

CHARLES BABBAGE INSTITUTE NEWSLETTER

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CENTER FOR THE HISTORY OF INFORMATION PROCESSING

CBI Annual Report 1992-1993

When people look back on the 1992-1993 year in CBI, they may very likely see it as an important year of transition. Several history projects came to a conclusion and new projects were begun. Plans were made to enlarge the archives staff. Use of the archives reached a remarkable all-time peak. And planning began for the transfer of the directorship to a vital and enthusiastic new person after a twelve-year reign of the present director. Whether such fast-paced activities normally occur in an institute during an interregnum, these activities certainly made the past year an exciting year in CBI.

The Archival Collection

Use of CBI's collections jumped a dramatic 300% in fiscal year 1993. First, there was a notable growth in outside scholarly use. Our statistics indicate that the CBI archival collection is becoming a nationally recognized resource among scholars. Second, the increase reflects use of the collections by several corporate clients who have generated a number of requests for information and reproductions.

The archival collections grew primarily with additions to the Margaret Fox Papers, Isaac Auerbach Papers, Control Data Corporation Records, Burroughs Corporation Records, Sperry Rand Univac Division Records, Data Processing Management Association (DPMA) Records, SHARE Records, GUIDE International papers, CBI's Market and Product Research Collection, CBI's Product Literature Collection, and Corporate Manuals Collection.

Thirteen oral histories were added to the CBI oral history collection. Nine were transferred from the Burroughs Corporation Records, and four were newly recorded interviews by CBI staff.

The Burroughs' interviews were recorded earlier with company executives by Anne Frantilla, Burroughs' former corporate archivist, and include information about areas of management decisions only sketchily found in the Burroughs company records. Of the four interviews recorded by CBI staff, all reveal information about company activities in which the principals were involved. The four interviews are with Isaac Auerbach (Auerbach Associates), Chester I. Lappen (Telemeter Magnetics and DataProducts), Calvin N. Mooers (Zator Company and Rockford Research Institute, Inc.), and George M. Ryan (Benson-Lehmer, Friden, and Cado).

The archives staff completed the processing of the DPMA records, reorganized the Market and Product Research Collection to enable access through a database at CBI, and began work on the Calvin Mooers papers. Preliminary work on the Burroughs collection, particularly pertaining to visual materials, was initiated. Through the generosity of the Unisys Corporation, CBI will hire an archives assistant to fully process the Burroughs Corporation Records. To enable more efficient access, CBI's bibliographies and glossaries collections were organized into a unified machine-readable bibliography. All machine-readable oral histories have been converted to a standardized format and all catalog records updated and downloaded to LUMINA, the University of Minnesota's Libraries' database, available on-line to anyone through telephone lines. Over 250 cubic feet of material was processed this year. The total CBI Collection now exceeds 3,500 cubic feet, and most of the collection is immediately available for

research.

The staff also developed and implemented a records management plan for the Institute and the Charles Babbage Foundation. This plan provides for the preservation of those records produced by CBI and CBF of historic value and provides better access to current records in the CBI office.

The archives staff concluded one grant project, a Research Libraries Group (RLG) and National Endowment for the Humanities grant to catalog the oral history collection, and developed two projects for potential funding (one for an RLG visuals study; the other would be a cooperative project with the Hagley Museum and Library). Bruce H. Bruemmer, CBI Archivist, is also working with the Minnesota Historical Society under a grant from the National Historical Publications and Records Commission to produce guidelines for oral history cataloging.

The History Program

In November 1992, CBI submitted to the Department of Defense a 360-page history of the Information Processing Techniques Office (IPTO) of the Advanced Research Projects Agency (ARPA). As described in an earlier issue of this Newsletter [Fall, 1992], the history is part administrative history of IPTO and part technical history of several significant areas of computing in which IPTO provided substantial R&D support. The history was prepared by Arthur L. Norberg, Judy E. O'Neill, and Kerry J. Freedman. The Johns Hopkins University Press signed a contract with the authors in January to prepare a scholarly version of the study for publication next year. A major portion

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of the second half of this fiscal year was occupied with the book-revision project.

