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Recent Monograph Publications and Research in CBI Collections

In the second quarter of this year, four new books have appeared in the history of computing, which to a greater or lesser degree made extensive use of the CBI collections. Combined, the subject matter of these works covers over 100 years of computing activity, and touches on all sectors from artifact development through software and services on to users. I refer, of course, to David Alan Grier's *When Computers Were Human*, JoAnne Yates' *Structuring the Information Age: Life Insurance and Technology in the Twentieth Century*, Jeffrey R. Yost's *The Computer Industry*, and Arthur L. Norberg's *Computers and Commerce: A Study of Technology and Management at Eckert-Mauchly Computer Company, Engineering Research Associates, and Remington Rand, 1946-1957*. If we add to this list James W. Cortada's *The Digital Hand: How Computers Changed the Work of American Manufacturing, Transportation, and Retail Industries* published in 2004, which also extensively used CBI collections, we have an important illustration of the kind of work that is now being done in the field. Moreover, the use made of the results of earlier studies by these authors illustrates how far the history of computing has come in the last two decades.¹

David Grier presented us with a fine study of who did computations before the advent of the electronic digital computer from early astronomical calculations in the 18th century to the many users of the digital computer in the post-world war II period. The book is divided into three periods. The first period, which ends in 1880, illustrates how the division of labor in calculation developed, using astronomy as a focus. The second period of 50 years to 1930 focuses on the widespread use of adding and calculating machines. The last period discusses computation during the Great Depression, World War II, and the early years of the Cold War. Practitioners in this period played a secondary role in computation as the shift to electronic computers was underway. Almost half the book is devoted to this third period. Among the CBI collections Grier found useful were the Edmund Berkeley Papers, the papers of Wallace Eckert, the papers of Gertrude Blanch (Grier was instrumental in the deposit of the Blanch papers in CBI), and the records of the ElectroData Company (a part of the Burroughs Collection). The information in these collections is a constituent part of the third period of Grier's book.

In *Structuring the Information Age*, JoAnne Yates examines how insurance firms—where good record keeping and the repeated use of massive amounts of data are crucial—adopted and shaped information processing technology through most of the twentieth century. There are two important themes in this work. The first theme is the introduction and use of tabulators and the transition to electronic digital computers. The second theme is the examination of the transition to electronic digital computers and the new uses of computer systems in insurance. In her elegant presentation, she illustrates the reciprocal influence of information technology and its use, and the influence of past practices on the

¹ Simultaneously with the research and writing of these works, several important dissertations were completed as well. When these reach publication, this list of works will need to be supplemented, especially in the case of software studies. Since several of these dissertations also used CBI collections, the conclusions of this essay will not be substantially different with their inclusion.

adoption and use of new technologies. The primary archival sources for this study were those of four major insurance companies.

In the 1950s, insurance industry leaders recognized that computers would enable them to integrate processes previously handled separately, but they also understood that they would have to change their ways of working profoundly to achieve this integration. Edmund Berkeley, whose papers in CBI Yates employed in this work, was one of the leaders who elaborated a vision for industry personnel as to the value of the new computer systems. He encouraged exploration of how to achieve integration by asking members of the emerging computer industry to analyze insurance practices. These computer people, especially J. P. Eckert and J. Mauchly, suggested modifying insurance practices to take full advantage of the power of the new computer systems. The industry proceeded slowly to achieve Berkeley's vision. When it came to choosing equipment and applications, most companies ultimately preferred a gradual, incremental migration to an immediate and radical transformation. In tracing this process, Yates shows that IBM's successful transition from tabulators to computers in part reflected that vendor's ability to provide large customers such as insurance companies with the necessary products to allow gradual change. Among the other CBI collections investigated by Yates are the Frances Holberton Papers and the Computer Literature Collection.

