The Charles Babbage Institute
For the History of Information Processing
Sponsored by AFIPS and the information processing community.
University of Minnesota
104 Walter Library
117 Pleasant Street, S.E.
Minneapolis, Minnesota 55455
Telephone (612) 376-9336

The Charles Babbage Institute Newsletter

Volume 5, Number 1 31 January 1983

ASSOCIATE DIRECTOR OF CBI APPOINTED

Dr. Dale Martin Johnson, Senior Lecturer in Mathematics at the Hatfield Polytechnic in the United Kingdom, will join the staff of CBI in Spring 1983 as Associate Director. Born in Evergreen Park, Illinois, within a short distance of the University of Chicago, he attended that institution, from which he received a Bachelor of Science degree in mathematics. He spent the next year as a programmer at Bell Telephone Laboratories. Eager to pursue advanced study, he left for the London School of Economics, University of London. There he studied with Karl Popper and Imre Lakatos, among others, and specialized in the history and philosophy of mathematics. Dr. Johnson's dissertation was an investigation of the history of general topology from about 1870 to 1930. In particular, he examined the transformation of this part of topology into an axiomatic-deductive theory and the philosophical implications of this development. Following receipt of his Ph.D. in 1972, he accepted the position at Hatfield.

At Hatfield he continued his research in the history of topology and combined teaching of the topic with offerings of courses in Logic, Topology, the Theory of Compatability and Automata Theory. These offerings led him to a renewed interest in computer science with regard to both certain aspects of logic in data-based management systems and informal aspects of pure computer science. Simultaneously, from his research emerged a major study of the history of the topological theory of dimension. His aim in doing this study of the work of L. E. J. Brouwer and H. Lebesgue was to provide a history of this important special theory but also to offer this history as an illustration of the general development of modern mathematical theories. In this and subsequent research on the American School of combinational topology, he has sought undeposited papers and correspondence of the principals and interviewed a number of prominent mathematicians about the development of the field. Dr. Johnson's knowledge of the theoretical aspects of computing and the general literature of the history of mathematics adds additional important strengths to CBI. His duties at CBI will cover the entire range of our activities, including the archival and data-base analysis programs.

Dale M. Johnson, CBI Associate Director

FROM THE DIRECTOR

Planning for a search for a CBI archivist stimulated CBI staff to evaluate the various aspects of the Institute's archival program and to develop structured approaches. Over the past few years, a series of projects were initiated to learn of holdings of manuscripts collections elsewhere and to accept materials offered to CBI. One project was the survey of archives conducted in 1981 to assemble information about collections already deposited. This information will serve as a basis for examining and describing holdings in other institutions. Since last March, Institute staff have been engaged in an assessment of significant events in the field of information processing, to enable us to judge what materials should be sought and how best to evaluate and process the materials already in the Institute. Another part of this labor can be seen in two other recent projects described elsewhere in this *Newsletter*, an interview analysis project and the historical bibliography project.

We solicited advice from many people about proper judgment of sources. From various parts of the world we received advice and encouragement about the archival program. We are particularly indebted to the members of the CBF Program Committee, Martin Campbell-Kelly from Warwick University in the United Kingdom, Spencer Weart and Joan Warnow of the American Institute of Physics, and David Allison of the Navy Laboratories Historical Program.

We have structured the continuing CBI archival program into four parts.

(1) As a first priority, the Program Committee suggested that we arrange the materials in the CBI and describe the materials in a forthcoming *Newsletter* so as to make the materials better known. There are five types of materials in the CBI: company information, photographs, manuals, interviews, and several collections containing private correspondence of individuals. Nearing completion is an analysis of the interviews done by or for or donated to the CBI. In December, arrangement of the other four types of materials was begun.

(2) The results of our literature survey and examination of the history of the field has put us into a position to embark on a solicitation campaign for the papers of persons active in the 1940s and 1950s. This part of the program is especially important because many of these persons have retired or will soon reach retirement age. Arrangements for deposit of their papers at CBI or other appropriate archives is timely.

(3) The nature of contemporary scientific, technological, and industrial activities suggests that the most important information needed to understand the history of these activities may not be in the correspondence of individuals. Rather, it may be found in other documents, both published and unpublished, where the unpublished materials may be in anyone's possession. We continue to evaluate this suggestion for the decades of the 1960s and 1970s in an exploratory endeavor to identify the types of information and where the information may be found.

