

From Paetus, De mensuris et ponderibus, 1573

Zaragoza, Joseph (1627–1679)

Canon trigonometricus. Continens logarithmos sinuum, et tangentium, ad singula scrupula totius semicirculi. Radii Logarithmo, 10.0000000

b/w: **Zaragoza, Joseph**; *Trigonometria Espanola,* resolucion de los triangulos planos, y esfericos, fabrica, y uso de los senos, y logarithmos.

Year: 1672 Place: Madrid

Publisher: Bernardo à Villa-Diego

Edition: 1st Language: Latin

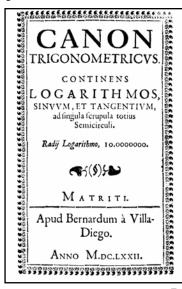
Binding: contemporary vellum

Pagination: ff. [24] Collation: a-f⁴ Size: 195x140 mm

See the later entry for **Zaragoza**, **Joseph**; *Trigonometria Espanola*, 1672.

Illustrations available: Title page

First page of tables



 Z_2

Zaragoza, Joseph (1627–1679)

Fabrica, y uso de varios instrumentos mathematicos, conque sirvio al Rey N. S. D. Carlos Segundo, en el dia de sus catorze anos...

Year: 1675 Place: Madrid

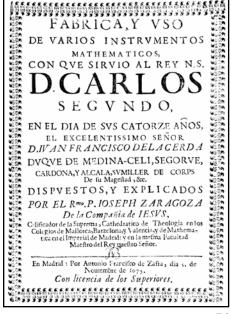
Publisher: Antonio Francisco de Zafra

Edition: 1st Language: Spanish Figures: 7 folding plates Binding: contemporary vellum Pagination: pp. [2], 222 Collation: A–2E⁴ Size: 201x144 mm

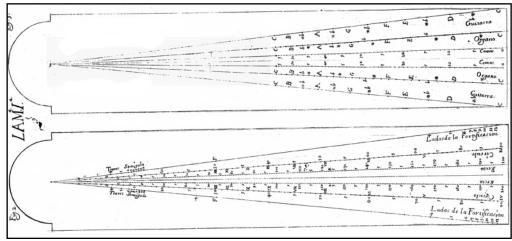
Joseph Zaragoza was a Spanish mathematician who held the chair of mathematics at Spain's Imperial College. In 1675, he was appointed to tutor the fourteen-year-old King Carlos.

This volume was written to accompany a collection of instruments given to the young king on his birthday. Zaragoza relates that the work was rushed to completion to meet the birthday deadline. He states that the volume was written and produced in one month, despite the fact that a work of this complexity and scope would normally have required a minimum of one year. Zaragoza, with the help of students and fellow Jesuits, wrote the text and engraved the plates at the same time as the printing was being done.

The instruments described are a ruler with scales showing domestic and foreign units of measure, a sector, various



Z 2



Sector, Z 2

sighting and drawing instruments and a number of experimental musical devices showing the relationship between the length of vibrating strings and the musical notes produced. The musical items have no relation to logarithms, despite the fact that at least one book dealer in modern times has so described them.

Illustrations available: Title page Sector

Z 3

Zaragoza, Joseph (1627–1679)

Tabula logarithmica continens unidecim numerorum chiliades, cum suis logarithmis ab unitate, scilicèt, ad 11100. Dispositis nova methodo, et proportioni astronomicæ apllicatis in gratiam astronomorum.

b/w: **Zaragoza, Joseph**; Canon trigonometricus. Continens logarithmos sinuum. et tangentium, ad singula scrupula totius semicirculi. Radii Logarithmo, 10.0000000.

b/w: **Zaragoza**, **Joseph**; *Trigonometria Espanola*, resolucion de los triangulos planos, y esfericos, fabrica, y uso de los senos, y logarithmos.

Year: 1672 Place: Madrid

Publisher: Bernardo à Villa-Diego

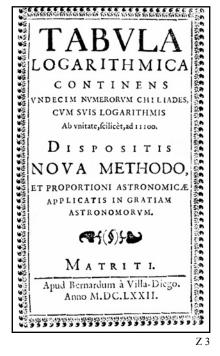
Edition: 1st Language: Latin

Binding: contemporary vellum

Pagination: ff. [20] Collation: A–E⁴ Size: 195x140 mm

See entry Zaragoza; Trigonometria Espanola, 1672.