Computers and Commerce by Arthur Norberg began as a confined study of Engineering Research Associates (ERA), a St. Paul, MN, company associated with the U. S. Navy. ERA spent six years as an independent company, but financial difficulties led to the decision to sell the company to Remington Rand, Inc. Once inside Remington Rand, there were repeated interactions and difficulties with another Remington Rand acquisition the Eckert-Mauchly Computer Company. It soon became obvious that to adequately tell the history of ERA both as an independent company and a division inside Remington Rand, it would be necessary to recount the histories of Eckert-Mauchly and Remington Rand. Much has been reported about Eckert and Mauchly and their monumental attempts to design, build, and market the Univac. Reevaluating these reports and adding substantial information about the design and management activities of Eckert-Mauchly, Norberg provides a more complete and balanced account of this firm, making comparison of it with other new and established firms more cogent. The completed work is the story of these three firms from 1946 to 1957. By 1957, Remington Rand had become Sperry Rand, the two computer operations were situated in a new division—the Univac Division, and many of the principals from ERA had left to found or participate in other computer company startups.

At the outset of the project, company records were only just becoming available, and, to do an adequate investigation, more had to be found. The collections for ERA came from two sources inside Sperry Rand/Unisys: Blue Bell, PA, and Eagan, MN. After exploitation of the Eagan papers, CBI sent them to Hagley to join the materials from the Blue Bell site of Unisys, an analogous set of collections for the histories of Eckert-Mauchly and Remington Rand. These Sperry-Rand records contained all the founding documents for the two computer companies, project reports, correspondence, and product descriptions. This served as the backbone of the story. Other CBI collections, namely, the Computer Product Manuals Collection and 14 collections of personal papers and company records collections, added information to meld onto this backbone. The

complete text integrates the technical and organizational histories of the firms and their interactions.

Over the last three decades, only a few attempts were made to present a history of the digital computer industry. Most of the works published about the industry, and there have been many, focused on one or two companies. Jeffrey Yost's latest book is a synthetic history of the electronic digital computer industry from its beginnings in the 1940s to the present. As the story unfolds, he reports on the advent of the mainframe industry, with reviews of the larger and more influential firms in this sector, to the rise of the software and services sectors, the personal computer hardware and software sectors, and networking. To engage contemporary readers who are not historians, he included a section on looking ahead. In this book, Yost drew extensively from secondary literature and made only limited use of archival sources. However, his use of archival sources in his earlier work and the work of others that he employed is evident. From CBI he utilized information from the Burroughs and Control Data collections, and CBI oral histories (including a number he conducted for CBI's Software History Project).

James Cortada's *The Digital Hand*, in imitation of A. D. Chandler's *The Visible Hand*, the influence of which is very clear in this work, is a tour de force. Cortada argues that computers have fundamentally changed the nature of work across America. They have made possible new roles, turning bankers into stockbrokers, while digital supply chains altered the retail landscape. In *The Digital Hand*, Cortada combines detailed analysis with narrative history to provide a broad overview of the computer's role in sixteen industries, accounting for nearly half of the U.S. economy. Beginning in 1950, when commercial applications of digital technology began to appear, Cortada examines the ways different industries adopted new technologies, as well as the ways their innovative applications influenced other industries and the U.S. economy. In addition to this account of the computers' impact on industry, Cortada also demonstrates how industries themselves influenced the nature of digital technology.

Many of the archival materials used in this study were consulting and market reports generated for the use of manufacturers. Cortada consulted CBI's Auerbach collection, CDC, Burroughs, the GUIDE collection, and the Market and Product Reports Collection. GUIDE (Guidance of Users of Integrated Data-Processing Equipment) began in 1956 as an international association of large-scale International Business Machines computer users. In 1970 the users group was incorporated as a non-profit organization under the name of GUIDE International Corporation. The Market and Product Reports collection contains reports about computer hardware, software, systems, and computer-related industries primarily in the United States that originated from numerous consulting firms. All these collections contain reports on the United States and international computer and electronics industries and markets, as well as evaluations of specific computers, peripherals, and software, published by a variety of market research firms. Cortada's assimilation of this material, as well as information gained from other sources, resulted in our first substantial account of the spread of computing into non-computing business sectors and the impact of this spread on the U. S. economy.

I could say a good deal more about each of these works, but it would be better for the reader to savor the contents of these interesting works in his or her own way. The reader can then test the validity of my conclusions about the impact of these works. What I

would like to add is, over the past decade-and-a-half, discussion in the history of computing shifted from a concentration on hardware, the U. S. federal government's role in computing, and some institutional developments to a focus on firms and industry, attempts to understand the practices and influences of users, and the spread of the electronic digital computer to new and unexpected areas of business and education. These five books are current examples of this shift. Of course, other, smaller investigations of these topics in the same fifteen years can be found in *Annals of the History of Computing* and in Ph.D. dissertations. The shift in interest rests on the examination of the extensive collections held by CBI and in the collections of other institutions and organizations, which have been quietly collecting these historic documents for some three decades. In the end, these studies resulted from the diligent and resourceful efforts of singular historians exploring multiple aspects of the history of computing.

