

Blagrave, Mathematical jewel, 1585

# Kandler, Johann

Arithmetica. Rechnung auf den Linien und mit den Ziffern, auff mancherley, fürnemlich aber schwartze Müntz, so im Land zu Bayrn und Schwaben, gengig, sampt trewer erklerung der Welschen Practica und derselben Exemplen, mit fleiss verfertigt.

Year: 1578 Place: Regensburg Publisher: Johann Burger Edition: 1st Language: German

Figures: title in red and black,

Binding: contemporary blind-stamped calf over boards, front joint slightly loose; gilt-stamped illustration of Jesus on

front cover Pagination: ff. [168] Collation: A–X<sup>8</sup> Size: 145x100 mm

Reference: Smi Rara, p. 539, H&J AM

This arithmetic is not found in the usual large collections such as at Columbia University or the British Library nor is it noted by **David Eugene Smith** (*Rara*) or **Augustus** 

**DeMorgan** (Arithmetical Books). It is, however, listed in Hoock and Jeannin (Ars Mercatoria vol. 1). While the title suggests coverage of both the table abacus and algorism, the table abacus receives little attention. German arithmetics of this period usually had rechnung auf den Linien and mit den Zifferen (or similar wording) in their title. Apparently it was an expectation that they all would—this anticipation led authors to include, if only for a few pages, something on the table abacus. In this case, the table abacus follows the explanation of algorism and is obviously not a topic of interest as few illustrations are given. This is a standard commercial arithmetic with a section on the basic operations, the rule of three and the rule of false position. At the end is a section on the coinage of various German areas and a short section on squares and cubes.

Illustrations available: Title page (color) Table abacus addition

#### K 2

# Karpinski, Louis Charles (1878–1956)

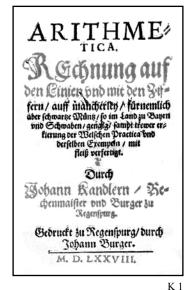
Bibliography of mathematical works printed in America through 1850

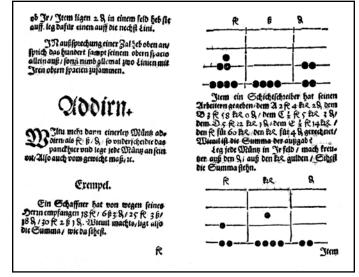
Year: 1940 Place: Ann Arbor, MI

Publisher: University of Michigan

Edition: 1st Language: English

Binding: original cloth boards Pagination: pp. [2], xxvi, 697 Collation: no collation Size: 273x199 mm





Addition on a table abacus, K 1

# BIBLIOGRAPHY OF MATHE-MATICAL WORKS PRINTED IN AMERICA THROUGH 1850

LOUIS C. KARPINSKI
WITH THE COOPERATION FOR WASHINGTON LIBRARIES OF
WALTER F. SHENTON

ANN ARBOR: THE UNIVERSITY OF MICHIGAN PRESS LONDON: HUMPHREY MILFORD, OXFORD UNIVERSITY PRESS

K 2

Karpinski was professor of mathematics at the University of Michigan in Ann Arbor. He is well known for his work on the history of mathematics and, in particular, for the detailed reference works he produced. These have served as the foundation for much subsequent research. He also wrote a number of papers on the development of arithmetic and mathematics, occasionally in collaboration with **David Eugene Smith**.

This volume is a typical example of Karpinski's thorough work. It contains bibliographic entries for nearly all arithmetic books printed in America up to 1850. Karpinski had access to the best collection of rare arithmetic books in the U.S.—that of George A. Plimpton of New York. The Plimpton collection provided the basis for this work, which Karpinski then augmented by searches of major libraries. He breaks new ground in that he attempts to illustrate the title page of every major work listed. Photographic reproduction would have been too costly, but Karpinski had the good fortune to know a Michigan alumnus, Clarence Epstean, then president of Walker Engraving, who arranged for the illustrations to be produced as zinc line engravings. While not perfect reproductions of the title pages, they were certainly better than most bibliographers could manage at the time.

Illustrations available:
Title page
Example of title page illustration

#### K 3

# Karpinski, Louis Charles (1878–1956)

The history of arithmetic

Year: 1925 Place: Chicago

Publisher: Rand McNally

Edition: 1st Language: English

Figures: engraved frontispiece

Binding: original embossed buckram boards; with dust jacket

Pagination: pp. xii, 200 Collation:  $\pi^21-13^8$ Size: 190x126 mm



# THE HISTORY OF ARITHMETIC

By

LOUIS CHARLES KARPINSKI

Professor of Mathematics, University of Michigan



RAND MCNALLY & COMPANY
CHICAGO NEW YOR

Frontispiece and title page, K 3

This history concentrates on the origins of numerals and fractions and contains illustrations from many different civilizations. It contains a large section on early arithmetic textbooks and their authors, particularly those published in America prior to 1800. It is heavily illustrated with title pages and excerpts from early books—the frontispiece shows the table abacus and algorism illustration from Gregor Reisch, Margarita Philosophica, 1503. It remains a very valuable reference work.

This is a signed presentation copy

Illustrations available: Title page and frontispiece Presentation inscription

# K 4

# Karsakof, S.

Aperçu d'un procede nouveau d'investigation au moyen de machines à compare les idées.

Year: 1832

Place: Saint Petersburg

Publisher: Imprimerie de sa Majesté Impériale.

Edition: unknown Language: French

Figures: 2 folding engraved plates Binding: original paper wrappers Pagination: pp. [2], 22, [2] Size: 214x134 mm

The author starts with the premise that human thought is mechanical. He proposes five different machines to automate simple logical principles. The concepts are similar to, but less sophisticated than, the systems employed about fifty years later in William Jevons' logical piano.

Illustrations available:

Title page

Diagram of a machine

## Kästner, Abraham Gotthelf (1719–1800)

Anfangsgrunde der Arithmetik Geometrie ebenen und sphärischen Trigonometrie und Perspectiv.

Year: 1758 Place: Göttingen

Publisher: Witwe Vandenhoeck

Edition: 1st Language: German

Figures: 12 folding engraved plates

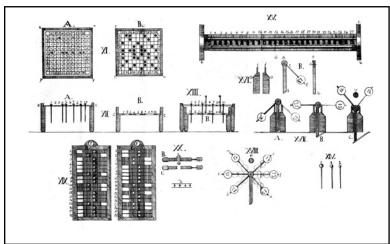
Binding: contemporary leather; red leather label; edges stained

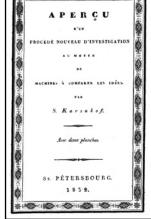
Pagination: pp. [24], 424 Collation: )(8)\*(4A-2C82D4 Size: 167x100 mm

Reference: Pogg Vol. I, p. 1217; Smi Hist, Vol. II, p. 613

Kästner (Kaestner) began his career as a lecturer in Leipzig in 1739 and rose to be the professor of mathematics and physics at Leipzig and Göttingen. He is remembered for his teaching and writing rather than for his original work. He wrote a very large number of essays on mathematical topics and their applications to optics, astronomy, etc. He also wrote a popular history of mathematics (see entry for Kästner, Abraham Gotthelf; Geschichte der mathematik, 1796). Gauss was a student at Göttingen during Kästner's time but is said to have avoided his lecturers as he considered them too elementary.

The majority of the work is an elementary treatise on arithmetic and mathematics. According to D. E. Smith (History of mathematics), it was in this volume that Kästner first defined trigonometric functions as being pure numbers (i.e., ratios of the sides of triangles rather than being related to the radius of the defining circle), but **Smith** notes that some earlier writers (e.g., **Regiomontanus**) had recognized this situation without explicitly defining them in that manner. Although Smith gives the exact quotation, it was from the third (1774)





Logical machines, K 4

K 4





K 5

edition; a short (and not nearly complete) search of this edition has failed to find the relevant passage.

Illustrations available: Title page

K 6

# Kästner, Abraham Gotthelf (1719–1800)

Geschichte der Mathematik seit der Wiederherstellung der wissenschaften bis das Ende des achtzehnten Jahrhunderts ... [four volumes]

Year: 1796–1800 Place: Göttingen

Publisher: Johann Georg Rosenbusch

Edition: 1st Language: German

Binding: contemporary boards; spines gilt; contrasting lettering pieces on spines.

Pagination: v.1: pp. [2], x, 708; v.2: pp. [2], xiv, 759, [1]; v.3: pp. [2], xiv, 484; v.4: pp. [2], xiv, 516

Collation: v.1: \*6A-2X82Y2; v.2: \*8A-3A83B4; v.3: \*8A-2G82H2; v.4: \*8A-2I82K2

Size: 197x117 mm

Reference: Smi Hist, Vol. I, pp. 541-542; Cre CL, p. 112

This four-volume work on the history of mathematics was described by **Smith** (History of mathematics) as poorly arranged, contains no index, and shows the effect of hurried compilation from notes taken in the course of a wide reading. One can forgive Kästner for his hurried compilation considering the vast number of other works he wrote, but the lack of an index does make

this a very difficult work to use. Kästner provides a great deal of bibliographic information—in fact, this work is perhaps better classed as an annotated bibliography than as a history of mathematics. It lacks illustrations of any kind.

Illustrations available: Title page (4)

# Kattner, Heinrich Julius (1811–)

See Lalanne, Léon Louis Chrétien; Der abacus oder Die Universal-Rechenmaschine von Leon Lalanne Chef-Ingenieur der Brücken und Chausseen. Nach der zweiten Auflage deutsch bearbeitet von H. J. Kattner. Mit einem Exemplar der Maschine und einer andern Steindrucktafel.

# K 7 **Katz, Arthur A.**

Engineering problems solved on the Univac. In Proceedings of symposium on industrial applications of automatic computing equipment, January 8–9, 1953, Kansas City, Missouri.

Year: 1953

Place: Kansas City, MO

Publisher: Midwest Research Institute

Edition: 1st Language: English

Figures: engraved frontispiece

Binding: boards

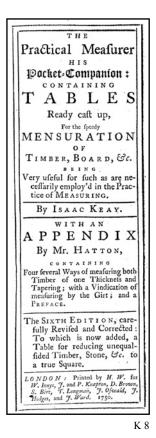
Pagination: pp. [18], 19-191, [1]

Size: 275x207 mm

See also the entry for **Midwest Research Institute**, 1953.

Katz, an early programmer on the UNIVAC I, gives an overview of the types of scientific and engineering problems that were then being solved with the UNIVAC I. He illustrates his discussion with a problem involving the solution of differential equations.

Illustrations available: First page



K 8 **Keay, Isaac** (1700–a1718)

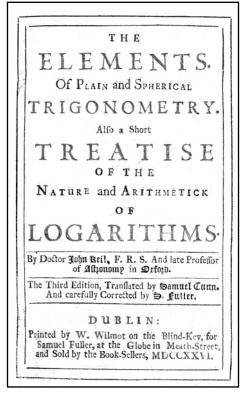
The practical measurer. His pocket companion: containing tables ready cast up, for the speedy mensuration of timber, board, & c. Being very useful for such as are necessarily employ'd in the practice of measuring. With an appendix by Mr. Hatton, containing four several ways of measuring both timber of one thickness and tapering; with a vindication of measuring by the girt; and a preface.

Year: 1750
Place: London
Publisher: Printed by H.W. for W. Innys, J. and P. Knapton, D.
Brown, S. Birt, T. Longman, J. Oswald, J. Hodges, and
J. Ward.
Edition: 6th

Language: English Binding: contemporary leather Pagination: pp. [22],168, [2] Collation: A–2A<sup>4</sup> Size: 177x68 mm

This is a ready reckoner containing a large table giving the volume of any rectangular object from 2 inches to 72 inches (in quarter-inch increments) on a side and from 1 to 42 feet long. Additional small tables are provided for area computations. The appendix by a Mr. Hatton was presumably by **Edward Hatton**, who published similar works (see **Hatton**, **Edward**; *Comes commercii*, 1754). Early editions of this work are scarce; a ninth edition is known from 1764, and others from 1736 and 1777.

Illustrations available: Title page



K 9

K 9 **Keill, John** (1671–1721)

The elements of plain and spherical trigonometry. Also a short treatise of the nature and arithmetick of logarithms.

Year: 1726 Place: Cambridge Publisher: W. Wilmot for Samuel Fuller Edition: 3rd Language: English Figures: 5 folding engraved plates.

# **Erwin Tomash Library**

Binding: contemporary leather Pagination: pp. [viii], 3–143, [1] Collation:  $\pi^1 a^3 A^3 B - S^4$  Size:  $170 \times 103$  mm

Keill was a student of David Gregory in Edinburgh and went with him to Oxford in 1691. He was elected to the Royal Society in 1701 and was appointed Savilian professor of astronomy at Oxford in 1713. He apparently spent a short time in America beginning in 1710. Keill was an influential disciple of Newton who effectively communicated Newtonian principles and philosophy to the scientific and intellectual community.

This is a posthumous edition of Keill's work, translated from the Latin by **Samuel Cunn** and corrected by S. Fuller. It consists of three short works. The first is on plane and spherical trigonometry; the second deals with the solution of spherical triangles on the globe (identified on the title page as *by another hand*). The last is the work on logarithms. The final page gives a table of "the usual *Algebraic* Signs of Characters," an indication that the modern systems of notation were becoming well established by this date.

Illustrations available: Title page (color) Algebraic signs

All Zmp	lanation of the usual Algebraic Signs or Characters.
	10 T 50 T 50 T 50 T
+	More, or to be added to
_	Less, or to be subtracted from
=	Equal to
×	Multiplied by
a b	a divided by b
a · h · : c : C	As a is to b, fo is c to d
0 , " "	Degrees, Minutes, Seconds, Thirds
F22 441, 3	52 Seconds, 44 Thirds, 3 Fourths
R.	Radius, or Sine of 90 Degrees
S.	Sine
Cos.	Cofine, or Sine of the Complement
T.	Tangent
Cot.	Cotangent, or Tangent of the Complement
V. S.	Verfed-Sine
or q	Square
V or V2	Square Root
A' or B'	Cube of A. or 4th Power of B.
V' or V	Cube Root, or Biquadrate Root (Encli
by 4. 6	by the 4th Proposition of the 6th Book
W.W.D.	which was to be demonstrated or done
N°. S°.	North or South
γ 🗠	Aries or Libra
\$ 10	Cancer or Capricorn
⊙ Þ	Sun or Moon.

Algebraic signs, K 9

K 10

# Keister, William (1907–); Alistair E. Ritchie and Seth H. Wasburn

The design of switching circuits

Year: 1951 Place: New York

Publisher: D. Van Nostrand

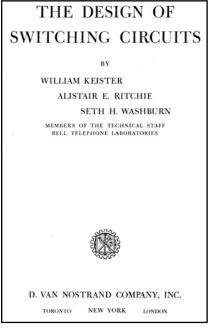
Edition: 1st

Language: English Binding: original cloth boards Pagination: pp. xx, 556 Size: 229x150 mm

The authors were all staff members of the Bell Telephone Laboratories.