With the submission of the IPTO history, Norberg returned to completion of a former project in the early history of the United States computer industry. This study is a comparison of the activities in various companies that entered the computer business in the late 1940s, especially Engineering Research Associates, Inc. and Eckert-Mauchly Computer Corporation. An analysis of the technical developments and administrative practices of the two companies will be made for their independent period and when they were part of the Remington Rand/Sperry Rand company. Some attention will be paid to how their efforts compare to those of International Business Machines, Inc., California Research Corporation, and Raytheon. Norberg presented a preliminary paper on the theme of this work at the Business History Conference annual meeting in April; the paper will be published in Fall 1993.

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Similarly after the IPTO history submission, O'Neill initiated a new research project on the history of women in computing. The main goal of this project is to investigate the available sources for information of the history of women in computing and to report on what is found in scholarly articles about women's roles and contributions. During the project, O'Neill will recover the achievements of women in computing and analyze the history of women's participation in the institutions of computing. While developing the format for this investigation, O'Neill also enlarged upon her earlier work in time-sharing and networking. Time-sharing will be part of an article highlighting the interaction of MIT and GE, and the reaction of IBM to time-sharing developments. O'Neill has accepted the editorship of a special issue for the *Annals of the History of Computing* on networking, to which she also plans to include an article of her own.

CBI and the Professional Community

The Adelle and Erwin Tomash Fellowship in History of Information Processing, sponsored by the Charles Babbage Foundation, was awarded to

SHOT Annual Meeting

The Society for the History of Technology (SHOT) will hold its annual meeting in Washington, D.C. 14-17 October 1993. Presentations relating to the history of computing and information processing include:

"Conventional Wisdom: Standards and the Shaping of Engineering Judgement" Stuart Shapiro, CRICT, Brunel University, UK

"Data-processing from Bertillon to the International Classification of Diseases" Geoffrey Bowker, University of Illinois at Champaign/Urbana

"Data Processing and Technological Change: The Post Office Savings Bank" Martin Campbell-Kelly, University of Warwick

"Computers and Industrial Organization: Early Sources of 'Just in Time' Production in the Dutch Steel Industry" Jan van den Ende, Delft University of Technology, and Kees Bertels, University of Leiden, Netherlands

"The Transitions from Tabulating to

Irving F. Elichirigoity of the University of Illinois-Urbana. Mr. Elichirigoity research is a study of the historical contribution of global computer modeling to the reconceptualization of the relationship between humanity and the biosphere.

Recognition of CBI's commitment to providing access to its collections came from the Central Technical Services in the University Libraries when the assistant archivist Kevin D. Corbett became a regular member of the Original Cataloging Group. Corbett also worked as the co-compiler, along with David J. Klaasen of the University's Social Welfare History Archives, of the 1990 and 1991 bibliographies for the *American Archivist*, and served as the special assistant to the Meeting Planner for the Society of American Archivists at their 1992 annual meeting. Bruce Bruemmer and his colleagues on the Archives Task Force of the (U.S.) Commission on Preservation and Access completed their study and presented their findings at a special meeting at the Bentley Library of the University of Michigan. Bruemmer delivered a paper to a special meeting on

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Computing Technology in the U.S. Life Insurance Industry" JoAnne Yates, MIT

The Information, Computing, and Society special interest group of SHOT will hold its seventh annual meeting at the SHOT conference. The meeting is currently scheduled for Saturday, October 16 from 4:30-6:15. For further information about the special interest group contact Paul Ceruzzi, National Air and Space Museum, Smithsonian Institution, Washington D.C. 20560, nasem001@sivm.bitnet. □

Change of Address

Arthur Norberg can now be reached at the following address:

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Tomash Fellowship in the History of Information

The Charles Babbage Institute is currently accepting applications for the Adelle and Erwin Tomash Graduate Fellowship, sponsored by the Charles Babbage Foundation, to be awarded for the 1994-1995 academic year to a graduate student whose dissertation will address some aspect of the history of computers and information processing. Topics may be chosen from the technical history of hardware or software, economic or business aspects of the information processing industry, or social, institutional, or legal contexts of computing.

