Computer Oral History Collection, 1969-1973, 1977

Interviewee:	Ingerman
Interviewer:	
Date:	June 17, 1971
Repository:	Archives Center, National Museum of American History
Description:	No transcript

Abstract:

Citation: Computer Oral History Collection, Archives Center, National Museum of American History.

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Computer Oral History Collection, 1969-1973, 1977

Interviewee:	David R. Israel
Interviewer:	Richard R. Mertz
Date:	April 22, 1970
Repository:	Archives Center, National Museum of American History
Description:	Transcript, 40 pp.

Abstract: Israel, born in 1927, came from a family that wanted him to be a Harvard-trained lawyer; instead, he studied electrical engineering at the Massachusetts Institute of technology (MIT) from 1945 to 1949, interrupting his work for thirteen months to work on radio in the Navy. At MIT, he studied numerical computation with Z. Kopal, analog computers with S.H. Caldwell, and programming digital computers with W.G.Welchman. He did graduate work at MIT's Digital Computer Laboratory. There, following the lead of Jay Forrester, he became especially interested in real time computer applications and wrote a thesis on civilian air traffic control in 1951. He also worked on Project Charles, a program intended to use the Whirlwind computer for defense against manned bombers. The Whirlwind featured self-controlled marginal checking, core memory, a light pen, and real time control applications. By the end of 1950 engineers were displaying radar information on an oscilloscope. By April 1951 they could program bomber interceptions. Soon, Israel was in charge of operational design of a new computer for air defense, the Semi-Automatic Ground Environment (SAGE). He worked on the SAGE until 1956, then on devices used with it and then on monitoring SAC traffic with the Whirlwind. When MITRE Corporation separated from MIT in the late l95Os, Israel went with MITRE. He moved to Washington in 1966 and eventually became a civil servant. People mentioned frequently in this interview are Charles W. Adams. John W. Carr, Robert Everett, Jay W. Forrester, Howard Kirshner, Alex Orden, Alan J. Perlis, Irving N. Rabinowitz, and John von Neumann.

Citation: Computer Oral History Collection, Archives Center, National Museum of American History.

Computer Oral History Collection, 1969-1973, 1977

Interviewee:	David Jacobsohn
Interviewer:	Henry Tropp
Date:	June 21, 1972
Repository:	Archives Center, National Museum of American History
Description:	Transcript, 83 pp.
Abstract:	See Argonne National Laboratories interview.
Citation:	Computer Oral History Collection, Archives Center, National Museum of American History.
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Computer Oral History Collection, 1969-1973, 1977

Interviewee:	Mario Juncosa
Interviewer:	Richard R. Mertz
Date:	February 23, 1971
Repository:	Archives Center, National Museum of American History
Description:	Transcript, 130 pp.

Abstract:

Citation: Computer Oral History Collection, Archives Center, National Museum of American History.

Computer Oral History Collection, 1969-1973, 1977

Interviewee:	Josef Kates
Interviewer:	Henry Tropp
Date:	June 29, 1971
Repository:	Archives Center, National Museum of American History
Description:	Transcript, 58 pp.

Abstract: This interview begins with Kate's recollections of the computer from the period 1945 to 1950.

Citation: Computer Oral History Collection, Archives Center, National Museum of American History.

Transcript: http://invention.smithsonian.org/downloads/fa_cohc_tr_kate710629.pdf

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Computer Oral History Collection, 1969-1973, 1977

Interviewee:	Leroy Kaufold and Walt Edwards
Interviewer:	Robina Mapstone
Date:	February 2, 1973
Repository:	Archives Center, National Museum of American History
Description:	Transcript, 22 pp.

Abstract: Interview conducted at Northrop in the Avionics Department, the Electronics Division.

Roy Kaufold entered the computer field in 1947 working with digital technology, specifically star trackers at Northrop. Walt Edwards got into the computer business upon graduation from Cal Tech in 1951. Edwards took a job with Bill Jet Scientific Instrument Company doing analog work. In 1952, Edwards joined Computer Research Corporation (CRC) as a junior engineer working for Harold Sarkissian on the Decimal DDA. Edwards comments briefly on the CRC 105, 102, and 102A. General discussion of computer development post World War II, the technology available, components available, and the individuals involved. Both Edwards and Kaufold discuss the Boolean technique. Colleagues mentioned frequently are Phil Taylor, George Finn, Fred Stevens, Dr. Kindle, Floyd Steele, Richard Sprague, and Don Eckdahl.

Citation: Computer Oral History Collection, Archives Center, National Museum of American History.

Transcript: http://invention.smithsonian.org/downloads/fa_cohc_tr_kauf730202.pdf

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Computer Oral History Collection, 1969-1973, 1977

Interviewee:	James R. Killian, Jr.
Interviewer:	Henry Tropp
Date:	June 13, 1972
Repository:	Archives Center, National Museum of American History
Description:	Transcript, 27 pp.