As noted in Norberg's study, the research was done over a number of years, during which more and more documents were uncovered. Grier returned to primary sources that, in some cases, have been available for centuries and crafted a story of how the nature of computation developed and changed into its present character. Yates account of the insurance industry and technology resulted from a new perspective that the industry changed in profound way with technology. Business historians before Yates focused on the business and social aspects of the insurance industry. Her new juxtaposition of the business and its use of technology teaches us much about the early years of the industry's use of technology, a use that can be seen in Cortada's examination of the way many industries shifted to electronic technology. Several other authors in the past three decades traced the history of the mainframe and minicomputer sectors of the computer industry. Yost has given us the first synthetic history of the industry's many sectors from the mainframe to the microcomputer to the software and services sectors and the networking area.

Reflecting on the entire range of publications of the last 30 years, we now have before us a stunning array of articles and monographs that offer a rather comprehensive account of the many facets of the history of computing. When judged against the paucity of materials available for use in the new college and university courses on the subject in the early 1980s, this is a remarkable accomplishment of a small number of dedicated scholars in the United States and Europe. Soon historians will add several works about this history in the Far East and Australasia to round out the story. The concerted efforts of these historians, and their partners the archivists who gathered the documents without which the historians could not have done their research, provides a good understanding of the history of computing.

Arthur L. Norberg

CBI Director Honored at IT College Retirement Reception

CBI Director Arthur Norberg was honored on April 26, 2005 at the University of Minnesota's Institute of Technology College's (IT) Retirement Reception. Dr. Norberg was the first permanent Director of the Charles Babbage Institute and has served the University of Minnesota in this capacity between 1981 and 1993 and from 1999 to the present. Dr. Norberg will shift to Emeritus status at the end of the current (2004-2005) academic year, but will continue to serve as CBI Director until the new director comes on board.

Concurrent to joining CBI, Dr. Norberg was appointed to the faculty of the Department of Computer Science and Engineering and has served with distinction in this department and as a faculty member of the Program in the History of Science and Technology ever since. As CBI Director Dr. Norberg has held, and currently holds the Engineering Research Associates Chair in the History of Technology.

Dr. Norberg received a M.S. in physics from the University of Vermont, and a Ph.D. in History of Science from the University of Wisconsin-Madison. He also came to the University of Minnesota with substantial teaching and administrative experience. At the University of California-Berkeley's Bancroft Library he had directed a new project in the history of science and technology with a focus on the Lawrence Radiation Laboratory and at the National Science Foundation he had led the agency's program in Ethics and Values in Science and Technology. Trained first as a physicist, Dr. Norberg earlier worked for Westinghouse Corporation in the nuclear reactors program and spent almost a decade teaching physics to undergraduates.

In addition to his leadership of the Charles Babbage Institute, and his teaching undergraduate and graduate courses on the history of computing and the history of technology and science, Dr. Norberg has served in many administrative capacities both within and outside the University of Minnesota over the past two and a half decades. Within the university's Program in the History of Science and Technology Dr. Norberg has been at various times the Director of Undergraduate Studies and the Director of Graduate Studies, as well as Acting Head of the program. He has been an officer in the History of Science Society (HSS), the Society for the History of Technology (SHOT) and the American Association for the Advancement of Science (AAAS). He also served for a half dozen years on the NASA Advisory Committee, and has been a longtime editorial board member of *IEEE Annals of the History of Computing*.

Dr. Norberg has produced seminal scholarship on the early computer industry as well as on the history of computer research funded by the Department of Defense's Advanced Research Projects Agency (ARPA). The former includes a number of articles and his recently published *Computers and Commerce: A Study of Technology and Management at Eckert-Mauchly Computer Company, Engineering Research Associates, and Remington Rand, 1946-1957* (Cambridge: MIT Press, 2005). The latter research resulted in a report produced for the Department of Defense as well as *Transforming Computer Technology: Information Processing for the Pentagon, 1962-1986* (Baltimore: Johns

Hopkins University Press, 1996) [with Judy E. O’Neill]. This influential book was the first and remains the most significant study of the development of the ARPANET, and also provides important analysis of independent, but often complementary, ARPA-funded work in computer graphics, timesharing, and artificial intelligence. In addition to his research on the history of computers, networking, and software, Dr. Norberg has also conducted substantial research on the history of astronomy, especially planetary prediction theory of the 18th to 20th centuries, as well as on the history of chemistry.

