

# **CHARLES BABBAGE INSTITUTE**

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**CENTER FOR THE HISTORY OF INFORMATION TECHNOLOGY**

**NEWSLETTER**

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*CBI Newsletter* Editor: Jeffrey R. Yost

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# CBI Salutes “Silver” Anniversary Donors

CBI has a splendid “silver” 25th anniversary that we’d like to mark, and it is of course connected to the flurry of “golden” 50th anniversaries evident in the world of computer history. The late 1950s witnessed the founding of a number of electronics and computer industry giants, including Control Data and Fairchild Semiconductor, the emergence of dominant designs for computer circuits, and the creation of key programming languages and concepts. Within two decades of these momentous events, in 1979, Erwin Tomash and his core group of computer-history activists founded the Charles Babbage Institute.

Here, while warmly recalling these founding events, we would like to direct a moment of celebratory attention to a “silver” anniversary for our most-dedicated, longest-term financial supporters. This past fall, I asked CBI’s secretary Katie (Baumhover) Charlet to identify the most-consistent donors to CBI—not always the largest donors, just the ones we have counted on over the years. The results of her research, frankly, astonished us. We knew CBI had a healthy number of longer-term supporters extending back 10 and 15 years. As relative newcomers ourselves, what amazed us was the impressive number of supporters stretching back 20 and even 25 years. We resolved to create a festive “silver anniversary” moment to honor these exceptionally dedicated friends.

To each and every of our long-term supporters: we at CBI are truly honored to have your support. You have shown that people from diverse walks of life, including the business, professional, education and technical worlds, can have a positive difference in understanding the history of this remarkable age, even as it has continued to change around us. Because of your essential support—combined also with crucial support from the CBF Founders and the contributors to the ERA Chair Fund—CBI has developed into the leading international research center in the history of computing. You, as core members, have sustained our core activities. This solid base has permitted CBI, in effect, over nearly three decades, to define and create the modern field of computer history.

This long-term support has allowed CBI to build outward from its strengths. The list of notable accomplishments is simply breath-taking: supporting scholars from around the world to better understand this remarkable history and the people who made it; conducting and completing research projects for NSF, the National Archives, IBM, and DARPA; publishing dozens of scholarly articles and nearly a dozen scholarly books; creating a unique research infrastructure through extensive oral histories; and not least collecting, processing, and making publicly accessible the unparalleled archival records from leading companies, people, government agencies, and professional organizations. (See my note in the “Director’s Desk” column about the recent ACM archive.) Recently, CBI’s associate director Jeffrey Yost took on the editorship of *IEEE Annals of the History of Computing*. Our presence in the archival world is stronger than ever. None of these achievements would have been possible absent CBI’s dedicated base of long-time financial supporters. For all of this, our heartfelt thanks. You have literally helped make history.

## **25 years of support to CBI**

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# CBI conference-workshop

## “History, Gender, and Computing” (30-31 May 2008)

Women were active participants in building and programming the first electronic digital computers, and notably prominent in the first generation of computer programmers in the 1950s, as attentive readers of books and articles by Janet Abbate, William Aspray, David Grier, Jen Light and others can attest. It is equally important to acknowledge that women have faced serious barriers to full participation in the computing professions. Today, computing persists as one of the most gender-segregated domains of modern life. How and when did a male-coded world of computing emerge? How and why has it continued? Where are the exceptions—and what are promising strategies for change?

The Charles Babbage Institute presents a two-day conference-workshop devoted to a much-needed examination of these questions. While the National Science Foundation and other policy actors have devoted immense resources to increasing women’s participation in computing, over the past two decades there has been a *striking drop* in women’s participation in computing education (from roughly 2 in 5 undergraduates in the mid-1980s to around 1 in 5 today) and a corresponding tail-off in the U.S. workforce. Clearly, an important “missing piece” needs to be discovered. This international conference, with participants from the U.S., Canada, and Europe, examines gender and the diverse uses of computing in offices, libraries, schools, mass media, and the computing profession. The eight papers will spark lively audience discussion on these themes:

- Automation, skill, and power;
- Gender discourse and imagery;
- Boundaries and identity;
- Gendered cultures of work and play.