Abstract: Killian, born in 1904, obtained his B.S. from MIT in 1926, worked for a few years on Technology Review, and then rose through the administration of the Massachusetts Institute of Technology (MIT), serving as President from 1948 through 1959. Admiral DeFlorez, an MIT graduate, encouraged MIT engineers to develop flight simulators during World War II, envisioned space satellites and, after the war, helped to start the Office of Naval Research. Norbert Wiener's numerous discussions assisted MIT engineers in computer design. Wartime research on radar and gun sights encouraged engineers there to consider the actual application of their work in the field. This attitude influenced the Research Laboratory of Electronics, although the separate MITRE Corporation eventually was formed to develop the Semi-Automatic Ground Environment (SAGE) computer for air defense. Professor Draper especially believed that engineers should supervise production of machines they had designed, so that the Draper Laboratory not only designed inertial guidance systems, but oversaw their production. Vannevar Bush initiated research on computers at MIT with his work on the differential analyzer. The network analyzer also was developed there early. During World War II, some machines on Bush's plans were used in cryptanalysis. Forrester invented the magnetic core memory for use in the Whirlwind. Killian comments on Forrester's patent for the magnetic core. From work on the Whirlwind, Forrester moved to study the application of computers to management. George Valley envisioned a computerized system of spotting airplanes, leading to the SAGE. Whirlwind also trained engineers with entrepreneurial talents like Kenneth Olsen. Finally, Killian comments on Gordon Brown and digital control of machine tools. People mentioned frequently in this interview are Gordon Brown, Vannevar Bush, C. S. Draper, Jay Forrester, and Harold Hazen.

Citation: Computer Oral History Collection, Archives Center, National Museum of American History.

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Computer Oral History Collection, 1969-1973, 1977

Interviewee: Lester Kilpatrick
Interviewer: Robina Mapstone
Date: May 17, 1973
Repository: Archives Center, National Museum of American History
Description: Transcript, 95 pp.

Abstract: Les Kilpatrick was born in 1923 and received his undergraduate degree in engineering from Texas Tech University. In 1948, he received his master's of electrical engineering from the Massachusetts Institute of Technology (MIT). While at MIT, Kilpatrick worked in the project meteor Laboratories doing work on the development of digital multiplex telemetry systems. This was Kilpatrick's first introduction to anything digital. In 1948, he left MIT for California and a job at North American Aviation. At North American, Kilpatrick became involved with a division that was developing a guidance system for a Navajo missile. Kilpatrick specifically worked on digital computing equipment to solve guidance equations that involved inertial navigation. He comments on his work with telescopes and the problem of a gyro-stabilized platform. Discusses Floyd Steele and his group which built the Magnetic Drum Digital Differential Analyzer (MADDIDA). This was to be the first divergence between East and West Coast computer design approaches. The west coast did everything by logical equations and with synchronous machines while the east coast drew block diagrams and used asynchronous machines. Kilpatrick was involved in building two vacuum tube machines, the North American Programmed Automatic Computer (NATPAC) and the North American Digital Analyzer (NATDAN). NATPAC was a general purpose computer developed to punch up star tapes. Also comments on the reliable COMPuter (RECOMP) and the Field Artillery data Computer (FADAC) (serial computers), and disk memory developed at North American. Kilpatrick discusses his involvement with transistors in 1950-1951. Transistors were used in the NATDAN, the first transistorized airborne computer that was ever built in the world. In 1959 Kilpatrick left North American and started CalComp, California Computer Products. CalComp was formed in 1953 with one person, Bob Morton. Not until 1959 did the others—Gene Seid, Ron Cone, Bob Morton, and Gene Beckman— join fulltime. The first contracts consisted of government cost-plus-fixed-fee development contracts. This four engineer, one lawyer team received its first contract from Frankfort Arsenal in 1960 to

develop a portion of the FADAC system, a display unit. The first real sizeable contract came from NASA which needed a timing control device to go on the Nimbus satellite, a weather observation satellite. By 1962, CalComp switched from government contract work to primarily producing plotters which made more money. Kilpatrick discusses further financial developments of the CalComp, other contracts and alliances that were made with other companies to design and build a product. Those mentioned in the interview include Gene Seid, Floyd Steele, Dick Tanaka, Willia Ware, George Canova, and Glenn Hagen.

Transcript: http://invention.smithsonian.org/downloads/fa_cohc_tr_kilp730517.pdf

Computer Oral History Collection, 1969-1973, 1977

Interviewee:	Claire Kilty
Interviewer:	Henry Tropp
Date:	June 21, 1972
Repository:	Archives Center, National Museum of American History
Description:	Transcript, 83 pp.

Abstract: See Argonne National Laboratories interview.

Citation: Computer Oral History Collection, Archives Center, National Museum of American History.

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Computer Oral History Collection, 1969-1973, 1977

Interviewee: Paul King
Interviewer: Robina Mapstone
Date: February 27, 1973
Repository: Archives Center, National Museum of American History
Description: Transcript, 84 pp.

