

CBI Concludes Its National Collecting Strategy Program

In 1985 CBI began planning for a wide-ranging set of activities brought together under the name of the National Collecting Strategy program. The underlying objective of all these activities was to gain a better understanding of which records should be saved and which destroyed if we are to document adequately the history of computing. We set out to develop a set of guidelines for use by the many different types of organizations that must participate in the preservation of records in order to truly document our national activities in computing and information processing.

With the generous support of the AT&T

Foundation, Control Data Corporation, IBM Corporation, the Andrew Mellon Foundation, Unisys Corporation, and the National Historical Publications and Records Commission, the CBI staff has worked for three years towards these goals. The enormity of the task became more apparent every work day; and while there is not yet a network of organizations working in unison to document the history of computing, we have made great strides in this direction.

The knowledge that we gained has been synthesized and is being distributed through a series of reports and papers. One of these, "In-

formation Technologies in Historical Context: Position Papers from a Symposium of the Charles Babbage Institute and the National Museum of American History," examined the critical issues to be addressed in the history of computing. An ongoing series of papers survey important historical research areas and identify the key events for archivists and records managers. Two of these, on computer architecture and computer printers, will appear in forthcoming issues of *Annals of the History of Computing*. In a similar vein, "An Annotated Bibliography of Secondary Sources on the History of Software" leads archivists as well as records managers to the available historical literature on this under-studied but important topic.

Another set of documents describes the
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CBI Acquires Edmund Berkeley's Papers

The first and largest portion of the papers of the late Edmund C. Berkeley was donated to CBI by Berkeley Enterprises in February 1989. Berkeley was a publisher of computer-related works and was well-known for his popularization of computers in *Giant Brains or, Machines That Think* (1949). His publishing firm was established in 1948 and was responsible for *Computers and Automation*, one of the earliest periodicals devoted to electronic computers. It was later renamed *Computers and People* in 1974 because "the

most important field of unsolved problems related to computers is the field of the relations of computers to people." Berkeley was also instrumental in establishing the Association for Computing Machinery. He was one of its founders in 1947 and served as the organization's first secretary until 1953.



A publicity photograph of Edmund Callis Berkeley taken about 1949.

The papers date from the late 1940s when Berkeley worked for the Prudential Insurance Company and include nearly eighty-five cubic feet of records. They contain material relating to Berkeley's educational work at Prudential, his books, the Association for Computing Machinery, Berkeley Enterprises, his educational computer projects (Brainiac, Simon, Squee, Relay Moe, et al.), articles and projects for *Computers and Automation* and other publications, robotics, consultant work on LISP, and the effect of automation on society. Berkeley was an outspoken advocate of social responsibility in the use of computers, and the records reflect his concerns. They are also a rich

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Correction

We wish to report an error in our last Newsletter. We incorrectly reported the gift to the ERA Chair from John L. Hill and Catherine Hill. Catherine Hill was given a different name. We regret this error and once again would like to thank John and Catherine Hill for their generous contributions to the ERA Chair and for their other gifts to CBI over the years.

High-Tech Research Guide Now Available

CBI is pleased to announce the availability of its newest publication, *The High-Technology Company: A Historical Research and Archival Guide*, written by Bruce H. Bruemmer and Sheldon Hochheiser. The guide is the product of a one-year project sponsored by the National Historical Publications and Records Commission with the assistance of the Control Data Corporation. Its purpose is to better equip historians and archivists to document high-technology industry (a description of the project appeared in CBI's Summer 1988 Newsletter). The guide presents a generic description of industrial activity in the high-technology environment, and introduces a technique, called a "documentary probe," for obtaining general historical and documentary information about these companies.

Use of the description and probes offers a pragmatic way to identify historically valuable materials in a high-technology firm, a dynamic environment that is usually plagued by an enormous volume of records. The guide will prove to be valuable aid to anyone engaged in historical research of high-technology businesses, or involved in preserving records relating to the history of high-technology firms. It is available directly from CBI at a cost of \$10.00 per copy. □

CHARLES BABBAGE INSTITUTE NEWSLETTER

The Charles Babbage Institute, Center for the History of Information Processing, is sponsored by the University of Minnesota and the information processing community. Arthur L. Norberg, Director; William Aspray, Acting Director

The Charles Babbage Institute Newsletter is a quarterly publication of The Charles Babbage Institute, University of Minnesota, 103 Walter Library, 117 Pleasant Street S.E., Minneapolis, MN 55455, telephone (612) 624-5050. The Newsletter reports on Institute activities and 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. ©The Charles Babbage Institute.

