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Dieter von Jezierski  
Translated by Rodger Shepherd, M.D., M.P.H.

# SLIDE RULES

A Journey Through Three Centuries



# Slide Rules A Journey Through Three Centuries

**Bernd Ulmann**

A decorative red circular graphic with a gradient, appearing as a partial circle or a stylized 'C' shape, located to the right of the author's name.

## **Slide Rules A Journey Through Three Centuries:**

**Slide Rules** Dieter von Jezierski, 2000 Originally published in German in 1977 as the first major book on the history of the slide rule since Florian Cajori's *A History of the Logarithmic Slide Rule* this newly revised and translated edition of *Slide Rules A Journey Through Three Centuries* offers readers a fresh more Continental perspective on this most fascinating of calculating instruments The book is an important piece of historical and technological research in which the author includes the history of the slide rule from its beginnings in the 17th century through its gradual adoption and development worldwide during the 19th and 20th centuries to its sudden and almost complete demise in the mid 1970s He also covers the evolution of various slide rule components technologies and manufacturing processes as well as histories of the major slide rule manufacturers and their product lines during the last 100 years There are detailed references to original sources throughout which the reader may use as a springboard to further study and research Readable and very informative this is a book that together with those of Cajori and Peter Hopp any slide rule collector or historian of technology will find of great interest and real benefit

*Computing for Science, Engineering, and Production* Karl Kleine, 2013-09-30 Wie rechnete man bevor es Computer gab Mit welchen Rechenhilfsmitteln konnten Ingenieure Maschinen konstruieren die sicher und effizient funktionierten Architekten Bauwerke planen deren Statik sicher war Wissenschaftler aus Me reihen die Gesetze der Natur errechnen und Kaufleute Gewinn und Verlust zahlen m g im Griff haben Mit Rechenschiebern Rechenmaschinen Tabellenwerken und mathematischen Spezialinstrumenten erbrachten unsere Vorfahren verbl ffende Leistungen Dies galt ganz besonders in der Zeit der Zweiten Industriellen Revolution zwischen der Mitte des 19 und des 20 Jahrhunderts als eine ganze Reihe technischer Erfindungen das Leben dramatisch ver nderte wie Strom und Licht Auto und Flugzeug Telefon und Radio und viel und vielseitig gerechnet werden mu te um all dies zu erschaffen Zu diesem Thema trafen sich Sammler und Forscher von Rechenschiebern und anderen Rechenhilfsmitteln im Oktober 2013 in Berlin zu einer internationalen Konferenz unter dem Motto Rechnen f r Wissenschaft Entwicklung und Produktion Rechenger te f r die zweite industrielle Revolution How did we compute in the ages before the advent of the modern digital computer What were the instruments to help engineers scientists business men and others to perform arithmetic and other mathematical computations for their work Using slide rules adding machines tables and special instruments our ancestors achieved stunning results particularly in the times of the Second Industrial Revolution In the time frame from 1850 to 1950 a broad wave of inventions and technological developments changed life dramatically Electricity provided power and illumination cars and airplanes made us a mobile society telephones and radio gave us unprecedented communication All that required computation in one way or other The International Meeting of collector and researchers of slide rules and other historical computing instruments of 2013 took place in Berlin the largest European industrial metropolis in this period This richly illustrated book is a collection of papers from this conference