Illustrations available: Title page Table page



Z 4

Zaragoza, Joseph (1627–1679)

Trigonometria Espanola, resolucion de los triangulos planos, y esfericos, fabrica, y uso de los senos, y logarithmos.

Year: 1672 Place: Mallorca

Publisher: Francisco Olivier

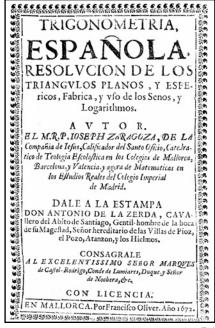
Edition: 1st Language: Spanish

Figures: 7 folding plates (4 bound at the front and 3 at the

back)

Binding: contemporary vellum; title stenciled on spine

Pagination: pp. [8], 120 Collation: ¶⁴A–P⁴ Size: 195x140 mm



Juan Caramuel y Lobkowitz, (1606–1682) is the first Spanish mathematician to introduce logarithms into Spain. However, his work *Mathesis biceps* (see entry for Caramuel y Lobkowitz, Juan; *Mathesis nova*, 1670) was written in Latin and printed in Italy, so this work by Zaragoza (in Spanish and printed in Spain two years later) is often considered as the introduction of logarithms into Spain.

The work is divided into three books; the first deals with the concept of logarithms and the last two with their use in plane and spherical trigonometry.

The two sets of logarithms bound with this work (see entries for **Zaragoza, Joseph**; *Canon trigonometricus* and *Tabula logarithmica*) are usually considered as separate publications (and are so listed here) because they were printed in Madrid rather than in Mallorca. However all known copies are bound with this work. The *Tabula Logarithmica* contains standard base 10 logarithms of sines and tangents. Judging from the errors in Vlacq's 1624 publication, which were corrected in the Briggs-Gellibrand 1633 table, this table was copied from the latter.

Illustrations available: Title page

Z 5

Zavaglia, Sebastiano

Ragguaglio fra tutte le misure metriche decimali autorizzate con decreto 8 Octobre 1859 e le misure Bolognesi e viceversa. Coi più facili modi di riduzione disposti per ordine alfabetico con alcune applicazioni utili alle arti industriali

b/w: **Coli, Gaudenzio**; *Trattato elementare del sistema metrico decimale Bologna*, 1859.

Year: 1860 Place: Bologna

Publisher: Tipografia Scienze

Edition: unknown Language: Italian

Binding: contemporary half-bound leather; wrappers bound in

Pagination: pp. 55, [1] Size: 155x110 mm Reference: Not in Rcdi *BMI*

This is a work on the metric system that relates the local Bologna measures to those of the new metric system and vice versa. See also the entry for **Coli, Gaudenzio**; *Trattato elementare del sistema metrico decimale Bologna*, 1859.

Illustrations available: Title page



Z 5

Z 6

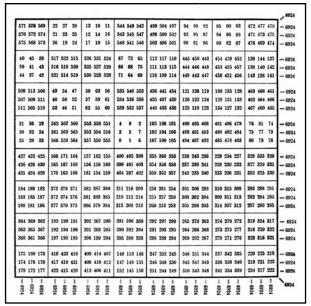
Zeiss, Erwin

Zahlenzauber

Year: 1934 Place: Vienna Publisher: Lechner Edition: 1st Language: German

Binding: original paper wrappers

Pagination: pp. 62 Size: 227x154 mm



Order 24 magic square, sum =6924 in all directions, Z 6

This is a work on the creation of magic squares. It gives algorithms for both even and odd order magic squares and illustrates them with several large examples. Squares with an odd number of rows and columns are easier to generate than those with and even number. Magic squares are useful in several different areas, one of which is the design of experiments.

