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Walk-Through Computer

The Computer Museum plans to build a giant walk-through computer to address the question:"How do computers work?"

The exhibit—the first of its kind ever built—will employ state of the art technology and stunning theatrical effects to stimulate curiosity and leave a lasting impression, as do the walk-through hearts at the Franklin Institute and the Chicago Museum of Science and Industry.

The Walk-Through Computer will feature a 25-foot long working keyboard and bumper-car sized mouse. When visitors stand at special video input stations, a computer will capture an image of their own face on a giant monitor.

After walking into the computer through a doorway in its see-through chassis, people will watch the data for their own face as it flows through the computer. They will be able to peer right inside the RAM, disks, and buses. Behind the processor the "CPU Theater" will contain a still larger blow-up (times 500) of the microprocessor. Synchronized voice and lights will follow the program executing at a radically slowed-down rate. High-level instructions will be tracked, giving people a glimpse of software.

A room full of learning stations will explore the nitty-gritty of the computer's operation for those who want to learn more detail. Topics will include binary numbers, boolean algebra, building a half adder, how a transistor works, assembly language, and operating systems.

The distinguished panel of advisors to the exhibit includes Art Bardige, Director of Learningways; Daniel C. Dennett, Professor of Cognitive Science, Tufts University; Allison Druin, Tell Tale Technologies; Signe Hanson, Director of Exhibit Design, Boston Children's Museum; Danny Hillis, Founding Scientist and Director of Research, Thinking Machines; David Macaulay, author-illustrator of *The Way Things Work*; Philip Morrison, Institute Professor, Massachusetts Institute of Technology; Phylis Morrison, author and producer of science materials and programs, and co-producer with Philip Morrison of the PBS series, *The Ring of Truth*; Jonathan Rotenberg, President, The Boston Computer Society; Richard Rubinstein, Manager of Technology Assessment, Digital Equipment Corporation.

The Museum has already raised $262,000 of the $750,000 needed for the exhibit. If the remaining funds are pledged by the end of 1989, the Walk-Through Computer could open as early as spring, 1990.

Museum Interns Teach and Learn

"People have taught me things all my life," says Ye-Bun Benjamin "Ben" Lui. "Now, I can show them." The 16-year-old Roxbury Latin School junior did just that in The Computer Museum's new Resource Center. Last summer, he and Dan Wells, 17, a senior at Cambridge School of Weston, worked as interns at the Museum. "I wanted to do something meaningful and also learn more about computers," said Ben, a Hong Kong native. At 12, because two of his teachers used computers, Ben also became interested in them. He began programming in BASIC and soon after won a Boston citywide computer contest in the educational games category. Ben decided to intern at the Museum after being "impressed with the technologies" on a visit two years ago. Hoping to major in physics, computer engineering or math, he is sure his Museum experience will help.

Dan Wells was busy helping the Collections Department maintain a library database. "I love being around both old and new computers," he explains. It was love at first sight. At age nine, he learned how to use one of the original Apple IIs. Cerebral palsy had limited the range of motion in his hands, and the Apple's word processing program helped him write more effectively. Soon he realized that the computer was "more than just a glorifed typewriter." At 10 Dan began to learn BASIC and is now considering building his own IBM/AT-compatible microcomputer. He plans to enter a branch of science that uses computer skills and hopes to continue interning at the Museum this fall because, he says, "I like how everyone here works together."

▲ *Museum interns Dan Wells (right) and Ben Lui (left) compare old and new technologies—an IMSAI 8080 early model personal computer from Collections and a laser optical disk from the new Resource Center.*

NEW FACES

Since May, new Assistant Store Manager **Dan Burke** has been working with Store Manager Christina O'Sullivan to provide imaginative and educational products of interest to our visitors. Formerly, he worked in sales at The Children's Museum Shop.

Kate Jose, Project Manager for the next Computer Bowl, is coordinating all details for this event, scheduled for April 27, 1990. A 1967 Wellesley graduate specializing in nonprofit arts administration, business communications, and marketing, Jose has developed and managed events for Cornell University and the Institute of Contemporary Art.