The longtime success and achievements of the Charles Babbage Institute in providing leadership in the preservation (helping to build and provide access to world-class archival collections) and historical interpretation (scholarship) of the history of information technology would not have been possible without the dedication, knowledge, and skill of Dr. Norberg as a historian and an administrator. His research and leadership was critical not only to advancing important understanding of the field, but in uncovering and taking advantages of opportunities for important new IT history archival collections that are now housed at CBI, the Hagley Museum and Library, and elsewhere. Dr. Norberg also initiated CBI’s oral history program and has conducted many dozens of oral histories held at the Institute and available in full text on the CBI Web site. Use of this collection, which now includes more than 350 oral histories on the history of computing software and networking, continues to grow. In addition to Dr. Norberg’s many achievements for CBI, he has also profoundly aided the educational, research, and service missions of University of Minnesota and the broader history of science and technology community through his work as a faculty member, and his service to professional societies and other organizations.

Jeffrey R. Yost

“Documenting Internet2: A Collaborative Model for Developing Electronic Records Capacities in the Small Archival Repository” (NHPRC grant number 2004-036)

What options are available to a traditional, small-scale archives, such as CBI, when the core documentation in its primary collecting area is no longer created in traditionally manageable formats? How will CBI fulfill its collecting mission into the future if the stable, structured organizations, to which we are accustomed become dynamic, decentralized collaborations? How exactly will we adapt our professional methods to accommodate these changes?

These questions prompted us to propose a grant project to the National Historical Publications and Records Commission in the fall of 2003. The project was funded, and we began work in January of 2004. (See announcement and updates in previous issues of the *CBI Newsletter*—Winter 2004 and Spring/Summer 2004.) Institutional partners are the Charles Babbage Institute (Carrie Seib, Beth Kaplan), the University of Minnesota Libraries Information Technology Division (Eric Celeste), and the University of

Michigan School of Information (Margaret Hedstrom, Dharma Akmon). Project advisors represent the American Institute for Physics (Joe Anderson), the University of Indiana Archives (Phil Bantin), the Minnesota State Archives (Bob Horton), Internet2 (Barb Nanzig), the University of Minnesota Libraries (Wendy Lougee) and the University of Minnesota Institute of Technology (Arthur Norberg).

The project concludes on August 31st, 2005. Now, as we move into the final phases, we are struck by how far we have come—and, at the same time, how far we have to go. The following summarizes project goals as well as project activities from the past six months. Our final report, which will be available in September, will include an analysis of results. All project documentation is and will continue to be available on the project Web site: <http://www.cbi.umn.edu/documentingi2/index.html>

The primary goal of the project has been to lay the groundwork for implementation of a sustainable electronic records program at the Charles Babbage Institute, consistent with CBI's collection scope and with professional archival and technological standards.

Tangible outcomes of the project will be

- an identified set of valuable archival records from Internet2 (I2);
- a blueprint for implementation of an electronic records repository hosted by the University of Minnesota Libraries;
- an understanding between the University of Minnesota Libraries and Internet2 that CBI will be the repository of choice for long term storage, preservation and access to the records of Internet2;
- guidelines and “lessons learned” for collaborative electronic records programs that will be of use to other small-scale repositories.

We are moving ahead successfully with all tasks and project components as set out in the initial proposal and plan of work, on time and within budget. Work this spring involves exploring appraisal criteria and testing technological options through a series of pilot projects with records from Internet2.

Working in communication with project staff Beth Kaplan and Margaret Hedstrom, project archivist Dharma Akmon continued onsite work at Internet2 following the July 2004 advisory board meeting in Minneapolis.