(4) The CBI serves as a clearinghouse of information about sources for the history of the field. As noted above, our survey uncovered some information about holdings elsewhere. Using these results, we intend to examine and describe these holdings and include the descriptions in our data base.

This program, of course, is a long-term activity and we will continue to depend on the interest, information, and good will of everyone in the field. The response to earlier requests for materials and information on materials has been very heartening, as demonstrated in our last *Newsletter*, where we reported a long list of donors to the Institute's collections. We hope that readers continue to recognize the historical importance of papers and photographs in their possession and notify the CBI of their availability, and encourage their friends to do so also.

NEW STAFF

Those readers who have telephoned CBI recently may have noticed an unfamiliar voice answering our phones. Deadra Johnston, who joined CBI's office staff last November, is now handling many of the Institute's receptionist and secretarial activities. Ms. Johnston is a 1980 graduate of Edison High School in Minneapolis and was employed by the Minneapolis Public School District prior to joining CBI.

TAPE-RECORDED INTERVIEWS AT CBI

Emerson once suggested that there is properly no history, only biography. If he was correct, however, historians of information processing, benefitting from the computer's rapid yet recent development, can not only exploit biographical sources, but autobiographies through oral history as well. Accordingly, the Charles Babbage Institute undertook a project to collect, transcribe, and edit a group of 42 interviews with computer pioneers, which will provide a rich resource for researchers. The preparation of the interviews for researchers' use required a three-stage process. The taped interviews were first transcribed. Next, each interview was edited, indexed, and provided a running table of contents so the researcher can quickly determine the content of the interview and its applicability to his or her research. We intend to place the

index and table of contents in the Institute's automated data-base system currently under development. Third, negotiations with the interviewees to open the text to researchers, which have been undertaken throughout the process, are being completed so use of the interviews can proceed.

The content of the forty-two interviews held at CBI can be categorized into six thematic groups. The first group contains eleven interviews with members of the Moore School team that developed the ENIAC, including sessions with J. Presper Eckert, John Mauchly, Herman Goldstine, and Carl Chambers, among others. Primarily conducted by either Nancy Stern of Hofstra University or Christopher Evans for the Science Museum of London, the interviews address issues still unresolved or of continuing historical interest in the development of the ENIAC. Such issue areas as the process of development from the ENIAC to the UNIVAC, the patent issue among the Moore School staff, and the origin of such developments as the stored program concept are explored. The second group of interviews, closely related to the first, includes conversations with members of the Princeton University Institute for Advanced Study group, the group in which John von Neumann played a prominent role. Interviews with Goldstine, Julian Bigelow, James Pomerane, and Willis Ware, also largely undertaken by Stern or Evans, explore the developments at the IAS and consider in depth the enigmatic personality and actions of von Neumann.

A series of interviews with early members of the Stanford Computer Science Department conducted by Pamela McCorduck constitutes the third category. Focusing on one prominent department, McCorduck examines the development of computer science as an academic discipline and, more particularly, the growth of Stanford into one of the nation's most distinguished departments despite its relatively late entry into the field in 1963. The largest single set, and our fourth group, includes twelve interviews with early European computer scientists such as Freddie Williams, A. D. Booth, and Donald Davies. English luminaries predominate, but interviews with some continental scientists such as Konrad Zuse, Gerhard Dirks, and Antonin Svoboda are also held at CBI. The European interviews, conducted mainly by Evans, explore the development of non-American lines of computer development and will be a valuable source in studies of comparative computer development.

The fifth group contains interviews with prominent computer businessmen. This constitutes the smallest category, but efforts are underway to enlarge the collection. While only two interviews with computer executives have been collected to date, they include excellent conversations with James Birkenstock and R. Blair Smith, both of IBM. Finally, a miscellaneous category of five interviews represents conversations with historians, archivists, and other academicians.

The desire to generate a better understanding of the development of the computer field and the designs and motivations of prominent individuals in this field can be served in part by interviews held at the CBI. Accordingly, this Winter, the CBI will publish an Occasional Paper (#2) describing in greater detail the content, length, interviewer, and present availability of the interview collection. Anyone interested in the paper may receive a copy free of charge by writing the Institute.