Illustrations available:
Title page
Order 24 magic square

Z. 7

Zeper, Cornelis Marius Waller

De oudste intresttafels in Italie, Frankrijk en Nederland met een herdruk van Stevins "tafelen van interest"

Year: 1937 Place: Amsterdam

Publisher: Noord-Hollandsche Uitgeversmaatschapi

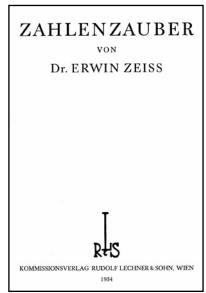
Edition: 1st Language: Dutch Figures: + pp. 4 insert

Binding: original paper wrappers Pagination: pp. [10], 95, [1], 92 Collation: $\pi^51-6^8A-E^8F^6$ Size: 246x160 mm

Reference: Not in B de H BNHS

This is a study of interest tables from Italy, France and the Netherlands with a comparison to the interest tables of Simon Steven. There are two copies of this item in the collection.

Illustrations available: Title page



Z 6

DE OUDSTE INTRESTTAFELS IN ITALIË, FRANKRIJK EN NEDERLAND MET EEN HERDRUK VAN STEVINS "TAFELEN VAN INTEREST"

PROEFSCHRIFT TER VERKRIJGING VAN DEN GRAD VAN DOCTOR IN DE WIS- EN NATUUR-KUNDE AAN DE RIJKSUNIVERSITEIT TE LEIDEN. OP GEZAG VAN DEN RECTOR MAGNIFICUS DE J. VAN DER HOEVE. HOOGLEERAAR IN DE FACULTEIT DER GENEESKUNDE. VOOR DE FA-CULTEIT DER WIS- EN NATUURKUNDE PUBLIEK TE VERDEDIGEN OP DINSDAG 6 APRIL 1937. DES NAMIDDAGS TE 4 UUR

DOOR

CORNELIS MARIUS WALLER ZEPER

AMSTERDAM — 1937 N.V. NOORD-HOLLANDSCHE UITGEVERSMAATSCHAPI

Z7

Z 8

Zernike, F.

De differentiaal-analysator als vorbeeld van een continue machine. In Moderne Rekenmachines. Symposium van de Nederlandse Natuurkundige Vereniging.

Year: 1949 Place: Amsterdam

Publisher: Nederlandse Natuurkundige Vereniging

Edition: offprint Language: Dutch

Binding: original paper wrappers

Pagination: pp. 23–32 Size: 240xx160 mm

Reference: Not in B de H BNHS

These are the conference proceedings of a meeting held at the Mathematisch Centrum in Amsterdam. The Mathematisch Centrum staff, particularly Dr. A van Wijngaarden (and Willem van der Poel, initially with the Dutch Post Office), were great proponents of automatic computation and influenced the development of various computers and languages, particularly Algol-68.

The proceedings contain four papers: the first is a survey of computing developments by van Wijngaarden; the next is a discussion of computer arithmetic systems by W. L. van der Poel, who designed a computer known as the Zebra; the third, by F. Zernike, is a discussion of analog machines ranging from Helle-Shaw integrators to the Bush differential analyzer; and the last paper is a mathematical contribution by H. Freudenthal.

Illustrations available: Title page

> Moderne Rekenmachines Symposium van de Nederlandse Natuurkundige Vereniging en het Mathematisch Centrum, gehouden op Zaterdag 14 Mei 1949 in het Natuurkundig Laboratorium van de Universiteit van Amsterdam. Symposiumcommissie: Proj. Dr. F. Zernike, Voorzitter; Dr. K. J. Keller, Secretaris; Prof. Dr. J. G. van der Corput; Dr. Ir. A. van Wijngaar-den; Dr. H. Brinkman; Dr. J. F. Schouten. Algemeen overzicht over moderne rekenmachines door A. van Wijngaarden 2 Schakelingen van automatische cijfermachines door W. L. van der Poel 13 De differentiaal-analysator als voorbeeld van een continue machine door F. Zernike 23 Mathematische problemen van teruakoppelina door H. Freudenthal 33

> > Volume cover, Z 8

Zobel, Johann Georg and Joseph Muller

Beschreibung einer Flachen-Berechnungs und Theilungs-Maschine

> Year: 1815 Place: Munich Publisher: Lindauer Edition: 1st Language: German Figures: 3 large folding plates

Binding: flame-red paper-covered boards

Pagination: pp. x, 42 Collation: $\pi^4 2^{*1} 1 - 5^4 6^1$ Size: 234x195 mm

Nothing is known of the authors other than that Zobel had the title of *trigonometer to the king* and was apparently working for the Bavarian tax authorities while Müller was a mechanical craftsman who built the instrument described here.