Akmon's work onsite at Internet2 was intended to garner information about records and recordkeeping at Internet2 that would guide our decisions about pilot projects in the second year of the grant. The onsite work turned out to be extraordinarily fruitful, due to Akmon's abilities and to the atmosphere of access (to people and to records) promulgated by Internet2 chief of staff Barb Nanzig. Akmon was granted access to key staff members for a series of interviews that provided a wealth of information on record-keeping practices (both paper and digital) in the particular organizational culture of Internet2. Akmon then prepared surveys of existing paper records and digital records held on various servers and personal computers at the Internet2 headquarters. Interviews and surveys were shared with project staff and the advisory board via an internal project Web site. A report on the overall technology environment at Internet2, supplements information in the surveys and interviews. Akmon also assessed use of two document management systems in place at Internet2. Finally, Akmon used the information gleaned

from all of this investigation to develop a report describing four possible appraisal models and assessing how each would obtain in the Internet2 environment. As planned, this report, shared with the advisory board in December 2004, articulated the issues for discussion and planning at the second advisory board meeting in January 2005.

The second Advisory Board meeting was held in Ann Arbor on January 19 and January 20, 2005. This was a change from the initial project timeline, which had set the second advisory board meeting near to the conclusion of the project. Re-scheduling this meeting to take place earlier was intended as a way to capitalize on the expertise of the board members earlier in the process, while their responses and advice would have an impact on the direction of next steps. This turned out to be a very good decision: the meeting was tremendously productive, as board members and project staff evaluated work so far, weighed the issues inherent in the project goals, and solidified plans for completion of the work ahead. The meeting notes capture points of consensus during the meeting as well as debate about how best to shape next steps in the project. The outcome of the meeting was an agreed-upon set of practical next steps: three experiments, to be carried out in Spring 2005, designed to evaluate scenarios for appraisal and technology along with analysis of the costs and benefits.

Other activities during the past six months have related to dissemination of project preliminary findings. Akmon presented a poster session at the Society of American Archivists 2004 conference in August. Carrie Seib, Beth Kaplan, and Phil Bantin presented a session at the April 2005 meeting of the Midwest Archives Conference in Chicago. Another session is planned for the Society of American Archivists conference, August 2005, in New Orleans, to include presentations from Seib, Akmon, Barb Nanzig, Joe Anderson, and Eric Celeste.

Kaplan, Seib, and Akmon have begun to prepare an article on the project for an upcoming compilation of essays on documentation projects, to be completed in summer 2005. Hedstrom and Akmon are in the early stages of outlining an article on documenting dynamic organizations.

Elisabeth Kaplan

Marie Hicks Named 2005-2006 Erwin and Adelle Tomash Fellow

The Charles Babbage Institute is pleased to announce that Marie Hicks of Duke University has been named the 2005-2006 Erwin and Adelle Tomash Fellow. Ms. Hicks received her undergraduate degree (magna cum laude) with highest honors in European history from Harvard University in June 2000. At Harvard she studied British, European, and American history, women's studies, economics, philosophy, and physics. She won a number of prestigious fellowships and awards throughout her undergraduate career. After graduation Ms. Hicks worked as a UNIX systems administrator at Harvard's department of electrical engineering and computer science prior to entering graduate

school. She joined Duke's graduate program in the History Department in Fall 2001, earned a graduate certificate in Women's Studies in Spring 2002, and received her MA degree in History in the fall of 2003. Her course work focused on the history of technology, British history, the history of gender, and modern European history. She was awarded the Anne Firor Scott Award (2003), the Duke Graduate School Summer Research Award (2003), and Ernestine Friedl Research Award (2004) to conduct preliminary research for her dissertation during the summers of 2003 and 2004.

Ms. Hick's dissertation investigates the development, implementation, and use of computing technologies in British government offices from the end of World War Two through the early 1970s. The computerization of British civil service offices established new modes of information processing and new categories of office labor. Her research examines how the earliest office computers were integrated with labor, and how they fundamentally changed the work process. She plans to argue that the goal of increasing productivity, a major factor in the installation of early British office computers, significantly shaped the social and political, as well as the technological, context of this change. The attractiveness of expensive office-automating computers in this period was predicated, in part, on the notion of a gendered workforce of ostensibly tractable and inexpensive female input and operator staff. Managers and technology professionals installed computer technology in office environments, (re)gendering them feminine in conversation with the new labor needs of the machines and the cultural perception of women as young, deskilled, low-cost, high-turnover secretarial workers. At the same time, computer developers and office managers promoted the image of computerization as a tool to increase productivity and modernize Britain.