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Tomash Fellowship Awarded

We are pleased to announce the award of the first Adelle and Erwin Tomash Fellowship to **Anthony Gandy**. Mr. Gandy is a graduate student in the Business History Unit of the London School of Economics and Political Science. He will spend the 1989-90 academic year at the Babbage Institute studying the U.S. computer industry. His research involves a study of the American manufacturers of computer hardware and semiconductor components as a comparative basis for his principal study, the emergence of the post-war British electronics industry.

Mr. Gandy studied from 1983 to 1986 at the University College of Wales, Aberystwyth, from which he received a B.Sc. with Honors in Economics. Prior to beginning his graduate study, he worked for a year as part of the electronics group of Racal Automation Ltd. His dissertation research is being directed by Professor Leslie Hannah. □



Anthony Gandy

Past Fellowship Recipients Complete Programs

Nebeker Receives Ph.D. Degree

Frederik Nebeker, 1987-88 recipient of the CBI Predoctoral Fellowship, has recently completed his program of studies and has been awarded the Ph.D. degree by Princeton University. Dr. Nebeker wrote his dissertation on "The 20th-Century Transformation of Meteorology." A major part of the dissertation examined the use of computers and earlier calculating machines, devices, and aids in practical and theoretical meteorology of the late nineteenth and twentieth centuries. The plan is to revise the dissertation in the near future for publication as a book.

In the fall semester Dr. Nebeker taught as an instructor in the Princeton University History Department. He currently holds the Andrew W. Mellon Fellowship in Bibliography of the American Philosophical Society Library in Philadelphia. The focus of his work there is the geophysical tradition (geodesy, scientific navigation, hydrography, oceanography, meteorology, the study of terrestrial magnetism, and the like) in the United States in the nineteenth century. He is preparing a monograph consisting of an introductory essay and an annotated guide to the relevant holdings of their Library.

Greenstein Completes Dissertation

Shane Greenstein, CBI's 1988-89 Predoctoral Fellowship recipient, will be completing his dissertation this spring at the Economics Department at Stanford University. The dissertation is entitled "Computers, Compatibility, and Economic Choice." Its first chapter examines issues related to whether an established and dominant system designer can

manipulate standards to its advantage in complementary markets—arguing in contrast to much previous analysis that "leveraging" is feasible under some circumstances. The second chapter analyzes government use of mainframe computers in the 1970s and early 1980s, focusing on the links between the costs associated with switching between competing vendors and observable economic behavior. The third chapter statistically analyzes federal agency choices of commercial mainframe vendors and their links with potential competition and previous investment by agencies with a vendor. The final chapter examines the links between the procurement procedures used to acquire systems and the degree of potential competition, buyer investment, and vendor capabilities. One theme running throughout all the essays stresses how past events in the market largely shaped later market outcomes.

Following completion of the dissertation, Greenstein will be a Postdoctoral Fellow at the Center for Economic Policy Research at Stanford in the summer and fall. Beginning in January 1990 he will be joining the economics faculty at the University of Illinois at Champaign-Urbana as an assistant professor. His general areas of interest include industrial economics, government procurement of computer systems, and economic factors influencing technological development.

We welcome these two colleagues to the history of information processing and look forward to their further research and writings on the subject. □

Norberg Selected as Sigma Xi Lecturer

Arthur Norberg has been selected as a Sigma Xi National Lecturer effective 1 July 1989 through 30 June 1991. States Evan R. Ferguson, Acting Scientific Director of Sigma Xi, the Scientific Research Society, in a congratulatory letter to the President of the University of Minnesota, "The College of National Lecturers is selected so that outstanding speakers who are working at the leading edge of scientific research may communicate their insights and excitement to a broad range of scholars and the community as a whole." Dr. Norberg's Lecture Topics for Sigma Xi are: "The Myth and the Reality of the Information Revolution," "Entrepreneurial Vision and Technological Development: The Case from Computers and Microelectronics," and "The Question of Technology in the Analysis of Culture." □

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rich set of resources already available to document the history of computing. "Resources for the History of Computing: A Guide to U.S. and Canadian Records" provides the first survey of archives and manuscripts available in these two countries. The "Guide to the Oral History Collection of the Charles Babbage Institute" provides researchers with information about the more than 200 interviews in the CBI collection. Our studies determined that we could have the greatest positive effect upon the survey of business archives, where the archivist or records manager has to face the dual challenges of high technology and large, complex, rapidly-evolving business organizations. In response to that most pressing need, we have worked for two years to produce "The High-Technology Guide: A Historical Research and Archival Guide" (announced elsewhere in this Newsletter). A by-product of all this work has been the addition of some thirty oral histories to the CBI Collection, many documenting the functional organization of the high-technology business.