**Third International Handbook of Mathematics Education** M.A. (Ken) Clements, Alan

Bishop, Christine Keitel-Kreidt, Jeremy Kilpatrick, Frederick Koon-Shing Leung, 2012-11-15 The four sections in this Third International Handbook are concerned with a social political and cultural dimensions in mathematics education b mathematics education as a field of study c technology in the mathematics curriculum and d international perspectives on mathematics education These themes are taken up by 84 internationally recognized scholars based in 26 different nations Each of section is structured on the basis of past present and future aspects The first chapter in a section provides historical perspectives How did we get to where we are now the middle chapters in a section analyze present day key issues and themes Where are we now and what recent events have been especially significant and the final chapter in a section reflects on policy matters Where are we going and what should we do Readership Teachers mathematics educators ed policy makers mathematicians graduate students undergraduate students Large set of authoritative international authors Calculation and Computation in the Pre-electronic Era Aristotle Tympas, 2018-01-12 Although it is popularly assumed that the history of computing before the second half of the 20th century was unimportant in fact the Industrial Revolution was made possible and even sustained by a parallel revolution in computing technology An examination and historiographical assessment of key developments helps to show how the era of modern electronic computing proceeded from a continual computing revolution that had arisen during the mechanical and the electrical ages This unique volume introduces the history of computing during the first steam and second electricity segments of the Industrial Revolution revealing how this history was pivotal to the emergence of electronic computing and what many historians see as signifying a shift to a post industrial society It delves into critical developments before the electronic era focusing on those of the mechanical era from the emergence of the steam engine to that of the electric power network and the electrical era from the emergence of the electric power network to that of electronic computing In so doing it provides due attention to the demarcations between and associated classifications of artifacts for calculation during these respective eras In turn it emphasizes the history of comparisons between these artifacts Topics and Features motivates exposition through a firm historiographical argument of important developments explores the history of the slide rule and its use in the context of electrification examines the roles of analyzers graphs and a whole range of computing artifacts hitherto placed under the allegedly inferior class of analog computers shows how the analog and the digital are really inseparable with perceptions thereof depending on either a full or a restricted view of the computing process investigates socially situated comparisons of computing history including the effects of a political economy of computing one that takes into account cost and ownership of computing artifacts assesses concealment of analog machine labor through encasement black boxing Historians of computing as well as those of technology and science especially energy will find this well argued and presented history of calculation and computation in the mechanical and electrical eras an indispensable resource The work is a natural textbook companion for history of computing courses and will also appeal to the broader readership of curious computer scientists and engineers as well as those who generally just have a yearn to learn the

contextual background to the current digital age In this fascinating original work Tympas indispensably intertwines the histories of analog and digital computing showing them to be inseparable from the evolution of social and economic conditions Prof David Mindell MIT *Tools of American Mathematics Teaching, 1800-2000* Peggy Aldrich Kidwell, Amy Ackerberg-Hastings, David Lindsay Roberts, 2008-08-11 From the blackboard to the graphing calculator the tools developed to teach mathematics in America have a rich history shaped by educational reform technological innovation and spirited entrepreneurship In *Tools of American Mathematics Teaching 1800 2000* Peggy Aldrich Kidwell Amy Ackerberg Hastings and David Lindsay Roberts present the first systematic historical study of the objects used in the American mathematics classroom They discuss broad tools of presentation and pedagogy not only blackboards and textbooks but early twentieth century standardized tests teaching machines and the overhead projector tools for calculation and tools for representation and measurement Engaging and accessible this volume tells the stories of how specific objects such as protractors geometric models slide rules electronic calculators and computers came to be used in classrooms and how some disappeared

Journal of the Oughtred Society ,2005 **Analog Computing** Bernd Ulmann, 2022-11-07 Analog computing is one of the main pillars of Unconventional Computing Almost forgotten for decades we now see an ever increasing interest in electronic analog computing because it offers a path to high performance and highly energy efficient computing These characteristics are of great importance in a world where vast amounts of electric energy are consumed by today s computer systems Analog computing can deliver efficient solutions to many computing problems ranging from general purpose analog computation to specialised systems like analog artificial neural networks The book *Analog Computing* has established itself over the past decade as the standard textbook on the subject and has been substantially extended in this second edition which includes more than 300 additional bibliographical entries and has been expanded in many areas to include much greater detail These enhancements will confirm this book s status as the leading work in the field It covers the history of analog computing from the Antikythera Mechanism to recent electronic analog computers and uses a wide variety of worked examples to provide a comprehensive introduction to programming analog computers It also describes hybrid computers digital differential analysers the simulation of analog computers stochastic computers and provides a comprehensive treatment of classic and current analog computer applications The last chapter looks into the promising future of analog computing **Handbook on the History of Mathematics Education** Alexander Karp, Gert Schubring, 2014-01-25 This is the first comprehensive International Handbook on the History of Mathematics Education covering a wide spectrum of epochs and civilizations countries and cultures Until now much of the research into the rich and varied history of mathematics education has remained inaccessible to the vast majority of scholars not least because it has been written in the language and for readers of an individual country And yet a historical overview however brief has become an indispensable element of nearly every dissertation and scholarly article This handbook provides for the first time a comprehensive and systematic aid for

researchers around the world in finding the information they need about historical developments in mathematics education not only in their own countries but globally as well. Although written primarily for mathematics educators, this handbook will also be of interest to researchers of the history of education in general as well as specialists in cultural and even social history.