In August, new Development Coordinator **Gillian Ley** came to the Museum from A Better Chance, Inc., an organization that recruits academically talented minority students and places them in selective private schools. A Simmons College communications graduate with experience in development and public relations, Ley works closely with Development/PR Director Janice Del Sesto to plan and implement fundraising activities.

▲ Will the real human beings please stand up? From the left (with robot toys from Smart Machines): Dan Burke, Jill Richard, Chip Morrison, Kate Jose, and Brian Wallace.

Donald "Chip" Morrison joined the Museum in June as Exhibit Developer for the "Walk-Through Computer." A doctoral candidate in Human Development at the Harvard School of Education, he recently co-authored a Pascal tutorial for the Macintosh called *Just Enough Pascal*. A 1972 Dartmouth drama graduate, Morrison will oversee the advancement of the exhibit project.

Since June, **Jill Richard** has worked with Director of Education Adeline Naiman as a consultant on the Resource Center and other educational activities.

Formerly, she was Instructional Techology Specialist for the Massachusetts Department Of Education.
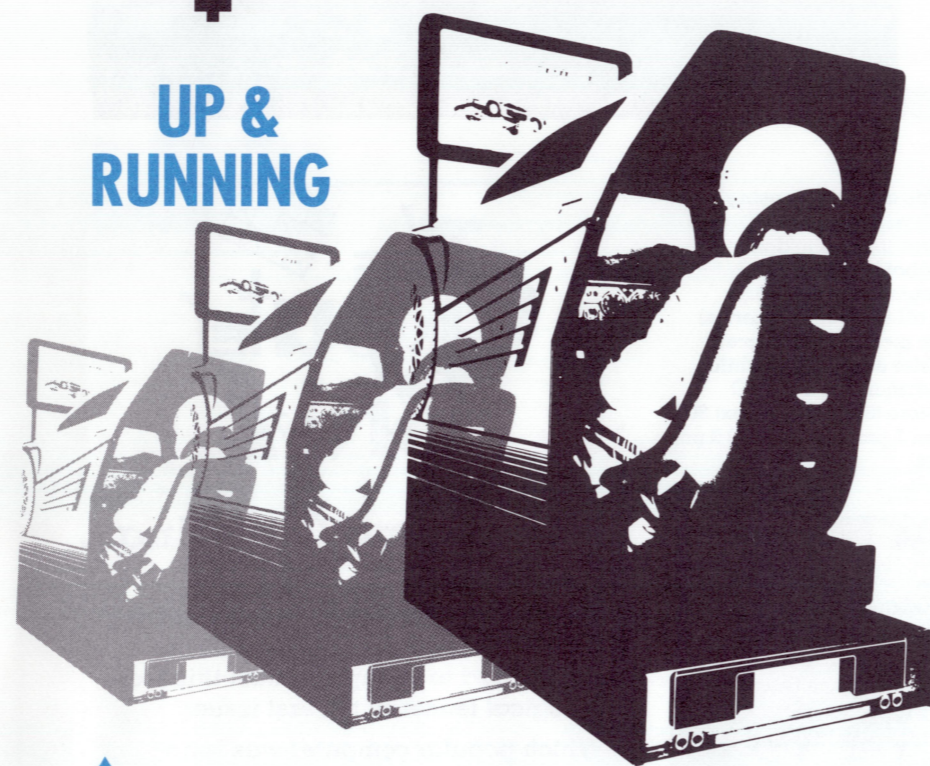
Recently, Museum Interpreter **Brian Wallace** became Collections Manager, responsible for the collection of artifacts, photos, films, and archival materials. The Ithaca College graduate pursued museum studies and art history at Glasgow University, Scotland, from 1985 to 1988, and also administered a visiting artists program for an arts and crafts cooperative in Boulder, Colorado.

A warm welcome to Interpreters **Susan Balise, Beryl Palmer, Jim Sokoloff,** and **Bonnie Tai,** to Store Assistant **Hilary Silver,** and to administrative volunteer **Karen Johansen.**

Search for Director Begins

As you learned in the last issue of the *NEWS*, Joe Cashen has resigned as Executive Director to return to private industry. We appreciate Joe's contributions and wish him well.