Complementing these presentations is a scheduled poster session, showcasing additional views and innovative projects, as well as a viewing of “Gendered Bits: Identities, Practices, and Artifacts in Computing.” This new exhibit, created by CBI archivist Arvid Nelsen, explores how gender has shaped the professional identities and material culture of computing. Using materials from CBI’s extensive archival holdings in the history of computing, as well as the Children’s Literature Research Collections, it presents the contributions, struggles, and shifting roles of women as well as raises questions about gender broadly and the specific issues of masculinity. The exhibit in Andersen Library will be open 28 May through 23 July 2008.

Registration is open now, through 20 May, for the public conference on 30 May; registered attendees get a free lunch. (Conference presenters reconvene for a smaller “workshop” the following day.) For conference registration, program, travel and lodging details, a bibliography with core readings and key literature, and a set of useful links, see <[www.umn.edu/~tmisa/gender/](http://www.umn.edu/~tmisa/gender/)>. Please direct questions to <[cbi@umn.edu](mailto:cbi@umn.edu)>.

Generous support is provided by conference sponsors: the Deutsche Forschungsgemeinschaft; the University of Minnesota IT Dean's office; Graduate Program in History of Science, Technology & Medicine; Department of Computer Science and Engineering; Department of Electrical and Computer Engineering; and Office of International Programs.

Helpful readings:

Janet Abbate, special issue on "Women and Gender in the History of Computing." *IEEE Annals of the History of Computing* 25 no. 4 (Oct.-Dec. 2003).

J. McGrath Cohoon and William Aspray, *Women and Information Technology: Research on Underrepresentation*. Cambridge: MIT Press, 2006.

David Alan Grier, *When Computers were Human*. Princeton: Princeton University Press, 2005.

Jennifer Light, "When Computers Were Women." *Technology and Culture* 40 no. 3 (July 1999): 455-483.

## Director's Desk

There is an exciting whirlwind of initiatives and activities at CBI. I'll try to keep readers current on the more significant of these in this column. Remember that we also make periodic announcements on our main CBI webpage <[www.cbi.umn.edu](http://www.cbi.umn.edu)> as well as special announcements on the CBI blog that is linked to it.

### **ACM Archives coming to CBI**

Some 20 years ago, CBI began taking steps to collect and preserve historical materials from the Association of Computing Machinery (ACM), the oldest computer-related professional society. Over the years, CBI assembled an impressive set of archival materials from ACM's executive officers, its award winners, and various ACM luminaries. These include the personal papers of such notable computing figures as Daniel McCracken, Carl Hammer, Herbert Bright, Bryan Kocher, Edmund Berkeley, George Glaser, Charles Bachman, and Bruce Gilchrist as well as records from several ACM special-interest groups and regional sections. These ACM-related materials handsomely complement CBI's other holdings of institutional records including those of ADAPSO, AFIPS, IFIP, and DPMA.

Beginning last summer, ACM's Patricia Ryan conducted a nation-wide search to identify a permanent archival repository for its central organizational records, a long-term goal of the ACM History Committee. This fall CBI was chosen for further discussions, and in March we learned that ACM both finalized their selection of CBI as the home repository and approved funding to process and publicize the collection. The project includes a

nine-month, professional project archivist to work in residence at CBI as well as dedicated student support staff. The result will be a fully processed collection complete with an online finding aid with detailed historical, scope, and content notes. The completion of the project will also include a celebration at Andersen Library accompanied by an exhibit. A permanent, online exhibit on the CBI website will further promote and publicize the collection.

The institutional archive based on the materials presently at ACM headquarters in New York city, together with CBI's existing holdings of personal and institutional records documenting ACM's storied history, will create at CBI a fully realized archival center for ACM history. CBI Archivist R. Arvid Nelsen—with input from Beth Kaplan, CBI's former Archivist, who had done an earlier survey and assessment of the ACM records—submitted the proposal and will manage the archival work in the coming year. This will be one finding guide that we can all eagerly anticipate!

### **Minnesota's Institute of Technology turns 75**

CBI will take a leading role in an 18-month project recently funded by the University of Minnesota IT Dean's office to research, document, and publicize the history of the Institute of Technology, the large engineering-and-science college in which CBI itself is academically located. Founded in 1935, the Institute of Technology will celebrate its 75th anniversary in 2010. To prepare for the event, Dean Steven Crouch approached the History of Science and Technology (HST) program with a suggestion about doing a serious history research project, and Bob Seidel (former CBI director) and I developed a proposal that he evidently liked.

One challenge of this project will be to keep the "big picture" in mind while examining the dozen distinct departments and two-dozen research centers that constitute the college. Another question is how the Institute of Technology came to be; no other research university has this distinct combination of academic disciplines, embracing science, mathematics, and engineering departments that are most commonly in two or more different colleges.