The connections involved in routing a telephone call are quite complex and have resulted in some of the most involved switching gear ever designed. Until the creation of the modern digital switching systems, telephone switching circuits were created from vast banks of relays and stepping switches. This is a description of this technology from a typical telephone relay, through the counting circuits used by Bell Laboratories in their series of relay-based calculating machines, to multi-functional switching gear.

Illustrations available: Title page Telephone relay



K 10

Kells, Lyman Morse (1888–); Willis Frederick Kern (1903–) and James R. Bland

Five-place logarithmic and trigonometric tables.

Year: 1935 Place: Boston

Publisher: Ginn & Company

Edition: 1st Language: English

Binding: original cloth boards; gilt spine

Pagination: pp. viii, 118 Size: 230x151 mm The authors were professors at the United States Naval Academy.

This set of tables was designed for use by cadets while at the Academy and at sea after graduation. It is not listed in the usual references on tables (**Fletcher**, et al.), perhaps because it is a derivative of an earlier work. The preface points out that the process of linear interpolation was difficult for students to grasp and that the authors have thus included a diagram which gives the idea almost at a glance. This diagram is missing in this copy of the book, although the interpolation process is explained with an example.

Illustrations available:

Title page



K 11

K 12

# Kells, Lyman Morse (1888–); Willis Frederick Kern (1903–) and James R. Bland

K + E polyphase duplex decitrig slide rule No. 4071. A manual.

Year: 1939 Place: Hoboken

Publisher: Keuffel & Esser

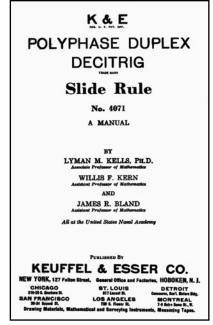
Edition: 1st Language: English

Binding: original printed paper wrappers

Pagination: pp. [4], 87, [3] Size: 200x132 mm

All three authors were professors at the United States Naval Academy. This is a standard instruction manual for the Keuffel & Esser slide rule.

Illustrations available: Title page



K 12

K 13

# Kells, Lyman Morse (1888–); Willis Frederick Kern (1903–) and James R. Bland

K + E slide rules. A self instruction manual. For use with the following K&E slide rules: Log log duplex decitrig slide rule No. 4081. Jet log duplex decitrig No. 4181

Year: 1955 Place: New York Publisher: Keuffel & Esser Edition: 4th

Edition: 4th Language: English

Binding: original cloth boards Pagination: pp. [4], 126 Size: 205x133 mm

This self-teaching manual for the slide rule was obviously commissioned by the Keuffel & Esser firm as a sales aid. The book was issued in several forms. A second copy, with a slightly different title page (no model numbers under the names of the slide rules being the only evident difference) is in the collection.

Illustrations available:

Title page

Log-log duplex slide rule

Title page of almost identical issue

#### K 14

# Kells, Lyman Morse (1888–); Willis Frederick Kern (1903–) and James R. Bland

The log log duplex decitrig slide rule No. 4081. A manual.

# **Erwin Tomash Library**

Year: 1942 Place: Hoboken

Publisher: Keuffel & Esser

Edition: 1st Language: English

Binding: original printed paper wrappers

Pagination: pp. [4], 101, [3] Size: 199x132 mm

## A standard instruction manual for the K&E slide rule.

Illustrations available: Title page

K 15

# Kells, Lyman Morse (1888–); Willis Frederick Kern (1903-) and James R. Bland

The log log duplex decitrig slide rule No. 4081. A manual.

> Year: 1943 Place: Hoboken Publisher: Keuffel & Esser

Edition: 1st

Language: English

Binding: original printed paper wrappers

Pagination: pp. [4], 101, [3]

Size: 199x132mm

# A standard instruction manual for the K&E slide rule.

Illustrations available:

Title page

K 16

# Kells, Lyman Morse (1888-); Willis Frederick Kern (1903–) and James R. Bland

The log log duplex trig slide rule No. 4080. A manual.

Year: 1939 Place: Hoboken Publisher: Keuffel & Esser

Edition: 1st Language: English

Binding: original printed paper wrappers

Pagination: pp. [4], 102 Size: 199x132 mm

# A standard instruction booklet for the K&E slide rule.

Illustrations available:

Title page

K 17

# Kells, Lyman Morse (1888–); Willis Frederick Kern (1903-) and James R. Bland

The polyphase duplex trig slide rule No. 4070. A manual.

> Year: 1939 Place: Hoboken

Publisher: Keuffel & Esser

Edition: 1st Language: English

Binding: original printed paper wrappers

Pagination: pp. [4], 87, [3] Size: 192x132 mm

A standard instruction manual for the K&E slide rule.

Illustrations available:

Title page

K 18

# Kelly, Patrick (1756–1842)

The universal cambist, and commercial instructor; being a general treatise on exchange; including the monies, coins, weights and measures, of all trading nations and colonies: with an account of their banks and paper currencies. In two volumes.

# TABLE II.

Sir Isaac Newton's Assays, Weights, and Values of most Foreign Silver and Gold Coins, actually made at the London Mint, by Order of the Privy Council, before the Year 1717. First published in 1719, and re-published by Authority in 1740.

		W	eight.	Sta	nd.	Wt.  Value.	
THE Piastre of Spain, or Seville Piece of 8 Reals, now reduced to 10.	dw.	dw.		dw.			
The new Seville Piece of Eight.	W.I	17	12	17	10	2 54	
The Mewice Piece of Eight	$W.1\frac{1}{2}$	14		13	21	15 43.11	
The Mexico Piece of Eight.	W.1	17	105	17	8	14 53.83	
The I mai Fiece of Eight	Stand	17	9	17	9	53.87	
The Peru Piece of Eight, coarser but of uncertain allay	1						
The old Ecu of France, or Piece of 60 Sols Tournois.	W 1	17	12	17	10	254	
The new Ecu, or Piece of 5 Livres, or 100 Sols	W 11	10	144	10	11	12 60.39	
The Crusado of Portugal, or Ducat worth 400 Reas now marked and	17.12	19	142	19	11	12 00.39	
raised to 480 Reas	W.9	11	4	11	1	13 34.31	
The Potocks or Potogons of Portugal worth too Person words 13					-	. 1.2	
The Patacks, or Patagons of Portugal, worth 500 Reas, now marked	1					- 7,5	
and raised to 600							

Newton's table of coins, K 18

Year: 1811 Place: London

Publisher: for the Author

Edition: 1st Language: English

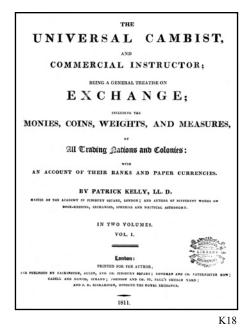
Binding: contemporary leather; rebacked

Pagination: v.1: [v], [1], xxx, 450 v.2: xvii, [1], 315, [3] Collation: v.1:  $\pi^3$ a- $c^4$ d<sup>3</sup>B-3H<sup>4</sup>3I<sup>3</sup>3K-3L<sup>4</sup>3M<sup>2</sup>; v.2:  $\pi^2$ b<sup>4</sup>c<sup>3</sup>B-

 $U^{4}*U-2Q^{4}2R^{3}$  Size: 266x208 mm

Kelly was a mathematician and astronomer who at one time ran the Mercantile School, a private school in Finsbury Square in London. He was a friend of many scientists, including Sir William Herschel (Astronomer Royal and the father of **John F. W. Herschel**, who was a friend of **Charles Babbage**). He was consulted by various committees of the House of Commons on questions of coins and currency.

This is a two-volume work on the coinage, weights and measures of all the trading nations. It provides information on each country's currency, the different types of coins in circulation and the rates of exchange. Volume 2 contains a description of how logarithms can be used in calculating exchange, but no table is provided. It does contain a short table on assays, drawn up under the direction of Isaac Newton when he was Master of the Mint. It is noted that however correct this Table might have originally been, it is no longer to be depended on, as many of the Coins are out of circulation, and others have been considerably altered. While the table is useless for reference purposes, it serves as an introduction to more modern assay tables and shows that the practice has a long and honorable history.



These volumes contain the stamp of the Herschel library and a note from the son of **John F. W. Herschel** that his father likely acquired them when he was a member of the Committee for Weights and Measures.

Illustrations available: Title page Isaac Newton table



K 19

Kenney, Cyril Ernest

The quadrant and the quill a book written in honour of Captain Samuel Sturmy, "a tryed and trusty sea-man" and author of The Mariner's Magazine, 1669

Year: 1947 Place: London

Publisher: Metchim and Son

Edition: 1st Language: English

Figures: title in red and black Binding: three-quarter bound Pagination: pp. 146, [2] Size: 312x250 mm

While this is a limited edition of 600 copies, they are not numbered.

This well-illustrated work describes the life and work of **Samuel Sturmy**. It is illustrated with selections from *The Mariner's Magazine* and from the major works that **Sturmy** had in his library. Each illustration of a title page or frontispiece is captioned with **Sturmy**'s comment on its contents. Additional plates from other contemporary books are used to illustrate such things as the typical dress of a seventeenth-century surveyor and the various

parts of a large *first rate* ship of war. Even if one is not interested in **Sturmy** himself, the illustrations are reason enough for owning this work.

Illustrations available: Title page (color)

A TREATISE

ON A

BOX OF INSTRUMENTS

AND

THE SLIDE-RULE,

FOR THE USE OF

Extisemen, Engineers, Scamen, and Schools.

BY THOMAS KENTISH.

SECOND EDITION.

LONDON:
RELFE & FLETCHER, 15, CLOAK LANE.
1847.

K 20

# K 20 **Kentish, Thomas** (fl.1839–47)

A treatise on a box of instruments and the slide rule for the use of excisemen, engineers, seamen, and schools.

Year: 1847 Place: London

Publisher: Relfe & Fletcher

Edition: 2nd Language: English Figures: 1 folding plate

Binding: original cloth blind-stamped boards

Pagination: pp. xii,180, iv, 32 Collation: a<sup>6</sup>B–H<sup>12</sup>X–2X<sup>12</sup> Size: 180x103 mm Reference: Tay *MP II*, p. 474

This is a text on the uses of a box of instruments (containing compass, parallel ruler, protractor, plane scale and sector), and a slide rule. The elementary examples are drawn from geometry, but the last section describes the use of these devices in sailing and navigation. An appendix indicates that after the first few hundred copies of the first edition had been sold, it became obvious that an illustration of the magnetic compass was needed. This small addition is augmented by further description of operations on a slide rule. The last thirty-one pages are

a catalog of the books available from the firm of *Relfe*, *Brothers* (*late Relfe & Fletcher*).

Illustrations available: Title page

#### K 21

## **Kentish, Thomas** (fl.1839–1847)

A treatise on a box of instruments and the slide rule for the use of gaugers, engineers, seamen, and students.

> Year: 1852 Place: Philadelphia

Publisher: Henry Carey Baird

Edition: 1st (U. S.) Language: English Figures: 1 folding plate

Binding: original cloth blind-stamped boards

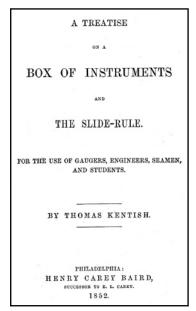
Pagination: pp. 228, 24 Collation: 1–19<sup>6</sup>1–2<sup>6</sup> Size: 169x110 mm

Reference: Tay MP II, p. 474

This American edition of the work appears identical to the second edition (including the appendix illustration of the compass, etc.). The only major change is the replacement of the British bookseller's list with that of the firm of Henry Carey Baird of Philadelphia.

Illustrations available:

Title page



K 21

K 22

# **Kentish, Thomas** (fl.1839–1847)

A treatise on a box of instruments and the slide rule. For the use of gaugers, engineers, seamen, and students.

Year: 1877 Place: Philadelphia

Publisher: Henry Carey Baird

Edition: 2nd (U.S.) Language: English Figures: 1 folding plate

Binding: original cloth blind-stamped boards

Pagination: pp. 228, 24 Collation: 1–19<sup>6</sup>1<sup>12</sup> Size: 189x120 mm

Reference: Tay MP II, p. 474

This edition, except for the bookseller's list (still by Henry Carey Baird, who by this time had moved to a different location), is identical to the previous two.

Illustrations available: Title page

#### K 23

#### **Kepler, Johannes** (1571–1630)

Ausszug auss der Uralten Messe Kunst Archimedis Und deroselben newlich in Latein aussgangener Ergentzung, betreffend Rechnung der Cörperlichen Figuren, holen Gefessen und Weinfässer, sonderlich dess Oesterreichischen, so under allen anderen den artigisten Schick hat. Erklärung unnd bestättigung der Oesterreichischen Weinvisier Ruthen, und deroselben sonderbaren gantz leichten und behenden Gebrauchs an den Landfässern. Erweitterung dessen auff die aussländische, so auch auff das Geschütz unnd Kugeln. Sampt einem sehr nutzlichen Anhang Von vergleichung dess Landtgebräuchigen Gewichts, Elen, Klaffter, Schuch, Wein und Traidsnaass, under einander, und mit andern aussländischen, auch Alt Römischen. Allen unnd jeden Obrigkeiten, Beampteten, Kriegs Obristen, Handelsleuten, Büren - Müntz - Baw - und RechenMeistern, Wein Visierern, Hausswürthen, und meniglichen in und ausser Lands, fast dienstlich: sonderlich aber dem Kunst unnd Antiquitetliebenden lesern annämlich.

Year: 1616 Place: Linz

Publisher: Hans Blanck Edition: 1st (German) Language: German

Binding: contemporary manuscript vellum

Pagination: pp. [4], 113, [3] Collation:  $\pi^2$ A-O<sup>4</sup>g<sup>2</sup> Size: 300x181 mm

Reference: Zin *GBAL*, pp. 20–23, 27,28, 36–41, 43, 44, 47, 50, 51, 53–59, 61, 63, 65, 67, 68, 70, 72, 76, 78–80, 82, 309, 311, 315, 316, 318, 320, 322, 324, 326, 328, 330, 331, 334, 337, 341, 344, 347, 349, 350, 354–356, 358, 359, 361, 363, 368, 372, 377, 382, 384, 385, 387, 389, 390, 392, 394, 398, 403–406, 409



K 23

Johannes Kepler was born into a fractious, marginally functional family, but this situation does not seem to have hindered his development as an astrologer, astronomer and scientist. He exhibited aptitude for the study of science at an early age and after preparatory school was awarded a scholarship to the University of Tübingen. There he was introduced to the new theory of Copernicus by the astronomy professor Michael Maestlin and became a convinced Copernican. When the teacher of mathematics at the Lutheran school in Graz died, the town authorities asked the university for a replacement, and Kepler was chosen—thus ending his potential career as a clergyman. Unfortunately for Kepler, he was a Protestant, and Graz was a strongly Catholic city. At first Kepler's life in Graz went smoothly until, suddenly, on September 28, 1598, the Catholic authorities ordered all Protestant teachers to leave town by sunset. Kepler then joined Tycho Brahe in Prague at the court of Rudolff II. When **Tycho Brahe** died, Kepler was appointed to his post as imperial mathematician. In January 1612, after the death of his first wife, Kepler moved to Linz, where he not only remarried but also arranged for the first printer to be established there in order to produce his Stereometria.