Jon Gjerde
Research Assistant

CBI HISTORICAL BIBLIOGRAPHY

The massive spread of computer usage over the past four decades and the increasing impact of computer technology upon society has spurred interest and awareness about its historical development. The history of computing is becoming an interdisciplinary field, attracting the attention not only of computer scientists and historians but of journalists, economists and policy planners as well. As the amount of literature on the history of computing increases, a greater need exists to bring it together and organize it for scholarly research. As part of CBI's efforts to promote interest and investigation in the history of information processing, we have undertaken a systematic review of the field and plan to publish an annotated bibliography of the significant literature on the history of the development of computers.

The construction of a new bibliography in this area demands special consideration. Although the bibliography does not pretend to be exhaustive, a genuine effort has been made to provide a comprehensive cross section of the available scholarly and technical literature. The several hundred items chosen for inclusion concentrate on the period from the early 1940s to the mid-1970s and no attempt has been made to deal comprehensively beyond these dates although some overlap inevitably exists. The entries have been selected from a wide variety of books, serials and other publications. The serial literature is especially important, because articles frequently cover subjects not yet adequately treated in more extensive works. A few key, unpublished dissertations are also listed in cases where published monographic work is relatively scarce. All entries are fully annotated and arranged in categories convenient for easy use—General Works, Hardware, Industry Structure, etc. These entries are arranged both topically and chronologically, thereby

continued on page 4. . .

grouping material devoted to a specific theme and indicating historical development. Under each general category, entries are arranged alphabetically by author. The multiplication of rubrics has complicated the classification of entries and computer historians will undoubtedly quarrel with some of the arrangements made. Such differences, however, can only add to the quality of our future analyses.

Although intended primarily as a reference work, a good bibliography should also be a guide to the strengths and weaknesses of the field, to areas needing further research and to subjects which are already inundated with material. We hope this bibliography can show which subjects have dominated the thinking of past and present generations of computer historians as they struggle with the meaning of this technology and its impact. It is hoped that the CBI Bibliography on the History of Computing will be a significant addition to our knowledge. Accordingly, CBI will publish this bibliography as the first in its forthcoming series of Occasional Papers. This publication will be available this Winter and those interested may receive a copy by writing the Institute.

Edward Tebbenhoff
Research Assistant

ARCHIVIST POSITION ANNOUNCED

A national search is being conducted for an archivist for CBI. Printed below is a summary of the position description.

The archivist is responsible for managing the Collection, including acquisition, appraisal, arrangement and description, and preservation of records and for providing access to and reference service from the Collection. The archivist trains and supervises staff members, represents the Collection to its multiple constituents, and in consultation with the Institute director promotes use of the Collection through programs of instruction and research. In addition, the archivist is also responsible, in cooperation with the CBI director and staff, for promoting the preservation of records of the history of information processing in other archives and manuscripts repositories; he or she does so by working with other archivists and scholars in developing appraisal guidelines, coordinating placement of collections, aiding in the design of computer applications in archives administration, cooperating in building national data-bases of historical records, and advising organizations in developing records management programs.

The official position description, qualifications required for the position and application information can be obtained from the Personnel Office, 499 Wilson Library, 309 19th Aveune, South, University of Minnesota, Minneapolis, Minnesota 55455.

CBI INTERVIEW PROGRAM

The CBI recently initiated a series of tape-recorded oral history interviews with computer corporation executives. The interviews are with executives who were in a position to witness or directly implement projects that either contributed to growth or for some reason were unsuccessful. The first set will be with executives who also achieved positions in their company that gave them responsibility for strategy of wider corporate endeavors.

Our primary aim is to assemble a larger body of information than now exists in archives around the world about the growth and changes of the computer industry, executive analysis of changes in the industry's products, classes of customers, principal competitors, and particular corporate structures.

Interviews began with Robert E. McDonald, formerly President of Sperry, and Willis K. Drake, currently Chairman of the Board of Data Card and who was also an important member of several companies before founding Data Card. Our research in preparation for these interviews, as well as conversations with a number of corporate leaders, resulted in a list of other prominent individuals, whose knowledge spans 30 years of industrial developments. Several other persons on this list have already been approached to participate in interview sessions.

Transcripts of interviews will be made available as soon as possible, and the first set should be available for research in early summer 1983.

James Ross
Research Assistant

PUBLICATIONS

- Ernest Braun and Stuart Macdonald, *Revolution in Miniature: The History and Impact of Semiconductor Electronics*, 2nd Edition. (Cambridge, England: Cambridge University Press, 1982). ISBN0521289033. $9.95.

  A revised and enlarged edition of the 1978 publication. The chapter on large scale integration in the 1970s is new, and the chapters on the structure of the U. S. and international semiconductor industry were substantially revised.