Less tangible, but no less important, have been the many site visits and public lectures made by our staff to gain information and spread the word. The project staff visited Burroughs, Control Data, General Electric, Hagley Museum, Harvard University, IBM, Library of Congress, MIT, National Archives, Smithsonian Institution, Sperry, Unisys, and University of Illinois in their search for information. The National Collecting Strategy re-

ceived public discussion at one or more meetings of the Society of American Archivists, Midwest Archives Conference, Business Archives Conference, University of Minnesota Library Symposium, CBI-National Museum of American History Meeting on Information Technologies in Historical Context, and the International History of Computing Conference sponsored by CBI and the (British) National Archive for History of Computing.

As a result of this work, archivists and records managers today have a better basis for making informed decisions about which records to save. Our warmest thanks are extended to the many individuals and institutions that supported and participated in this important work. □

Berkeley, continued from page 1 . . .

source of material on social activism of the 1960s and early 1970s. The collection is comprised of correspondence, memoranda, and an extensive reference file, all arranged by topic.

The records had been stored in his Newtonville, Massachusetts home, and CBI's archivist arranged the transfer of the materials to Minneapolis. The donation was made by Judith Callahan, president of Berkeley Enterprises, in close cooperation with Berkeley's wife, Mrs. Suzanne Berkeley, and his sons, Robert and David. A special grant to cover the cost of shipping was provided by the Association for Computing Machinery and the American Federation of Information Processing Societies. CBI is indebted to both organizations for their support.

A second, smaller collection of papers is housed in New York City, and arrangements are being made to ship that material to CBI as soon as possible. A third set of personal papers held by Berkeley's family is expected to be donated to CBI in the future. Taken together, the collection will be one of the largest accessions of records donated to CBI and will be a significant resource for historians of computing.

A preliminary inventory of the Edmund C. Berkeley papers is expected to be completed some time this summer. There will be some restrictions on access to the collection, and researchers interested in using the papers are urged to contact the CBI archivist for further information. □

Library of Congress Establishes Software Reading Room

Last summer the Library of Congress (LC) opened the Machine-Readable Collections Reading Room (MRC RR), marking the beginning of a one-year pilot program to store microcomputer programs and data files. The purposes of the project are to determine the best methods for acquiring machine-readable materials for the Library's collections, to provide access to its collection, to develop policies and procedures for servicing machine-readable materials, and to develop procedures for cataloging the software and files. The project is the result of the recommendations of three Library of Congress Committees: Machine-Readable Collection Committee, the Task Force on Computer Collection Management, and an Ad Hoc Committee on Selection Policy for Machine-Readable Publications.

The Reading Room is intended for use by those wishing to study the design, history, and documentation of software and data files. The collection is comprised of programs and data files that were collected previously by the LC, were donated by publishers, or were purchased outright. There are over 600 titles, including major data files on CD ROM, such as *de Italia*, the *Oxford English Dictionary*, and *Electronic Encyclopedia*. The library plans to obtain copies of all American software products as well as a substantial sample of foreign products. This objective is somewhat hampered by the current copyright regulations which exempt machine-readable materials from deposit requirements. LC is working with microcomputer and CD ROM publishing industries to implement a change in the regulations.

The MRC RR currently has hardware to read IBM compatible and Macintosh programs and has plans to acquire older equipment to read programs and files on obsolete microcomputers. Currently, no steps have been taken to preserve the machine-readable data beyond the form in which it is published (usually floppy disk or CD ROM). The Reading Room is located in the Thomas Jefferson Building, Room LJ-140G. For further information write to Linda L. Arret, General Reading Rooms Division, Library of Congress, Washington, DC 20540 or call (202) 707-5278. □

Beyond the Limits: A New Gallery at the National Air and Space Museum

by Dr. Paul E. Ceruzzi, Curator, Smithsonian Institution's National Air and Space Museum

In May 1989 the Smithsonian Institution's National Air and Space Museum will open a major new gallery, "Beyond the Limits," devoted to the subject of how the computer has affected the practice of air and space flight in the past four decades. This exhibit, occupying a 5,000 square-foot gallery and containing numerous artifacts, films, photographs, and interactive computer stations, will be the first major Smithsonian exhibit devoted to the subject of computing to open in twenty years.