Shortly after Kepler moved to Linz, there was a very good wine harvest, and to take advantage of it, he had a wine cellar installed in his home. He discovered that the volume of the wine barrels had been calculated simply by measuring their diagonal length and that no account had been taken of the variations in their shape. In attempting to recalculate the volumes, he developed a scheme in

which he summed up the volumes of thin cross-sections of the barrels—an approach that foreshadowed the development of the calculus. He extended this technique to other shapes and eventually wrote it up in his 1615 work *Stereometria* (see separate entry). When sales of this volume were less than expected, Kepler revised it, added some new material and translated the work into German to produce this volume. The revisions included an appendix on the subject of weights and measures from antiquity to date of publication and a glossary of German and Latin mathematical terms.

Illustrations available: Title page Barrel illustration



Wine barrel, K 23

# K 24 Kepler, Johannes (1571–1630)

Mathematici chilias logarithmorum ad totidem numeros rotundos. Præmissâ demonstratione legitima ortus logarithmorum eorumq[ue] usus. Quibus nova traditur arithmetica, seu compendium, quo post numerorum notitiam nullum nec admirabilius, nec utilius solvendi pleraq[ue] problemara calculatoria, præsertim in doctrina triangulorum, citra multiplicationis, divisionis, radicumq[ue], extractionis, in numeris prolixis, labores molestissimos.

Year: 1624 Place: Marburg

Publisher: Caspar Chemlin

Edition: 1st Language: Latin Figures: 1 folding plate

Binding: later quarter vellum over boards Pagination: pp. 55, [1], [52], [2], 113–216

Collation: A–N<sup>4</sup>O<sup>2</sup> Size: 191x149 mm

Reference: Hend BTM, #7.0, p. 30

Kepler was a great admirer of logarithms. When in 1617 he first saw a copy of **John Napier**'s book on logarithms, usually identified as the *Descriptio* (see **Napier**, **John**; *Mirifici logarithmorum canonis descriptio*, 1614), he didn't understand them. He wrote to Wilhelm Schickard saying that some Scottish nobleman had come up with a way of turning all multiplications and divisions into additions and subtractions, but but later remarked that

he doubted it would work properly. About a year later he reconsidered the concept and became so enthused that he wrote to **Napier**. Unfortunately, **Napier** had been dead for about two years before the letter arrived. It may, however, have been part of the impetus that started Napier's son, Robert, toward publishing his father's *Constructio* (see entries for **Napier**: 1620 and 1889).

Kepler was one of the few who followed **Napier**'s lead in the use of logarithms that were not base 10 (i.e., common or Briggsian logarithms). This situation is not surprising when you note that Kepler's logs were published in the same year as **Henry Briggs**' first table.

This set of logarithms, like Napier's, was a table of the logarithms of trigonometric sines rather than of integers. They differed from Napier's not in values but in the intervals of tabulation. (The values are identical to Napier's with the log sine of 90 degrees being 0, and then as the angle decreases, the logarithm increases so that the log sine of 0 degrees is infinite.) Napier's table has an entry for each minute of the arc, and consequently the values of the logarithms of sines are sometimes not expressible as exact decimal numbers. Kepler's table is more complex. He based his table on a circle of radius 10<sup>7</sup>, and thus his sines had values between 0 (for the sine of 0 degrees) and 10<sup>7</sup> (for the sine of 90 degrees). He entered exact decimal values for these sines into the tables and then determined the angles to which they corresponded. Thus the angle entries are not in equally spaced steps. This scheme has the advantage that a table for the logarithms of sines can also be used as a table for the logarithms of integers.



The table contains five columns (see illustrations) as follows:

- 1. An angle given in degrees, minutes and seconds,
- 2. The sine of that angle
- 3. The sine of that angle measured in hours, minutes, and seconds  $[\sin(0) = 0, \sin(90) = 24 \text{ hours}]$
- 4. The logarithm of the sine
- 5. The sine being measured in a base 60 system  $[\sin(0) = 0, \sin(90) = 60]$

Kepler's logarithms were very accurate. The entries would have occasional + or – signs after them, notations that indicate rounding that has taken place. If no sign, then the logarithm is exact to within a quarter unit of the last digit; if there is a +, then the log is greater than it should be by a quarter unit of the last digit, etc.

Illustrations available: Title page Sample page from table

ARCUS	SINUS	Parter vicefi-	LOGARITHMI	Parter
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differentise.	abfoluci.			naria.
4 19			155.15	38. 41
40. 9. 56	64500.00	15.28.48	43850.50-	30.40
4. 30			154.91	18.46
40.14.26	64600.00	15. 30. 14	43695.58	30.40
4 30	7		43540.90	38. 49
40.18.56	64700.00	15. 31. 41	154.44	30.43
40.13.17	64\$00.00		43386.46	38. 55
40.23.27	04000.00	15. 33. 7	154.10	, ,,
40.17.58	64900.00	15-34-34	45252.26	\$8. 56
4 12	04900.00	13.34.34	153-97	
40.31.50	65000.00	15. 16. 0	43078.29	39. 0
	-,	-,-,	153-73	-
40. 37. 2	65100. 00	15. 37. 26	41914. 16 +	39. 4
4-33	-,,	.,,,,	153.48	
40. 41. 35	61200.00	15. 38. 53	41771.08	39. 7
4- 3.1			253.26	-
40.46.7	65300.00	15. 40.19	42617.81	\$9. 41
4- 33			153.03	
40.50.40	65400.00	15. 41. 46	41464-79-+	39. 14
4- 55			151.79	
40. 55. 13	65500.00	15. 43- 12	41312.00-	39. 18
4- 55	*****		111.11	59. 11
40.59.46	65600.00	15. 44. 38	42159-45	59. 22
	65700.00	15. 46. 5	41007.13-	
41. 4. 19	91/00.00	15. 40. 5	151.09	39. 25
41. 8. 53	6(800.00	15- 47- 31	41855.04-	39. 29
41. 0. 55	-,	-9-4/- 9-	153.87	33. 27
41. 14. 16	61900.00	15. 48.58	41701-17-	59. 52
4-34		, , , ,	151.61	,,,,
41. 18. 0	66000.00	15. 50. 24	41551-55-	\$9. 36
4- 35			151.40	
41. 22. 31	66100. 00	15. 51. 50	41400.15-	39-40
4- 35			151-18	
41.27.10	56200.00	15.55.17	41248 97->	39- 43
4-36			150.54	
41.51.46	66500.00	15. 54- 43	4109803	39- 47
4 35			150.71	
41. 36. 21	66400.00	15. 56. 10	40947.51-6	39. 50
4 36			150.49	-
		N.	A 2 A	RCU

Sample table page, K 24

#### K 25

# Kepler, Johannes (1571–1630)

Nova stereometria doliorum vinariorum, in primis Austriaci, figuræ omnium aptissimæ, et usus in eo virgae cubicæ compendiosissimus & plane singularis. Accessit stereometriæ Archimedeæ supplementum.

Year: 1615 Place: Linz

Publisher: Johannes Plancus

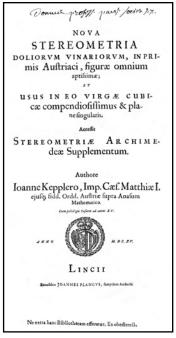
Edition: 1st Language: Latin

Binding: contemporary vellum; tear in lower right front cover

Pagination: ff. [56] + errata sheet

Collation: A-O<sup>4</sup> Size: 306x198 mm

Reference: Hend BTM, #7.0, p. 32

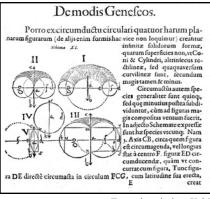


K 25

See also the entry for **Kepler**, *Ausszug auss der Uralten Messe Kunst*, 1616.

This, the first book printed in Linz, was Kepler's description of finding the volumes of several different shapes of barrels, the torus, etc. It was more theoretical than his 1616 German edition, and that, together with the fact that it was written in Latin, probably limited its sales, which fell well short of Kepler's expectations. The work deals not only with wine barrels but also with many other shapes that can be generated by revolving a conic about a line. This line can be an axis, parallel to an axis, a tangent to the conic, etc. In this way he was able to describe some ninety-two different shapes.

Illustrations available: Title page Torus illustration



Torus description, K 25

# Kepler, Johannes (1571–1630)

Supplementum chiliadis logarithmorum, continens præcepta de eorum usu

Year: 1625 Place: Marburg

Publisher: Caspar Chemlin

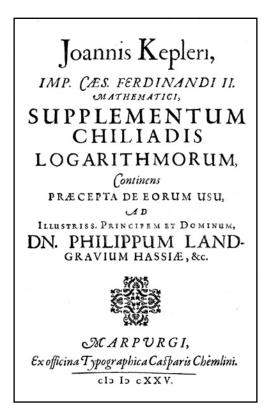
Edition: 1st Language: Latin Figures: 1 folding plate

Binding: later quarter vellum over boards Pagination: pp. [2], 113–118, 121–216

Collation: P-2D<sup>4</sup> Size: 191x149 mm

See the entry for **Kepler**, *Mathematici chilias logarithmorum*, 1624. This is a supplement to that volume. It contains no tables but is a description of their use. Page 117 contains fifty-seven errata for the main log table, almost all of which are minor changes to the last figure. Several authorities indicate that this work is usually, as in this instance, bound with the original 1624 table and speculate that they were issued this way. The pagination, which is continuous from the previous volume, would support this contention or at least indicate that Kepler intended them to be issued together.

Illustrations available: Title page



K 27

## **Kepler, Johannes** (1571–1630)

Tabulae Rudolphinæ quibus astronomicæ scientiæ, temporum longinquitate collapsæ Restauratio continetur; a Phoeniceillo astronomorum Tychone, ex illustri & generosa Braheorum in regno Daniae familiaoriundo equite, primum animo concepta et destinata anno christi MDLXIV: exinde observationibus siderum accuratissimis, post annum praecipue MDLXXII ...

Year: 1627 Place: Ulm

Publisher: Jonas Saur

Edition: 1st Language: Latin

Figures: engraved frontispiece by George Celerrudol Binding: Later half-bound calf over simulated leather boards; gilt spine

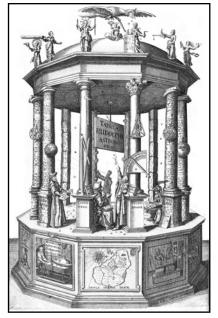
Pagination: pp. [16], 125 (mis# 12 as 4, 13 as 5), [3]; 119 (misnumbered 119 as 115), [1]

Collation: ):(4):():(4a-q4A-N4O8

Size: 332x217 mm

Reference: Gin *HLB*, Vol. XIX, #2, p. 131; H&L, #12754; Cas, 9; Zin *GBAL*, #5063

Throughout his life Johannes Kepler had difficulty getting paid by his employers. These tables were dedicated to one of his former employers, Rudolph II, in the hope that his successor would eventually release the 6,300 guldens Kepler was owed in back pay. To further emphasize that science was dependent on patronage, the frontispiece shows the emperor, pictured as a crowned eagle, flying over and dropping coins on the assembled scientists below.



Frontispiece, K 27

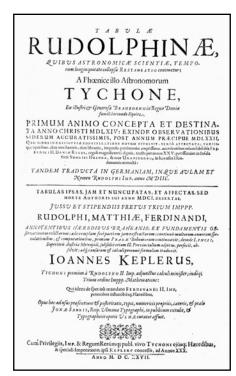
This work is the last Kepler published during his lifetime, and it is considered to be his most outstanding achievement. It is an astronomical volume that presents Kepler's analysis of the observations of **Tycho Brahe**. As Owen Gingerich remarked (*Harvard Library Bulletin*, Vol. XIX, #2, p. 131)

Kepler's discovery of the laws of planetary motion, provided the foundation for these perpetual tables from which the planet's position could be calculated for any moment. This is the first scientific book to exploit the newly discovered logarithms.

These tables are based on Tycho Brahe's observations, supplemented by his Kepler's own, with positions calculated according to his three laws of planetary motion. The calculations were in themselves a monumental undertaking. Tycho's data assumed 'perfect' circular orbits and Kepler had to recalculate to account for the true elliptical orbits which he had discovered.

Kepler included a copy of his own Napierian-style logarithms, although the intervals of tabulation are not the same as those in his earlier publication (see entry for **Kepler, Johannes**; *Mathematici chilias logarithmorum*, 1628).

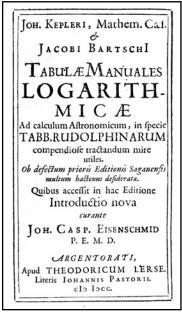
A manuscript, *Tabula Logarithmorum Indicis*, contemporary with the printed work, is inserted at the end.



The bibliographic description of this work is thorny. Kepler had 1,000 copies printed, but the loose sheets were bound at different times and with different additions. This process accounts for the four-page 1629 *Sportula* (see illustrations) addition that describes how to use these tables for astrological calculations. Kepler, despite his antipathy to astrology, added this section to increase sales.

Illustrations available:

Title page Frontispiece Last page of the log tables Sportula first page Sportula 1629 colophon



K 28

K 28

**Kepler, Johannes** (1571–1630) and **Jacob Bartsch** (1600–1633)

Tabulæ manuales logarithmicæ ad calculum astronomicum, in specie Tabb. Rudolphinarum, compendios tractandum mire utiles. Ob defectum prioris editionis saganensis multum hactenus desideratæ. Quibus accessit in hac editione introductio nova curante Joh. Casp. Eisenschmid.

Year: 1700 Place: Strasbourg

Publisher: Apud Theodoricum Lerse

Edition: 2nd Language: Latin

Binding: contemporary vellum Pagination: pp. 40, [104], [80], [100] Collation: a-e<sup>4</sup>A-C<sup>4</sup>D<sup>5</sup>E<sup>4</sup>F<sup>5</sup>G-2L<sup>4</sup>2M<sup>2</sup>

Size: 155x91 mm

Reference: Cas, 99; Hend BTM, p. 207

Jacob Bartsch was Kepler's son-in-law. After Kepler died, Bartsch decided that Kepler's logarithms (the original 1624 publication evidently being sold out) should be made available in a less expensive form than the *Rudolphine Tables* (see entries for **Kepler**, *Chilias*, 1624, and *Tabulae Rudolphinae*, 1627). The intention was to fund the printing by collecting the back pay owed to Kepler. When the money was not provided, the printing was stopped, so copies of this 1631 edition are scarce. In 1700, John Caspar Eisenschmid brought out this second edition. Because these logarithms are not base 10 (*common* or *Briggsian* logarithms), they never became popular.

