The Charles Babbage Institute Newsletter

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COMMENT BY THE DIRECTOR

Activity in the history of computing has increased markedly over the past few years. Besides the founding of CBI, with its several internal archival and research programs and its external support for graduate students in the field, we have seen the opening of The Computer Museum in Marlboro, Massachusetts, a number of significant exhibits on historical topics—the most recent of which on FORTRAN appeared first at the last NCC, the founding of the *Annals of the History of Computing* published by AFIPS for publication of articles, and the appearance of several monographs on technical and industrial developments in computing. Perhaps another bellweather of this activity is the need for a 3rd edition of Brian Randell's *Origins of Digital Computers*, just published.

The sources used in these publications vary from manuscript materials in archives to the technical literature on library shelves, with a not inconsiderable sprinkling of personal reminiscences. To encourage more and broader studies, it is necessary to assemble more and varied archival materials, a task with which CBI is charged. Over the past year, CBI pursued several projects related to this task. The most important project is the Data-Base for the History of Information Processing. When complete, the Data-Base will contain information about principal developments in the field obtained from the computer and business literatures, manuscript sources, interviews and photographs. A report on the status and aims of this project can be found elsewhere in this *Newsletter*.

There has been some concern recently for too much attention to hardware development, with a small amount of simultaneous analysis of software, and too little attention to industrial activity. Considering the large role of entrepreneurs in the growth of this field, this is a valid concern. The nature of the field of information processing, perhaps ascribable to its relative infancy, is different than other areas, such as biology or physics. Our research confirms that it is not possible at this time to separate the field into hardware, software, application and industrial organization, without severely limiting the historical perspective and significantly compromising historical interpretation. In those works where a more limited perspective has been taken, more description than interpretation has been the result. By providing more insight into this phenomenon and a greater array of materials for analysis of the entire spectrum, CBI hopes to contribute to increasing historical investigations of computing and greater understanding of the impact of computing in our society. As part of this contribution, CBI took another step, in conjunction with Tomash Publishers, to make available rare materials related to the early days of digital computing through its reprint series. In the last issue of the *Newsletter* we described this activity. This fall we celebrate inauguration of this series with three of the more important volumes in the history of computing, also described elsewhere in this *Newsletter*. All this activity, both in CBI and at other institutions, provides ample testimony to the growing interest in the history of a field that is having a substantial impact on society.

CBI BEGINS DEVELOPMENT OF DATA-BASE

Electronic digital computers have now been in use for almost four decades and an interest, awareness and knowledge about their historical development is steadily growing. One area restraining growth in historical activities in this field is the lack of archival materials. To craft effective strategies for identifying and appraising the historical significance of materials produced over the last four decades, there is a need to provide a comprehensive analysis of the computer literature. As part of CBI's efforts to obtain a broad and balanced view of the evolution of the field of information processing, we are engaged in a systematic review of

the entire range of literature associated with computer science, including academic and industrial activities.

The stages in the data gathering for this effort are:

(1) Reviewing the primary technical literature in the field.

(2) Analyzing the trade press publications.

(3) Examining the secondary literature, including historical treatments by participants and the historical narratives produced by others. This information is categorized by its primary focus and cross indexed in as many ways as necessary to provide easy access to the data.

This analysis of the data will serve several uses, both within CBI and for others working on historical topics involving computer science or generating archival materials. The data collection occurred during the summer of 1982. This is to be followed in the fall of 1982 by an analysis of the data. Our analysis will provide us with an overall framework for CBI's subsequent projects. For example, we expect to isolate the following.

(1) Literature that provides a good overview of the principles governing hardware design, both in the early years when machines were singly designed and later when families of machines were in vogue.

(2) Literature that provides a good overview of the principles underlying the development of programming techniques and languages, and the evolution of programming systems.

(3) A chronology of industrial activities, especially company entry into the computer field, data about products and marketing, personnel, and changes in the industry's infrastructure.

A second level of analysis will reveal the aspects of historical development that cannot be gleaned from these materials. We will then search for the type of materials where such information can be obtained, and identify who might be the source for the materials. In addition, a list will be compiled showing the people active in the field, their positions at successive times, and their specialties. This information will be used to develop priorities for solicitation of archival materials and interviews.

A third level of analysis will key the bibliography, event trees in hardware and software design and industrial developments, to each other. This will provide the basis for a number of possible projects from historical research to curriculum design by anyone who wishes to undertake such projects. Moreover, this material will be useful in CBI's clearinghouse activities, because it provides the minimal base for responding to inquiries.

While a substantial part of this project will be completed by the end of 1982, frequent updates of the data base will be made as information about new archival materials is received and other sources reveal the need to do so.