Abstract: After working on fire control in the Navy, King studied mathematics at several colleges, graduating from California State Polytechnic College in 1952. He went to work under Jack van Paddenburg at Lockheed, using the Card Programmed Calculator (CPC), the IBM 604, and then the IBM 701, to program problems of aircraft design and flight. In 1954, King went to Electrodata just as the first Datatron was completed for the Jet Propulsion Laboratory. Ernst Selmer had designed the machine to solve matrix equations for mass spectrometers, but it proved useful to insurance, textile, petrochemical, and banking companies. Sold as the Electrodata 205, it had a magnetic drum memory and a B-box or early index register for repetitive calculations. Its successor was the Burroughs 220, a late vacuum tube machine with magnetic core. By 1959, Burroughs had planned the Burroughs 2111, a machine with magnetostrictive delay line memory and a general purpose controller that governed more than one input/output device. This was the first machine where King had some influence on design, as he was part of product planning and not training users in programming. The introduction of the IBM 1401 ended the project. In 1959, King attended a conference at the University of California at Los Angeles on utilization of giant computers. He was impressed by the ability of Ferranti's Atlas computer to run multiple programs and by the arithmetic system of the Bendix G-2O. The Burroughs 5000 not only drew on these features, but was designed to take over as much routine as possible in programming and operation. It featured a general purpose i/o controller, descriptors (control words), and programming that proceeded entirely through compilers. The machine handled AlGOLrithmic Language (ALGOL), Common Business-Oriented Language (COBOL), and had a magnetic drum memory of 64,000 words. To meet both commercial and scientific needs, it could process either 8 characters at a time or 48-bit words. The drum memory was replaced and the software was modified to produce the Burroughs 5500 and then the Burroughs 5700. The 5000 was first sold in 1962 and the 5700 might still be in production (in 1973), making it one of the longest-selling computers. Later

designers, particularly those of the IBM 360, showed little interest in the stack structure or other features of the 5000. Burroughs also produced a simpler, less successful machine, the Burroughs 200. Its D825 was installed as a backup computer, the Back-up Interceptor Control (BUIC) at Semi-Automatic ground Environment (SAGE) sites and as the Ballistic Missile Early Warning System (BMEW) for ICBH's. Burroughs also made a machine for digitizing data from the SAGE. Its D830 had a film memory and was used in airline reservation systems. The very large Burroughs 8500 never sold successfully. King worked for UNIVAC from 1962 until 1965, but then returned to Burroughs. He comments on the decision to build the IBM 650 rather than the Wooden Wheel computer, on the IBM Stretch computer, on the data channel of the IBM 709, on the Rice University computer, on Whirlwind in relation to Datatron, and on patent rights.

Computer Oral History Collection, 1969-1973, 1977

Interviewee:	Russell Kirsch
Interviewer:	Richard R. Mertz
Date:	October 8, 1970
Repository:	Archives Center, National Museum of American History
Description:	Transcript, 46 pp.

Abstract:

Citation: Computer Oral History Collection, Archives Center, National Museum of American History.

Transcript: http://invention.smithsonian.org/downloads/fa_cohc_tr_kirs701008.pdf

Computer Oral History Collection, 1969-1973, 1977

Interviewee:	Irving Korn
Interviewer:	Robina Mapstone
Date:	May 11, 1973
Repository:	Archives Center, National Museum of American History
Description:	Transcript, 48 pp.

Abstract:

Citation: Computer Oral History Collection, Archives Center, National Museum of American History.

Transcript: http://invention.smithsonian.org/downloads/fa_cohc_tr_korn730511.pdf

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Computer Oral History Collection, 1969-1973, 1977

Interviewee:	Norman Kreuder
Interviewer:	Robina Mapstone
Date:	March 16, 1973
Repository:	Archives Center, National Museum of American History
Description:	Transcript, 58 pp.

Abstract:

Citation: Computer Oral History Collection, Archives Center, National Museum of American History.

Computer Oral History Collection, 1969-1973, 1977

Interviewee:	Ben Kroupa
Interviewer:	Henry Tropp
Date:	June 21, 1972
Repository:	Archives Center, National Museum of American History
Description:	Transcript, 83 pp.
Abstract:	See Argonne National Laboratories interview.
Citation:	Computer Oral History Collection, Archives Center, National Museum of American History.
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Computer Oral History Collection, 1969-1973, 1977

Interviewee:	Sandy Lanzarotta
Interviewer:	Robina Mapstone
Date:	September 12, 1973
Repository:	Archives Center, National Museum of American History
Description:	Transcript, 28 pp.

Abstract:

Citation: Computer Oral History Collection, Archives Center, National Museum of American History.

Transcript: http://invention.smithsonian.org/downloads/ fa_cohc_tr_ lanz730912.pdf

Computer Oral History Collection, 1969-1973, 1977

Interviewee:	Harry T. Larson
Interviewer:	Robina Mapstone
Date:	October 2, 1972
Repository:	Archives Center, National Museum of American History
Description:	Transcript, 148 pp.

Abstract:

Citation: Computer Oral History Collection, Archives Center, National Museum of American History.

Computer Oral History Collection, 1969-1973, 1977

Interviewee:	Sam Legvold
Interviewer:	Uta C. Merzbach
Date:	June 26-27, 1969
Repository:	Archives Center, National Museum of American History
Description:	Transcript, 55 pp.

Abstract:

Citation: Computer Oral History Collection, Archives Center, National Museum of American History.

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Computer Oral History Collection, 1969-1973, 1977

Interviewee:	Derrick H. Lehmer
Interviewer:	Uta C. Merzbach
Date:	October 8, 1969
Repository:	Archives Center, National Museum of American History
Description:	Transcript, 20 pp.