Illustrations available: Title page



K 29

# K 29 **Kern, Ulrich** (fl.1531)

Eyn new Kunstlichs wolgegründts Disierbuch, gar gewiss unnd behend auss rechter art der Geometria, Rechnung und Cirkelmessen. Darinnen mancherley Visier rüten oder Stäb angezeygt zemachen, nach yeglicher landart Eichen und mass, der gleichen noch nie getruckt oder aussgangen

Year: 1531 Place: Strasbourg

Publisher: Peter Schäffer and H. Schweitzer

Edition: 1st Language: German

Figures: annotation in red ink; some leaves printed in red and black, diagrams for creating gauging instruments

Binding: rebound in old vellum manuscript

Pagination: ff. [i], lvi Collation: A<sup>6</sup>B–N<sup>4</sup>O<sup>3</sup> Size: 301x200 mm

Reference: Smi Rara, p. 496 and p. 520



Colophon and printer's mark, K 29

This work details the construction and use of various gauging rods. Gauging was an important function before the standardization of barrel sizes and shapes. It was also important to know the volume measures used in different cities, and a section of this work is devoted to that subject. The title page contains a woodcut of the author about to gauge a barrel, and the fact that the barrel is asymmetrical shows one of the problems faced in this process. The last page has a woodcut printer's mark showing the printer and his wife.

Illustrations available:

Title page Barrel diagram Sample instrument markings (color) Printer's mark and colophon

#### K 30

# Kern, William H. and Robert B. Job

A wage calculator

Year: 1901 Place: Shamokin, PA Publisher: E. E. Scott Edition: 1st

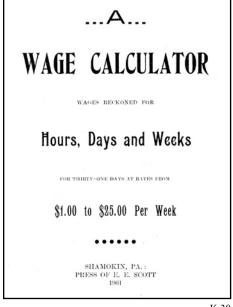
Language: English

Binding: original cloth boards

Pagination: pp. 108 Size: 176x152 mm

This is a ready reckoner for wages for rates from \$1 to \$25 per week. The entries in the tables are the total wages for a given period of time (1 hour to 31 days 9 hours).

Illustrations available: Title page Sample table page



**Kersey, John, the elder** (1616–1690), editor See **Wingate, Edmund**; *Arithmetique made easie,* or, a perfect methode for the true knowledge and practice of natural arithmetique...

See Wingate, Edmund; Mr. Wingate's arithmetick, containing a perfect method for the knowledge and practice of common arithmetick.

#### K 31

# Kersseboom, Willem (1691–1771)

Proeven van politique rekenkunde, vervat in drie verhandelingen over de meenigte des volks in de provintie van Hollandt en West Vrieslandt; de probable leeftyt der weduwen, de duurzaamheid der huwelyken, de relatie van de meenigte des volks tegen het getal der geboorene, en dat der gehuwde paaren &c ...

Year: 1748, 1742, 1742, 1740 Place: 'sGravenhage Publisher: Jan van den Bergh Edition: 1st (Collected) Language: Dutch

Figures: title in red and black; title pages for each part Binding: contemporary paper covered boards; rebacked

Pagination: pp. [2], 44, [2], 65, [5], 72, 18 Collation:  $\pi^1A-E^4F^3A-H^4I^{1*}2A-I^4A-B^4C^1$ 

Size: 269x206 mm

Reference: B de H BNHS, #2458, pp. 148-149; not in Cro CL

Kersseboom was a Dutch official controlling contracts involving annuities. He was also what today would be called an *actuary*.

This is a reprint of four of Kersseboom's earlier publications. The combined-volume title page translates



K 31

as Essays in political arithmetic contained in three treatises: on the amount of population in the province of Holland and Westfrieslandl on the probable duration of the life among widows; on the duration of marriages, the relation of the number of the population to the number of births, and to that of the married couples. In fact, this work contains four different items; the first three are as described on the title page, and the last, Eenige Anmerkingen, is concerned with an estimate of the world's population made by the geographer Nicolas Struyck. It contains a number of unusual tables, one of which (p. 56 of the second section) gives the number of people to survive a population of 1,400 at all ages from birth to 100 years.

Several different dates have been assigned to the initial publications of individual sections by various book dealers. We believe they are in error. The combined volume was published in 1748, and the dates for the individual items are accurate as given in the bibliographic information above.

Illustrations available:
Title page (main) - color
Title pages of individual items (4)
Population table

#### K 32

# **Kessler, Franz** (ca.1580–ca.1650)

Eygendtlicher Bericht Von Nutzen und Gebrauch dess Proportional-Instruments Francisci Kesslers von Wetzlar. Durch welche man erstlich in unglaublicher Geschwindigkeit und schneller Eyll, nach allem

# **Erwin Tomash Library**

Astronomischen Scioteterischen oder Sonnuhrischen auch Geometrischen erfordern, alle grosse oder kleine ungetheilte Quadrantriss in ihre begerte Grad und Minuten ...

b/w: Kessler, Franz; Kurtzer einfältiger ..., 1612

Year: 1612 Place: Oppenheim Publisher: de Bry Edition: 1st Language: German

Binding: modern boards; spine gilt

Pagination: pp. 20, 8 Collation: A–B<sup>4</sup>C<sup>2\*4</sup> Size: 193x149 mm

Reference: Zin GBAL, pp. 48, 334, 350, 353

Little is known about Franz Kessler other than the fact, stated on the title page, that he came from Wetzler.

See the entry **Kessler**, *Kurtzer einfältiger* ..., 1612. This is a continuation of his work on the sector. In this short pamphlet he describes applications of the instrument.

Illustrations available:

Title page



K 32

K 33

## Kessler, Franz

Kurtzer einfältiger und doch aussführlicher verstandlicher Bericht: Wie ein jeglicher der Mathematischen Kunst Liebhaber, gantzringfertig, das uberauss compendios - Scioterische Gnomische oder Geometrische und ringföstige Proportional Instrument, auss seinem unumbstösslichen wahren Grund, selber lernen machen und ins Werck richten soll. Allen Sonnuhristen, Geometris, Bawmeistern, wie auch allen Mahlern, Bildhawern, Steinmetzen und Schreinern zu sonderem gefallen an jetzo zum ersten mal an Tag geben

Year: 1612 Place: Oppenheim

Publisher: Johan Theodor de Bry

Edition: 1st Language: German

Binding: modern boards; spine gilt

Pagination: pp. 20, 8 Collation: A–B<sup>4</sup>C<sup>2\*4</sup> Size: 193x149 mm

Reference: Zin GBAL, pp. 48, 334, 350, 353

Despite the fact that **Galileo** sought a monopoly on the sector, word of it quickly spread throughout Europe. This work was one of the very early publications—appearing only a few years after **Galileo** had started teaching about the instrument and barely six years after Galileo had managed to have notes printed for use by his students. The early date of this publication shows that the sector was undergoing modification from its very beginning—a process that would continue for many years.

The sector described in this work is very simple with only three lines described in detail (the illustration shows only the *line of lines*). While Galileo's sector had been oriented toward military uses (particularly solving the caliber problem for artillery), Kessler's sector was designed for solving problems in spherical triangles, i.e., navigation. This fact isn't surprising because it was Johannes Theodorus de Bry (1561–1623), a travel writer from those times, who sponsored the publication of this work and another bound with it (**Kessler, Franz**; *Eygendtlicher Bericht Von Nutzen*, 1612).

Illustrations available: Title page Sector



K 33

# **Keuffel & Esser Company**

Catalogue of the Keuffel & Esser Co. manufacturers and importers - drawing materials - surveying instruments - measuring tapes

> Year: 1921 Place: New York Publisher: Keuffel & Esser

Edition: 36th Language: English

Binding: original cloth boards; gilt-stamped on spine and front

cover

Pagination: pp. x, 482 Size: 218x140 mm

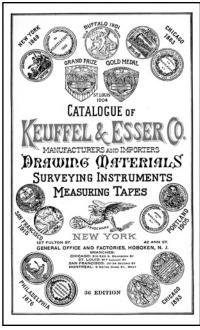
Keuffel & Esser was an established American company that supplied mathematical instruments. It began manufacturing slide rules in the late 1800s although it had imported them earlier. This catalog lists the company's complete stock, which was one of the most extensive in the industry. At this time its stock of different types of slide rules alone took sixteen pages. An engraving of the firm's general office and factory in Hoboken, NJ, as well as a photographic montage of its various branch offices precedes the catalog proper.

Illustrations available: Title page (color) Factory engraving

#### K 35

# **Keuffel & Esser Company**

Elementary instructions for operating the slide rule. Mannheim type.



K 34

Year: 1928 Place: Hoboken

Publisher: Keuffel & Esser

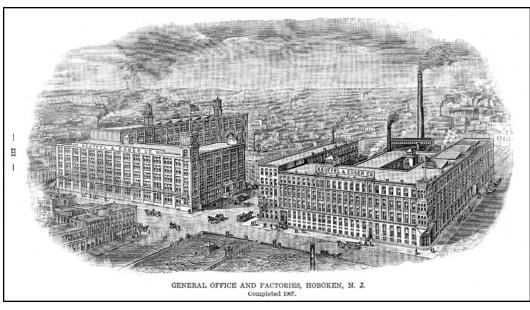
Edition: 1st Language: English

Binding: original printed paper wrappers

Pagination: pp. 16 Size: 222x148 mm

This is an early version of the general instruction manual for K&E slide rules.

Illustrations available: Title page



# **Keuffel & Esser Company**

K & E slide rules and calculating instruments

Year: 1934 Place: New York Publisher: Keuffel & Esser

Edition: 1st Language: English

Binding: original paper wrappers Pagination: pp. [2], 307–332 Size: 224x145 mm

This catalog lists twenty-four different types of slide rule offered by K&E as well as accessories such as leather cases and magnifiers.

Illustrations available:

Title page



K 37

## K 37

# **Keuffel & Esser Company**

K & E slide rules and calculating instruments

Year: 1939 Place: Hoboken

Publisher: Keuffel & Esser

Edition: 2nd Language: English

Binding: original paper wrappers Pagination: pp. [2], 307–332

Size: 223x148 mm

This version of the K&E catalog lists 23 different slide rules. The company appears to have dropped a few from

the earlier catalog and to have added specialty rules such as the chemist's slide rule and one for solving problems associated with air conditioning.

A May 15, 1939, price list is inserted.

Illustrations available: Title page

#### K 38

# **Keuffel & Esser Company**

The log log trig slide rule No. 4090. A self teaching manual with tables of settings, equivalents and guage points.

Year: 1936 Place: Hoboken Publisher: Keuffel & Esser Edition: 1st Language: English Figures: 1 folding plate

Binding: original printed paper wrappers

Pagination: pp. 142 Size: 201x131 mm

A standard instruction manual for the K&E slide rule.

Illustrations available:

None

# **Keuffel & Esser Company**

See Bishop, Calvin Collier; Slide rule.

## K 39

# Kiely, Edmond Richard (1899-?)

Surveying instruments. Their history and classroom use

Year: 1947 Place: New York

Publisher: Columbia University

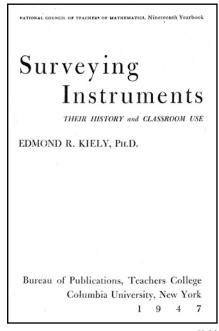
Edition: 1st Language: English

Figures: 270 figures in the text Binding: original cloth boards Pagination: pp. xiii, 411 Size: 230x150 mm

Edmond Kiely was a teacher of mathematics and engineering at Iona College and was someone deeply interested in the history of the subject. He apparently managed to do research on old surveying books while at one of the institutions of the Congregation of the Christian Brothers of Ireland, and the results are reported on here. This is the standard reference for material on early surveying books and should be consulted by anyone interested in the subject. Surveying techniques, as opposed to books, are also well described in various histories of technology—see, for example, *A History of* 

*Technology* by C. J. Singer, Volume 3, 1959. Many of the remarks on surveying instruments in this catalog owe their origin to Kiely.

Illustrations available: Title page



K 39

#### K 40

## **Kilburn, Thomas A.** (1921–2001)

The new universal digital computing machine at the University of Manchester. In Nature, Vol. 168, July 21, 1951.

Year: 1951 Place: London

Publisher: Macmillan & Co.

Edition: 1st Language: English Binding: disbound Pagination: pp. 95–96 Size: 251x177 mm

Kilburn attended Cambridge University and upon graduation in 1942, joined the Telecommunications Research Establishment (TRE) at Malvern, where he was part of a group headed by **F. C. Williams**. In 1946, **Williams** moved to the University of Manchester, and Kilburn was seconded by the TRE to go with him to help with research on digital storage devices. **Williams** and Kilburn were responsible for the design and construction of the Manchester *Baby* machine—the first stored program computer to operate (June 21, 1948). Later in 1948, he was formally invited to join the faculty of Manchester University and received a Ph.D. for his work on the electrostatic **Williams**' tube memory system

and its incorporation into the successor to the Baby computer.

Kilburn had used the pages of *Nature* (vol. 164, p. 684, 1949) to announce the experimental computer (Manchester Baby Machine). Here he announces the production version of that machine manufactured by Ferranti Ltd. (the Ferranti Mark I).

Illustrations available: First page

#### K 41

# **Kilburn, Thomas A.** (1921–2001)

The University of Manchester universal high-speed digital computing machine. In Nature, Vol. 164, October 22, 1949.

Year: 1949 Place: London

Publisher: Macmillan & Co.

Edition: 1st
Language: English
Binding: disbound
Pagination: pp. 684–687
Size: 246x173 mm

This is the paper in which Kilburn announces the completion of the world's first digital electronic stored program computer. It was constructed at Manchester University by Kilburn and F. C. Williams and ran its first program in 1948. While unsuitable for any except experimental programs, it did prove the feasibility of the concept. It was replaced by a larger version of the design constructed by Ferranti Ltd. Ferranti Ltd. and Manchester University had a long association that resulted in many fundamental advances in the design and construction of electronic computers.

Illustrations available: Title page

#### K 42

# Kilburn, Thomas A. (1921–2001); G. C. Toothill; D. B. G. Edwards and B. W. Pollard

Digital computers at Manchester University. In Proceedings of the Institution of Electrical Engineers, Vol. 100, Part 2, 1953.