- Robert L. Glass, editor, *Computing Catastrophes*. (Seattle: Computing Trends, 1983. $11.00. (Available from Computing Trends, 6925 56th Ave., Seattle,

WA 98118, USA.)

"Gathered here on these very pages, are the BIG computing failure stories of all time." All but one of the 18 tales are reprinted from *DATAMATION*.

- Dirk Hanson, *The New Alchemists: Silicon Valley and the Microelectronics Revolution*, (Boston: Little-Brown, 1982). ISBN0316343420. $15.95.

  An interesting contrast to the Braun and Macdonald revised edition. The historical sections of each chapter are reports of anecdotal evidence that is unreliable at best and sometimes quite wrong. The stories presented do make interesting reading.

- Japan Electronic Industry Development Association (JEIDA) and Japan Electronic Computer Co. (JECC), *Japanese Computers*, English Edition. (Latham, NY: Science and Technology Press, 1983). $250.00. (Available from Science and Technology Press, P. O. Box 614, Latham, NY 12110, USA.)

  This directory features mainframes, minicomputers, office computers, etc., of the Big Six Japanese computer manufacturers (Fujitsu, Hitachi, Mitsubishi, Nippon Electric, Oki and Toshiba) as well as other computer manufacturers. Information included describes hardware, system configuration, software and applications. The important element for historical purposes is a chronology of Japanese computers from 1950 to 1982.

- Recent articles of interest in the history of computing:

  Charles J. Bashe, "The SSEC in Historical Perspective," *Annals of the History of Computing*, *4*(October 1982):296-312.

  Allan G. Bromley, "Charles Babbage's Analytical Engine," *Annals of the History of Computing*, *4*(July 1982):196-217.

  Allan G. Bromley, "Charles Babbage and the Invention of Workmen's Time Recorders," *Antiquarian Horology*, *13*(September 1982):442-449.

  John G. Fletcher, "Computing at LLNL," *Energy & Technology Review*, (A publication of the Lawrence Livermore National Laboratory), September 1982, pp. 28-39.

  Nicholas Metropolis and Eldred C. Nelson, "Early Computing at Los Alamos," *Annals of the History of Computing*, *4*(October 1982):348-357.

  Brian Randell, "From Analytical Engine to Electronic Digital Computer: The Contributions of Ludgate, Torres, and Bush," *Annals of the History of Computing*, *4*(October 1982):327-341.

  Mike Williams, "History of Computation: Charles Babbage (1791-1871)--grandfather of the computer age," *Canadian Information Processing Society Review*, *6*(September/October 1982):20-23.

COMPUTER SYSTEMS PATENT ABSTRACTS PUBLISHED

CBI has learned of a potentially useful source of information on patents related to computing. Patent Data Publications, Inc. is publishing a seven volume set titled, *Computer Systems Patent Abstracts*. The volumes contain abstracts of every patent issued by the U.S. Patent Office between 1931 and 1982 pertaining to electronic digital data processing and calculating systems and associated software.

For additional information or to place an order contact J. Harding, Patent Data Publications, Inc., 901 North President Street, Wheaton, Illinois 60187. The price of the seven-volume set is $350 and it is scheduled for publication in March 1983.

SELECTED VOLUMES OF CBI REPRINT SERIES AVAILABLE

The fourth volume of the *Reprint Series for the History of Computing, High-Speed Computing Devices* by the staff of Engineering Research Associates Inc., is scheduled for publication in May, 1983. It was originally published by McGraw-Hill in 1950 and is now issued as a facsimile reprint with a new introduction by Arnold A. Cohen, a Senior Fellow at CBI, who was one of the original authors. This volume was a detailed survey of American systems of computation and discusses the design and operation of specific computing machines as well as the physical components of American computing machines in use around 1950.

The first three volumes, which were described in a previous *Newsletter* (Vol. 4, No. 3) are:

The Preparation of Programs for an Electronic Digital Computer, by M. V. Wilkes, D. J. Wheeler and S. Gill. Publication Date: December 1982. Price: $30.00 plus $2.50 for packing and shipping.

Babbage's Calculating Engines, assembled by Babbage's son, Major General H. P. Babbage. Publication Date: February 1983.

A Handbook of the Napier Tercentenary Exhibition or Modern Instruments and Methods of Calculation, edited by E. M. Horsburgh. Publication Date: March 1983.