The Board agrees with Joe's assessment that this next stage of the Museum's development offers an exciting challenge for new leadership. We are committed to finding an individual with the leadership, vision, and organizational skills who can lead the Museum in its next growth phase during the coming decade.

Toward that end, we have recruited an excellent search committee, assisted by an executive search firm, to carry out the national search.

Because the Museum's programs, exhibits, and staff have been nationally recognized for their excellence, the Board and the search firm are confident that the Museum can attract candidates of the highest quality.

We are making good progress and hope to be inviting you to meet the new Executive Director later this fall. Until then, we hope you will take the opportunity to visit our enhanced graphics gallery and Resource Center, as well as meet some of our other "New Faces" here at the Museum.

From The Chairman of the Board

▲ Board Chairman Gardner C. Hendrie says the Museum is "making good progress in its search for Executive Director."

G. C. Hendrie

Gardner C. Hendrie
Chairman of the Board

UP & RUNNING

▲ Visitors can take off in an Atari hard-driving simulation game in the Image Gallery through November.

The Computer and the Image Gallery continues to stay at the leading edge of computer graphics technology. The gallery has been transformed by adding five new exhibits, incorporating the "Interactive Image" last winter, and updating the Animation Theater (featured in the last *NEWS*).

Hewlett-Packard has created a spectacular and educational program on rendering three-dimensional objects. The exhibit features Martin Newell's teapot, the 1974 classic graphics test object. This exhibit is based on an HP TurboSRX 350 workstation. It features renderings of the teapot from primitive wire-frame techniques through color-shaded renderings, culminating in highly realistic synthetic images that simulate the teapot in an environment. Visitors use knobs to slide, rotate, zoom into, and illuminate the teapot.

Real-time, realistic images can be explored on a two-processor Titan from **Ardent Computer**. One choice lets visitors control the speed and direction of the wind and see in real time how a flag responds. The computer works out the effect of the wind on the flag, rendering the result as a moving picture of a flapping flag.

Flight and driving simulation will be brought up to date and offer awesome experiences for visitors. On an IRIS workstation donated by **Silicon Graphics**, they will be able to pilot a 747. This workstation has real-time sharp, detailed color graphics.

Through November 30, **Atari Games, Inc.'s** "hard driving" simulator lets visitors actually feel the force of the road on the steering wheel as they "round a curve." The coupling of 3-D computer graphics (the view outside the windshield) with mechanical force adds a new dimension of realism to simulation. The game features cockpit, swivel seat, gas, brake and clutch pedals, and 4-speed stick shift.

Also, the computer-aided design section will be enhanced with a new **Sun Microsystems** 386i workstation. Sun is now developing special software for visitors to be able to experience the power of using a computer for three-dimensional design. Sun is exploring an application in which visitors design a house and then view a simulation of the shadows cast by their building on its surroundings.

These enhancements were made possible, in part, by grants from the National Computer Graphics Foundation and the Association for Computing Machinery's Special Interest Group for Graphics and Interactive Techniques (ACM SIGGRAPH).
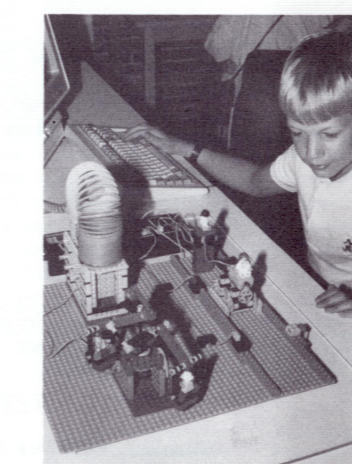
New Resource Center Opens

The Computer Museum's new Resource Center opened just in time for the National Educational Computing Conference in June and has been open to the public ever since. Designed to show computer-based instructional programs to teachers, students, and parents, the Resource Center has several hands-on exhibits that sample the range of hardware and software now available.