Year: 1952 Place: London

Publisher: Institution of Electrical Engineers

Edition: offprint Language: English Binding: unbound Pagination: pp. 14 Size: 278x217 mm Kilburn had used the pages of Nature to officially announce the existence of the Ferranti Mark I at the University of Manchester (see Kilburn, Thomas; The new universal digital computing machine, 1951). Here he and the Ferranti staff present a much more complete technical report on the machine. It begins by describing the prototype (Manchester Baby) and follows with a comprehensive description of the new machine and how it differs from the prototype. While the Baby was the first operational stored program computer, it was not capable of serious production work. This new machine was a significant improvement. It was also the first commercially produced computer to be delivered from a manufacturer to a user. After producing the first machine for Manchester University, Ferranti sold a number of others to industrial and academic customers not only in England but also in Canada, Italy and elsewhere.

Illustrations available: First page

King, Gilbert W.; George W. Brown (1917 –) and Louis Nicot Ridenour, Jr. (1911–1959)

See Buchholz, Werner; Photographic techniques for information storage. In Proceedings of the I. R. E., Vol. 41 No. 10, October 1953.

## K 43

# King, Richard S.

Prof. R. S. King's mathematical instructor and accountant's guide. Containing the brightest pages in mathematics ever written.

Year: 1885 Place: [Utica, NY] Publisher: R. S. King Edition: 1st Language: English

Binding: original paper wrappers

Pagination: pp. 24 Size: 159x100 mm

The inside cover has a stiff paper multiplication table with a cursor to allow easier finding of multiples of the digits from 0 to 9. The text consists of elementary problems that can be solved by multiplication (*What will 39 cigars cost at \$2.00 per hundred?*) and then treats square and cube roots and simple interest problems. While the beginning of the work is elementary, the explanation of roots is complex and certainly does not merit the description of *brightest pages in mathematics ever written*.

Illustrations available: Cover

Cover Title page Multiplication table PROF. R. S. KING'S

Mathematical Instructor

ACCOUNTANT'S GUIDE.

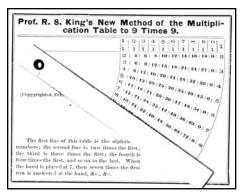
CONTAINING THE BRIGHTEST PAGES IN MATHEMATICS EVER WRITTEN.

PUBLISHED BY

PROF. R. S. KING,

AUTHOR.

K 43



Multiplication table, K 43

# K 44

# King, Thomas

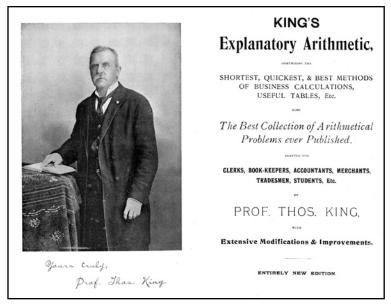
King's explanatory arithmetic, comprising the shortest, quickest, & best methods of business calculations, useful tables, etc. Also the best collection of arithmetical problems ever published. Adapted for clerks, book-keepers, accountants, merchants, tradesmen, students, etc.

Year: n/d Place: n/p Publisher: n/p Edition: new Language: English

Figures: photolith frontispiece

Binding: half-bound printed cloth boards

Pagination: pp. 112 Collation: 1–7<sup>8</sup> Size: 183x123 mm



Frontispiece and title page, K 44

King is noted as *professor*, but nothing else is known of him or his relationship to **Richard King** (author of *Prof. R. S. King's mathematical instructor* ...).

This is a combination formula reference and ready reckoner. It contains formulae for simple calculations needed for commerce, construction work, gauging and ullaging (determining the amount of material missing from a partially filled cask).

Illustrations available:
Title page and frontispiece

# K 45 **Kircher, Athanasius** (ca.1601–1680)

Arithmologia sive de abditis numerorum mysterijs. Qua origo, antiquitas & fabrica numerorum exponitur; abditiæ eorundem proprietates demonstrantur; fontes superstitionum in amuletorum fabrica aperiuntur; denique post cabalistarum, arabum, gnosticorum, aliorumque magicas impietates detectas, vera & licita numerorum mystica significatio ostenditur.

Year: 1665 Place: Rome Publisher: Varesi Edition: 1st Language: Latin

Figures: engraved frontispiece; 3 folding plates Binding: contemporary vellum; later ties

Pagination: pp. [14], 301, [9] Collation: \*32\*4A-2P42Q3 Size: 238x177 mm

Reference: Soth/Zeit BCM, Vol III, #875-#626A, p. 49

Athanasius Kircher was a prolific German Jesuit scholar and author. Born in Mainz in 1601 or 1602 (even he was unsure which), he was educated in the humanities, sciences and mathematics. He is known to have published forty-four books, and more than 2,000 of his letters and manuscripts are extant. He was a central figure in the science of his day, corresponding with most of the famous scientists in Europe and regularly receiving reports from other Jesuits as they traveled on missions to different parts of the world. He was the youngest of six sons, and his father, who was himself well educated, soon recognized his bent for scholarly pursuits and not only sent him to the local Jesuit school but also hired private tutors for special subjects (e.g., he hired a local rabbi to teach him Hebrew).



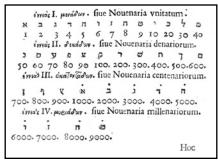
Frontispiece, K 45

Epilogifmus or	maiam name	rorum, qui	millenariorum
Note millens-	enneadi c	Notæ dimi	
riorum	tiones in.		-
Integrorum	zyphris	diorania	
M !	£1000		
CID	1000	D	500
CXD	1000	D	500
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	1000	D	500
au vel m	1000	13	500
X	1000	QC	500
Ō	1000		
0	F10000	D	5000
IMI	10000	10	3000
XM	10000		
DMC .	10000	1	
X	10000		
ccioo	10000	ככו	
<b>(</b>	T100000	-	5000
CCCIDDD 4	100000	D	50000
CM	100000	כככו	50000
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CMD .	T10000000		F2
MM.	1000000	CQD	500000
MM.	10000000	1	

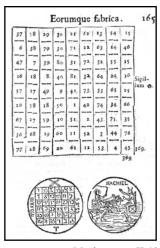
Roman number system, K 45

In 1628, Kircher was appointed professor of mathematics and philosophy (and Hebrew and other mid-Eastern languages) at the University of Würzberg. While still at Würzberg, he published his first major work, Ars magnetica, in 1631. But the Thirty Years' War and persecution by various Protestant armies eventually drove him and his best pupil, Gaspar Schott, to the Papal area in Avignon, where he was appointed professor. He was later (1633) nominated by Ferdinand II to a professorship of mathematics in Vienna, but while stopping in Rome enroute to Vienna, learned that Pope Urban VIII had called him there. He remained in Italy the rest of his life. For eight years, starting in 1638, he served as professor of mathematics at the College in Rome; thereafter, he withdrew to devote himself entirely to his studies and experiments, spending some forty-six years studying and writing in private.

In 1656, the Black Plague swept across Italy, and Kircher spent most of his time nursing the ill and attempting to find a cure. He examined the blood of his patients through a microscope and thought that the plague was caused by *vernimuli* in the blood. What he might well have seen was large bacteria in the contaminated blood specimens rather than the much smaller plague bacillus. Despite this error, his work is notable as the first attempt



Hebrew number system, K 45



Magic square, K 45

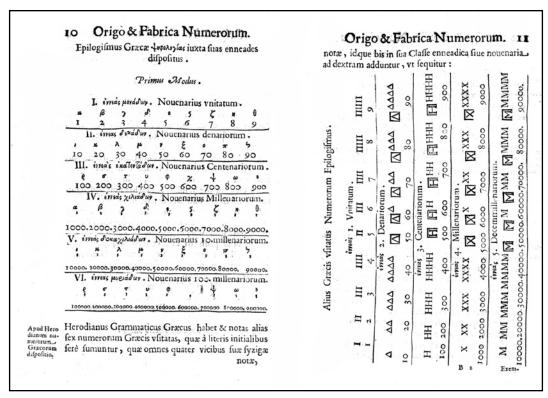
to apply the microscope to finding the cause of a disease and the first mention of a germ theory.

Although Kircher is known for a number of similar innovations, the vast majority of his output consisted of compilations of already known material. His interests ranged widely over both the humanities and the sciences, and his most significant contribution was in the dissemination of this knowledge.

Kircher lived when the basis of mathematics was in transition from the works of Pythagoras and Boethius to those of his contemporaries Isaac Newton and Gottfried Wilhelm Leibniz. He continued to be immersed in a view of mathematics that regarded numbers as mystical and a subject worthy of study in themselves. In this work he explores a number of these early concepts (some of which he condemns as superstitions of pagan origin). He begins with an investigation, largely speculative, of the origins of Greek, Roman, Hebrew and Arabic numeral systems and then continues to examine the use of numbers in mysticism. In the course of this work, he investigates magic squares of sizes ranging from a simple 3x3 to a large 9x9. He assigns each of these a significance (male, female, sun, etc.). The work contains lengthy discussions of mystic formulae, amulets and the Pythagorean concept of numbers being the atoms of the universe. A frontispiece shows Pythagoras (with a 3-4-5 triangle) and another unknown scholar contemplating various mystical symbols, magic squares and an angel who is exhorting them to measure and think.

Illustrations available:

Title page
Frontispiece
Magic squares
Hebrew numbers
Greek numbers
Roman numbers



Greek number sysems, K 45

# K 46 **Kircher, Athanasius** (ca.1601–1680)

Ars magna sciendi, in xii libros digesta, qua nova & universali methodo per artificiosum combinationum contexum de omni re proposita plurimis & prope infinitis rationibus disputarii, omniumque summaria quædam cognito comparari potest.

Year: 1669 Place: Amsterdam

Publisher: J. Jannson (van Waesbergehe)

Edition: 1st Language: Latin

Figures: engraved frontispiece; engraved portrait of Emperor Leopold; 5 double folding plates; 22 engravings in text

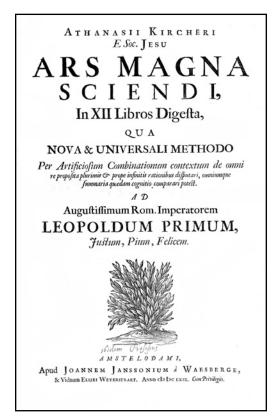
Binding: contemporary vellum over boards, ties missing

Pagination: pp. [16], 482, [10] Collation: \*4\*\*\*4A-3O<sup>4</sup>P<sup>6</sup>

Size: 372x236 mm

Reference: DSB VII, pp. 374–78; Wal *BBM*, 10865; Ferg, I, pp. 466–68

This work represents the Jesuit search for a universal language that would permit description and categorization of all knowledge into a unified system. Kircher starts from the premise, first set forth by the Catalan **Ramon Lull** (see **Lull**, **Ramon**; *Ars magna generalis et ultima*, 1517), that if one could find the ultimate essence of ideas and combine them in all possible ways, then it should be possible to systematize all knowledge.



K 46

Kircher first defines the *alphabet* of his system to be the nine ideal attributes of God and then uses Lull's combinatorial systems to manipulate and relate them to philosophical concepts. He uses volvelles to help in finding all the combinations, and these are all present unassembled in this copy. He also attempts to relate the opposites of various fields into his system of a universal language.

The major illustrations in this work are worthy of note. The volume is dedicated to Leopold I and includes a beautiful engraved portrait of him. The work is divided into two major sections, each with its own engraved frontispiece. The first shows Divine Wisdom on a throne on which is engraved in Greek *Nothing is finer than to know all things* (a quotation from Plato). The second shows nine figures representing Justice, Mathematics, Medicine, etc. because this section is devoted to the combining of these subjects with the earlier results of the combinations of attributes.

Illustrations available:

Title page Frontispiece 1 Frontispiece 2 Leopold I Combination diagrams Symbolic alphabet Opposites in mathematics



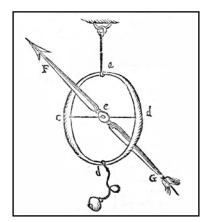
Frontispiece 1, K 46



Leopold I, K 46



Frontispiece 2, K 46



Inclinometer, K 47

K 47 **Kircher, Athanasius** (ca.1601–1680)

Magnes sive de arte magnetica opus tripartum

Year: 1641 Place: Rome Publisher: Grignani Edition: 1st Language: Latin

Figures: engraved frontispiece, 33 engraved plates (1 folding)

(1 with volvelle) Binding: contemporary vellum

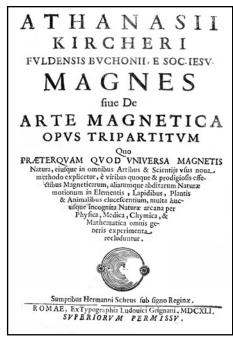
Pagination: pp. [32], 524, [16], 525-616, 615-916, [16]

Collation:  $a-b^8A-I^8K^{10}L-2I^82K^4@^82L-3M^83N^5$ 

Size: 238x167mm

This massive tome, a masterpiece of baroque engraving, was produced by Kircher to record everything that was then known about magnetism. In it Kircher casts a wide net that embraces almost all natural phenomena, for he considers that all forces in nature may be explained in terms of attraction and repulsion. William Gilbert had produced his *De magnete* in 1600, and Kircher is known to have had access to it. This volume is also famous for the first use of the term *electromagnetism*, which Kircher used as a chapter title (the actual words were *Magnetismo electri*). He did not limit himself to a simple repeating of the facts found in Gilbert. As it is described by Merrill (*Athanasius Kircher*, Provo, 1989):

Kircher's *Magnes* is filled with curiosities, both profound and frivolous. The work does not deal solely with what modern physicists call magnetism. Kircher discusses, for example, the magnetism of the earth and heavenly bodies; the tides; the attraction and repulsion in animals and plants; and the magnetic attraction of music and love. He also explains the practical application of magnetism in medicine, hydraulics, and even in the construction of scientific instruments and toys. In the epilogue Kircher moves from the practical to the metaphysical—and Aristotelian—when



K 47



Frontispiece, K 47

he discusses the nature and position of God: *the central magnet of the universe*.

Illustrations available:

Title page

Electromagnetism quotation

Frontispiece

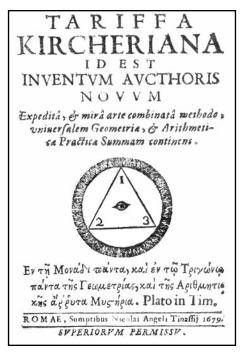
Magnetic attraction of sword

Magnetic surveying instruments

Christian festivals volvelle

Inclinometer

Registration



K 48 **Kircher, Athanasius** (ca.1601–1680)

Tariffa Kircheriana id est inventum aucthoris novum. Expedita, & mira arte combinata methodo, universalem geometria & arithmetica practica summam continens...