These volumes are available from the Charles Babbage Institute or from Tomash Publishers, P.O. Box 49613, Los Angeles, California 90049. Readers may order volumes individually or subscribe to the entire series. Those who order a subscription to the series will receive a 10 percent discount.

PIONEER DAY '83 TO HONOR HOWARD AIKEN

The Pioneer Day program, scheduled for Wednesday, May 18 in Anaheim, California, will present two sessions honoring the accomplishments of Howard H. Aiken and the Harvard Computation Laboratory. The first session, "The Machines," will emphasize the evolution of Mark I through Mark IV. The second session, "The Laboratory," will discuss various aspects of the Harvard Computation Laboratory. A panel discussion on "Assessment of Howard H. Aiken's Contributions" will focus on the accomplishments of Aiken, both technical and administrative, and on his impact upon the emerging computing industry.

Pioneer Day is part of the 1983 National Computer Conference which is being held in Anaheim, California, on May 16 through May 19. The theme of the four-day conference is "The Emerging Information Age: Computers, Communications, and People," and in addition to Pioneer Day will include a technical program consisting of at least 80 sessions and more than 600 exhibits. For more information contact the American Federation of Information Processing Societies (AFIPS), 1815 North Lynn Street, Arlington, Virginia 22209, or telephone 703-558-3624.

SYMPOSIUM ON ARCHIVES FOR THE HISTORY OF COMPUTING

On May 5 and 6, 1983, The Computer Museum will host a symposium that addresses questions concerning archives for the history of information processing. The purpose is to share information about activities planned and underway at the museum, institutes, libraries, government agencies, corporations, universities, and individuals. Attendance will be limited in order to gain a broad cross-section of information. Anyone interested should contact Chris Rudomin at The Computer Museum, One Iron Way, Marlboro, Massachusetts 01752 or telephone 617-467-7570.

NEW TRUSTEES AND DIRECTORS ELECTED AT ANNUAL MEETING

The annual meeting of the Charles Babbage Foundation, held at the University of Pennsylvania in Philadelphia on October 21 and 22, 1982, began with a dinner meeting on Thursday evening and a presentation by Professor Paul R. Kleindorfer, Chairman of the Department of Decision Sciences at The Wharton School. Professor Kleindorfer spoke on "Productivity, Technology, and Organizational Innovation: New Trends in the Manufacturing Sector."

During the meeting on the following day Alfred D. Chandler, Jr. and Frank Vigilante were elected as Trustees and Bernard A. Galler and Per A. Holst were elected to serve on the Board of Directors.

Alfred Chandler is the Straus Professor of Business History at Harvard University. During his academic career he has also held faculty positions at the Massachusetts Institute of Technology and Johns Hopkins University. Since 1959 Professor Chandler has written a number of books and articles on the structure and the changes in structure over time of American business corporation, and in 1978 he received the Pulitzer Prize and the American Historical Association prize for his book, *The Visible Hand—The Managerial Revolution in American Business*.

Frank Vigilante is Vice President of Large/Intermediate Systems, American Bell Inc., Advanced Information Systems Division. His career at the Bell System began in 1957 as a member of the technical staff at Bell Laboratories working on the development of electronic switching systems. Since then Mr. Vigilante has held a number of positions at Western Electric and American Telephone and Telegraph Co. As a result of his work in switching systems, he has been granted 15 patents and has authored several articles.

Bernard Galler is Professor of Computer and Communication Science and Associate Director of the Computing Center at the University of Michigan. His many activities in organizations related to the computing field include serving as president of ACM from 1968-1970, serving on many AFIPS committees, and is currently Editor-in-Chief of their quarterly publication, *Annals of the History of Computing*. Professor Galler has written a number of books and articles on automatic programming and linear programming. His current research is in the areas of text-processing systems and computer analysis of musical sounds.

As a native of Norway, **Per Holst** received his degree in electrical engineering from the Institute of Technology in Trondheim and was a research physicist at the Christian Michelson Institute in Bergen, Norway, prior to joining The Foxboro Company in 1966. He held a several management positions before being appointed to his current position as manager of Information-Based Engineering and Automation. In 1976 he was elected president of the Society for Computer Simulation and since 1977 has been the Society's representative to the AFIPS Board of Directors. Mr. Holst has written two books indexing the literature of simulation and several articles on computer-related historical topics.

FRIENDS OF CBI

CBI offers a special welcome to the individuals listed below who have recently joined or renewed their membership in our Friends Program.

