



The

Volume 7, Number 2

Winter 1985

Charles Babbage Institute

The Center for the History of Information Processing

WORKSHOP ON HISTORICAL TREATMENT OF TECHNICAL DOCUMENTS HELD AT CBI

The Historical Treatment of Technical Documents was the focus of a two-day workshop at CBI on November 29 and 30. A select group of computer scientists, archivists, and historians met to discuss the records that are produced in the design, development and application of computer hardware. The wide range of viewpoints represented by the participants contributed greatly to understanding the problems of defining, locating, appraising, preserving, and providing access to historical information related to hardware developments. The conclusions and concerns that emerged from the groups represented at the workshop will be described in the next issue of the newsletter.

The conference was sponsored jointly by the Charles Babbage Institute and the Computer Museum with partial funding from the National Endowment for the Humanities.

CBI HOSTS GUEST LECTURER

Andrew P. Hodges, a British mathematician, visited the Institute on November 8 and 9, 1984. Dr. Hodges is well known for his research on twister theory in mathematics and on Alan Turing. He is the author of a major biography, *Alan Turing: The Enigma* (Simon and Schuster, 1983).

During his visit he gave two lectures for faculty and students at the University of Minnesota. His first talk on "Computability and the Origin of the Computer," explored the relationship between an early paper of Turing's, which characterized the recursive functions in terms of a theoretical computing machine, and his 1945-46 plans for the ACE computer.

A second lecture was presented for the Program on the History of Science and Technology colloquium on the nature of the research and the hazards in writing a major biography.

The lectures were jointly sponsored by CBI, the History of Science and Technology Program and the Department of Mathematics.

THE GERMAN COMPUTER INDUSTRY

The chart on the following page diagrams the growth and development of the German computer industry from 1950 to 1970. This is the third of a series of genealogies CBI is preparing to further the understanding of the origins and evolution of the computer industry. The spin-offs and mergers of Minnesota companies and West Coast companies were described in earlier issues of the *Newsletter*.

The indigenous German computer industry had four main roots: Konrad Zuse's company, the electronics leaders Siemens and AEG, and the various ITT subsidiaries which merged to form Standard Elektrik. Non-German companies appear on the chart only if they have a formal tie to a German company. Thus, IBM, a market leader in Germany for many years, is not depicted.

Zuse AG built vacuum tube and transistorized computers between 1953 and 1961; its most notable product being the Z-22 computer completed in 1956. In 1964 Brown Boveri, a Swiss firm, acquired Zuse AG. Two years later Siemens acquired a 70 percent interest in Zuse AG, positioning it second in the German computer market behind IBM.

Siemens and Halske entered the computer field in 1954 and begun production of its transistorized 2002 computer in 1957. In 1964 it reached a licensing agreement with RCA. At the time of the Zuse acquisition, it changed its name to Siemens AG.

Standard Elektrik was the result of a 1954 merger between two ITT subsidiaries, Mix and Genest and Süd-deutsch Apparatefabrik. In 1957 Standard Elektrik's Informatik Division, in cooperation with another ITT subsidiary, C. Lorenz, developed and installed a transistorized computer for Fuerth, a mail-order firm.

Between 1957 and 1959 Telefunken, a subsidiary of AEG, developed its TR4 computer, the fastest and largest computer in Europe at the time. In 1966 Telefunken was merged into AEG, and a year later the name was changed to AEG Telefunken. In 1967 the company signed a licensing agreement with General Electric to build the GEPAC 4020 under the name AEG 60-50. In 1974 Siemens acquired the computer operations of Telefunken, which it operated under the name Konstanz.

In 1968 Heinz Nixdorf founded Nixdorf-Computer AG. The following year the German Bundespost (Federal postal

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HISTORY OF THE B5000

Richard Waychoff, a principal software designer for the Burroughs B5000, has written a personal account of the computer and the people behind its development. His paper concentrates on the stories behind the various technical innovations, like the Algol syntax chart, recursive descent, stream procedures, and reentrant code. He also discusses the relationship between the design team at the Electro-Data Division in California and the Burroughs management in Detroit, and the sale of the first B5000 to Stanford. Among the people included in his story are Bob Barton, Edsger Dijkstra, George Forsythe, and Donald Knuth.

Copies of Waychoff's paper are available for research purposes from CBI for \$3.00, to help defray copying and postage expenses.

SHOT AWARDS ROBINSON PRIZE TO LARRY OWENS

Dr. Larry Owens, University of Massachusetts-Amherst, was awarded the Joan Cahalin Robinson prize for the best paper presented at a SHOT (Society for the History of Technology) meeting. His paper, "Vannevar Bush and the Differential Analyzer: Authorship and Context in the History of an Early Computer," was presented during the 1983 annual meeting.