Year: 1679 Place: Rome

Publisher: Nicole Angelo Tinassi

Edition: 1st Language: Latin

Figures: 24 woodcut folding plates Binding: contemporary vellum Pagination: pp. [22], 316, [2], [404] Collation: A<sup>11</sup>A–V<sup>8</sup>A–2B<sup>8</sup>C<sup>1</sup>

Size: 134x90

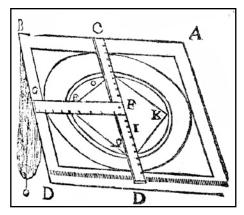
Reference: Soth/Zeit BCM, Vol. III, #875-#625, p. 48

This volume was published near the end of Kircher's life when his health had deteriorated and when he was spending the majority of his time in contemplation at a shrine he had helped restore. For that reason, the work was actually put together by one of his pupils, Theodorus Fritzer Trvirensis. It is the only work not explicitly claimed by Kircher. He used the pseudonym of Bededictus de Benedictis when he wrote the preface. The fact that it was assembled by one of his students also likely accounts for the fact that it is uncharacteristically, for Kircher, lacking in quality illustrations.

It would appear to be a collection of items that Kircher had not yet published on his own. The first part is a treatment of arithmetic, trigonometry, geometrical figures and even music. The second major portion is a description of Kircher's *pantometrum*, or surveying plane table. This had been described by another of Kircher's pupils, **Gaspar Schott**, some nineteen years earlier, together with much better diagrams (see the entry for **Schott**, *Pantometrum*, 1660).

Bound with this work, and obviously meant to accompany it, is an extensive set of elementary arithmetic tables that take up the last half of the book (see entry for **Kircher**, *Tariffa Kircheriana*, *sive mensa pythagorica expansa* ..., 1679).

Illustrations available: Title page Pantometrum



Pantometrum (plane table), K 48

# K 49 Kircher, Athanasius (ca.1601–1680)

Tariffa Kircheriana, sive mensa pythagorica expansa, ad matheseos quesita accomodata per quinque columnas, quarum numeri in fronte sunt multiplicantes, & in prima columna dicuntur multiplicandi. R.Q.C. ubicunque occurrunt significant radices, quadrata, & cubos in traversa numerorum serie.

Year: 1679 Place: Rome

Publisher: Nicole Angelo Tinassi

Edition: 1st Language: Latin Figures: tables

Binding: contemporary vellum Pagination: ff [202]

Pagination: ff. [202] Collation: A–2B<sup>8</sup>C<sup>1</sup> Size: 134x90 mm

These are the tables that are bound with **Kircher**, *Tariffa Kircheriana id est inventum aucthoris novum*, 1679.

Illustrations available:

Title page:



K 50 **Kirkby, John** (1690–1745 or 1754)

Arithmetical institutions. Containing a compleat system of arithmetic natural, logarithmical, and algebraical in all their branches: whereby the learner is led after an easy and familiar manner from the very first principles of this kind of literature to the state unto which it is brought at present: together with many curious and useful improvements never before made publick.

Year: 1735 Place: London

Publisher: B. Motte and C. Bathhurst; and J. Clark

Edition: 1st Language: English Figures: 1 folding plate

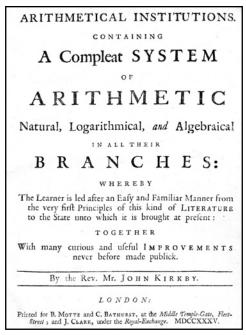
Binding: modern three-quarter-bound leather Pagination: pp. [8], 48, 68, 40, 72, 93, [1], 59, [3] Collation:  $\pi^2b^2B-N^2B-S^2A-K^2A-S^2B-2A^22B^1B^1C-P^2Q^4$ 

Size: 220x163 mm

This may well be a complete system of arithmetic, but **DeMorgan** (Arithmetical books) describes it as A system of arithmetic ... mixed up with algebra. The title page states that the learner is led after an easy and familiar manner from the very first principles, but it would have been very difficult for anyone to use without a teacher being present to explain almost every passage. As just one example, the first chapter begins with the definitions "Computation is that Action of the Mind whereby Things are referred to Unity" and "Unity is that whereby everything is considered as One." This is not what would be commonly thought of as easy and familiar. Kirkby does mention logarithms, although no table is given. The majority of the work is a curious mixture of commercial considerations (tables of the value of foreign coins

etc.), general scientific tables (specific gravity of cow's milk, goat's milk and *spirit of urine* in both summer and winter) and discussion of theoretical questions such as **de Moivre**'s *Theorem for an Infinitinomial* and the solution of quadratic, cubic and higher order equations.

Illustrations available: Title page



K 50

K 51 **Kirkby, S.** 

The Stanley harmonic analyser

Year: [c. 1950] Place: London

Publisher: W. F. Stanley & Co.

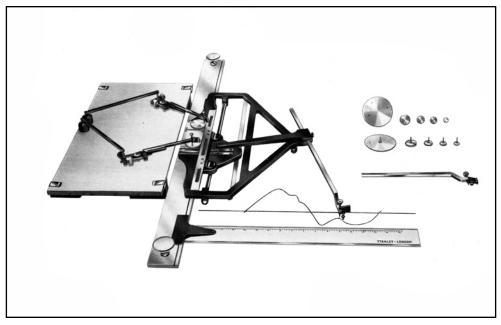
Edition: 1st Language: English

Binding: original printed paper wrappers

Pagination: pp. 20 Collation: no collation Size: 216x140 mm

Kirkby was a professor of aerodynamics in the Cranfield College of Aeronautics.

The English firm of W. F. Stanley & Co. was an important producer of scientific instruments. The Harmonic Analyser was a device used to find the series of cosines that could be added together to approximate an arbitrary curve traced by the machine. The Stanley version of the machine used two planimeters to record the sine and cosine components of the curve. There were many different applications for harmonic analysis in subjects such as engineering, geophysics, meteorology, etc.

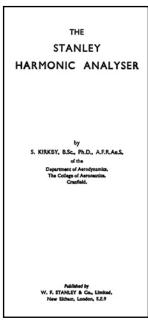


Stanley harmonic analyser, K 51

Illustrations available:

Title page Cover page

Photo of the Harmonic Analyser



K 51

Klipstein, Philipp Engel (1747–1818)
See Müller, Johann Helfrich von; Beschreibung
seiner neu erfundenen Rechenmaschine, nach
ihrer Gestalt, ihrem Gebrauch und Nutzen.
Herausgegeben und mit einer Vorrede begleitet von
Ph. E. Klipstein.

K 52

# Klügel, Georg Simon (1739–1812)

Mathematisches Wörterbuch oder Erklärung der Begriffe, Lehrsätze, Aufgaben und Methoden der Mathematik mit den nöthigen Beweisen und literarischen Nachrichten begleiter in alphabetischer Ordnung [with supplement, 7 volumes]

> Year: 1803–1836 Place: Leipzig Publisher: Schwickert Edition: 1st Language: German

Figures: v.1: 8 folding plates; v.2: 6 folding plates; v.3: 8 folding plates v.4: 7 folding plates; v.5: 8 folding plates; v.6: 2 folding plates v.7: 4 folding plates

Binding: contemporary half-bound sheep & marbled boards; spine gilt, black leather lettering pieces on spines

Pagination: v.1: pp. viii, 944, [2]; v.2: pp. [2], 956, [6]; v.3: pp. [2], 937, [3] (mis# 929 as 639, 930 as 640, 931 as 929, 932 as 930, 933 as 931, 934 as 932, 935 as 789, 936 as 789, 937 as 933) v.4: pp. vi, 889, [1]; v.5: pp. iv, 1188, [2]; v.6: pp. [6], 737, [1]; v.7: pp. [2], 1032

Collation: v.1:  $\pi^4A-3M^83N^4O^5$ ; v.2:  $\pi^1A-3N^83O^9$ ; v.3:  $\pi^1A-3L^83M^7N^7$ ; v.4:  $\pi^3A-3I^83K^5$ ; v.5:  $\pi^2A-4E^84F^3$ ; v.6:  $\pi^3A-2Y^82Z^53A^4$ ; v.7:  $\pi^1A-3S^83T^4$ 

Size: 205x121 mm

Reference: DSB VII, pp. 404-405

Klügel attended the University of Göttingen with the intention of studying theology, but **A. G. Kästner**, a mathematician there, recognized his talents and convinced him to switch to mathematics. He received his Ph.D. degree in 1763 and two years later moved to Hanover, where he became the scientific editor of



Intelligenzblatt. In 1767, he became the professor of mathematics in Helmstedt and later at the University of Halle. Although best known for this dictionary, he contributed significantly to trigonometry, particularly in his *Analytische Trigonometrie*, where he defined trigonometric functions as being the ratios of sides of a triangle and thus aided the switch from the old radiusbased trigonometric values to the modern system.

This is more than a simple dictionary of terms. It might better be called an encyclopedia because it contains large explanatory articles on mathematical techniques, biographies of major figures, etc.

This seven-volume set consists of the original five volumes (issued as A–D 1803, E–J 1805, K–P 1808, Q–S 1823, T–Z 1831) plus the two supplements (A–D 1833, E–Z 1836). The posthumous volumes from Q–Z were begun by Klügel but edited by K. B. Mollweide and J. A. Grunert, who also did the supplements.

Illustrations available: Title page

# K 53

## Knauss, Friedrich von (1724–1789)

Selbstschreibende Wundermaschinen, auch mehr andere Kunst und Meisterstücke; als so viele nunmehr aufgelöste Problemen unter den drey glorwürdigsten Regierungen Frazens I, Josephs II beyder römischen Kaiser und Marien Theresiens ...





Automatic writing machine, K 53

Year: 1780 Place: Vienna

Publisher: For the author by Schulz-Gastheim

Edition: 1st Language: German

Figures: engraved portrait frontispiece; 10 engraved folding plates

Binding: modern half-leather, marbled boards; untrimmed Pagination: pp. [18], 170, [2]

Collation:  $\pi^9$ A–K<sup>8</sup>L<sup>6</sup> Size: 215x153 mm

Reference: Pogg Vol. I, p. 1297; Gra TLR, IV, 32

Knauss was a mechanic who specialized in creating automata of various kinds, although he is also known to have invented more basic machines such as water pumps. He began his career at the court of Prince Charles of Lorraine and later moved to Vienna to work for Franz I. Maria Theresa made him the director of the Physikalischmechanische Kunstkammer, where he spent the rest of his life creating court amusements.

This book describes several different automatic writing machines designed to both amuse and impress royal guests. They were driven by cam-like mechanisms and could write out names, Latin phrases, etc. The book also contains a description of mechanical devices for copying letters as they are being written (a pantograph), lifting engines, etc. All the devices are shown in folding plates, but only one of the writing machines gives an illustration of the mechanism involved. The frontispiece is a portrait of the author.

This volume has occasionally been described, perhaps from a misinterpretation of the title, as concerning early typewriters.

Illustrations available:
Title page and frontispiece
Exterior of an automatic writing machine
Mechanism of the writing machine



Frontispiece and title page, K 53

# K 54 **Knight's Cyclopædia**

Calculating machines. In Knight's Cyclopædia of the industry of all nations. Cols. 486–89.

Year: 1851 Place: London

Publisher: Charles Knight

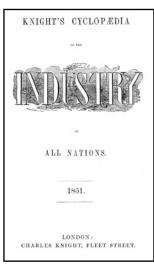
Edition: 1st Language: English Figures: 37 engraved plates

Binding: original cloth boards; faded spine

Pagination: pp. [4], iii-xxiv, [1]; Cols. 1806; pp. [1807-10], [1]

Collation:  $\pi^2 b^{11}B-2O^{11}2P-2S^{12}2T^{10}$ 

Size: 212x133 mm



K 54

This is a general article on calculating machines that spends more time on the **Babbage** engines than on any other single topic. The *Knights Cyclopædia* was edited and largely written by **George Dodd** (see **Dodd**, **George**; *The curiosities of industry and the applied sciences*, 1852).

Illustrations available: Title page

K 55

**Knoll, Max** (1897–1969) and **B. Kazan** 

Storage tubes and their basic principles

Year: 1952 Place: New York

Publisher: John Wiley & Sons

Edition: 1st Language: English

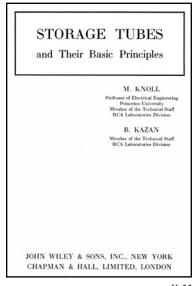
Binding: original cloth boards Pagination: pp. xiv, 143, [1] Size: 230x146 mm

The authors were both members of the staff at RCA Laboratories. Knoll was also a professor of electrical engineering at Princeton.

This book is about the early electrostatic memory tubes (often called Williams' tubes or iconoscopes) that were one of the fundamental technologies used for memory systems in early computers. RCA had done significant research in the use of these tubes for both television and storage, and thus it was reasonable that RCA should also

have been asked to produce a report for the U.S. Army Signal Corps on the subject—that report formed the basis of this book. The descriptions are highly technical and were designed to provide basic knowledge for engineers designing circuits for these devices.

Illustrations available: Title page



K 55

# K 56 **Knott, Cargill Gilston** (1856 – 1922), editor

Napier tercentenary memorial volume

Year: 1915 Place: London

Publisher: Longmans Green

Edition: 1st Language: English

Figures: color portrait frontispiece; color lithograph; 15 plates Binding: original ivory cloth boards, gold embossed

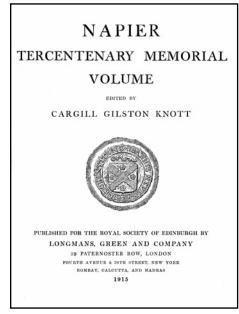
Pagination: pp. xii, 441, [1] Collation:  $\pi^6$ A–3I<sup>4</sup>3K<sup>1</sup> Size: 256x187 mm

Knott entered Edinburgh University in 1872 and, upon graduating, became an assistant to the famous physics professor P. G. Tait. He later moved to become a professor of physics at the Imperial University in Tokyo, where he did fundamental work on the physics of earthquakes. He returned to Edinburgh in 1891 to take up a post in the Applied Mathematics Department. He was a founder of the Edinburgh Mathematical Society and secretary to the Edinburgh Royal Society. It was because of this last position that he took on the job of editing the proceedings of the Napier Tercentenary Memorial Celebration.

See the entry for **Horsburgh**, *Handbook of the exhibition* ..., 1914, for the origin of this work.

This volume records not only the speeches made by dignitaries at the celebratory church service but also papers presented by such notables as **F. Cajori**, **D. E. Smith**, **M. d'Ocagne**, etc. They cover both the life and history of **John Napier** and the subsequent developments of the concept of logarithms. It is, perhaps with the exception of the work of **Mark Napier** (*De art logistica*, 1839), the best source of information available on Napier and is certainly a very good source for the history of logarithms and logarithmic computation. It was during this meeting that it was speculated that of all the computation done in the previous 300 years, the vast majority had been done with the aid of logarithms.