McHENRY AWARDED FELLOWSHIP FOR SECOND YEAR

William K. McHenry received an extension of his CBI Fellowship for a second year to support his doctoral dissertation research at the University of Arizona at Tucson. His dissertation will be an investigation of the absorption and diffusion of computing in the U.S.S.R. at the enterprise level based on a study of technical, social, economic, political and historical factors. It will include an analysis of the history of Soviet software.

INTERNATIONAL SYMPOSIUM ON PROBLEMS OF DOCUMENTATION PLANNED

An international symposium on problems of documentation for the history of science is being planned by the Commission on Documentation of the Division of History of Science/IUHPS, in cooperation with the History of Medicine and Science Unit, University of Edinburgh. It will be held in Edinburgh, Scotland, on September 16-20, 1983. The symposium will encompass a broad range of topics on the preservation, description and access to primary sources of all physical kinds; the bibliographic control of current historical literature and of the older published sources; examples of uses of sources; and a consideration of the "archives of the future" being currently created by various technological advances.

The program is in an early planning stage and the Chairman of the Commission, Nathan Reingold (Joseph Henry Papers, Smithsonian Institution, Washington, D.C. 20560), welcomes suggestions of other topics and of the names of potential speakers. Attendance is limited to sixty persons (including up to 10 spouses) by the symposium facility. Those interested in participating should write to Professor E. G. Forbes, History of Medicine and Science Unit, University of Edinburgh, High School Yards, Edinburgh EH1 1LZ, United Kingdom.

INVISIBLE COLLEGE DEPARTMENT

"Invisible College" is a term which refers to a set of individuals working in a specialized field of knowledge who, despite varied geographical locations, slowly get to know one another and begin exchanging ideas and information about their field. As a clearinghouse, the Charles Babbage Institute has catalyzed the growth of the invisible college of individuals interested in the history of computing. This department of the Newsletter is designed to introduce our readers to the work of other individuals in the field. We hope that you will get in touch with each other directly, or by writing to the Institute about a particular item.

F. W. Kistermann is **researching the early years of the German IBM company** which for the first thirty-nine years was called the Deutsch Hollerith Machinen Gesellschaft (German Hollerith Machine Co.). The primary focus of his research is the invention of the Hollerith system, other related developments that were occurring at that time, and to a lesser extent some aspects of the pre-Hollerith era. He is interested in collecting documents and pictures for pre-electronic machines and in some specific instances such materials for electronic computers.

Dr. Kistermann recently completed a report on the history of the design and uses of the Hollerith punch card. In his article, he discussed changes in the size, shape and use of punched cards from 1886 to 1900 and included information on the distribution of punched positions on the cards. Requests for copies of this report or comments regarding his current research project can be sent to him at the Historical Archives, IBM Germany, P.O. Box 80 0880, D-7000 Stuttgart 80, Federal Republic of Germany.

Walter H. Hellman has recently completed a dissertation on **"Norbert Wiener and the Growth of Negative Feedback in Scientific Explanation**; with a Proposed Research Program of 'Cybernetic Analysis'." Some of the major themes of his work that concern historical issues are:

- The presentation of a detailed study of the historical process by which the use of negative feedback became assimilated by widely differing disciplines in the 1940s; and
- The presentation of a detailed study of the remarkable role played by Norbert Wiener in the assimilation and dissemination of the negative feedback methods.

Anyone interested in receiving more information about Mr. Hellman's research may contact him at the Department of General Science, Oregon State University, Corvallis, Oregon, 97331.

The National Physical Laboratory is sponsoring a **one-day meeting on Charles Babbage** on December 10, 1982, in Teddington. The scheduled speakers represent several different areas of research related to the life and work of Charles Babbage. Specific topics to be presented at the meeting are:

"Charles Babbage and the Applications of Science," by R. A. Hyman, consultant and author;

"The Mathematical Work of Charles Babbage," by J. M. Dubbey, author;

"Babbage's Programs for the Analytical Engine," by A. G. Bromley, University of Sydney, Australia; and

"The Heritage of Charles Babbage in New Zealand and Australia," by G. J. Tee, University of Auckland, New Zealand.

Further details and registration information may be obtained from Mr. R. S. Watson, Division of Information Technology and Computing, National Physical Laboratory, Teddington, Middlesex, TW11 OLW, United Kingdom.

The evolution of **John von Neumann's** personal philosophies and attitudes concerning mathematics, moral issues and other related areas is being traced by his brother Nicholas A. Vonneuman. Mr. Vonneuman hopes to provide some insights on the influence and impact of John von Neumann's early years. Although he has begun to reorganize notes that he has made over the years on his brother's childhood and early adulthood, he has not yet decided the final form his writing will take. He is anxious to talk with others who may be working on a biography of John von Neumann to discuss the possibility of a collaborative effort. Mr. Vonneuman's address is 1396 Lindsay Lane, Meadowbrook, Pennsylvania, 19046.