There are no restrictions on the venue of the fellowship. It may be held at the

home academic institution, the Babbage Institute, or any other location where there are appropriate research facilities. The stipend will be \$10,000 plus an amount up to \$2,000 for tuition, fees, travel to the Babbage Institute and relevant archives, and other approved research expenses. Priority will be given to students who have completed all requirements for the doctoral degree except the research and writing of the dissertation.

There is no special application form. Applicants should send biographical data and a research plan. The plan should contain a statement and justification of the research problem, a discussion of

procedure for research and writing, information on availability of research materials and evidence of faculty support for the project. Applicants should arrange for three letters of reference, certified transcripts of college credits, and GRE scores to be sent directly to the Institute.

Complete application materials should be received by January 15, 1994.

Send materials to:

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Telephone 612/624-5050. □

Second History of Programming Languages Conference

by Rajeev Pandey

Department of Computer Science
Oregon State University

[Note: The author was one of five graduate students who were awarded scholarships to attend HOPL-II.]

The Cambridge Center Marriot was the site of the Second History of Programming Languages Conference held April 20-23, 1993. The choice of the venue was appropriate, overlooking the Massachusetts Institute of Technology, where many early language advances occurred, and across the Charles River from The Computer Museum, which is devoted to recording and displaying history of computing in general. The first History of Programming Languages Conference was held in June 1978, 15 years prior.

Tuesday, April 20, was set aside for a Forum on the History of Computing. Chaired by Robert F. Rosin of Enhanced Service Providers, Inc., the forum began with a lecture by Princeton University's Michael S. Mahoney on "Issues in the History of Computing." Overview presentations on activities and resources in the history of computing followed the lecture. Bruce Bruemmer of the Charles Babbage Institute discussed documents and archives, Gwen Bell of The Computer Museum reported on artifacts and museums, Bernard Galler of the University of Michigan talked about *The Annals of the History of Computing* and other

journals. Jean Sammet, programming languages consultant and program chair, told the audience how to hold effective conferences, and the overview presentations concluded with a survey of university courses in the history of computing presented by Martin Campbell-Kelly of the University of Warwick.

Participating in the history of computing was the subject of a number of parallel small group discussions, chaired by the various Forum speakers and J.A.N. Lee (conference chair and professor at Virginia Polytechnic). Topics discussed included writing about and teaching history, documenting projects, and preserving and collecting

artifacts.

The Forum concluded with a panel discussion regarding the challenge of creating public displays about the history of computing. The panel consisted of David Allison (National Museum of American History), Paul Ceruzzi (National Air and Space Museum), and Oliver Strimpel (The Computer Museum). All three shared their extensive experience in creating displays at their respective institutions.

The Main Program began on April 21, opening with welcoming remarks by the conference organizers and a Keynote address by Frederick P. Brooks of the

HOPL-II continued on page 5...



HOPL-II Panel: A. Colmerauer, W. Whitaker, D. Richie, N. Wirth, and A. Kay

Margaret Fox Papers Organized

In 1951 Margaret Fox joined the National Bureau of Standards (NBS) as a member of the technical staff of the Electronic Computer Laboratory. By 1966 she was appointed chief of the Office of Computer Information. Her records document a broad range of computing activities undertaken at the Bureau, beginning with the acquisition of the UNIVAC computer.

Another accession of records were received earlier this year from Ms. Fox. It added considerably to the documentation of the Bureau's early computer activities as well as information about Samuel Alexander, head of the Information Technology Division from 1964 until his death in 1967. John Jackson, a graduate student working at CBI, was assigned to process the accession into the existing collection. The collection (CBI 5) now amounts to over 8 cubic feet of records covering the period 1935 to 1975.