Illustrations available: Title page Color portrait of Napier



K 56

K 57

## Knowles, W.

Calculating scale. A substitute for the slide rule

Year: 1903 Place: London Publisher: E. & F. Spon Edition: 1st Language: English

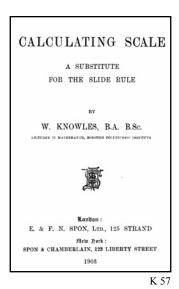
Binding: original cloth printed wrappers

Pagination: pp. 29, [3] Collation: no collation Size: 160x125 mm

Knowles was a lecturer in mathematics at the Bourough Polytechnic Institute.

This was an attempt to make a scale of numbers that would be equivalent to a logarithmic scale 100 inches long. The scale contained two sections, the first corresponding to a logarithmic scale and the second to a linear scale of inches. In order to multiply two numbers, one found each on the logarithmic scale, noted their distance from the front on the linear scale of inches, added those two numbers together and looked up the position of the sum to find the product on the logarithmic scale. The scale was conveniently broken into sections, each five inches long. Division and other operations were more complex, with the user having to determine the distances between two points on the logarithmic scale. The scale was not particularly easy to use, but it had the advantage of being compact. One could obtain accurate four-digit results.

Illustrations available: Title page Sample page of the scale



1-59 1.42 1.60 1-61 1.62 1.15 1-45 1-63 1.30 1-46 1-64 1-31 1-47 1.65 1-17 1.66 1-32 1-48 1.18 1.67 1.49 1.33 1.68 1.19 1.50 1.34 1.69 1.51 1:07 1.20 1.35 1.70 1.52 1:21 1:71 1.36 1.53 1.72 1.22 1-57 1:54 1.73 1.23 1.38 1-74 1.39 1.56 1.75 1.24 1.76 1.25 1:77

Logarithmic scale, K 57

K 58

## Köbel, Jacob (ca.1460–1533)

Ain New geordnet Rechen biechlin auf den linien mit Rechen pfeningen: den Jungen angenden zu heislichem gebrauch und hendeln leychtlich zu lernen mit figuren und exampeln. Volgthernach Klärklichen angezaigt.

> Year: 1514 Place: Augsburg Publisher: Erhart Oeglin Edition: 1st Language: German

Figures: woodcut on title

Binding: original blue paper wrappers; boxed

Pagination: ff. [6], 24 Collation: A–B<sup>6</sup>C<sup>4</sup>D<sup>6</sup>E–F<sup>4</sup> Size: 194x140 mm

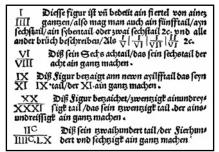
Reference: Smi *Rara*, p. 100; Smi *Hist*, Vol. I, p. 336; Bar *CCCB*, p. 292–300; Pul *HA*, p. 116

Köbel (Kobilin, Kiblin, Kobelius, Kobilinus, Caballinus), the son of a goldsmith from Heidelberg, studied at the university there. From the time he graduated in 1480 to when he obtained a second degree in law in 1491, he was evidently in the book trade, but little else is known of his life. It is thought that he also studied in Cracow, and some have claimed he was a student there at the same time as Copernicus (the Rector of the university was Mathias de Cobilyno, so it is possible that there was some relationship). He became established as a publisher, ninety-six works being attributed to him by the article in the Dictionary of Scientific Biography. Initially, he published other authors, but later in life he began to do his own work, principally the many different editions of his book on arithmetic. He was not only a famous rechenmeister but also a skilled painter and engraver.

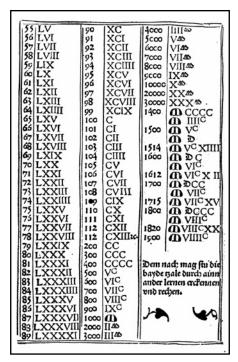


K 58

This arithmetic went through a large number of editions (at least twenty-two in the sixteenth century), occasionally being modified slightly and often being printed with other works by Köbel. A second edition was brought out in Oppenheim the same year as the first—the two may be easily distinguished by the colophon. This is a very rare work, not only because of its scarcity but also because of the content. It is unusual to find an arithmetic in which the material is explained using only the table abacus and Roman numerals (except for the use of Hindu-Arabic numbers in the discussion of notation). At this time most Germans would have been using the abacus and Roman notation for their work, but the majority of writers on the subject would have included a section on algorism if not made it their major topic. For contrast, see the entry for Böschenstein, Ain New geordnet Rechen biechlin, 1514.



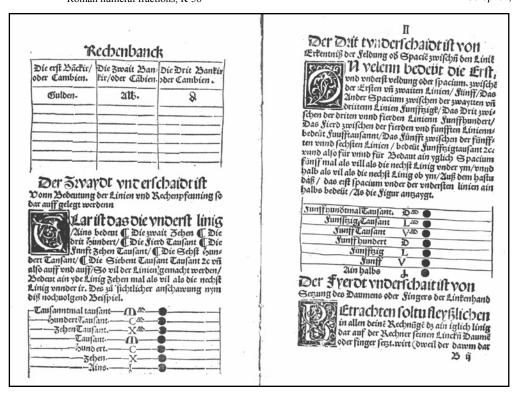
Roman numeral fractions, K 58



Roman numerals, K 58

Getruckt mil Lingspurg durch Erhart öglür.

Colophon, K 58



Forms of the abacus, K 58

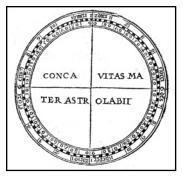
# **Erwin Tomash Library**

He makes interesting use of a curious superscript notation to modify the usual additive system of Roman numerals. He begins his numeration using the Old Roman, nonsubtractive, notation in which IIII = 4, but then shifts to the modern Roman subtractive forms, with IX = 9 and XIX = 19, etc. For larger numbers he denotes 400 by CCCC but then uses  $V^c$  for 500,  $IX^c$  for 900,  $II^M$  for 2,000, etc.

At one point in his table of notation, he introduces what, at first sight, appears to be another curious notation. He indicates 112 = CXIII and then again  $112 = CXIII_{ic}$ . This is, however, a misprint and should be read as "113 = CXIII, etc." (see illustration).

His use of fraction notation is equally unusual, with II<sup>c</sup>/IIII<sup>c</sup>.LX being used for 200/460 (see illustration).

After introducing this strange notation, he describes several forms of the table abacus, one (a *Rechenbanck*) specifically arranged for dealing with mixed radix money systems. He then carefully notes how the counters are to be manipulated so that the student would take two counters in the "5" position and replace them with one in the "10" and that five counters on a "10" line can be replaced by one in a "50" line, etc. This attention to detail is, again, unusual for a work of this nature. He then



Astrolabe mother, K 59



Astrolabe rete, K 59

treats the seven basic operations (addition, subtraction, duplation, mediation, multiplication, division, and progression) and gives examples for all but the last on his Rechenbanck. The rest of the work considers topics such as the rule of three and monetary exchange.

Illustrations available:

Title page (with table abacus illustration)
Roman numeral notation
Abacus forms
Fractional notation
Colophon

#### K 59

## Köbel, Jacob (ca.1460–1533)

Astrolabii declaratio, eiusdemque usus mire ineundus, non modo astrologis, medicis, geographicis, cæteris que literarum cultoribus multum utilis ac necessarius: verum etiam mechanicis quibusdam opificibus non parum commodus: à Jacobo Koebelio facilioribus formulis nuper aucta, longéque evidentior edita. Cui accessit Isagogicon in astrologiam iudiciariam

Year: 1545 Place: Paris

Publisher: (John Loys, for) William Richard

Edition: 3rd Language: Latin

Figures: 16 woodcut illustrations in text; 1 chart; without final

folding plate



Astrolabe plate, K 59



Astrolabe back, K 59

Binding: modern marbled paper boards

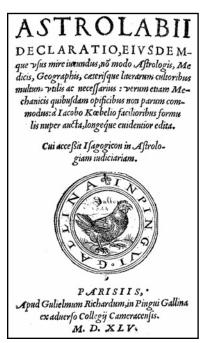
Pagination: ff. [31] Collation: a-c<sup>8</sup>D<sup>7</sup> Size: 165x101 mm Reference: Zin *GBAL*, 3574

Köbel first published this short work on the astrolabe in 1532. In addition, he covers a number of other mathematical instruments. After describing the construction of the astrolabe, including such details as the suspension ring and the pin holding in the alidade, he proceeds to explain a few of its uses. The majority of the work is, however, taken up with a description of a quadrant that, although it has the folded astrolabe markings (like **Gunter**'s quadrant), is only shown being used for terrestrial surveying.

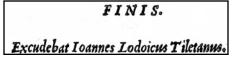
The *National Union Catalog* indicates there may have been a first edition in 1517, but no copy has been located. Perhaps it is a ghost edition.

Illustrations available:

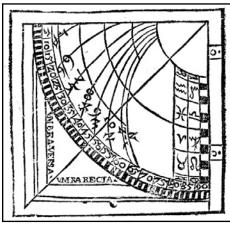
Title page
Back of astrolabe
Astrolabe plate and rete
Quadrant
Quadrant in use
Colophon



K 59



Colophon, K 59



Köbel's quadrant, K 59



Quadrant in use, K 59

K 60 **Köbel, Jacob** (ca.1460–1533)

Eyn New geord[n]et Vysirbüch. Helt yn[n]. Wie man[n] uff eins yden Lands Eych un[d] Masz, ein gerecht Vysirtüt mache[n] un[d] do mit ein ygklich onbekant Vasz vyzieren, auch seynen inhalt erlernen solle. Den anhebenden Schülern Visirens Leichtlich, mit Figuren unnd Exempeln, zü lernen angezeigt. Angehengt Tafeln

Year: 1515 Place: Oppenheim Publisher: Jacob Köbel Edition: 1st Language: German

Figures: engraved title and final pages Binding: contemporary paper boards

Pagination: ff. [iv], xxviii Collation: A<sup>4</sup>B–C<sup>6</sup>D–G<sup>4</sup> Size: 184x137 mm

Reference: Smi Rara, p. 113; Smi Hist, Vol. I, pp. 336-337

This is a book on gauging. It was evidently the second of Köbel's own works to be printed, the first being his arithmetic book in 1514 (see **Köbel**, *Eyn new geordenet Künstlich Rechennbüchlin*, 1531). It is nicely printed (as might be expected when the publisher is also the

author) and contains many woodcuts illustrating the measurements of different types of casks, containers and the gauging rod itself. The printer's device illustrates a gauger with his instruments. When describing the gauging rods, the book has two places where a corrective diagram was pasted over an otherwise plain illustration of a section of a rod (b3 verso and c1 recto), and these are lacking in this copy, although the bits of glue remain. Although we have not consulted it, sources indicate that there is no mention of these in the reference work *Jakob Köbel zu Oppenheim*, 1494–1533 Bibliographie seiner Drucke und Schriften by Joseph Benzing (Wiesbaden, 1962).

Illustrations available:
Title page
Gauging illustrations (5)
Printer's device



K 60



Gauging instruments, K 60



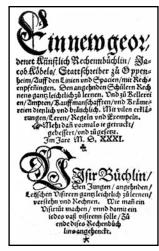
Gauging, K 60



Gauging, K 60



Printer's mark and gauging instruments, K 60



K 61 **Köbel, Jacob** (ca.1460–1533)

Eyn new geordenet Künstlich Rechennbüchlin, Jacob Köbels, Stattschreiber zu Oppenheim, Auff den Linien und Spacien, mit Rechenpfenningen. Den angehenden Schülern Rechens gantz leichtlich zu lernen. Und zu Kellereien, Ampten, Kauffmanschafften und Krämereien dienlich und braüchlich. Mit vilen erklärungen, Leren, Reglen und Examplen. Mehr dan[n] vormals [n]ie getruckt, gebessert und zugesetzt. Visir Büchlin, Den Jungen angehenden Leijischen Visirern gantz leichtlich zu lernen, verstehen und Rechnen. Wie man[n] ein Visirrut machen unnd damit ein jedes vass visirenn solle. Zu ende dises Rechenbüchlins angehenckt.

Year: 1531 Place: Frankfurt

Publisher: Christian Egenolff

Edition: 3rd

Language: German

Figures: woodcut illustrations in text

Binding: later vellum Pagination: ff. cxii Collation: A–O<sup>8</sup> Size: 146x99 mm

Reference: See Hergenhahn in Geb COSS, p. 63-83

Köbel published many different editions of his arithmetic books. He was the main source of instructional books on the topic until he died. At that time **Adam Riese** (who had been introduced to Köbel's work and used it as a model for his own) took over supplying the German market. Sometimes Köbel combined his arithmetic (which was rewritten from time to time) with works on other subjects such as gauging. In this edition the arithmetic is all done on the table abacus and with Roman numerals (including fractions). There is no use of algorism although the Arabic numerals are briefly introduced and are used

in places such as multiplication tables. This work was written near the end of Köbel's productive period—little else was published as he suffered badly from gout from about this time until his death. In this edition the arithmetic is combined with calendar computations, surveying, gauging and other applications.

Illustrations available:

Title page Illustration of abacus Roman numeral fractions Shadow surveying Colophon



Shadow surveying, K 61

(Getruckt zu Franckenfurt/am Mein. In Ver lag wind Gemeinschaft des Ernhaftenn vind zuriemen Geren Jacoben Ads belo/Stattschieber zu Oppens heim. Det Chaltan Eges nolffen: Im Merzen/ Vlach der gedurt Chalti.
M. S. RRRI. Jar.

Colophon, K 61

K 62 **Köbel, Jacob** (ca.1460–1533)

Geometrei, Vonn künstlichem Messen unnd absehen: allerhand höhe, fleche, ebene, weite unnd breyte, Als Thürn, Kirchen, bäw, baum, velder, unnd äcker &c. Mit künstlich zübereiten Jacob stab, Philosphischen Spiegel, Schatten, unnd Messrüten, Durch schöne Figurn und Exempel.

Year: 1536 Place: Frankfurt

Publisher: Christian Egenolff

Edition: 2nd Language: German

Binding: modern boards in brown morocco-backed folding box

Pagination: ff. [28] Collation: A–G<sup>4</sup> Size: 183x42 mm

Reference: Pogg Vol. I, p. 1289; Zin *GBAL*, pp. 16, 48, 57, 69, 84, 132, 137, 144, 146, 149–151, 153–155, 157, 158, 163, 164, 168, 173, 177, 182, 184, 185, 187, 191, 209, 214, 287, 307, 308, 318.