The Visual Almanac uses a videodisk linked to a Macintosh computer to provide text, still images, moving pictures, and sound on many curriculum areas. A LogoWriter exhibit offers a tutorial on an IBM computer with a laser printer and the full LogoWriter program on an Apple IIGS for experienced Logo users to explore. LEGO/Logo has a small "circus" built of LEGO blocks, gears, and motors that are controlled by a program on an IBM PC.
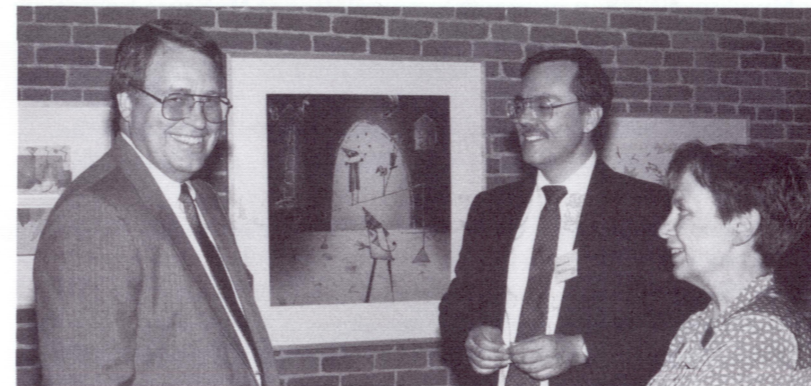
Two science experiments displayed on two computers are examples of the Personal Science Laboratory that uses an interface to the IBM PC and probes to measure and graph temperature and motion. A program that draws on the sound and graphics capabilities of the Apple IIGS is "Puppeteers," which lets visitors write a script, create and costume characters, and see and hear their play acted out.

Other exhibits will be added to the Resource Center as new technologies and programs come along. Additional resource materials are also planned.

▲ A youngster explores the LEGO/Logo exhibit's "circus."

Images from the Computer Art Show Opening

▲ William Avery, Vice President and General Manager of Sun Microsystems's East Coast Division, (at left) talks with Bryan Kocher, President of the Association for Computing Machinery, and Museum Founding President Gwen Bell. Behind them: artist Barbara Joffe's "Circus."

Nearly 400 Museum members and other guests enjoyed an early look at "Computer Art in Context: The SIGGRAPH '89 Art Show" at a preview reception sponsored by Sun Microsystems, Inc. June 29, 1989. Several of the show's artists also flew in from around the country for the event. The evening's festivities included the donation of a Sun386i graphics workstation to the Museum's Graphics Gallery. The show, featuring more than 50 works by computer artists from around the world, runs through the fall.
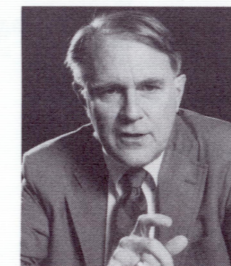

▲ Maryland sculptor-mathematician Helaman Ferguson (far right) discusses his silicon bronze "Umbilic Torus NC" with ACM SIGGRAPH Conference Co-Chair Christopher F. Herot (left) and Cordelia Foell (center). Ferguson used a computer to design and control the cutting of a mold for his piece.
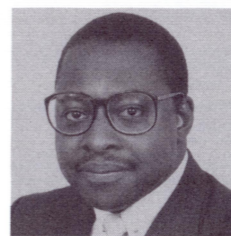
MEET THE BOARD

Seven New Directors Join Museum

The Museum has many new and interesting faces these days. At the annual meeting this June, we elected an exciting and diverse group of leaders in business and education to our Board of Directors. I am pleased to introduce them and hope you'll join me in welcoming them to The Computer Museum.

G.C. Hendrie

Gardner C. Hendrie

C. Gordon Bell is Vice President of Research and Development at Ardent Computer, Sunnyvale, CA. A Director and then Trustee of the Museum since 1982, he rejoins the Board because, as he explains, "When we started the Museum in 1979, we determined it would be international in scope. Now from my vantage point on the rim of the Pacific, I want to insure that this will happen." The Museum's collection was seeded by the artifacts Bell assembled in writing his 1972 classic, *Computer Architecture: Structure and Examples.*

At Digital Equipment Corporation, where he was Vice President of Research and Development, Bell was principal architect of the mini-computer (PDP-5 and 8), the time-sharing PDP-6, and then led the VAX strategy. A founder of Encore Computing Company and Professor of Computer Science and Electrical Engineering at Carnegie-Mellon University, he also organized the Directorate for Computing at the National Science Foundation.