Babbage Sustaining colleague: New Member. The Association of Data Processing Service Organizations (ADAPSO).

Babbage Colleague: Renewed Membership. Robert D. Schmidt.

Participating Associates: New Members. Martin D. Alexander, Bruce Francis Elchison, John W. Fendrich, Henry Eric Firdman, Bernard A. Galler, James W. Hunt, Harold W. Lawson, Jr., Robert McClenon, David P. Moffett, Gary Mokotoff, John Morrissey, Allen Newell, Mina Rees, Michael J. Samek, William Scholer, Jeffrey Wenger, Peter White. Renewed Memberships. Bernice Arnold, Allan G. Bromley, Don A. Christensen, Charles A. Dickinson, Richard D. Dotts, Andrew Scott, Irving L. Wieselman.

Associate Member: New Members. J. Mack Adams, David R. Brown, W. H. Burkhart, Tat-Hung Chan, Michael Clare, Arnold A. Cohen, Richard Crump, Grady Early, Les Earnest, Lloyd D. Fosdick, Bruce Gilchrist, Martin A. Goetz, Jack Goldberg, David W. Gravens, Charles P. Hall, Carl Hammer, Henry Harr, L. C. Hobbs, George T. Jacobi, Helen L. LaFlare, Richard Larratt, Edwin Layton, Jeffry T. Lee, Will E. Leland, David E. Lilienfeld, Joyce Currie Little, Ronald A. May, Roger L. Mills, National Federation of State Humanities Councils, Kathryn E. Nielsen, Curt Noll, Leland P. Robinson, Aaron Seidman, Linda C. Smith, Joyce Statz, Maurice V. Wilkes, Brian J. Winkel. Renewed Memberships. The Bakken Library, John M. Bennett, Otto Bernath, Mr. and Mrs. John Diffenbaugh, John Dreyfus, Robert R. Everett, George E. Gourrich, Robert Mayer, Robert J. Miller, Byron E. Phelps, The Science Museum in London.

FRIENDS OF THE CHARLES BABBAGE INSTITUTE PROGRAM

Your renewed or new membership assists CBI's effort to assure the existence of an accurate record of the information processing field's evolution. If you are not currently a 'Friend of CBI,' please consider becoming one.

A Babbage Associate—$30 donation—besides supporting the work of CBI you will receive:

- the CBI Newsletter
- a 20% discount on the CBI *Reprint Series for the History of Computing*.

A Babbage Participating Associate—$75 donation—besides supporting the work of CBI you will receive:

- the CBI *Newsletter* and other occasional publications
- a 20% discount on the CBI *Reprint Series for the History of Computing*
- a years subscription of AFIPS *Annals of the History of Computing*; check the membership card if you already subscribe to *Annals* and we will extend it for one year.

A Babbage Colleague—$250 donation—besides supporting the work of CBI you will receive:

- the CBI *Newsletter* and other occasional publications
- one book of my choice from the CBI *Reprint Series for the History of Computing* and 20% discount on any other books from the Reprint Series
- a years subscription to AFIPS *Annals of the History of Computing*; check the membership card if you already subscribe to *Annals* and we will extend it for one year.

A Babbage Sustaining Colleague—$500 donation—besides supporting the work of CBI you will receive:

- the CBI *Newsletter* and other occasional publications
- two books of my choice from the CBI *Reprint Series for the History of Computing* and 20% discount on any books from the Reprint Series
- a years subscription to AFIPS *Annals of the History of Computing*; check the membership card if you already subscribe to *Annals* and we will extend it for one year.

A Babbage Patron—$1,000 donation—besides supporting the work of CBI you will receive.

- the CBI *Newsletter* and other occasional publications
- four books of my choice from the CBI *Reprint Series for the History of Computing* and 20% discount on any books from the Reprint Series
- a years subscription to AFIPS *Annals of the History of Computing*; check the membership card if you already subscribe to *Annals* and we will extend it for one year.

I would like to become a Friend of CBI:

( ) Associate Member—$30 ( ) Colleague—$250 ( ) Patron—$1,000
( ) Participating Associate—$75 ( ) Sustaining Colleague—$500

( ) My company has a matching gift program or might be willing to support the work of CBI

My check for $_____ is enclosed payable to the Charles Babbage Foundation which is the support arm of CBI.
Current **Annals** subscriber: ( ) yes ( ) no

Name _____

(Please show Prof., Dr., Mr., Ms., Mrs., Miss as appropriate)

Title _____

Department _____

Organization _____

Address _____

City, State, Country _____ Zip/Postal Code _____ Telephone _____

I am interested in the history of information processing:
( ) From the standpoint of someone involved in information processing. ( ) Both of the above.
( ) From the standpoint of a practicing historian. ( ) For other reasons (Please state reasons).