The title promises instruction on all kinds of surveying of lands, churches, woods and fields by using Jacob's staff, mirrors, and other instruments, all illustrated with beautiful figures and examples. Köbel delivers on his promise with a delightful work. The various sections seem to have been written independently and then gathered together into this book. Each is complete in itself, and the section on the use of mirrors has the date 1531 in the heading. The illustration on the title page, repeated in the text, shows sixteen men lined up heel to toe, showing the standard method of defining a foot as the average foot size of the first sixteen men leaving church on a Sunday morning.

The first section deals with the Jacob's staff. It shows two different forms: one with a sliding scale and another with a peg that will fit into holes along the length of the main staff. The section on mirrors illustrates their use in finding the heights of towers and concludes with an illustration of the length of shadows being used to perform the same task. The engraver of the woodcut appears to be slightly confused as to the direction of the sun as the shadows go in opposite directions.

The rest of the work describes how to find the area of rectangular fields and, if they are not rectangular, how to divide them into triangles and even into circles to compute the area. Illustrations available:

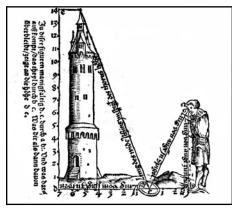
Title page

Two forms of Jacob's staff

Mirror surveying (2)

Shadow surveying

Area survey problems



Mirror surveying, K 62



Jacob's staff, K 62

K 63

## Kohl, Friedrich [Joseph Marie Jacquard (1752–1834)]

Geschichte der Jaquard-maschine und der sich ihr anschliessenden abänderungen und verbesserungen. Nebst der biographie Jacquard's.

Year: 1873 Place: Berlin

Publisher: Nicolaische Verlags

Edition: 1st Language: German

Figures: Lithographed portrait frontispiece; 16 folding plates;

18 woodcuts in text

Binding: contemporary half-bound cloth boards; backstrip

worn

Pagination: pp. [6], 198 Collation:  $\pi^{3}1-24^{4}25^{3}$ Size: 266x212 mm This is a very detailed description of the Jacquard mechanism. It begins with a biography of Jacquard, whom Kohl called *Charles Marie Jacquard* but also notes that in some writings he is known as *Joseph Marie*. This is followed by a complete description of the loom and its operation with punched cards. The lithographed illustrations are very detailed and provide enough information to construct a loom. Mention is also made of different Jacquard-type mechanisms, e.g., one that uses a cylinder in place of the punched cards when weaving a simple repeating pattern.

The frontispiece is a nice portrait of Jacquard.

Illustrations available:

Title page Frontispiece

Illustrations from lithographed plates (2)

	GESCHICHTE
JA	CQUARD-MASCHINE
	UND DER SICH BIR ANSCHLIESSENDEN
A	BÄNDERUNGEN UND VERBESSERUNGEN
	NAME OF THE STREET
	BIOGRAPHIE JACQUARD'S
	1008
	PROFESSOR FRIEDRICH KOHL
	IN CHEMNITZ,
Ei	NE YON DEN VEREIN ZUR BEFÖRDERUNG DES GEWERRFLEISSES IN PREUSSEN
	GEKRÖNTE PREISSCHRIFT.
	MIT DEM BILDNISSE JACQUARD'S,
	26 LETOGRAPHERTEN TAPELN UND 18 ABBILDUNGEN IN MOLEICHNITT.
	BERLIN.
	NICOLAISCHE VERLAGS-BUCHHANDLUNG
	(crocos.) 1873.

K 63



Frontispiece (Jacquard), K 63



K 64

# K 64 Kohlhans, Johann Christoph (1604–1677)

Neu-erfundene Mathematische und Optische Cüriositaten, bestehend So wohl in einem sattsamen Unterricht, zum Feldmessen und itz üblichen Fortification. Nechst deutlichem Entwurff, in selbiger benöthigten Linien durch ein sonderbahres Vortheil zu erfinden. Als auch in einer gantz neuen und bewährten Art, allerhand ohne Rechnung mit geringer Mühe durch ein kleines Instrument genau und künstlich zu messen; Und dann in beygefügten unterschiedlichen Optischen Raritäten, auch andern zu Perspectiven und so genandter finstern Kammer gehörigen merckwürdigen Sachen. Beydes zur Luft und annehmlichen Nutzen eröffnet und an Tag gegeben.

Year: 1677 Place: Leipzig

Publisher: F. Lanckischen

Edition: 1st Language: German

Figures: title in red and black; 25 copper plates (23 double-

page (#VIIIK repeated), 2 folding)

Binding: contemporary vellum Pagination: pp. [16], 320, [4] Collation: a-b<sup>4</sup>A-2R<sup>4</sup>2S<sup>2</sup> Size: 196x133 mm

Reference: Pogg Vol. I, p. 1299

Johann Christoph Kohlhans (Kolhans) was a professor of mathematics at Coberg and later became a professor of Greek at Göttingen.

This work discusses surveying, fortifications and optics (particularly the telescope). Kohlhans devised two very

complex sectors for use as an aid in surveying and fortification problems. The sectors are noteworthy as they contain not only the usual types of scales but also have built-in protractors, plane and diagonal scales. In order to get all the scales on a sector, Kohlhans had to create them with wide legs. He also had to use judicious positioning of the scales, e.g., with the shorter scales engraved near the outer edge.

Illustrations available:

Title page Sector 1 Sector 2

K 65

# Koll, Otto (1851–1911)

Geodätische Rechnungen Mittels der Rechenmaschine

Year: 1903 Place: Halle (Salle) Publisher: Eugen Strien Edition: 1st Language: German Binding: original boards Pagination: pp. iv, 81, [3]

Collation:  $\pi^2 1 - 5^8 6^2$ Size: 260x167 mm

Koll was a professor and advisor to the finance ministry of the Prussian government. The work deals with calculations done during surveying operations and how they can be performed on some of the latest mechanical equipment. He mentions the Burkhardt arithmometer (a Leibniz-type, sometimes known as a Glashutte machine because of where it was made) and the Millionär (a machine capable of direct multiplication via a mechanical version of Napier's bones—see illustration in the entry for **Jacob**, **Louis Frederic Gustave**; *Le calcul mechanique*, 1911).

Illustrations available: Title page Burkhardt machine Millionär



Millionär calculator, K 65



K 65



Burkhardt calculator, K 65

K 66

## Korff, Serge Alexander (1906–)

Electron and nuclear counters. Theory and use.

Year: 1946 Place: New York Publisher: D. Van Nostrand

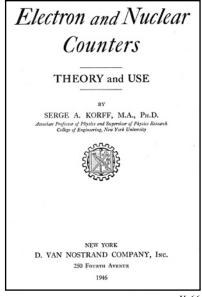
Edition: 1st Language: English

Binding: original cloth boards Pagination: pp. xii, 212 Size: 212x138 mm

Korff was, at the time, a professor of physics and supervisor of physics research at the College of Engineering, New York University.

This work describes vacuum tube circuits for counting pulses produced from devices such as Geiger counters. It is of interest to this collection because it was this type of application that gave rise to the electronic counting circuits used in the first generation of computers.

Illustrations available: Title page



K 67

# Korn, Granino Arthur (1922-) and Theresa M. Korn

Electronic analog computers (D-c analog computers)

Year: 1952 Place: New York Publisher: McGraw-Hill Edition: 1st Language: English Binding: original cloth boards

Pagination: pp. xv, 378
Size: 228x155 mm

Granino Korn was an engineer with Lockheed Aircraft Corporation in Burbank, California, and Theresa Korn was his wife.

In the early 1950s, it was not clear that digital computers would be able to deal with all problems encountered in engineering applications, particularly those as complex as the elimination of flutter in wing design. Analog computers were regarded as providing a superior, more intuitive (for most engineers) solution to many problems. Although digital computers became the standard tool used for this type of work in the late 1950s and 1960s, for some applications the older analog techniques are still being used and even microchips incorporating analog components are still being produced.

Illustrations available: Title page

# K 68

# Korn, Granino Arthur (1922-) and Theresa M. Korn

Electronic analog computers (D-c analog computers)

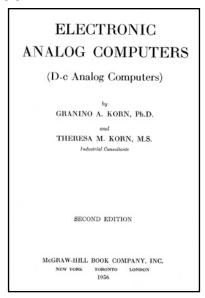
Year: 1956 Place: New York Publisher: McGraw Hill Edition: 2nd Language: English

Binding: original cloth boards Pagination: pp. xiv, 452 Size: 228x151 mm

By this time the Korns had left the aircraft industry and had established themselves as industrial consultants.

This second edition was rewritten and includes additional technical material.

Illustrations available: Title page



K 68

K 69

#### Kraitchik, Maurice Borisovich (1882–)

Traité des carrés magiques

Year: 1930 Place: Paris

Publisher: Gauthier-Villars Edition: 1st

Language: French

enterprise.

Binding: original paper wrappers

Pagination: pp. 108, [4] Size: 244x158 mm

Kraitchik was associated with the University of Brussels and also was an engineer with a Belgian industrial

This is a work on magic squares. They have application in several important industrial and statistical problems. He details the algorithms for generating magic squares and illustrates many large squares (e.g., order 35). In the

days prior to digital computers, the generation of such a large square would have been a non-trivial task.

Illustrations available:
Title page
Order 35 magic square

# TRAITÉ DES CARRÉS MAGIQUES PAR M. KRAITCHIK Agrépé à l'Université de Bruselles Ingénieur à la Société Financière de Transports et d'Extreprises Industrielles (Sofone) PARIS GAUTHIRE-VILLARS & C\* LIBRAINES-SETERES 55, QUAI DES GIARDO-AUGUSTINS, 55 1930

K 69

K 70

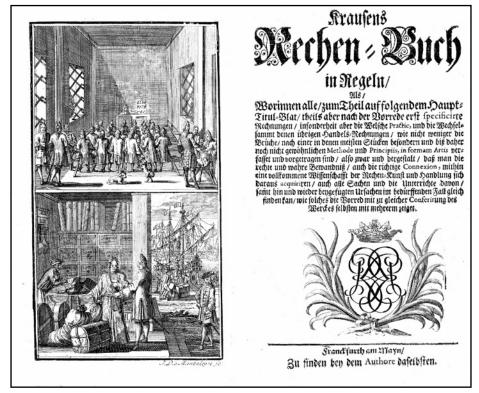
## Kraus, Elias

Pandicatæ & digesta arithmetices. Oder: Ordentlicher Begriff der gesammten Rechen-Kunst. Als worinnen hauptsächlich Die Kauffmänische Rechen-Kunst. Wie auch Die Rechen-Kunst in unbenannten Zahlen. Die Gemeine Art zu rechnen, und die Welche Practic in gantzen, und gebrochenen Zahlen. Mit darzu gehöreder Progression-Rechnung. Regula de Tri inversa, Regula Dupla sev Quinque Directa und Inversa, wie auch Multiplici, sammt allen denjenigen Rechnungen, so wegen Enge des Raums nach der Vorrede erst specificiret worden. Und kürzlich Die Mathematische Rechen -Kunst. Sammt der Algebra, zum Gebrauch deren. So Handlungen, Aemptern, Oeconomien und allerhand Gewerben mit Rechnungen zu thun haben, und zu besserm Behuff ein richtiges Systema Arithmetices suchen, als auch deren, so diese Kunst erst erlernen wollen, in richtiger Ordnung vor Augen gestellet sind von ...

Year: 1722 Place: Frankfurt Publisher: For the author Edition: 1st

Language: German Figures: engraved frontispiece; double-page title in red and

black



Frontispiece and half-title page, K 70

Binding: contemporary vellum Pagination: pp. [6], [100], 1602

Collation:  $\pi^3$ )(42)(-4)(85-9)(410)(2A-5H85I1

Size: 167x99 mm

This is an arithmetic in which the examples are drawn from commercial practice. The most remarkable thing about the work, other than its use of galley division at this late date, is its size—1602 pages.

An autograph presentation inscription from the author is dated 1737. The frontispiece, which faces the half-title page, shows a lecture on arithmetic and a commercial scene in a shipping firm.

Illustrations available:
Title page (color)
Half-title page and frontispiece
Presentation inscription



K 70

## K 71

## Kusters, N. L.

The Ott differential analyzer

Year: (1947)
Place: London
Publisher: HMSO
Edition: 1st
Language: English
Figures: 6
Binding: original paper wrappers

Pagination: pp. [2], 3, [7] Size: 250x188 mm

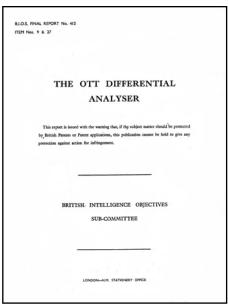
Kusters was an official with the Canadian National Research Council. At the end of World War II, the Allies sent teams of scientists to examine and inspect German laboratories. This is a report on such a visit that was prepared for the British Intelligence Objectives Sub-Committee.

The German firm of A. Ott produced analog calculating instruments, such as planimeters and harmonic

analyzers, of very high quality. During the war, it produced gyroscopic integrating accelerometers used in the control systems of the V2 rocket. The Ott differential analyzer was not yet complete but was to be delivered to Professor **Alwin Walther** of the Technische Hochschule in Darmstadt. Two other copies were in the early stages of construction. Walther, despite wartime shortages, had convinced authorities to approve the construction in 1941, but it was not complete when, in June 1944, the threat of bombing forced Ott to move it from the factory to a bowling alley in the basement of an adjacent bar. It was finally delivered to Walther in 1948 and remained in service until 1956.

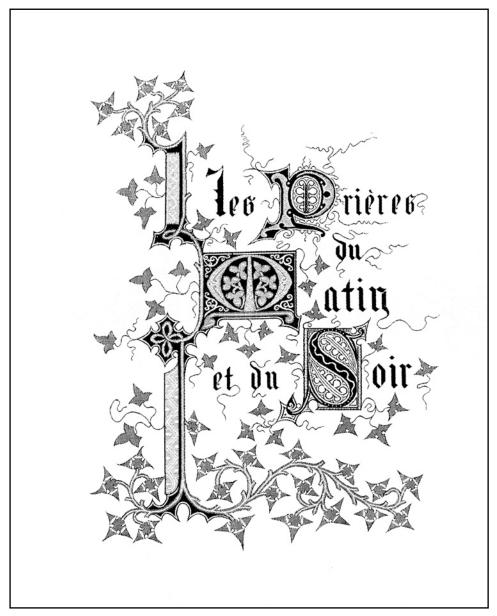
The Ott differential analyzer, unlike the early mechanical versions created by **Vannevar Bush** and others, had automatic curve followers on the input tables and used electrical signals to connect various components. It also used a variation of the basic integrating devices, replacing the rotating disk integrators with a system (first introduced by **Abdank-Abakanowicz** in 1882 and later used by Ott in his integraphs) in which all movements were linear displacements of a horizontal table. Multiplications were performed by a linear motion device based on *similar triangles* in a manner similar to that of a sector.

Illustrations available:
Title page
Cover page
Integrating device
Multiplication device



K 71

# Erwin Tomash Library



H 128