CBI CHARTER APPROVED

After deliberation by a subcommittee of the Board of Directors and presentation to the CBF Program Committee and the AFIPS History of Computing Committee, the Board's Executive Committee approved the following charter for CBI.

THE CHARLES BABBAGE INSTITUTE FOR THE HISTORY OF INFORMATION PROCESSING is:

■ an archival center whose principal objective is to promote and to develop national collections of historically significant materials in the history of information processing;
■ a clearinghouse for information about the location and contents of historical material and about persons interested in the history of information processing;
■ a contemporary history center that fosters research in and writing about the development of the field of information processing through the use of historical materials available at the Institute and at other repositories.

The constituent parts of the Institute's program are:

generating information files about the events, persons and equipment important to the history of information processing;

developing strategies for effective collection and preservation of historically significant manuscripts and records collections;

soliciting historical materials for preservation at the Institute or at another appropriate archives;

advising individuals about the historical value in their papers and aiding them in selection of a repository;

building national collections of archival material and maintaining a data base on holdings in all repositories;

advising institutions and corporations on records management, including isolation of historically relevant materials;

supporting, where feasible and appropriate, the work of others either through fellowships to individuals or direct support to organizations; and

conducting retrospective analyses of significant events and impacts, and issuing reports, publications and indexes as guides to the field.

SELECTED VOLUMES OF CBI REPRINT SERIES AVAILABLE

During the next five years the *Reprint Series for the History of Computing* will make available a substantial collection of early and difficult to obtain literature relating to the history of computing. The first three volumes will be available over the next few months beginning October 1st and may be ordered from the Charles Babbage Institute or from Tomash Publishers, P.O. Box 49613, Los Angeles, California, 90049.

The first volume to be released is *The Preparation of Programs for an Electronic Digital Computer*, by M. V. Wilkes, D. J. Wheeler and S. Gill. It was first published in 1951 by Addison-Wesley. This volume is a facsimile reprint with additional plates and is the first practical text on computer programming. The volume is based on the programming system of the EDSAC computer at Cambridge, England, in the early 1950s. Special attention is paid to the EDSAC's use of a library of subroutines. The book has a new authoritative introduction by a computer historian, Martin Campbell-Kelly of the University of Warwick, England.

Babbage's Calculating Engines will be published in November. It is a collection of papers about Babbage's difference engine and analytical engine assembled by his son Henry Prevost Babbage and was originally printed in 1889 in England. The difference engine and analytical engine anticipated the logical conceptions of 20th century digital computers. This edition contains additional plates and a new introduction by Babbage scholar Allan G. Bromley, University of Sidney, Austrialia.

A third volume, scheduled for publication in December, is *A Handbook of the Napier Tercentenary Exhibition or Modern Instruments and Methods of Calculation*, edited by E. M. Horsburgh. It was originally issued in 1914 by the Royal Society of Edinburgh. This is a facsimile reprint of the official guide to the Napier Tercentenary Exhibition of 1914 and a general survey of calculating devices used up to that time. It includes a well written account of Napier's life and times as well as detailed descriptions of the use of the abacus, slide rule, planimeters, harmonic analyzers, integranoneters, and differentiating machines. Also included are discussions of mathematical tables and mathematical models for plane geometry in use at the time. The material is beautifully illustrated with a multitude of engravings, photographs and diagrams. This edition is provided with a new introduction by Michael R. Williams, University of Calgary, Canada.

(If you are interested in purchasing any of these volumes you may wish to note our new membership plan which is described in another section of the *Newsletter*. It provides discounts or free volumes with certain categories of membership.)

PUBLICATIONS

■ Brian Randell, *The Origins of Digital Computers: Selected Papers*, 3rd. Edition (Berlin, SpringerVerlag, 1982). ISBN 3540113193. $28.00.

In this third edition of Randell's exceptional work, he has added papers by Vannevar Bush (1940), J. A. Rajchman et al (1942), and his 1977 paper on COLOSSUS. A substantial number of additions were made to the bibliography.

■ Anthony Hyman, *Charles Babbage: Pioneer of the Computer* (Princeton University Press, Princeton, NJ, 1982). ISBN 0691083037. $22.50.

This is a substantial and significant biography of Charles Babbage. Hyman employed many archival sources, which offer rich views of Babbage and his times. He tried, with a measure of success, to demonstrate the premises behind many of the projects and enterprises Babbage became involved in during his lifetime. Hyman claims that many of these were intimately tied to the premises behind the difference and analytical engines research. This book is the best biography of Babbage to date.

■ Harry Wulforst, *Breakthrough to the Computer Age* (New York, Scribners, 1982). ISBN 0684174995. $12.95.

A straightforward description of the activities in Philadelphia from 1943 to 1951 involving developments from ENIAC to UNIVAC, written by a former public information officer of the Sperry Corporation.