When Bavaria was attempting to reform its tax system it became obvious that the existing land surveys were out of date and that the measurement of irregular plots of land was the root of the problem of creating accurate assessments. This problem was remedied by a new survey and the use of an integrating machine to determine the areas. The machine apparently worked by dividing irregularly shaped plots into small slices whose areas could then be easily added up. This is essentially an analog of the mathematical procedure known as Simpson's Rule for integrating functions.

Illustrations available: Title page



Z 9

7 10

Zubler, Leonhard (1563–1609)

Fabrica et usus Instrumenti Chorographici: Das ist Newe Planimetrische Beschreibung: Wie man mit einem leichten und geringen Instrument alle Stätt, Gärten, Weyher und Landschafften jedes in sein gewisse Lägerstatt und Proportion auffreissen und verjüngen soll. Mit XV verstendtlichen schönen Kupfferstucken gezieret und erklärt: Allen Kunstliebenden sonderlich aber den Bawmeisteren und die sich des Circkels und Lineals gebrauchen zu gutem an tag geben.

Year: 1607 Place: Basel Publisher: Ludwig König Edition: 1st (German)

Language: German

Figures: engraved frontispiece; engraved arms verso; 13 large engravings in text; title in red and black

Binding: modern half-bound vellum, marbled boards

Pagination: pp. [12], 39, [1] Collation: a^{4*2}b–f⁴ Size: 189x146 mm Reference: Ada *CBCE*

Leonhard Zubler was a skilled instrument maker, engineer, mathematician and goldsmith in Zurich.

The plane table, the subject of this work, is designed for use in the relatively calm conditions of a civil survey, and the illustrations, with one exception, show non-military usage. This is in striking contrast to Zubler's other 1607 work, (see **Zubler**, **Leonhard**; *Novum instrumentum geometricum*, 1607, and another edition in 1614), where an instrument more suited to military use, is described.

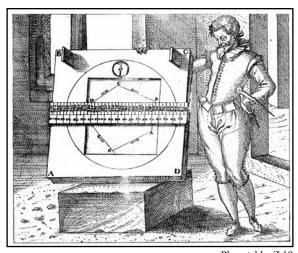
The fine drawings in both these works were made by a Swiss engraver, Dietrich Mayer (1572–1658). They are notable because of the presence of at least one figure showing a greatly enlarged image of the instrument in use—a device that readily illustrates the principle of operation. Zubler's plane table was equipped with a pair of sights and a compass for orientation (see illustration).

This copy is bound with another of Zubler's works (see **Zubler, Leonhard**; *Novum instrumentum geometricum*, 1607). These works, which are almost always found bound together, were issued in Latin (translation by Caspar Waser) in the same year by the same printer.

Illustrations available: Title page (color) Plane table



Z 10



Plane table, Z 10

Z.11

Zubler, Leonhard (1563–1609)

Novum Instrumentum Geometricum: Das ist Kurtzer unnd grundtlicher Bericht, alle Weite, Breite. Höhe, und Tieffe, mit sonderbarem Vortheil kunstlichen und gewiss auch von der Arithmetic unerfahrnen abzumessen: Mit XXII schönen kunstreichen und verständtlichen Kupfferstucken geziert und erklärt: Auch dem Kunstliebenden zugefallen an jetz o erstlich an tag geben

b/w: **Zubler, Leonhard**; Fabrica et usus instrumenti chorographici.