The Erwin and Adelle Tomash Fellowship is made possible by the generous support of Erwin and Adelle Tomash, the founders of the Charles Babbage Institute.

Jeffrey R. Yost

News from the Archives

RECENT ACQUISITIONS include donations from Willis Drake, Joseph Schwebel, and Manny Block. Additions to the Applied Data Research records were received. A description of these materials will appear in the next issue of the *CBI Newsletter*. As always, many thanks to all of our donors.

FINDING AIDS

132 finding aids were encoded in EAD in the past three months.

The following finding aids are newly available online:

Association of DATA Processing Service Organizations (ADAPSO) Records (CBI 172)
And many from the Control Data Corporation Collection:

Acquisitions, Subsidiaries, and Joint Ventures, 1952-1991 (Series 1)
Annual and Quarterly Reports, 1958-1990 (Series 22)

Corporate Administration, 1957-1991 (Series 6)
Corporate Identity, 1961-1987 (Series 20)
Executive History Project Records (1980), 1957-1991 (Series 23)
Executive Papers 1956-1991 (Series 8)
Executive Papers - William C. Norris (Series 9)
Facilities, 1959-1983 (Series 21)
Financial Records, 1957-1991 (Series 10)
Legal Records, 1919-1983 (Series 11)
Marketing, Sales and Public Relations, 1960-1988 (Series 12)
News Releases, 1957-1990 (Series 13)
Newspaper and Magazine Articles, 1955-1984 (Series 14)
Personnel Documents and Reports, 1957-1991 (Series 15)
Planning Documents and Reports, 1957-1991 (Series 16)
Product Literature, 1955-1989 (Series 17)
Product Manuals, ca. 1957- ca. 1991 (Series 18)
Serial Publications, 1959-1991 (Series 19)

CBI Research on the History of Computer Security Standards

As networked computing becomes increasingly ubiquitous throughout the world, the threat and reality of computer crime; abuses of commercial, financial, and medical databases of personal information; the disabling or destruction of computing/software systems; and the overall importance of computer security have become increasingly frequent topics of journalists, privacy advocacy groups, politicians, and others. While computer security has increasingly been in the spotlight in the last decade or two, it, has a much longer history that dates back to concerns of electronic and electromechanical radiation revealing military secrets to eavesdropping adversaries during the early years of the Cold War, and the subsequent development of TEMPEST equipment and standards to address this aspect of the emerging computer security problem. With the advent and growing use of time-shared systems and computer networking during the 1960s, a number of agencies in the Department of Defense (DoD), the associated Air Force sponsored nonprofit think tank the RAND Corporation, the RAND spin-off System Development Corporation, the Air Force itself, and others began to recognize the heightened national security need for computer security standards. Building on the work of a number of studies, including those led by Willis Ware, James Anderson, and the studies of a number of other computer scientists and engineers within and outside the military (especially David Bell and Leonard Lapadula) led to the formal establishment of standards with the DoD *Trusted Computer System Evaluation Criteria*, or the so-called “Orange Book,” based on the color of its cover. For more than a decade this book was the standard in rating the level of trust in the design and use of operating systems for DoD computer procurement, development, and use. It also became influential outside of the military establishment, as a tool for industry to designate standard security levels for systems for corporations and non-government organizations.

Over the past two decades the recognition of computer security as a global rather than a national problem has prompted collaboration between the U.S., a number of Western European countries, and other allies, which has resulted in new international standards known as the Common Criteria. Alongside this standard setting work with systems, the National Bureau of Standards (NBS)/National Institute of Standards and Technology (NIST) has led the way in developing and pushing for certain standards in cryptography and cryptographic systems. The National Security Agency (NSA) has also been fundamentally involved, both directly and through its influence with NBS/NIST, in such efforts. Meanwhile, the media has often focused more on sensationalist and alarmist reporting, as opposed to meaningful exploration and dialogue concerning computer security issues. CBI Associate Director Jeffrey Yost is currently completing a book chapter surveying and providing historic context to computer security and computer security standards for a forthcoming volume on the history of information security that is being published by Elsevier Science Publishers and edited by Dr. Karl de Leuw, University of Amsterdam.