"As computers and technology become ever more important, the necessity of educating the general public increases dramatically," says **Richard P. Case,** Director of Systems Analysis, International Business Machines Corporation. "The Computer Museum is particularly well positioned to be a leader in that effort. Hence my interest," explains the computer technologist.

With IBM since 1956, he has held "six or seven careers in new product development—both hardware and software." He was responsible for the design of the IBM 1410 CPU and the IBM 7040-7044 processing systems and the architecture for the IBM/370. After serving as Systems Technology Division Vice President for Development, in 1986 he became Director of University Relations and Technical Programs, also overseeing IBM's technical journals and the corporate awards and technical recognition programs. He currently focuses on negotiation and litigation on intellectual, technical, and trade secret property protection. He has an MS in electrical engineering from Syracuse University.
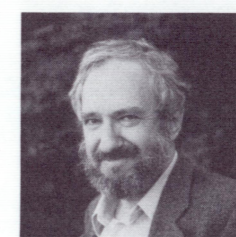
Before joining Aspen-Tech in 1985, Brewster ran a marketing consulting firm focusing on the high technology industry. Aspen-Tech, AT&T, Digital, General Motors, and Honeywell were among his clients. At AspenTech, he has directed worldwide sales and corporate marketing activities and technical services including customer support and quality control. Brewster also has held sales, marketing and financial posts with Colgate Palmolive, The Gillette Company, and IBM. He has an MBA from Harvard Graduate School of Business Administration.
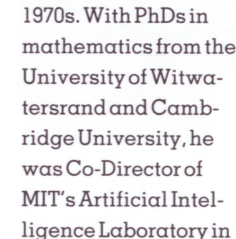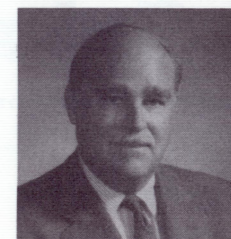

Anthony D. Pell is co-founder and President of the investment management firm of Pell, Rudman & Co., Boston. He is "interested in The Computer Museum as a relatively new museum exploring a brand new area for the general public." Already involved with the Fort Ticonderoga and Strawbery Banke Museums, he hopes the "process of cross-fertilization will be helpful to The Computer Museum. I know it will be educational for me."

A member of the New York and Washington, DC bars, he was associated with the law firms of Coudert Brothers and Cadwalader, Wickersham & Taft from 1966 to 1972. He then joined The Boston Company Financial Strategies, Inc. and was appointed Senior Vice President in 1975. There, he managed portfolios of marketable securities and financial planning for high net worth clients. A graduate of Princeton University, he has a JD from George Washington University Law School.

Dr. Seymour Papert, Professor of Media Technology, The Media Laboratory, MIT, joined the Board because he has from the outset "admired the Museum's enterprise in maintaining public awareness of the history of the growth of computation, especially with the Museum's increasing emphasis on the role of computation in education and the general culture." An authority on computer aided education, Papert and his team of experts in psychology, learning theory, physics, mathematics, and computer technology developed Logo, the widely used computer learning language, in the 1970s. With PhDs in mathematics from the University of Witwatersrand and Cambridge University, he was Co-Director of MIT's Artificial Intelligence Laboratory in 1967-1973. A John Simon Guggenheim Memorial Foundation Fellow in 1980-1981, he received the Marconi International Fellowship Award in 1981. His book, *Mindstorms: Children, Computers and Powerful Ideas*, has been translated from English into 11 other languages.
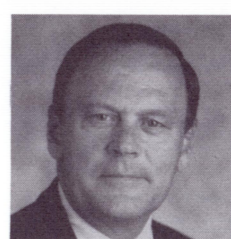

Casimir S. Skrzypczak, Vice President, Science and Technology, NYNEX Corporation, says that he joined the Board because he has "always been a devotee of history for the insights it can provide into the future. The opportunity to combine this personal interest with my professional involvement in the computer and information industry is exciting."