Beginning in June, Bob and I will lead a team of three HST research assistants into the archives and around the campus to explore these questions and others. We will be interviewing numerous faculty, staff, and alumni as well as collecting archival records. We are also planning several different types of publications, including an illustrated volume that can be widely circulated to IT's alumni and friends.

### **IBM Blue Gene supercomputer to CBI**

I mentioned in my last column that we were "in discussions with IBM about a possible donation of historical materials" and, indeed, this donation has come about. In March, CBI took delivery of an original "rack" of the IBM Blue Gene supercomputer. The intrigue began last September with an email from IBM's Patrick Carey, who sells Blue Genes around the world and who was looking for a permanent home for a development rack that IBM no longer needed. Pat observed that Blue Gene was the world's fastest supercomputer and that it was designed in IBM's Rochester, Minnesota, facility. Would

there be any interest in IBM donating it to CBI? he asked. Some of you may know that CBI is not in the business of taking in computer artifacts, but there are instances where “big iron” is worth collecting, no matter the policies or practicalities. I said “Yes, absolutely!”

For two days, I was in seventh heaven—you see, I’ve always wanted a supercomputer—but then concern about the practicalities set in. Pat had mentioned that this Blue Gene rack weighed in at 1,800 pounds (it’s the size of an oversize upright freezer). Everywhere I looked in Andersen Library for a convenient space to park a one-ton freezer, there was some voice in my head saying that it was going to be more difficult than I had imagined. In a moment of inspiration, I asked David Lilja, the chair of U of M’s Electrical and Computer Engineering department, if he might be interested in our teaming up and doing an exhibit showcasing this notable piece of computer history. It took David about 12 supercomputer clock cycles to fire back an enthusiastic “Sure, this sounds great!” David’s academic field is the analysis of high-performance computers, and he and Patrick even go back a decade or so. Our machine—the ECE–CBI Blue Gene—will become the centerpiece for an attractive historic exhibit in the EE/CS building.

At IBM the word is that the University of Minnesota is certainly rising in the world. Since its debut in November 2004, Blue Gene has been in the top rank of the world’s fastest supercomputers; see <[www.top500.org](http://www.top500.org)>. In February this year, IBM announced that the University’s Hormel Institute, a cancer research unit, will become the first research laboratory in the state to install the powerful IBM supercomputer. Each rack of this Blue Gene contains 2,048 IBM PowerPC processors, with a total of 95 billion transistors, running at the equivalent of 5.6 trillion operations per second. With this recent donation, the University might claim that it has two of these impressive machines.

*Thomas J. Misa*

## **Ian Walsh Named New Tomash Fellow**

Ian J. Walsh, a doctoral candidate in organizational behavior at the Carroll School of Management of Boston College, was recently named the 2008-2009 Erwin and Adelle Tomash Fellow.

Walsh’s dissertation investigates the persistence of “organizational afterlife,” or ongoing organizing to preserve valued organizational elements after an organization dies. His study focuses on two defunct minicomputer companies: Digital Equipment Corporation (DEC) and Data General Corporation (DG). While DEC and DG are no longer independent entities, former employees of both organizations have gone on to create alumni associations, corporate museums, and spinoff companies that have preserved their

historical contributions and legacies for future generations of managers and scholars. Walsh's dissertation examines why individuals participate in such organizational afterlife. He develops and tests a model of the role of deep structure identification in individuals' propensity to participate in activities that sustain an organization's afterlife and legacy.

His research combines traditional archival research as well as conducting and analyzing detailed surveys with retiree groups of both DEC and DG. He is planning on visiting the Babbage Institute this coming academic year to use a range of collections. These include the DECUS (DEC's user group) records, Market Research collections, and a variety of other materials.

Walsh's scholarship has been published in *Human Relations* and the *International Encyclopedia of Organization Studies*. In addition, Walsh has taught courses in organizational behavior and career planning at Boston College and was recently nominated for the Donald J. White Teaching Excellence Award. He has received a Master of Science degree from Boston College, a Master of Business Administration degree from Boston University, and a Bachelor of Science degree in Industrial and Labor Relations from Cornell University. Prior to enrolling at Boston College, Walsh worked for 8 years as a human resources manager at Data General and Teradyne, Inc.

