Rates of the Protector Life Assurance Society. Capital three millions sterling. In Collection of seventeen items by or about Babbage bound in one volume.

See **Babbage**, **Charles**; *Works of Charles Babbage*, *M.A.*, *F.R.S*, &c. (Collection of seventeen items by or about Babbage ...). Babbage appears as a director of the society on page 2.

P 121

Pugliesi Sbernia, Onofrio (-1679)

Aritmetica ... divisa in tre libri, ne'qauli s'insegna con la facilità possible la di lei prattica mercantile. in questa quarta impressione accesciuta di molti capitoli, e di diverse altre regole, non men curiose, che prosittevoli.

Year: 1714 Place: Palermo

Publisher: Antonio Pecora

Edition: 5th Language: Italian

Binding: contemporary vellum Pagination: pp. [4], viii,164 Collation: $\pi^{2*4}A$ – $T^4V^2X^4$ Size: 203x146 mm

Reference: Rcdi BMI, Vol. I, p. 324

Riccardi (*Bibloteca Matematica Italiana*) lists the first edition of this work in 1670 and the last in 1798. It is a simple arithmetic that starts out with numeration, progresses through the basic operations and work with



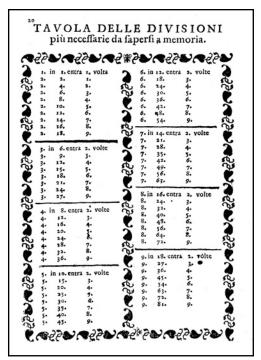
fractions and ends with topics such as the rule of false position, etc. There is little memorable in this work and considering the large number of competing arithmetics, it seems strange that it remained in print for over 100 years. Perhaps this accomplishment was due to the works' lack of complexity and its coverage of only the most basic of material. It does have useful full-page multiplication and division tables.

Illustrations available:

Title page Multiplication table Division table



Multiplication table, P 121



Division table, P 121