The highlights of the accession include:

SEAC — The material in the collection on the Standard Eastern Automatic Computer has been doubled, especially on the early years of the computer when it was called the NBS Interim computer (1948-1950). The collection contains many new schematic drawings of the Interim computer as well as technical papers. There is now a full set of Technical Memoranda written by the NBS staff concerning the operation of SEAC. Also included in the collection is a transcript of Edgar Bergan and Charlie McCarthy interviewing Samuel Alexander about the SEAC on their radio show in October, 1954.

Patent Studies — The amount of material in the collection concerning Samuel Alexander's work on the Patent Office Mechanized Searching Committee which began in 1954 has been tripled. There is extensive correspondence between Alexander and other committee members, including Vannevar Bush, the committee chairman.

DYSEAC — The records on the DYSEAC, one of the first "transportable" computers, more fully document the computer's design. In addition to

technical schematics, the collection contains detailed memoranda on the construction and operation of the DYSEAC. Also added is a series of photographs of the DYSEAC and the trucks which contained it.

UNIVAC — The records on the UNIVAC cover the period from 1946 to 1976. Notable among these records are copies of some of the very first contracts for the UNIVAC between the United States government and the Eckert-Mauchly Computer Corporation dated in the late 1940s and early 1950s, and a first draft of a "Report on the UNIVAC" from August 1947.

Samuel B. Williams — The collection contains descriptions and patents for three early computer systems undertaken by Williams for Bell Labs. Also included is a series of photographs of the Bell Labs staff and the Mark IV computer system from 1947.

ENIAC — Several new papers (1944-1946) on the ENIAC were added. These include papers from the U.S. Government as well as papers from Eckert-Mauchly.

Correspondence — New letters by Samuel Alexander were added including a series of IEEE fellowship nominations he wrote during the 1960s. The accession included new correspondence by A. V. Astin, E. U. Condon, and Ruth Davis (all from the U.S. Department of Commerce).

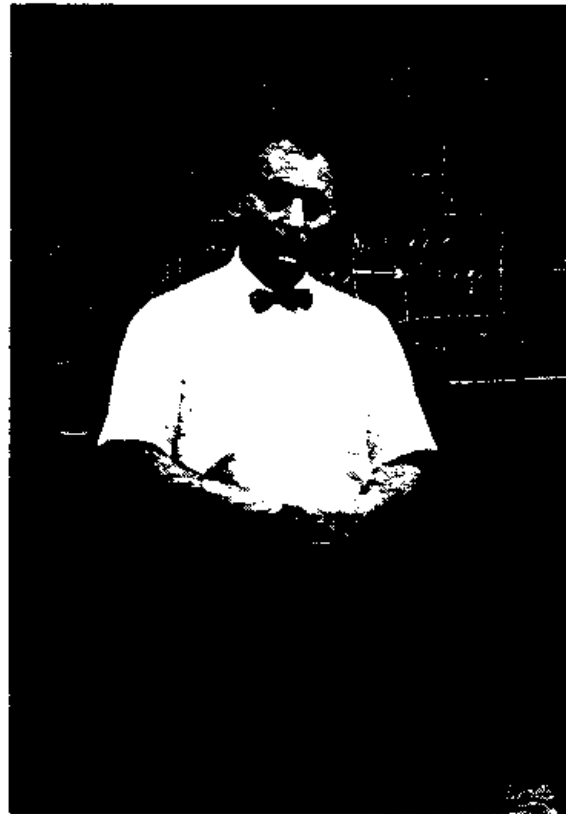
Classes, Conferences, Seminars, and Symposia — The collection has a wealth of programs and agendas from conferences and symposia attended by Samuel Alexander during the 1950s. There are extensive records from AGARD (Advisory Group for Aeronautical Research and Development) and ICIREPAT (an international patent association). Notes and agendas from early conferences include the UCLA Symposia on Modern Calculating Machinery and Numerical Methods (1948) and the Harvard Symposium on Large Scale Digital Calculating Machinery (1949). Alexander also taught various classes on data processing for various groups which ranged from the Army Signal School (1957) to the Insurance, Accounting, and Statistical

Association (1957).