Year: 1607 Place: Basel

Publisher: Ludwig König Edition: 1st (German) Language: German

Figures: engraved frontispiece; engraved arms verso; 20 large engravings in text; title in red and black

Binding: modern half-bound vellum, marbled boards

Pagination: pp. [8], 65, [3], [12], 39, [1]

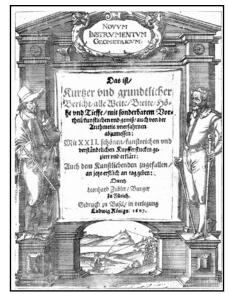
Collation: A-I4 [K]2a4*2b-f4

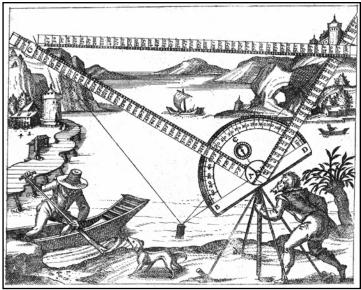
Size: 189x146 mm

Reference: Zin *GBAL*, p. 597; Pogg, Vol. II, p. 361; Ben *GW*, p. 63

This work is bound with another by Zubler (see the entry for **Zubler**, **Leonhard**; *Fabrica et usus* ..., 1607), and that entry should be consulted for basic information on Zubler and comparisons with this work.

The surveying instrument described in this work is an improved form that does not rely on right-angle triangles, but instead takes two sets of sides in proportion and makes the included angles equal—an idea fundamental to the sector and one first proposed almost 200 years earlier. The instrument can also be used in the traditional manner by using right-angle measurements.





Survey instrument, Z 11



Military survey, Z 11

The problems illustrated are largely military, and this work shows the growing importance of military survey techniques, particularly in relation to the use of artillery.

Illustrations available:
Title page (color)
Military survey
Large picture of instrument

Z 12

Zubler, Leonhard (1563–1609)

Novum Instrumentum Geometricum: Das ist Kurtzer unnd grundtlicher Bericht, alle Weite, Breite. Hoehe, und Tieffe, mit sonderbarem Vortheil kunstlichen und gewiss auch von der Arithmetic unerfahrnen abzumessen:

> Year: 1614 Place: Basel

Publisher: Ludwig König Edition: 3rd (German) Language: German

Figures: 20 large engravings in text; title in red and black Binding: 19th-century vellum over boards; marbled endpapers; red morocco label

Pagination: pp. 71, [1], (mis# 70 as 66, 71 as 67)

Collation: A–I⁴ Size: 195x145 mm

Reference: Ben GW, p. 63; Zin GBAL, # 4491, p. 361

See the entry for the first (1607) edition of this work. See also the entry for **Zubler**, **Leonhard**; *Fabrica et usus Instrumenti chorographici*, 1607, for basic information on Zubler and comments comparing the two works.

Illustrations available: Title page (color)



Z 12

Zuchetta, Giovanni Battista (1550-)

Prima parte della arimmetica ... Per la quale con mirabile ordine, & nuove regole si risolve con maravigliosa facilità ogni dubbio mercantesco. Con un trattato che risolve qualunque quesito bisognoso a'zecchieri, orefici, & argentari. Copiosa di postille, & tavole.

Year: 1600 Place: Brescia

Publisher: Vincenzo Sabbio

Edition: 1st Language: Italian

Figures: engraved title page

Binding: contemporary vellum over boards

Pagination: pp. [26], 412, [4] (mis# 390 as 490, 391 as 491,

410 as 412) Collation: $\pi^6 2^{*7} A - 2L^6 2M^4$ Size: 322x234 mm

Giovanni Zuchetta was a mathematics teacher from Genoa—a fact for which he apologizes in the introduction. He was apparently concerned that his provincial Italian origin might hamper the sales of this volume.

The title indicates this work as the first part of a series, but Zuchetta evidently published no further parts. The *Prologo* goes on to list some ninety-eight different classes of people who have need of arithmetic (or at least counting) in their lives—everyone from prelates to thieves, even God, needs numbers. A thief evidently needs to be able to count in order to manage stairs; hold gold, money and animals; and use picks, saws, keys, etc.



Despite the assertion of the need for a thief to count, Zuchetta does not begin his text with numeration but with fractions. This is followed by 160 pages on the rule of three and the rule of false position. The latter is called *regola di cattaino* which Zuchetta states is a term taken from the Arabs, who invented the procedure. The rest of the work is made up of examples from trade and commerce, with a few tables relating various currencies at the end.