Abstract: Lehmer, born in 1905, graduated from the University of California in 1927 and completed a Ph.D. in mathematics at Brown University in 1930. He taught at Lehigh University and then at the University of California. Lehmer also worked at the Aberdeen Proving Ground from 1945 to 1946 and as director of the Institute for Numerical Analysis from 1951 to 1953. In the l920s, Lehmer designed mechanical devices to perform calculations. He mentions J.C. Archibald of Brown and L.J. Comrie as interested in computing tables and describes the number sieve machine he developed himself. During World War II, Lehmer worked on an analog machine known as the bombing analyzer He then worked at Aberdeen on the Electronic Numerical Integrator and Automatic Computer (ENIAC). In July 1946, he, his wife, Emma Lehmer, and J.W. Mauchly ran a program on the ENIAC that calculated prime numbers modulo 2. This was one of the first "non-lethal" problems run on the machine. Lehmer comments on S. Frankel and N. Metropolis's classified work on the ENIAC, on the role of the National Bureau of Standards and the Bureau of the Census in promoting computer use, and on limited early use of computers by mathematicians. The Institute for Numerical Analysis (INA) did consider more theoretical problems as it was barred from competing with industry impractical matters. However, the closing of the INA during the McCarthy era discouraged such pursuits. R.C. Archibald is mentioned frequently.

Citation: Computer Oral History Collection, Archives Center, National Museum of American History.

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Computer Oral History Collection, 1969-1973, 1977

Interviewee:	Derrick H. Lehmer
Interviewer:	Robina Mapstone
Date:	April 18, 1973
Repository:	Archives Center, National Museum of American History
Description:	Transcript, 27 pp.

Abstract: Lehmer designed his number sieve between 1927 and 1932, beginning work when he was an undergraduate physics major. After graduation, he studied number theory with L.E. Dickson at the University of Chicago for one year before completing his graduate work at Brown University. During World War II, Lehmer built a bombing analyzer at the University of California at Berkeley. He spent about a year at Aberdeen Proving Ground in 1945 and 1946 working with the Electronic Numerical Integrator and Automatic Computer (ENIAC). Lehmer then returned to Berkeley, where he discussed plans for the California Digital Computer (CALDIC) with Paul Morton and Leland Cunningham. In 1951, he refused to sign a California oath and went to direct the Institute for Numerical Analysis (INA). After two years working on the Standards Western Automatic Computer (SWAC), he returned to Berkeley. Lehmer was involved with the journal *Mathematical Tables and Other Aids to Computation* from its beginning and edited it for ten years. He did not find the Western Data Processing Center at the University of California at Los Angeles useful. The Berkeley campus inherited an IBM 701 from the Lawrence Livermore Radiation Laboratory. Berkeley later rented time on other IBM machines at its computer center to the laboratory. The CALDIC is important less for problems run on it than as a machine that trained computer designers. The machine had features copied on the IBM 650. In 1946, Lehmer introduced the first course in automatic computing at Berkeley, using an IBM 602A. He also describes a course he was teaching in 1973 on history of computing.

Citation: Computer Oral History Collection, Archives Center, National Museum of American History.

Computer Oral History Collection, 1969-1973, 1977

Interviewee:	Clarence A. Lovell
Interviewer:	Richard R. Mertz
Date:	March 19, 1970
Repository:	Archives Center, National Museum of American History
Description:	Transcript, 27 pp.

Abstract:

Citation: Computer Oral History Collection, Archives Center, National Museum of American History.

Transcript: http://iinventions.smithsonian.org/downloads/fa_cohc_tr_Love700319

Computer Oral History Collection, 1969-1973, 1977

Interviewee:	Clarence A. Lovell
Interviewer:	
Date:	April 24, 1970
Repository:	Archives Center, National Museum of American History
Description:	No transcript

Abstract:

Citation: Computer Oral History Collection, Archives Center, National Museum of American History.

Computer Oral History Collection, 1969-1973, 1977

Interviewee:	John Lowe
Interviewer:	Robina Mapstone
Date:	October 16, 1973
Repository:	Archives Center, National Museum of American History
Description:	Transcript, 59 pp.

Abstract:

Citation: Computer Oral History Collection, Archives Center, National Museum of American History.

Transcript: http://invention.smithsonian.org/downloads/fa_cohc_tr_lowe731016.pdf

Computer Oral History Collection, 1969-1973, 1977

Interviewee:	Don Madden
Interviewer:	Robina Mapstone
Date:	April 16, 1973
Repository:	Archives Center, National Museum of American History
Description:	Transcript, 54 pp.

Abstract:

Citation: Computer Oral History Collection, Archives Center, National Museum of American History.

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Computer Oral History Collection, 1969-1973, 1977

Interviewee:	Ethel Marden
Interviewer:	Richard R. Mertz
Date:	March 31, 1971
Repository:	Archives Center, National Museum of American History
Description:	Transcript, 81 pp.