Return to the Charles Babbage Institute, University of Minnesota, 104 Walter Library, 117 Pleasant Street, S.E., Minneapolis, MN 55455.

The Charles Babbage Foundation
for the History of Information Processing

FOUNDERS

Gene M. Amdahl
Isaac L. Auerbach
Walter F. Bauer
Frank G. Chambers
Willis K. Drake
Richard Gilder, Jr.
Chester I. Lappen
Donald Lucas
John N. Maguire
Dan McGurk
William N. Mozena
Frank C. Mullaney
Kenneth H. Olsen
Max Palevsky
Clarence W. Spangle
Erwin Tomash

TRUSTEES

Gene M. Amdahl, Chairman, Trilogy Computer Systems

Paul Armer
Stanford University

*Isaac L. Auerbach, President, Auerbach Publishers, Inc.

*William O. Baker, President, Bell Telephone Laboratories (Retired)

*Walter F. Bauer, President and Chairman, Informatics General Corporation

*James W. Birkenstock, Vice President, IBM (Retired) and President, CBF Board of Directors

Alfred D. Chandler, Jr., Professor Harvard University

*Arnold A. Cohen, Charles Babbage Institute, University of Minnesota

*I. Bernard Cohen, Professor, Harvard University

*Willis K. Drake, Chairman, Data Card Corporation

*Aaron Finerman, Professor University of Michigan

*Bernard A. Galler, Professor University of Michigan

*Carl Hammer, Consultant

*Member, Board of Directors

*Per A. Holst, Manager, Research Operations, The Foxboro Company

*Arthur L. C. Humphreys, Director, International Computers Limited

Stephen G. Jerritts, Vice President, Honeywell Information Systems

Roger G. Kennedy, Director, National Museum of History and Technology, Smithsonian Institution

Melvin Kranzberg, Professor, Georgia Institute of Technology

Chester I. Lappen, Senior Partner Mitchell, Silberberg, and Knupp

Joshua Lederberg, President, Rockefeller University

C. Peter Magrath, President University of Minnesota

*Robert P. Multhauf, Senior Historian, Smithsonian Institution

William C. Norris, Chairman, Control Data Corporation

Kenneth H. Olsen, Chairman, Digital Equipment Corporation

Robert H. Sorensen, Chairman and Chief Executive Officer, Perkin-Elmer Corporation

*Clarence W. Spangle, Chairman, Memorex Corporation

Roger Staehle, Dean, Institute of Technology, University of Minnesota

*Erwin Tomash, Chairman Dataproducts Corporation (Retired)and Chairman, CBF Board of Directors

Frank S. Vigilante, Vice President, American Bell, Inc.

CORPORATE SPONSORS

AFIPS
American Telephone and Telegraph Co.
Broadview Associates
Burroughs Corporation
Comserve Corporation
CPT
Data Card Corporation
Dataproducts Corporation
Honeywell Corporation
IBM Corporation
International Computer Programs
International Computers, Ltd.
Informatics General Corp.
NCR Corporation
Perkin-Elmer Corporation
Arthur Young and Co.
Xerox Corporation

The Charles Babbage Institute
Arthur L. Norberg, Director

The Charles Babbage Institute
104 Walter Library
117 Pleasant Street, S.E.
University of Minnesota
Minneapolis, MN 55455

Non-Profit Org.
U.S. Postage
PAID
Permit No. 155
Minneapolis, MN

Return Postage Guaranteed
Address Correction Requested

N00082776 H 2
[redacted]
BOX 169
BEDFORD, MA 01730

The Charles Babbage Institute *Newsletter* is a publication of the Charles Babbage Institute for the History of Information Processing, University of Minnesota, 104 Walter Library, 117 Pleasant Street S.E., Minneapolis, Minnesota 55455, telephone (612) 376-9336. The *Newsletter* reports on Institute activities and on other developments in the history of information processing. Permission to copy without fee all or part of this material is granted provided that the source is cited and a copy of the publication containing the copied material is sent to the Institute.
©The Charles Babbage Institute for the History of Information Processing