**Meilensteine der Rechentechnik** Herbert Bruderer, 2015-11-13 Die Anfänge der Informatik liegen bereits im Dunkeln. In diesem Buch werden ausgewählte Meilensteine der Rechentechnik und der Frühzeit der Informatik vorgestellt. Grundlage dafür sind u.a. Aufsehen erregende Funde von Geräten und Schriften, die in den letzten Jahren gemacht wurden: historische Rechensteine, die weltweit größte Rechenwalze, weltweit älteste erhaltene Tastenaddiermaschine, bisher unbekannte Unterlagen zum Erfinder Zuse. Zur Sprache kommen Analog- wie Digitalrechner, Rechenrahmen, Rechensteine, mechanische Rechenmaschinen, Rechenschieber, elektronische Rechner usw. Zahlreiche Tabellen vermitteln einen weltweiten Überblick über die ersten Digitalrechner. Einen Schwerpunkt bilden die deutschsprachigen Länder Deutschland, Österreich, Schweiz, Liechtenstein mit einer umfassenden Darstellung von mechanischen Rechenmaschinen aus der Schweiz. Zeitstrahlen geben einen Überblick über frühere amerikanische, britische und deutsche Rechenautomaten. Der Verfasser geht auch auf die heikle Frage ein: Wer hat den Computer erfunden? Eine mehrsprachige Bibliografie mit über 3000 Einträgen rundet den Band ab. Das allgemeinverständliche Werk richtet sich an alle, die sich mit der Geschichte der Rechentechnik und der Informatik befassen. **MAA Notes**, 1983

Analogrechner Bernd Ulmann, 2011-11-22 Mit diesem Buch werden nicht nur die Grundlagen der Technik von Analogrechnern präsentiert, sondern es wird die Geschichte der unterschiedlichen Analogrechner-Systeme anschaulich dargestellt. Die Anwendungsgebiete reichen dabei von der Lösung grundlegender mathematischer Probleme über Berechnungen in Kosystemen in der Seismologie, Steuerungs- und Regelungstechnik und militärischen Anwendungen bis zu einigen überraschenden Beispielen aus Kunst und Unterhaltung. Was Integral- und Differentialprobleme angeht, ist die Analogrechner-Technik den Digitalrechnern in puncto Genauigkeit sogar überlegen, und so zeigt ein kurzer Ausblick in die Zukunft der Analogrechner hier sogar Entwicklungsmöglichkeiten auf.

**Discover**, 2003-07 **Erfindung des Computers, Rechnerbau in Europa, weltweite Entwicklungen, zweisprachiges Fachwörterbuch, Bibliografie** Herbert Bruderer, 2020-10-12 Das preisgekrönte Werk *Meilensteine der Rechentechnik* liegt in der 3. völlig neu bearbeiteten und stark erweiterten Auflage vor. Die beiden Bände, die im Ganzen rund 2000 Seiten umfassen, sind ein Gesamtwerk, lassen sich aber auch einzeln nutzen. Das Buch behandelt sowohl analoge wie digitale Geräte und geht auch auf benachbarte Bereiche wie historische Automaten und Roboter sowie wissenschaftliche Instrumente aus den Bereichen Mathematik, Astronomie, Vermessungswesen und Zeitmessung ein. Gestreift werden zudem frühere Schreibmaschinen und programmgesteuerte mechanische Webstühle. Der zweite Band widmet sich überwiegend den Elektronenrechnern, Erfindung des Computers, weltweite Entwicklung der Rechentechnik mit Schwerpunkt Europa, besonders Deutschland, England, Schweiz. Er schließt jedes je ein umfangreiches Fachwörterbuch Deutsch-Englisch und Englisch-Deutsch ein. Hinzu kommt eine

umfassende weltweite Bibliografie mit Einträgen deutscher englischer französischer italienischer und spanischer Schriften  
 Schwerpunkte des ersten Bandes sind Grundlagen mechanische Rechenmaschinen Rechenschieber historische Automaten und Roboter sowie wissenschaftliche Instrumente Entwicklung der Rechenkunst Schritt für Schritt Anleitungen für analoge und digitale Rechengerte Eine Fülle prachtvoller Rechenmaschinen Rechenbretter Androiden Figurenautomaten Musikautomaten Uhren Globen und Webmaschinen wird in Farbbildern vorgestellt Das Buch enthält ferner grundsätzliche Betrachtungen zu Themen wie digitaler Wandel und künstliche Intelligenz sowie zur Rolle der Technikgeschichte und der Erhaltung des technischen Kulturguts Beide Bände berichten über aufsehenerregende neue Funde von Dokumenten und Gegenständen und eine weltweit seriell gefertigte Rechenwalze weltweit kleinster mechanischer Parallelrechner erster mechanischer Prozessrechner Das Buch das sich auch als Nachschlagwerk eignet ist allgemein verständlich Es richtet sich an alle die Freude haben an Technik Mathematik Informatik und Kunstgeschichte Einige Merkmale Mehrsprachige Bibliografie zur Mathematik Informatik Technik und Naturwissenschaftsgeschichte mit über 6000 Einträgen deutsch englisches und englisch deutsches Fachwörterbuch 20 Schritt für Schritt Anleitungen für die Bedienung historischer analoger und digitaler Geräte 700 Abbildungen 150 tabellarische Übersichten zahlreiche Zeittafeln ausführliches Personen Orts und Sachverzeichnis Herbert Bruderer ist Dozent im R am Departement für Informatik der ETH Zürich und Technikhistoriker Er hat zahlreiche Bücher zur Informatik verfasst und ist mehrfacher Preisträger