Abstract: Marden obtained her uudergraduate degree in mathematics from Baylor College for Women and did some graduate work at George Washington University. In 1948, she was hired to work in the mathematical division of the National Bureau of Standards (NBS) on programming the Standards Eastern Automatic Computer (SEAC). She was trained by Florence Koons and Samuel Lubkin and, with Otto Steiner and Ira C. Diehm, was one of three who served as the core of SEAC programmers. Marden describes the instruction repertoire of the SEAC, storage, early subroutines, and the punching of early paper tapes. The first code Marden prepared for the SEAC was for ray tracing, a problem chosen to demonstrate the wide possible utility of the machine. Her code first ran in April 1950. In the period 1950-1953, her colleagues also trained others to use the SEAC and checked or prepared routines for other machines. Marden attributes the success of the SEAC to Ralph Slutz, who was most aware of the need to build tolerances into the machine. Once the SEAC was completed, it was used to run problems for the U.S. Air Comptroller's Office, other parts of the Department of Defense, and the Bureau of Standards. Problems included wind tunnel design, aircraft deployment, data evaluation, and analysis of crystal structure. Heaviest use, 16 hours per day, was by the Atomic Energy Commission for design of the hydrogen bomb. To make good use of the SEAC, the Bureau's Computation Laboratory hired mathematicians and, in the case of foreign nationals, gave contracts to faculty at American University. Jim Pike designed a method for using magnetic tape not on reels or spools. After the election of 1952, funds for the Computation Laboratory were sharply reduced to prevent government competition with the private sector. Marden soon transferred to work on software and training in Sam Alexander's division. She finally went there in 1955 and became chief of the software section in 1961. In 1965, she became chief of a division of the Bureau's Center for Computer Sciences. Franz Alt, Edward Cannon, John Curtiss, Ira C. Diehm, Don Feder, Herb Grosch, Florence Koons, Joseph Levin, Samuel Lubkin, Ralph Slutz, Otto Steiner, Olga Taussky-Todd and John Todd are mentioned several times in this

interview.

Citation: Computer Oral History Collection, Archives Center, National Museum of American History.

Computer Oral History Collection, 1969-1973, 1977

Interviewee:	Richard Martin
Interviewer:	Richard R. Mertz
Date:	April 27, 1970
Repository:	Archives Center, National Museum of American History
Description:	Transcript, 13 pp.

Abstract:

Citation: Computer Oral History Collection, Archives Center, National Museum of American History.

Transcript: http://invention.smithsonian.org/downloads/fa_cohc_tr_mart700427.pdf

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Computer Oral History Collection, 1969-1973, 1977

Interviewee: Daniel R. Mason
Interviewer: Robina Mapstone
Date: February 22, 1973
Repository: Archives Center, National Museum of American History
Description: Transcript, 29 pp.

Abstract: Dan Mason obtained an A.B. in mathematics from Kenyon College and, in 1950, a master's degree in applied mathematics from the Massachusetts Institute of Technology (MIT). He went to work in the Applied Science Division at IBM, spending one year helping salesmen sell and install the Card programmed Calculator (CPC). The sales force was oriented to business applications, but most CPC users were more interested in science and engineering. Los Alamos users developed a plug board so that the CPC could do floating point arithmetic. In 1952, Mason went to Poughkeepsie to do logic design for the Wooden Wheel, a machine with electrostatic memory that was faster than the CPC, but not as advanced as the IBM 701. IBM chose to develop the IBM 650 instead, a magnetic drum memory machine suited to business applications. Mason went to manage the IBM 701 installation in New York City. This organization trained both IBM personnel and customers. It also was a service bureau, selling time to numerous aerospace companies, for Werner von Braun's work on the space program, for calculations needed by the Aluminum Company of America in contract negotiations, and for logistics work of the Naval Aviation Supply Office. Staff members worked on a Russian-English translation program and one of them, John Backus, began thinking about what would come to be the programming language FORmula Translator System (FORTRAN). In 1956, an IBM 704 replaced the 701; an IBM 702 had been added earlier. In 1956, the Service Bureau Corporation separated from IBM by court order. Mason continued to supervise the New York machines and also set up a service bureau with an IBM 704 in California. Mason soon left the Service Bureau Corporation, working first as a consultant, then with the Marathon Oil Company and then with a Milwaukee bank. In 1962, he went to Computer Services Corporation (CSC) to lead a service bureau built around a Universal Automatic Computer (UNIVAC) 1107. The organization used the UNIVAC 1004 as early remote input/output equipment. Mason's section of CSC was sold to Commerce Clearing House in 1965 and he went along.

Computer Oral History Collection, 1969-1973, 1977

Citation: Computer Oral History Collection, Archives Center, National Museum of American History.

Computer Oral History Collection, 1969-1973, 1977

Interviewee:	John Mauchly
Interviewer:	Uta C. Merzbach
Date:	June 22, 1970
Repository:	Archives Center, National Museum of American History
Description:	Transcript, 50 pp.

Abstract:

Citation: Computer Oral History Collection, Archives Center, National Museum of American History.

Transcript: http://invention.smithsonian.org/downloads/fa_cohc_tr_mauc700622.pdf

Computer Oral History Collection, 1969-1973, 1977

Interviewee:	John Mauchly
Interviewer:	Henry Tropp
Date:	January 10, 1973
Repository:	Archives Center, National Museum of American History
Description:	Transcript, 72 pp.

Abstract:

Citation: Computer Oral History Collection, Archives Center, National Museum of American History.

Transcript: http://invention.smithsonian.org/downloads/fa_cohc_tr_mauc730110.pdf

Computer Oral History Collection, 1969-1973, 1977

Interviewee:	John Mauchly
Interviewer:	Henry Tropp
Date:	February 6, 1973
Repository:	Archives Center, National Museum of American History
Description:	Transcript, 21 pp.