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

*Jeffrey R. Yost*

## **News from the Archives**

### **Explorations of Gender in the History of Computing**

On March 12, CBI Director Thomas Misa and CBI Archivist Arvid Nelsen gave a presentation titled "Computers Once Were Women – Why Did This Change?" as part of the First Fridays series sponsored by the University of Minnesota Libraries Department of Archives and Special Collections. Approximately 70 people attended this event, which served as a kick-off for other upcoming activities.

Beginning May 28 and running until July 23, 2008, an exhibition curated by Arvid Nelsen will be on display in Andersen Library's first floor exhibit gallery. Entitled *Gendered Bits: Identities, Practices, and Artifacts in Computing*, the exhibit will explore how gender has shaped the professional identities and material culture of computing. It will examine issues and raise questions about gender broadly as well as specific matters of masculinity and the contributions, struggles, and shifting roles of women. Highlights will include artifacts from CBI collections such as the Gertrude Blanch Papers and the

Records of the Association for Women in Computing. The exhibit will complement the “History, Gender, and Computing” conference and workshop hosted by CBI May 30 and 31 (see the announcement in this issue).

### **New CDC Photograph Website**

Under principal investigator Stephanie Horowitz, CBI archives staff are experimenting with new methods of outreach to our user communities. As part of this initiative, we have created a collaborative website for photographs from the Control Data Corporation Records. The new website, located at <http://sites.google.com/a/umn.edu/cdc-photos/Home>, allows invited collaborators to add publicly viewable comments about individual photographs in the collection. We hope that this site will make it possible for an online community of former CDC employees to reminisce, tell stories, and help to identify people, locations, hardware, and dates in the images. Anyone can view the site, but if you would like to contribute to the site by adding comments, please send an email to [horow021@umn.edu](mailto:horow021@umn.edu) so that we can provide you with an “invitation”. We are excited about this opportunity and hope that it will be useful to everyone interested in the history of the Control Data Corporation.

### **Collections Update**

CBI has had an active year in both the acquisition and the processing of collections. Since the fall, noteworthy acquisitions have included a collection of documents relating to the development of SGML and other influential hyper-text standards, a ten-box addition to the Calvin Mooers Papers, a collection of documents relating to the development of Gopher at the University of Minnesota, and a collection pertaining to computing in the humanities. We have also processed a number of collections, including the Walter L. Anderson Papers (CBI 28), the James W. Cortada Papers (CBI 185), and the 2007 accession to the Charles W. Bachman Papers (CBI 125). The finding aids to these collections are all available on the CBI website <http://www.cbi.umn.edu/collections/archmss.html> .

*Stephanie Horowitz and R. Arvid Nelsen*

# Exploring the Archives

## Resources on Gender and Computing

*The following article is the third in a series highlighting materials in the CBI collections. The topics in this series have been chosen both for their historical significance as well as to call attention to materials/collections that may not be known to the research community.*

Women had active roles in both pre-World War II human computing and the construction and programming of early electronic digital computers. Although they have continued to have important roles in the computing professions over the past half-century, they have encountered numerous obstacles. Even as women's participation in other scientific and technical fields in the U.S. substantially increased in recent decades, it has declined in computing education and computing professions.

While a few historians and other scholars have published important work on this topic, academics have only begun to scratch the surface in understanding the important and varied roles of women in computer and software history, and the gendered nature and dynamics of IT education and work. This is the motivation behind CBI's upcoming workshop-conference "History, Computing, Gender" to be held May 30-31, 2008 (see related article).

Overall, fewer archival resources exist to study the history of computing and gender than many topics in the history of computing. Nevertheless, the Charles Babbage Institute has numerous rich collections in this area. Some of these resources are described in this article. They include personal papers of pioneering women in computing (Gertrude Blanch, Frances E. Holberton, and Margaret Fox), organizational records of groups seeking to advance the position and experience of women in computing professions (Association of Women and Computing), CBI oral histories with women, and large corporate collections that contain material related to the gendered environments of computer corporations.

First, I'll discuss some of CBI's personal papers of pioneering women in computing. Gertrude Blanch completed a Ph.D. in algebraic geometry at Cornell University in 1935. She went on to become a prominent mathematician and computer specialist. In the late 1930s and early 1940s, Blanch served as technical director of the Work Projects Administration's Mathematical Tables Project. This project employed 450 human computers by the early 1940s, and in 1942 it became part of the wartime Office of Scientific Research and Development (OSRD). After the war Blanch worked at the National Bureau of Standards on various aspects of computation and numerical analysis and was one of the founders of ACM. In 1954 she was appointed senior mathematician at Wright-Patterson Air Force Base, where she worked until retiring in 1967. She published more than 30 technical papers in her career.