**A Journey through the History of Numerical Linear Algebra** Claude Brezinski, Gérard Meurant, Michela Redivo-Zaglia, 2022-12-06 This expansive volume describes the history of numerical methods proposed for solving linear algebra problems from antiquity to the present day The authors focus on methods for linear systems of equations and eigenvalue problems and describe the interplay between numerical methods and the computing tools available at the time The second part of the book consists of 78 biographies of important contributors to the field A Journey through the History of Numerical Linear Algebra will be of special interest to applied mathematicians especially researchers in numerical linear algebra people involved in scientific computing and historians of mathematics

**Mathematik** Bernd Ulmann, 2015-09-25 Haben Sie kürzlich eine Wasserstoffbombe oder ein Nuklearunterseeboot verloren und fragen sich wie eine vernünftige Suchstrategie aussehen könnte Ist das arithmetische Mittel eine gute Technik um eine Aussage über das Einkommen einer Piratenmannschaft zusammen mit ihrem Kapitän zu treffen Ist eine Ihrer Territorien abgestürzt weil Sie in einem zu kleinen Restklassenring gerechnet haben Ist eine Theorie wie oft behauptet wird nur eine Theorie Wofür braucht man Polynomdivision und harmonische Funktionen in der modernen Netzwerktechnik Was haben Fourier Transformationen mit dem Gehör zu tun Dieses Buch ist kein herkömmliches Mathematikbuch was keinesfalls heissen soll dass es ohne Formeln auskommt oder das überhaupt versucht Ganz und gar nicht wie sich schon beim Durchblättern zeigt Dennoch unterscheidet es sich von der Mehrzahl anderer Mathematikbücher dadurch dass Anwendungen mathematischer Verfahren im Vordergrund stehen während mathematische Strenge die gerade für Studierende zumindest zu

Beginn ihres Studiums oftmals abschreckend wirkt in den Hintergrund tritt Vor allem unterscheidet es sich von anderen Mathematikbüchern jedoch durch die sogenannten Abschweifungen in denen der Autor was er auch in seinen Vorlesungen gerne tut an vielen Stellen des Buches ein wenig vom geraden Wege abkommt um ein wenig über Anwendungen historische Techniken und anderes zu plaudern Der dargestellte Stoff wird durch eine Reihe von Übungsaufgaben begleitet zu denen sich selbstverständlich im Anhang Lösungen finden Weniges ist deprimierender als eine Aufgabe bei der man partout nicht auf den rettenden Lösungsschlüssel kommt Ziel des Buches ist weniger mathematische Rigorosität als ein Gefühl und ein damit einhergehendes Verständnis für Mathematik und Freude an diesem Fach zu vermitteln

Encyclopedia of 20th-century Technology Colin Hempstead, 2005 Comprising 395 essays arranged alphabetically mostly on individual objects artifacts techniques and products this is an up to date work of reference for all those involved in teaching or researching the history of twentieth century technology Publisher's description

Shavings, 1999 **From the Tiger's Den** Elmer W. Koneman, Jack E. Carver, Clifton, Beverly Sparks, 2002 This book is a series of remembrances and vignettes of a 1950 high school class who were born during the Great Depression and spent their childhoods during World War II Memories of these events are included in sections on the Great Depression and World War II Stories are included from those serving in the Korean and Vietnam wars The book ends with a legacy section in which we ponder what our accomplishments over the last half century may mean for the future

**Dennert & Pape Aristo 1872-1978** Klaus Kühn, 2004 **The Century Dictionary and Cyclopedia: The Century dictionary ... prepared under the superintendence of W. D. Whitney** William Dwight Whitney, Benjamin Eli Smith, 1900



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