Abstract:

Citation: Computer Oral History Collection, Archives Center, National Museum of American History.

Transcript: http://invention.smithsonian.org/downloads/fa_cohc_tr_mauc730206.pdf

Computer Oral History Collection, 1969-1973, 1977

Interviewee:	John Mauchly
Interviewer:	
Date:	February 23, 1973
Repository:	Archives Center, National Museum of American History
Description:	Transcript, 33 pp.
Abstract:	NBS Colloquium.
Citation:	Computer Oral History Collection, Archives Center, National Museum of American History.
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Transcript:	http://invention.smithsonian.org/downloads/fa_cohc_tr_mauc730223.pdf

Computer Oral History Collection, 1969-1973, 1977

Interviewee:	John McPherson
Interviewer:	
Date:	September 2, 1970
Repository:	Archives Center, National Museum of American History
Description:	No transcript

Abstract:

Citation: Computer Oral History Collection, Archives Center, National Museum of American History.

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Computer Oral History Collection, 1969-1973, 1977

Interviewee:	Myron ”Jerry” Mendelson
Interviewer:	Henry Tropp and Robina Mapstone
Date:	January 3, 1972 and September 16, 1972
Repository:	Archives Center, National Museum of American History
Description:	Transcript, 88 pp. (January 3, 1972) and 71 pp. (September 16, 1972)

Abstract: This set consists of a 15-page statement given to Tropp, followed by a 74-page interview by Mapstone)

Mendelson completed a master's degree at the University of California at Los Angeles in 1948 and went to work at Northrop in one of three groups working on computers. His group, containing Greg Toben and Bill Woodbury, had had the idea of connecting an IBM 603 and IBM 405 in a machine developed at IBM as the Card Programmed Calculator (CPC). Mendelson worked under Toben on trajectory calculations for the guidance system of the Snark missile. Woodbury used the CPC for a study of random walk that related to nuclear engine design while Rex Rice used it for aircraft design. A second department under Floyd Steele planned the Digital Differential Analyzer (DDA) and then a magnetic drum version of the machine, the Magnetic Drum Digital Differential Analyzer (MADDIDA). Donald Eckdahl figured out how Steele's ideas could be put into practice. Steele introduced Boolean algebra into computer design. When he and some associates left Northrop to form Computer Research Corporation, Glenn Hagen supervised construction of the MADDIDA 44 before leaving for Bendix and then Alwac. After these departures, this group and users of the CPC merged under Mendelson and built the Quadratic Arc Computer (QUAC) in the period 1950-1951. In 1953, Mendelson went to Computer Response Corporation (CRC). The third group sponsored by Northrop was Eckert-Mauchly Corporation, builders of the Binary Automatic Computer (BINAC). Mendelson and others were sent east to learn to use the machine in August 1949. The following year it was installed and used in design of the QUAC.

John Postley was especially skillful at programming the CPC. The first computer built at Northrop was a 2-channel linear interpolator called the incremental slope computer, built to perform calculations for the Snark missile. Quadratic interpolation replaced linear in the Quadratic Arc Computer (QUAC) which was

produced as the APAC. Next came the DIDA, for which only 2 integrators were built before Steele figured out how to replace all the integrators by a magnetic drum. This machine, the Magnetic Drum Digital Differential Analyzer (MADDIDA), had far fewer components and serial rather than parallel structure. After Steele left Northrop and then CRC, he designed what became the Litton-20. His use of Boolean algebra in designs reflects the difficulty of representing multipurpose flip-flops geometrically. In 1950, after Northrop lost Steele and others to CRC, Mendelson taught a course in computers at Northrop using the BINAC and digital differential analyzer as illustrations. In 1956 he taught an extended form of this course at UCLA. Mendelson's first programs, for the BINAC, the Standards Western Automatic Computer (SWAC) and then the CRC 102A, were in machine language. Grace Hopper and others greatly improved software. Both Mendelson and Ida Rhodes were consulted in design of the IBM 701. The first computer with index registers was the Ferranti Manchester Mark I. CRC kept its version of word time microprogramming secret, leaving M. Wilkes to develop the idea independently. As a small, dynamic electronic computer company, CRC had difficulty merging with the larger, more conservative, electro-mechanically oriented NCR. The merger of Electrodata and Burroughs also had problems. Mendelson also comments on the relation of Autonetics and the Reliable COMPuter (RECOMP) to Northrop and on design of the QUAC. People mentioned several times in the statement and interview are Richard Baker, Robert Beck, Robert Douthitt, Donald Eckdahl, George Fenn, Glenn Hagen, John Postley, Harold Sarkissian, Richard Sprague, Floyd Steele, Norwood Teague, Gregory Toben, Donald Walter, Irving Wieselman, and William Woodbury.

Computer Oral History Collection, 1969-1973, 1977

Interviewee:	Donald H. Menzel
Interviewer:	Elizabeth Luebbert, Robina Mapstone, and Henry Tropp
Date:	July 31, l972
Repository:	Archives Center, National Museum of American History
Description:	Transcript, 117 pp.