The title page contains a slightly sinister-looking image of the author.

Illustrations available: Title page

Z.14

Zumbach von Koesfeld, Lothar (1661–1727)

Paradoxum novum mechanico-astronomicum. Hoc est Planetolabium, hactenus diu multumque desideratum. Exhibens alteram eamque secretiorem astronomiæ partem, utpote secundorum mobilium problemata. Quibus quidquid hactenus molesto calculo in planetarum.

> Year: 1691 Place: Leiden

Publisher: Daniel à Gaasbeek

Edition: 1st Language: Latin

Figures: 4 engraved folding plates; title in red and black

Binding: contemporary leather Pagination: pp. [12], 80, [24] Collation: π^{1*2} [†]3A–N⁴ Size: 260x143 mm

Size: 260x143 mm Reference: Zin GBAL

From 1685 to 1688, Zumbach von Koesfeld was in the employ of the Elector of Cologne as a musician and mathematician. He then moved to Leiden, where he studied medicine and earned his degree in 1692. He lectured in astronomy at Leiden until 1708, when he moved to Kassel to take the post of professor of mathematics at the Collegium Carolinum.

The work describes an astronomical instrument of Zumbach's invention. It could calculate planetary positions and predict eclipses. The use of the device is given in twenty-six examples (determining starting and ending times of lunar eclipses, whether partial or full, etc.). The final section contains a series of tables of astronomical phenomena for both regular (*Anni Communis*) and leap (*Anni Bissextilis*) years.

Zodiac type font, Z 14

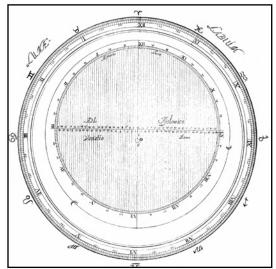


7 1

An unusual feature of this book is the special type that the printer made for the signs of the zodiac and used along with regular type (see illustration).

Illustrations available:

Title page 4 plates of the instrument Zodiac type font example



Lunar instrument, Z 14

Z 15 **Zuse, Konrad** (1910–1995)

Die mathematischen Voraussetzungen für die Entwicklung logistisch-kombinativer Rechenmachinen. In Zeitschrift für Angewandte Mathematik und Mechanik Ingenieurwissenschaftliche Forschungarbeiten, Band 29, 1949.

Year: 1949 Place: Berlin

Publisher: Akademie Verlag

Edition: 1st Language: German

Binding: original cloth boards Pagination: pp. 36–37 Size: 289x204 mm

Reference: Ran ODC, p. 441

Konrad Zuse was born in East Prussia and studied civil engineering at the Technisches Hochschule in Berlin. His engineering studies in the field of statics involved him in lengthy, tedious calculations, and this activity in turn led him (as it had **Charles Babbage**) to consider the possibility of constructing a machine to perform the calculations. Throughout his life, Zuse was a major innovator and a significant contributor to the art and science of automatic computation. He ranks as the first person to successfully build a fully functional programmable computing machine (the Z3 in 1941).

Working alone or with the aid of a few friends, Zuse completed his first crude computer, the Z1, in 1934 in the living room of his parents' apartment in Berlin. It was an entirely mechanical machine that used binary logic and functioned somewhat sporadically. The arithmetic unit was composed of mechanical switches and logic gates while the storage unit consisted of rows of metal bars separated by layers of glass. The Z1 can be said to have served only as a proof of principle.

In his next prototype, the Z2, Zuse combined a new arithmetic unit built with electromagnetic relays with the mechanical memory system of the Z1.

The first Zuse machine intended for productive output was the Z3, in which both the arithmetic unit and the memory unit consisted of electromagnetic relays. Zuse completed the Z3 in 1941. The Z3 was the world's first fully functional programmable calculator. The machine was controlled by a sequence of instructions punched into a strip of 35mm movie film.