Dr. Owens was the recipient of the Charles Babbage Institute Fellowship for 1983-84.

PUBLICATIONS

- Stan Augarten, *Bit by Bit: An Illustrated History of Computers and Their Inventors*. (New York: Ticknor & Fields, 1984.) (Distributed by Houghton Mifflin, Boston.) ISBN0899192688.

A highly illustrated history covering the more unusual subjects of calculating from the 16th century to the present.

- Wallace J. Eckert, *Punched Card Methods in Scientific Computation*. Vol. 5, CBI Reprint Series for the History of Computing. New introduction by J. C. McPherson. (Los Angeles: Tomash Publishers; Cambridge: MIT Press, 1984.) ISBN0262050307.

This volume is a facsimile of the original edition published in 1940 by the Watson Computing Bureau at Columbia University.

- Ole Immanuel Franksen, *Mr. Babbage's Secret: The Tale of a Cypher—and APL*. (Birkerød, Denmark: Strandbergs Forlag, 1984.) ISBN8787200864.

Franksen has provided an analysis of Babbage's Difference Engine using an abstract simulation written in APL.

- Douglas R. Hartree, *Calculating Machines: Recent and Prospective Developments and their impact on Mathematical Physics and Calculating Instruments and Machines*. Vol. 6, CBI Reprint Series for the History of Computing. New introduction by Maurice V. Wilkes. (Los Angeles: Tomash Publishers; Cambridge: MIT Press, 1984.) ISBN0262081474.

This volume is a facsimile of the original editions of these works published by Cambridge University Press in 1947 and the University of Illinois Press in 1949, respectively.

- Recent articles of interest in the history of computing:

John Vincent Atanasoff, "Advent of Electronic Digital Computing," *Annals of the History of Computing*, 6(July 1984):229-282.

Robert Dorfman, "The Discovery of Linear Programming," *Annals of the History of Computing*, 6(July 1984):283-295.

F. H. Hinsley et al, "Breaking Enigma," *After the Battle*, Number 37(1982):1-8.

Harry D. Huskey, "From ACE to the G-15," *Annals of the History of Computing*, 6(October 1984):350-371.

D. F. Merriam, "The Geological Contributions of Charles Babbage," *The Compass*, 6I No. 1(1983):31-38.

Arthur L. Norberg, "Another Impact of the Computer—The History of Computing," *IEEE Transactions on Education*, E-27(November 1984):197-203.

William Orchard-Hays, "History of Mathematical Programming Systems," *Annals of the History of Computing*, 6(July 1984):296-312.

Diana Payne, "My Secret Life with Ultra," *After the Battle*, Number 37(1982):9-16.

J. Barkley Rosser, "Highlights of the History of the Lambda-Calculus," *Annals of the History of Computing*, 6(October 1984):337-349.

William Silag, "The Invention of the Electronic Digital Computer at Iowa State College, 1930-1942," *The Palimpsest* (Iowa State Historical Society), 65(September/October 1984):150-164, 173.

Garry J. Tee, "Charles Babbage (1791-1871) and His New Zealand Connections," in *In Search of New Zealand's Scientific Heritage*, edited by M. E. Hoare et al (Royal Society of New Zealand, 1984), pp. 81-90.

Boris A. Trakhtenbrot, "A Survey of Russian Approaches to *Perebor* (Brute-Force Search) Algorithms," *Annals of the History of Computing*, 6(October 1984):384-400.

Henry S. Tropp, "Grace Hopper: The Youthful Teacher of Us All," *Abacus*, 2(Fall 1984):6-18.

The Charles Babbage Institute For the History of Information Processing is sponsored by AFIPS and the information processing community. Arthur L. Norberg, Director

The Charles Babbage Institute Newsletter is a publication of the Charles Babbage Institute for the History of Information Processing, University of Minnesota, 104 Walter Library, 117 Pleasant Street S.E., Minneapolis, Minnesota 55455, telephone (612) 376-8336. The Newsletter reports on Institute activities and on other developments in the history of information processing. Permission to copy without fee all or part of this material is granted provided that the source is cited and a copy of the publication containing the copied material is sent to the Institute.