Abstract:

Citation: Computer Oral History Collection, Archives Center, National Museum of American History.

Computer Oral History Collection, 1969-1973, 1977

Interviewee:	Nicholas Metropolis
Interviewer:	Henry Tropp
Date:	May 18, 1972
Repository:	Archives Center, National Museum of American History
Description:	Transcript, 26 pp.

Abstract:

Citation: Computer Oral History Collection, Archives Center, National Museum of American History.

Computer Oral History Collection, 1969-1973, 1977

Interviewee:	J.G.L. Michel and Devies
Interviewer:	
Date:	August 11, 1969
Repository:	Archives Center, National Museum of American History
Description:	No transcript

Abstract:

Citation: Computer Oral History Collection, Archives Center, National Museum of American History.

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Computer Oral History Collection, 1969-1973, 1977

Interviewee:	Frederick G. Miller
Interviewer:	Henry Tropp
Date:	April 14, 1972
Repository:	Archives Center, National Museum of American History
Description:	Transcript, 67 pp.

Abstract: Miller graduated from Cornell University in electrical engineering in 1935 and went to work for New England Power Service Company as governor in a power station and eventually as an engineer. During World War II, he spent 32 years in the Navy, first on underwater protection, and then working with Howard Aiken at Harvard University on the Mark I. On this machine, coded sequence mechanisms (programs) ran from paper tape input. Western Union equipment was used for data input and output. Arithmetic operations used a combination of binary digits and decimal exponents. Dual processing was possible, with results from one half of the machine used to check those from the other. Discharged after the war, Miller helped complete the Mark II and then ran it for ballistics calculations at the Naval Proving Ground at Dahlgren, Virginia. The Civil Service had no category to describe the computer maintenance personnel he hired. Miller describes Aiken's emphasis on building simple, reliable computers. Despite this conviction, Bob Campbell introduced a register on the Mark II that made it possible to make branching decisions. Engineers at Dahlgren improved both the checking devices and the sequencing mechanism on this machine. Miller also compares the placement of iterative functions on the Mark I, Mark II, and Mark III. Miller returned to Harvard for several months to work with Aiken on the MARK III. Aiken and his staff developed this machine largely on their own; they did not consult other computer builders. To compete with electronic computers, it ran at higher speeds than earlier relay computers and proved less reliable. Miller eventually left Dahlgren to work for RCA on the Business Machine (BIZMAC) and then went to Datamatic Corporation. When Datamation merged with Honeywell, he was placed in charge of field engineering. He comments frequently about Howard Aiken and Bob Campbell.

Citation: Computer Oral History Collection, Archives Center, National Museum of American History.

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Computer Oral History Collection, 1969-1973, 1977

Interviewee:	Roger Mills
Interviewer:	Robina Mapstone
Date:	May 14, 1973
Repository:	Archives Center, National Museum of American History
Description:	Transcript, 23 pp.

Abstract: Mills, born in 1924, attended Southern Methodist University and went to the University of California at Los Angeles in 1950 to work on a doctorate in mathematics. After one semester he left to work at Northrop in the Binary Automatic Computer (BINAC) programming group and then on the Magnetic Drum Digital Differential Analyzer (MADDIDA). In 1953, he was hired by North American, where he programmed the Axel Wenner-Gren Automatic Computer (ALWAC) I and the IBM 701. He describes a joint New York test of the IBM 704 by RAND, North American, and Lockheed; the Society to Help Avoid Redundant Effort (SHARE) reaction to the IBM 701, and response of the Digital Computer's Association to the IBM 1401. Mills learned about the FORmula Translator Sytem (FORTRAN) compiler at a 1960 IBM class. He worked at TRW and used the Packard-Bell 250, the CDC 1604, and the Philco 2000. Jack Strong is mentioned frequently in this interview.

Citation: Computer Oral History Collection, Archives Center, National Museum of American History.

Transcript: http://invention.smithsonian.org/downloads/fa_cohc_tr_mill730514.pdf

Computer Oral History Collection, 1969-1973, 1977

Interviewee:	Roger Mills
Interviewer:	Henry Tropp
Date:	August 26, 1971
Repository:	Archives Center, National Museum of American History
Description:	Transcript, 14 pp.

Abstract:

Citation: Computer Oral History Collection, Archives Center, National Museum of American History.

Computer Oral History Collection, 1969-1973, 1977

Interviewee:	Jack Mitchell
Interviewer:	Robina Mapstone
Date:	April 11, 1973
Repository:	Archives Center, National Museum of American History
Description:	Transcript, 85 pp.
Abstract:	See Henry Herold interview.
Citation:	Computer Oral History Collection, Archives Center, National Museum of American History.
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Computer Oral History Collection, 1969-1973, 1977

Interviewee:	MIT Club Meetings
Interviewer:	
Date:	February 2, 1955
Repository:	Archives Center, National Museum of American History
Description:	Transcript, 15 pp.
Abstract:	See Robert Wiener interview.
Citation:	Computer Oral History Collection, Archives Center, National Museum of American History.
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Computer Oral History Collection, 1969-1973, 1977

Interviewee:	MITRE Meeting
Interviewer:	Henry Tropp
Date:	April 10, 1972
Repository:	Archives Center, National Museum of American History
Description:	Transcript, 128 pp.