With the Z3 operational, Zuse proposed to the German military the construction of the Z4. It was to be based on relay technology but reverting to his earlier mechanical memory system. His proposal was rejected on the grounds that victory was near, so the machine would not be completed in time to aid the war effort.

Nevertheless, Zuse was determined to proceed and began work on the Z4 in 1942 using his own resources. His earlier machines had been destroyed in the bombing raids on Berlin, but as the Third Reich disintegrated, Zuse managed to sequester the Z4 in Bavaria. In 1950, it was moved to Switzerland and installed at the Eidgenossische

Technische Hochschule (ETH, or Swiss Federal Institute of Technology) in Zurich, where it operated until 1954. It was then moved to the Institut Franco-Allemand de St. Louis in France, where it continued its productive life until 1959.

It should be emphasized that Zuse's activities were completely independent of those of Eckert and Mauchly at the University of Pennsylvania and of Howard Aiken at Harvard University. Zuse holds several "firsts" in modern computer history, including the first use of a calculating machine (with a fixed program) in a production line (constructed during World War II for use in making the HS 293 flying bomb). For the first few years after World War II, when it was impractical to continue hardware research, Zuse devoted himself to the design of programming languages. Here again, he was a creative pioneer when in 1945 he developed the first algorithmic programming language, which he named *Plankalkül*.

In this paper Zuse describes the mathematical prerequisites for the development of combinatorial logic machines. He proposes four orders of calculator development:

- 1. Arithmetical calculating machines
- 2. Program-controlled calculating machines
- 3. Logic calculators
- 4. Artificial brains

He concludes that items 1 and 2 have already been accomplished, that a theoretical basis is available for step 3 and that step 4 is not yet practical. In discussing

ZEITSCHRIFT FÜR ANGEWANDTE MATHEMATIK UND MECHANIK INGENIEURWISSENSCHAFTLICHE FORSCHUNGSARBEITEN UNTER MITWIRKUNG VON K. BEYER · G. HAMEL · K. KLOTTER · L. PRANDTL W. TOLLMIEN UND C. WEBER HERAUSGEGEBEN VON FR. A. WILLERS, DRESDEN Band 29

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AKADEMIE-VERLAG · BERLIN

Journal cover, Z 15

the physical realization of these devices, he mentions the vacuum tube work of his friend Helmut Schreyer another pioneer in this area.

Zuse's autobiography (*Der computer mein lebenswerk*, Munich, 1970) has been translated into English, *The computer—my life, with forewords by F. L. Bauer and H. Zemanek*, Springer-Verlag, New York, 1993.

Illustrations available: Title page

Z 16

Zuse, Konrad (1910–1995)

Programmgesteuerte Rechenmaschinen in Deutschland In Zeitschrift für Angewandte Mathematik und Mechanik Ingenieurwissenschaftliche Forschungarbeiten, Band 30, 1950.

> Year: 1950 Place: Berlin

Publisher: Akademie Verlag

Edition: 1st Language: German

Binding: original cloth boards Pagination: pp. 292–293 Size: 283x197 mm Reference: Ran *ODC*, p. 416

See the entry for **Zuse**, **Konrad**; *Die mathematishen* ..., 1949. In this short note, Zuse briefly sets the scene regarding automatic calculating machines from the time of **Charles Babbage** and then comments that this technology has reached an elegant form in the United



Journal cover, Z 16

Erwin Tomash Library

States, England and Germany. He then briefly describes the machine known as the Z4 (being set up in the E.T.H. in Zurich about the time of this paper).

Illustrations available:

Title page

Z 17

Zuse, Konrad (1910–1995)

Uber programmgesteuerte Rechengerate fur industrielle Verwendung. In Probleme der Entwicklung programmgesteuerter Rechengerate und Integrieranlagen.

Year: 1953 Place: Aachen

Publisher: Rhein-Westf. Technische Hochschule

Edition: 1st Language: German

Binding: cloth boards, original paper wrappers bound in

Pagination: pp. [2], XIV, 75, [1], 10

Size: 207x145 mm

See entry for **Cremer, Hubert**; *Probleme der Entwicklung programmgesteuerter Rechengerate und Integrieranlagen*, 1953.

Illustrations available:

None









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