CBI's Gertrude Blanch Papers, 1932-1996, include personal and professional correspondence, published and unpublished writings, research notes, biographical materials, photographs, and other resources. This small but important collection was a major source in David Alan Grier's engaging and insightful book, *When Computers Were Human* (Princeton University Press, 2005).

Frances "Betty" Holberton joined the Eckert-Mauchly Computer Corporation in the late 1940s, one of the first two U.S. firms in the electronic digital computer field. She continued with the firm after it was acquired by Remington Rand Corporation in 1950 and became one of the leading figures in programming language development for Remington Rand.

CBI's Frances E. Holberton Papers, 1950s-1980s, include correspondence, reports, notes, and publications related to the development and standardization of FORTRAN, COBOL, and ASCII. The records also contain extensive documentation on the Eckert-Mauchly Computer Company and its early products (BINAC and UNIVAC), as well material on the NBS Standards Eastern Automatic Computer (SEAC).

Margaret Fox, a graduate of Wisconsin State College (1940), was a naval electronics engineer during World War II. In the early 1950s she joined the technical staff of the NBS Electronic Computer Laboratory, and subsequently, the Research Information Center and Advisory Service on Information Processing (RICASIP). From 1966 to 1975 Fox was the chief of the Office of Computer Information in the NBS Institute for Computer Science and Technology. She was a longtime member of ACM and the American Federation of Information Processing Societies (AFIPS), serving as the first secretary of the latter organization.

CBI's Margaret Fox Papers, 1935-1976, contain professional correspondence; records of boards, councils, and committees; various NBS reports; organizational charts and personnel lists; extensive project reports on early digital computers and applications; transcripts of talks; articles; project proposals; Naval Ordnance Laboratory records; and photographs.

In addition to personal papers, CBI also has records of organizations focused on issues of gender and computing, most prominently the Association for Women in Computing (AWC). AWC was founded in December 1978 in Washington, D.C., and incorporated in Maryland early the following year. At its founding, it had 15 charter members and quickly grew to support efforts at both the national and local levels. The AWC's goals were to promote communication among women in the field of computing and software, expand educational and professional development opportunities for women, maintain a speakers bureau, and give awards honoring the accomplishments of women in IT. AWC published a national newsletter, "Source," as well as supported local newsletters of AWC chapters in many major U.S. cities. AWC had a national annual conference, had a presence on the programs of ACM and NCC annual conferences, and was a member of American Federation of Information Processing Societies (AFIPS).

CBI's Association for Women in Computing Records, 1978-1991, includes correspondence of officers, administrative records, committee meeting minutes, conference programs, "Source" (incomplete run), contextual materials on founding documents, and some local newsletters. In addition to these national records, CBI also has a separate collection containing the records of the Association for Women in Computing's local organization in the Twin Cities.

CBI has nearly 400 oral histories with pioneering computer scientists and prominent figures in the computer, software, and networking industries. The vast majority of these interview transcripts are with men. However, there are a small number of oral histories with women, including the most downloaded oral history in the CBI database—a group oral history from the 1990 Univac Conference (CBI Oral History 200). Among the participants are Jean Sammet, Florence K. Koons, Frances E. Holberton, Jean Bartik, and Dorothy Armstrong. CBI has additional oral histories with Norma Anderson, Alice Burks, Margaret Fox, Laura Gould, Madge Griswold, Frances Holberton, Luanne Johnson, Margaret Loftus, Ethel Marden, and Adelle Tomash.

While most of the materials mentioned above focus on women's history of computing, CBI's collections can also be used to tease out the history of gendered environments within organizations. Here, our two largest corporate collections, Burroughs and Control Data, offer rich possibilities. The range of materials in these collections that could potentially be used to better understand gender and computing include personnel records, correspondence, corporate newsletters/magazines, and photographs.

CBI continues to seek collections to enhance and extend our considerable existing archival resources on the history of gender and computing.

*Jeffrey R. Yost*

## **Growing the "CBI Friends"**

We are delighted to announce that, thanks to so many of you, we are making real progress in growing our roster of annual supporters. The CBI Friends program is expanding at all levels, with a number of new "Friends" joining for the first time, healthy renewals of "Associates," "Colleagues," and "Sponsors," as well as expansion at the upper levels of "Patrons" and "Benefactors." To one and all, we are very honored to have your financial support. Overall, we experienced a gratifying 10 percent increase in the number of friends—and this on top of last year's astonishing 50 percent jump in contributors—and we are also recording a handsome increase in the total amount raised.