Abstract:

Citation: Computer Oral History Collection, Archives Center, National Museum of American History.

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Computer Oral History Collection, 1969-1973, 1977

Interviewee:	Owen Mock
Interviewer:	Robina Mapstone
Date:	April 12, 1973
Repository:	Archives Center, National Museum of American History
Description:	Transcript, 49 pp.

Abstract: Deemed unfit for the U.S. Army infantry because of a hearing problem, Mock was assigned to be a key punch operator in France during World War II. He used an IBM 405 and IBM 513 for personnel accounting. Afterward, he attended the University of California at Berkeley on the G.I. bill, graduated in mathematics in 1949, and was hired as a tabulator operator by Foster and Clyde. In 1950, Mock returned to Berkeley for graduate work, doing computing for the oceanography department on an IBM 602A. After a year, he went to the Institute for Numerical Analysis with Derrick Lehmer, working on Electric Accounting Machines (EAM) equipment, an IBM 602A, an IBM 604, and a Card Programmed Calculator (CPC). Mock also worked on the assembler and loader for the SWAC. When the INA closed, Mock went to North American Aircraft. In addition to programming the company's CPC, its IBM 701, and diverse later IBM computers, he cooperated with others in the industry to write the Project for the Advancement of Coding Techniques (PACT-I) compiler for the IBM 701 and the PACT-IA compiler for the IBM 704. Mock, others from North American, and representatives of General Motors also produced an operating system for the IBM 704. PACT gave way to Society to Help Avoid Redundant Effort (SHARE), a group that designed the SHARE Operating System that IBM coded and checked for the IBM 709. Mock also programmed a business machine, the IBM 705. Jack Strong pooled such programs as well as those for the IBM 702 through GUIDE. Mock left North American in 1961 for Computer Sciences Corporation. He describes the company's early software design for Honeywell and Livermore. Frank Wagner is mentioned several times in this interview.

Citation: Computer Oral History Collection, Archives Center, National Museum of American History.

Computer Oral History Collection, 1969-1973, 1977

Interviewee:	D. Montgomery and R. Harper
Interviewer:	
Date:	October 9, 1973
Repository:	Archives Center, National Museum of American History
Description:	Transcript, 65 pp.
Abstract:	See Greg Toben interview.
Citation:	Computer Oral History Collection, Archives Center, National Museum of American History.
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Computer Oral History Collection, 1969-1973, 1977

Interviewee:	Franz Morehouse
Interviewer:	Henry Tropp
Date:	June 21, 1972
Repository:	Archives Center, National Museum of American History
Description:	Transcript, 83 pp.
Abstract:	See Argonne National Laboratories interview.
Citation:	Computer Oral History Collection, Archives Center, National Museum of American History.
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Computer Oral History Collection, 1969-1973, 1977

Interviewee:	Philip Morse
Interviewer:	Richard R. Mertz
Date:	December 16, 1970
Repository:	Archives Center, National Museum of American History
Description:	Transcript, 36 pp.

Abstract:

Citation: Computer Oral History Collection, Archives Center, National Museum of American History.

Transcript: http://invention.smithsonian.org/downloads/fa_cohc_tr_mors701216.pdf

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Computer Oral History Collection, 1969-1973, 1977

Interviewee:	Paul Morton
Interviewer:	Robina Mapstone and Henry Tropp
Date:	October 12, 1972
Repository:	Archives Center, National Museum of American History
Description:	Transcript, 36 pp.

Abstract: Morton, born in 1906, worked for the Puget Sound Power and Light Company both before and while he was attending the University of Washington. After graduation in 1931 he worked as an engineer, taught engineering at the University of Washington from 1935 to 1937 and then went to Massachusetts Institute of Technology (MIT0, earning a Ph.D. in electrical engineering in 1938. After using the MIT network analyzer, he had to resort to a Kelvin type integrator when he went to teach at the University of California at Berkeley. After Morton learned of the Electronic Numerical Integrator and Automatic Computer (ENIAC) in 1945, he decided to build a small scale electronic digital computer with magnetic drum memory, the California Digital Computer (CALDIC). The Office of Naval Research began providing funds in 1948 and parts of the machine ran by 1951. Despite maintenance problems the CALDIC remained in use through about 1955. In addition to the memory for the CALDIC, Morton's students made magnetic drums for the Standards Western Automatic Computer (SWAC) and the University of Illinois computer. The CALDIC not only demonstrated that relatively small machines were possible, but also trained numerous computer designers. Leland Cunningham, Harry Huskey, Derrick Lehmer, and John von Neumann are mentioned frequently in this interview.

Citation: Computer Oral History Collection, Archives Center, National Museum of American History.

Computer Oral History Collection, 1969-1973, 1977

Interviewee:	Lewis Mumford
Interviewer:	
Date:	October 20, 1971
Repository:	Archives Center, National Museum of American History
Description:	No transcript

Abstract:

Citation: Computer Oral History Collection, Archives Center, National Museum of American History.

Computer Oral History Collection, 1969-1973, 1977

Interviewee:	Robert Mumma
Interviewer:	Henry Tropp
Date:	January 17, 1973
Repository:	Archives Center, National Museum of American History
Description:	Transcript, 166 pp.
Abstract:	See Joseph Desch interview.
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