■ *Scientific American—The Mechanization of Work*, Volume 247 (September 1982).

This single topic issue is devoted to an area that was and continues to be highly affected by developments in information processing. Many of the articles have a decidedly historical flavor to them, and offer a perspective on how mechanization occurred in a number of areas from agriculture to the office.

■ Recent articles of interest in the history of computing:

Martin Campbell-Kelly, "The Development of Computer Programming in Britain (1945 to 1955)," *Annals of the History of Computing*, 4 (April 1982):121-139.

William Friis, "A 20-year Retrospective on Teller Terminals," *ABA Banking Journal*," 74 (April 1982):71,75-6,78.

Per A. Holst, "George A. Philbrick and Polyphemus—The First Electronic Training Simulator," *Annals of the History of Computing*, 4 (April 1982):143-156.

Mina Rees, "The Computing Program of ONR, 1946-1953," *Annals of the History of Computing*, 4 (April 1982):102-120.

George R. Stibitz, "Automatic Computing Machinery," *Annals of the History of Computing*, 4 (April 1982):140-142.

CENTER FOR THE HISTORY OF CHEMISTRY ESTABLISHED

The Center for the History of Chemistry (CHOC) was established in January 1982 with the joint support of the American Chemical Society and the University of Pennsylvania. The goals and planned activities of the Center have many similarities to those of CBI; and indeed CBI is one of the organizations that served as a model for the Center. CHOC's mission is to encourage research and provide resource information in the areas of the history of chemistry, chemical engineering and the chemical process industries.

Some of its immediate aims are to locate manuscripts and archival records of individuals, societies, trade associations, and companies; to offer aid in sorting and cataloguing papers and preparing inventories; to encourage the deposit of personal papers and other records in appropriate regional archives; to develop a program of interviews and undertake oral histories of major developments in modern chemistry; to develop a central computerized catalogue of manuscripts; and to serve as a clearinghouse for information about materials held in respositories around the country.

In conjunction with the Divison of History of Chemistry, the Center sponsored a symposium on, "The Task Ahead," at the American Chemical Society National Meeting in Kansas City on September 13, 1982. At the session Arnold Thackray, director of CHOC, discussed the Center's progress and programs. Several other presentations explored issues of documentation and preservation. Arthur L. Norberg, CBI Director, spoke on the challenges facing centers for contemporary scientific and technical history and on the opportunities for cooperation among such centers in addressing issues that transcend disciplinary context.

A SPECIAL THANK YOU TO CBI SUPPORTERS

We wish to take the occasion of the annual meeting of the Trustees, held in Philadelphia on October 21 and 22, to offer a special thank you to all those who have supported the Institute and Foundation either through financial support or the donation of materials for our archives.

NEW DIRECTOR ELECTED TO CBF BOARD

Carl Hammer is the most recent member to be elected to the Board of Directors. He is currently an Adjunct Professor at the American University and a Visiting Professor at the Defense University in Washington, D.C. In addition to having held positions at Cornell University, the Radio Corporation of American and Sperry Univac, Dr. Hammer has been extensively involved in many of the professional organizations associated with the information processing community. He is the recipient of the Computer Sciences Man-of-the-Year Award from the Data Processing Managment Association and the Distinguished Service Award from ACM. He has served as a Director of the American Federation of Information Processing Societies since 1973 and was nominated by AFIPS for this position on the CBF Board.

NEW FOUNDERS

John N. Maguire and Richard Gilder, Jr. have recently become Founding Members of the Charles Babbage Foundation.

Mr. Maguire is Chairman and Chief Executive Officer of Software AG of North America, Inc. of Reston, Virginia, which he founded in 1972. Previously, he held positions involving the design and application aspects of computers and computerized information systems with CACI, Lockheed Missiles and Space Company, and the Raytheon Company.

Mr. Gilder is President and a senior partner in Gilder, Gagnon and Company, Inc., a New York Brokerage House.

CBI ANNOUNCES NEW BENEFITS AND MEMBERSHIP CATEGORIES FOR SUPPORTERS

As many of you who are already members of the Institute's Associate program are aware, CBI receives its support from the information processing community through your membership donations, corporate sponsorships and AFIPS. 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. If you are a "Friend" please pass this information on to a friend of yours who then might become a "Friend" of ours.

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*
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A Babbage Colleague—$250 donation—besides supporting the work of CBI you will receive:
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- a year's 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 year's 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 year's 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:

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( ) 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.
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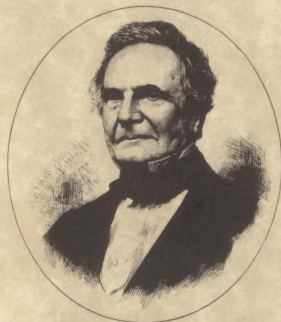
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