Most Smithsonian visitors are already aware that modern air and space flight depends on computers in a variety of ways. In a sense, the microelectronic "revolution" that has swept through the rest of society has touched aerospace as well. But in what specific ways, and why? And what are the historical roots of this apparently recent phenomenon? When the Air and Space Museum opened its doors in the Bicentennial year of 1976, there was little or no mention of computers in its exhibits. Now, after a dozen years of record-breaking crowds, such an exhibit seems appropriate and necessary to fulfill the Museum's mission to its public.

The subject is of course so broad as to encompass almost anything connected with modern air and space flight. For "Beyond the Limits" we concentrate on the engineering applications that, while not unique to aerospace, nonetheless best show how aerospace depends on computers today. In each thematic area the changes of recent years are placed in an historical context going back at least to the pencil-and-paper techniques of the 1930s or before. Visitors, who are notorious for *not* following through exhibits in the paths the curators want them to follow, will thus get a complete picture of at least one theme, no matter how little time they spend in the space. (For those who wish to have a more straightforward narrative history of the subject, a 300-page gallery catalogue, also entitled *Beyond the Limits*, will be published and made available.

The seven areas are: Design, Aerodynamics, Manufacturing, Flight Testing, Simulation, Air Operations, and Space Operations. Each section will contain a mix of historic and current artifacts, films, and interactive computer units. While interactive displays have been used at the Smithsonian before, no other gallery to date has as many or relies so heavily on them to carry the thematic messages.

Beyond, continued on page 5. . .

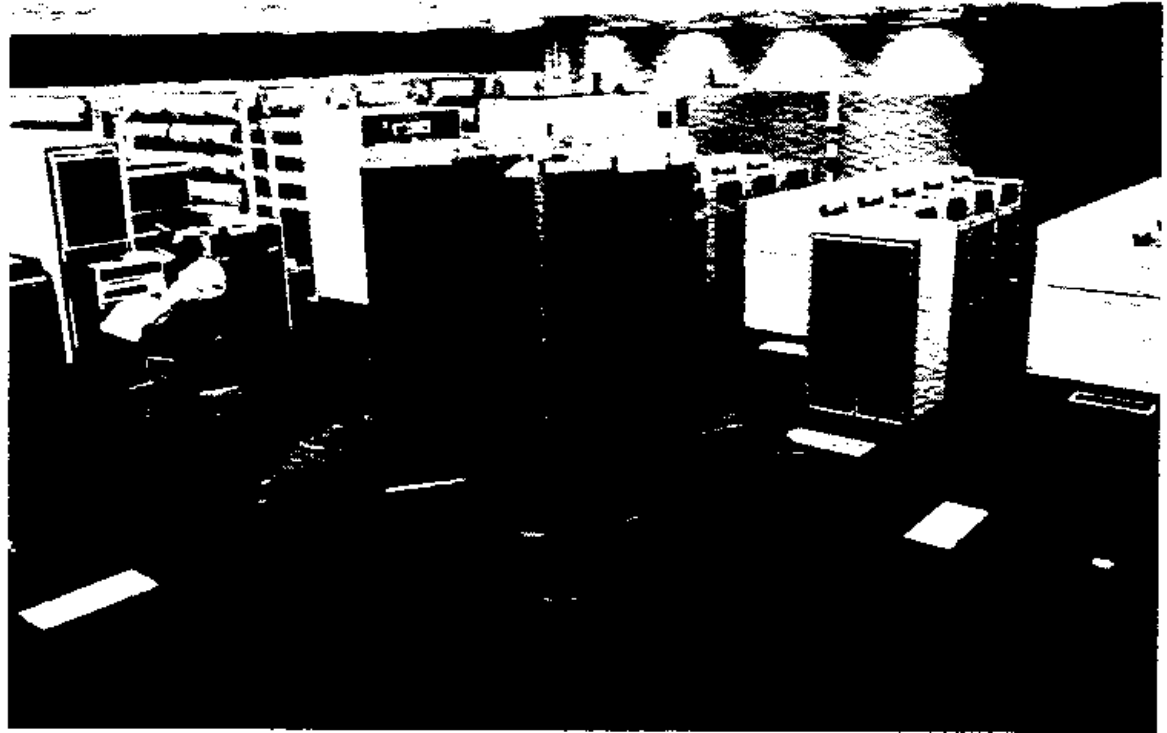


Figure 1:

A Cray-1, Serial #14, will be on exhibit—the only public exhibit of a Cray in the United States. This machine is the first Cray to be shut down and was one of the first to be delivered to a non-classified customer (the National Commission on Atmospheric Research). The machine is no longer operational. (Photograph courtesy Cray Research, Inc.)



Figure 2:

Three HP-41C calculators are visible in this photo of Shuttle astronaut Sally Ride, taken on board the Challenger during its second orbital mission on 21 June 1983. The calculators are fastened to the flight deck with Velcro to prevent their floating around the cabin. (Photograph courtesy NASA.)

Manchester Meetings on the History of Computing, July 1989

Following upon the success of the meeting held last summer in Manchester, England, the (British) National Archive for History of Computing and CBI are planning a second meeting. It will again be held in Manchester, on 19 and 20 July 1989. Unlike the first meeting, which emphasized archival issues, this meeting will concentrate on historical issues. Professor A. S. Douglas will give a keynote address; and some ten historians from England, Scotland, the United States, and West Germany have agreed to lecture on their current historical research. There is still room on the program, and anyone with a serious interest in historical research on computing is welcome.

Low cost housing will be available at the University, and there is no meeting fee. Travel funds are not available for the meeting. For further information, please contact William Aspray at CBI or Geoffrey Tweedale at the National Archive for the History of Computing, Department of Science and Technology Policy, The University, Manchester M13 9PL, England. □

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Major artifacts include a Cray-1 processor (Fig. 1), an Apollo Guidance Computer, and the HiMAT—a remotely-piloted aircraft with extensive on-board computer controls. The depth of the Smithsonian's collections is revealed in some of the more historic pieces: the 1923 engineering prototype for the Norden Bombsight; the first successful gyrostabilizer, built by Elmer Sperry in 1914; and an assortment of calculators and slide rules that were carried by Apollo and Shuttle astronauts into space (Fig. 2).

"Beyond the Limits" is an ambitious project for the Smithsonian, one that has pushed this institution beyond its own previous measures of complexity and cost for a gallery. But it deals with a timely and exciting subject, one we know the public is interested in. □

Hagley Collections Guide

Since 1983, the Hagley Museum and Library has been collecting materials on the history of modern computing, especially in its business context. A grant from the William and Flora Hewlett Foundation has enabled the Hagley to publish a guide to this material. *Computers, Automation, and Cybernetics at the Hagley Museum and Library* will be published this spring.

The guide begins by describing the papers of Elmer Sperry and the records of the Sperry Gyroscope Company. Sperry, inventor of several pioneering automatic guidance and control devices, played a critical role in the development of the automatic feedback control systems that were central to later developments in computing and cybernetics. It also includes the records of Sperry-UNIVAC that document the early development of the digital computers, including the ENIAC and UNIVAC. Other important collections described in the guide include those generated by the IBM antitrust and the Technitrol lawsuits.

For information on purchasing the book, contact the Hagley Museum and Library, Publications Office, PO Box 3630, Wilmington, DE 19807, telephone (302) 658-2400, extension 239. □

MIT Selective Repository Guide

Selective Guide to the Collections, Institute Archives and Special Collections, Massachusetts Institute of Technology Libraries (108 pages, 1988) is a catalogue of archival and manuscript collections that document the founding and growth of the Institute and its five schools (Architecture and Planning, Engineering, Humanities, Management, and Science); the Institute's educational and research activities (particularly in science and engineering); and non-MIT individuals and organizations whose activities complement MIT holdings. Emphasizing the history of contemporary science and technology and their impact on society, the collections illustrate the growing influence of government and industrial resources on research as well as the role of academic experts in the formation of science policy.

Copies may be ordered for \$7.50 from the Institute Archives and Special Collections, Room 14N-118, Massachusetts Institute of Technology, Cambridge, MA 02139. Checks should be made payable to Massachusetts Institute of Technology. □

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