Projects — NBS was involved in a number of projects that are documented by the records. These include the Automatic Data Processing Interagency Committee (1958-1972), BINAC (1949), the DYRO Data Processor (1950), EDVAC (1946-1950), and PILOT (1956).

NBS internal correspondence — Substantial additions have been made to the collection of NBS internal documents. These include adding to the NBS Procedural Memoranda (1948-1974), the correspondence of the Research Information Center and Advisory Service on Information Processing (1963-1965), the correspondence of the Center for Computer Science and Technology (1965-1974), and the National Applied Mathematics Laboratory (1947-1956).

CBI is pleased to make these records available to interested researchers and grateful to Margaret Fox for donating the records. Further details about the collection may be obtained from the collection finding aid which is available free of charge from CBI. □



Records of Samuel N. Alexander, a prominent figure in the early work with computers at the National Bureau of Standards, are found in the Margaret Fox Papers. Date and place of this photograph are unknown.

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University of North Carolina. The address was followed by Jean Sammet's views on language development in the last 15 years (Sammet was conference chair of the first History of Programming Languages Conference). Michael Mahoney concluded the session with an informal talk entitled "Making History."

The rest of the conference program was devoted to the presentation of papers on specific languages. The languages discussed included Algol 68, Pascal, Ada, Lisp, Prolog, CLU, Icon, Smalltalk, Forth, C, and C++. On hand to present these papers were several of the language designers, such as Alain Colmerauer (Prolog), Niklaus Wirth (Pascal), Dennis Ritchie (C), and Bjarne Stroustrup (C++). Other well-known

presenters included Ralph Griswold, Per Brinch Hansen, Alan Kay, Barbara Liskov, Guy Steele, and Jean Sammet. These presentations gave insight into the design, evolution, and future of the various languages.

On the evening of April 21 the Conference Banquet was held at The Computer Museum, in conjunction with the opening of an exhibit at the Museum on Programming Languages. Conference attendees were invited to contribute languages related materials to the exhibit. The centerpiece of the exhibit, which focusses on programming languages and their proliferation, is a "Tower of Babel" built from "bricks" bearing the names of various languages.

A conference banquet was held on April 22, followed by a couple of hours

of informal stories regarding the development of languages from developers. The late Grace Murray Hopper was the fond subject of many of the stories.

The conference concluded on the April 23 with a panel session, chaired by Michael Mahoney, entitled "Programming Languages: Does our Present Past Have a Future?" From the enthusiasm displayed by conference participants and the presentations, it's clear that not only does computing have a future, but a very rich past.

The author can be reached through Dept. of Computer Science Dearborn Hall 303 Oregon State University Corvallis, OR 97331-3202 telephone: 503 737-3273 e-mail: rpandey@storm.cs.orst.edu □

Current Projects and Research

A wide range of activities are underway in the history of computing and information processing. We invite researchers to share their research interests and current projects related to the history of computing and information processing with our readers in future newsletters.

Bryan Pfaffenberger, an anthropologist who teaches in the Division of Technology, Culture, and Communications at the University of Virginia, is working on the theoretical implications of technological innovation in early personal computing. Research conducted in the Silicon Valley focused on the utility of theories derived from the sociology of scientific knowledge (SSK), such as the social construction of technology (SCOT) model proposed by Pinch and Bijker.