News Briefs: *CBI Newsletter* and *Iterations*

Change in frequency of the *CBI Newsletter*

CBI began publication of its *Newsletter* over 25 years ago to be a clearinghouse of information about activities associated with the history of information technology. Since then, the number of outlets available to inform people about these activities has risen to the point where there is significant duplication among these outlets. Web sites have become the preferred medium used by organizations for providing information. While information on each site tends to be associated with the activities of the sponsors of the Web sites, one can easily obtain the specific information desired about activities. Moreover, many of the organizations sponsoring programs in the history of information technology also issue e-mail messages highlighting activities and informing interested parties of time sensitive developments. These changes have decreased the importance of maintaining a publication that can provide overviews on a timely basis.

At the same time, CBI has devoted more effort in its *Newsletter* to acquainting people with new collections and oral histories available for research at CBI, many items of which can be obtained electronically. The publication has also reported on the research projects within the Institute. In short, the *CBI Newsletter* became more inward looking in promoting its outreach program through its Web site. Therefore, CBI has decided to alter the frequency of the *CBI Newsletter* publication downward to twice each year. This issue begins Volume 27. There will be two issues in this volume, 27:1 and 27:2, spring and fall, a practice that will continue into the foreseeable future. The fall issue will continue to carry CBI's annual report.

The Future of *Iterations*

CBI established the on-line journal *Iterations* in 2001 to provide a vehicle for the history of software. In the preparation phase, the editor solicited articles, commentary, and information on activities and the journal's first issue appeared at the end of 2002. Since then two more annual issues appeared, but each time the number of articles in each issue declined and the effort to acquire more submissions increased. The number of articles on software history in other traditional publications has not increased in this period either, although some spurts of activity might make it seem as though the number of articles has grown. Given this situation, we, sadly, have decided to cease publication of this on-line journal with the volume for 2004 (Vol. 3). The existing volumes will remain on the CBI Web site for the use of scholars and other interested people.

Recent Publications

Akera, Atsushi. "Think Piece: The Circulation of Knowledge, Institutional Ecologies, and the History of Computing" *IEEE Annals of the History of Computing* 26:3 (July-September 2004): 86-88.

Akera, Atsushi and William Aspray, eds. *Using History to Teach Computer Science and Related Disciplines* (Washington, D.C. Computing Research Association, 2004).

Aloisio, Mario. "The Calculation of Easter Day, and the Origin and Use of the World Computer" *IEEE Annals of the History of Computing* 26:3 (July-September 2004): 43-49.

Arora, Ashish and Alfonso Gambardella, eds. *From Underdogs to Tigers: The Rise and Growth of the Software Industry in Brazil, China, India, Ireland, and Israel* (New York: Oxford University Press, 2005).

Aspray, William. "The Supply of Information Technology Workers, Higher Education, and Computing Research: A History of Policy and Practice in the United States." In Richard Coopey, ed. *Information Technology Policy: An International Perspective* (New York: Oxford University Press, 2004): 54-96.

Aspray, William, ed. *Chasing Moore's Law: Information Technology Policy in the United States* (Raleigh, NC: SciTech, 2004).

Assimakopoulos, Dimitris, Rebecca Marschan-Piekkari, and Stuart MacDonald. "ESPIRIT: Europe's Response to US and Japanese Domination of Information Technology." In Richard Coopey, ed. *Information Technology Policy: An International Perspective* (New York: Oxford University Press, 2004): 247-263.

Aylen, Jonathon. "Megabytes for Metals: Development of Computer Applications in the Iron and Steel Industry." *Ironmaking and Steelmaking* 31:6 (2004): 465-478.

Baatz, Simon. "Medical Science and Medical Informatics: The Visible Human Project, 1986-2000." In W. Boyd Rayward and Mary Ellen Bowden, eds. *The History and Heritage of Scientific and Technological Information Systems* (New Medford, NJ: Information Today, 2004): 110-117.

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Compiled by Jeffrey R. Yost

James Warren Birkenstock (1912-2005)

On May 12, 2005, James (Jim) W. Birkenstock passed away just after his 93rd birthday. Jim was a great friend and help to all of us in CBI and CBF, and will be remembered for his many contributions. A lengthy memoir of his life and activities in the computer field written by Jim appeared in the *IEEE Annals of the History of Computing* in Volume 27 (No. 1): 2000. A tribute to Jim will appear in our next *Newsletter*.