It's never too late to join the CBI Friends. For a \$100 contribution, we can mail you the forthcoming issues of *IEEE Annals of the History of Computing*, the field's pre-eminent journal. Its editor-in-chief is none other than CBI's very own Jeffrey Yost. Jeff has been

working long hours to bring readers the best in scholarship, literally from around the world, as well as informative news, biographies, anecdotes, and general happenings in the field. We mail the issues, as soon as we receive them from IEEE, directly to each of our CBI Friends. If you're feeling forgetful, you might join today with a double contribution at whatever level you choose and receive the remaining 2008 issues of *Annals* and all the 2009 issues. (Drop us a note and we can even save postage on next fall's annual appeal!)

As I mentioned in the last newsletter, my plan for financial stability for CBI requires us to double the size of the CBI Friends. If each of our present CBI friends enrolled just one member at the same level, hey presto, we'd be there in a flash. If you'd like some talking points about CBI, you can see my "Director's Desk" column in this newsletter. And if conferences, publications, grants, archives, exhibits, and supercomputers aren't enough, then there is always the staple argument to remember. That is, CBI depends on its core supporters for its core funding: maintaining the basic infrastructure of people and expertise so that we can go out and secure external funding for a variety of special projects. This is the basic proposition that allowed us to submit successful proposals this past year to ACM and NSF. Once again, to all of our donors, we give our heart-felt thanks.

*Annual Giving for 2008*

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\*Includes contribution to Arthur Norberg Travel Fund

# Arthur L. Norberg Travel Grant Recipients

Sharon Ghamari-Tabrizi and Bernardo Bátiz-Lazo were recently awarded Arthur L. Norberg Travel Grants of \$750 apiece in support of research travel to the Charles Babbage Institute.

Dr. Ghamari-Tabrizi, author of *The Worlds of Herman Kahn: The Intuitive Science of Thermonuclear War* (Harvard University Press 2005), will be conducting research for a book chapter, “Cognitive and Perceptual Training in the Cold War Man Machine System,” which is planned to appear in a forthcoming edited volume, Joel Isaac, ed. *The Cold War Pieces* (Cambridge University Press 2009). She will be conducting research using CBI’s System Development Corporation and National Bureau of Standards collections.

Dr. Bernardo Bátiz-Lazo, who has published extensively on the history of the banking and finance industries, is researching a study entitled, “ATMs in America and Britain: A Comparative History of Globalization in Retail Financial Markets, 1967-2005.” He will be conducting research using CBI’s Burroughs Corporation records to gain insights into the history of their cash dispensing machine business. He is Senior Lecturer in Business and Accounting History at the University of Leicester.

CBI’s Arthur L. Norberg Travel Grants are made possible by generous donations from individuals recognized in last issue of the *CBI Newsletter*. The fund facilitates travel support for scholars to use CBI collections and is named in honor of CBI’s founding director.

Jeffrey R. Yost

## Recent Publications

Akera, Atsushi. “The Life and Work of Bernard A. Galler (1928-2006).” *IEEE Annals of the History of Computing* 30:1 (Jan.-Mar. 2008): 4-15.

Aspray, William. “Leadership in Computing History: Arthur Norberg and the Charles Babbage Institute.” *IEEE Annals of the History of Computing* 29:4 (Oct.-Dec. 2007): 16-27.

Aspray, William, and Paul E. Ceruzzi, eds. *The Internet and American Business* (MIT Press, 2008).

Bentkowska-Kafel, Anna, and Trish Cashen. *Futures Past: Thirty Years of Arts Computing* (University of Chicago Press, 2007).

Campbell-Kelly, Martin. “The History of the History of Software.” *IEEE Annals of the History of Computing* 29:4 (Oct.-Dec. 2007): 40-51.

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*Compiled by Jeffrey R. Yost*

## ***Featured Photograph***

<<http://digital.lib.umn.edu/IMAGES/reference/cb/cb000342.jpg>>

In this 1955 photograph from the Burroughs Corporation collection (CBI 90), a woman is shown hard at work assembling computer hardware. In many promotional photographs from computer companies of the mid-20<sup>th</sup> century, women are portrayed either as bystanders or, at best, as passive users of a computer product. However, it is clear from this photograph that some women also played an integral role as creators of computing equipment.

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