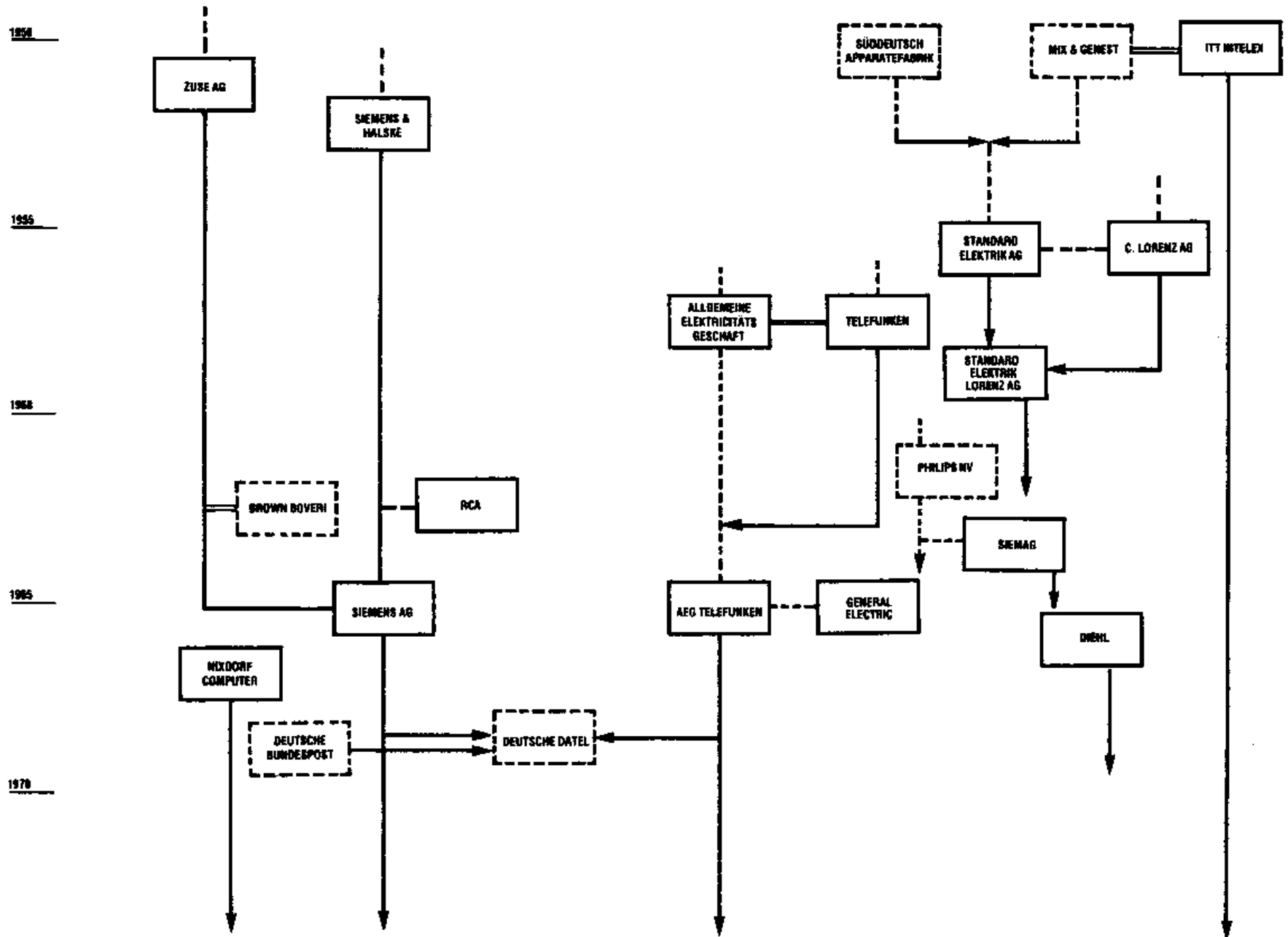
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service) joined with Siemens, AEG, and later Nixdorf to found Deutsche Datel, a computer marketing company.

The Dutch electronics firm Philips NV gained a market in Germany through its 40 percent ownership of the small German computer firm Siemag, and through a joint venture in 1974 in Unidata, which had been founded in 1972 by Siemens and the French firm CII.

GENEALOGY OF THE GERMAN COMPUTER INDUSTRY



Key

company that was not working on computers

company that designed or produced computers

company that worked on computers, but later abandoned the computer

company A acquired by company B or merged into company B

company A sold its computer operations to company B, but continued in its non-computer product lines

subsidiary relationship between A and B

some other type of relationship between A and B (e.g. licensing)

work on computers in progress

no work on computers in progress

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I am interested in the history of information processing:

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CBI Newsletter, Vol. 7, No. 2
Winter 1985

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