His preliminary conclusion: Although SSK-derived models are very useful, their models tend to emphasize the design that "wins out" as against others that "fail," owing to differential social support. As the history of personal computing shows, technology—perhaps unlike science—provides an opportunity for designers to build broader constituencies by incorporating two or more distinct, even contradictory, philosophies of design in a single, composite artifact. The history of PC artifacts can be seen, then, as a series of

incorporations, resulting in systems that can be configured to appeal to a variety of constituencies.

Pfaffenberger's conclusions echo those he reached in a previous study of the electronic database industry (*Democratizing Information: Online Databases and the Rise of End-User Searching*, G.K. Hall, 1990), which was the recipient of the Best Book of the Year award of the American Society for Information Science. In this study, Pfaffenberger shows how seemingly contradictory models of text retrieval were combined in a single, somewhat unwieldy system, in an attempt to enroll the support of librarians seeking to preserve a niche for their professional subject indexing expertise.

Pfaffenberger's model of the formation of composite artifacts helps to explain the dysfunctionality of some computing systems, he believes. A system based on a "pure" design model (Steve Jobs' NeXT computer is an example) may fail because it lacks the flexibility of a less coherent design like that of Intel-based machines, which can be configured to appeal to any of personal computing's constituencies—at the cost, however, of system stability. Dr. Pfaffenberger plans to publish his research conclusions in an essay that is currently undergoing revision; comments

are welcome.

Dr. Pfaffenberger can be reached at 1320 Earlysville Forest Drive, Earlysville, VA 22936-9585 e-mail: bp@virginia.edu □

CBI Archivist Promoted

CBI's Archivist, Bruce Bruemmer, was recently promoted to Librarian at the University of Minnesota, the highest level in that job classification. Bruemmer joined CBI in 1984 as its first professional archivist, and has overseen a seven-fold growth of the archival collection, including major accessions from Auerbach Associates, Berkeley Enterprises, Control Data, Carl Hammer, the National Bureau of Standards, and Jean Sammet. In his promotion document he was cited for his work in automating CBI's catalog, the publication of *The High-Technology Company: A Historical Research and Archival Guide*, the passage of an archival records bill in the Minnesota Legislature, and his contributions to archival professional organizations. □

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documenting defense contractors, which met at the RAND Corporation in Santa Monica, CA. He also spoke about the history of computing and archives in the Forum on the History of Computing preceding the History of Programming Languages (HOPL) II Conference in Boston. O'Neill also attended the HOPL II Conference. Norberg presented a paper at an international conference in Trento, Italy, on automated archival databases and the need for further development to prepare for including them in automated bibliographic databases. Norberg also presented a paper at a conference on the history of radar in Munich at the Deutsches Museum, a paper comparing high-frequency radar developments in the United States and the United Kingdom before World War II, written jointly with Robert W. Seidel of the Los Alamos National Laboratory. The paper is to appear in the conference

proceedings.

CBI staff serve on a number of advisory committees and councils. O'Neill: Minnesota delegation to the Committee on Institutional Cooperation/Women in Science and Engineering program (a consortium effort of the Big Ten schools), Happenings Editor for *Annals of the History of Computing*, and Programs Vice President, Twin Cities Chapter, Association for Women in Computing.

Bruemmer: Program Committee and Public Information Committee (Chair), Society of American Archivists, and Librarian Personnel Committee, University of Minnesota.

Norberg: Advisory Council, Task Force on Education, and Task Force on High Performance Computing, NASA, Finance Committee, History of Science Society, an article Editor, *Annals of the History of Computing*; and Advisory Editor (through December 1992),

Technology and Culture.

The papers presented, activities participated in, and the committees served on offer ample information about the kinds of meetings CBI staff attended during the year.

Lastly, Norberg and O'Neill offered a course on the history of computing in the History of Science and Technology Program in the University. Norberg also taught a general survey course on the history of science in the United States.

Goals for 1993-1994

During the coming year, CBI will be undergoing many changes as a result of new leadership. However, CBI will continue to focus on its main mission—to engage in historical research to foster greater understanding of significant events in computing and information processing and to identify and preserve the significant records associated with this field. □

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