An expert in telecommunication architectures and technology trends, Skrzypczak is responsible for the formulation of NYNEX's strategic technology plans and for directing its research and development programs, including the NYNEX Science and Technology Center. He held several Engineering, Traffic and Planning positions at New York Telephone, becoming Vice President of Network Planning for Bellcore in 1982. Before joining NYNEX, he was Vice President of Network Planning at Bell Communications Research Inc.
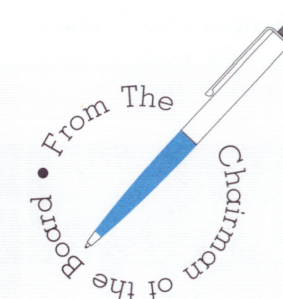
executive," he says.

Now, as the President of Insurance and Personal Financial Services at The New England, a life insurance and financial services company, joining The Computer Museum's Board "excites me. It's one way to stay involved with computing. At The New England, he oversees manufacturing, distribution and servicing of insurance and related financial services to personal, small business, and employee benefits markets.

As an actuarial student in the early 1960s at Guaranty Mutual Life Insurance, Omaha, **Robert A. Shafto** converted the company's punch card files to an IBM 1401 magnetic tape system. In 1965, he joined Electronic Data Systems Corporation, Dallas, as a senior systems engineer. "It's an unusual background for an insurance

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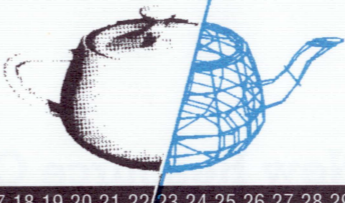Max J. Steinmann
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Louis Calabrara
Richard Callwood
Neale Carhartt
Robert Cleasby
Judy Csikos
Edward DeGaray
Mary Dudley
Jim Dumoulin
Louis Ewens
Hope Ezersky
Richard Forbes
Alan Frisbie
Richard Hovey Gamble
Kristy Glynn
Joseph Grande
Cheryl Groninger
Marty Grossberg
Sarah Hall
Janet Hansen
Darrel Harmer
Elliot Haseigard
Toshiaki Hayashi
Arthur Hoge
Charles Hood
Franki Hooper
Bill Jones Jr.
Frankie Keefe
Ann Kirby and Thomas Fitzgerald
Mildred Lintner
Theresa MacKinnon
William Maddox
Steve Matthews
Pamela Moore
Frank Morris
Kathryn Nettles
Kim Ostrander
Diane Ransom
Alice Rupe
William Sage
Steve Schumacher
George Seguine
Katherine Selfridge
Edward Shaw
Leo Tam
Michelle Volesko
Janet Wallace
Bickford White
Elaine Yaffe-Blumenthal
Jeanne Yates

SEPT 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 **OCT** 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

1 EXHIBITION EXTENDED

Through the Fall, 1989
"Computer Art in Context: SIGGRAPH '89 Art Show" An exhibition of spectacular new computer art from artists around the world. The show features 2- and 3-dimensional works, kinetic sculpture, interactive environments where visitors can take part, installation pieces, animation, and polydimensional works on videotape. Exhibition juried by panel of international artists and curators.
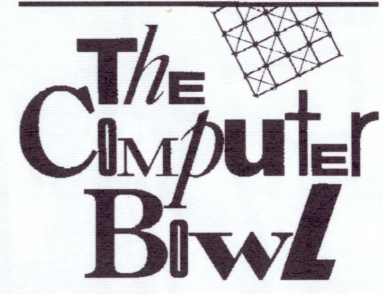
1 SPECIAL EVENT/EXHIBITION

Sunday, October 1-Tuesday, October 31, 1989:
"The World At Your Fingertips" Special activities and presentations celebrating the use of computer databases as reference and research tools during Computer Learning Month. Highlights include three workstations and a server for visitors to explore *Compton's Encyclopedia*, a program on CD-ROM with a built-in dictionary and writing processor. Donated by Jostens Learning Corporation. In the Resource Center.

15 WORKSHOP

Sunday, October 15, 1989: 10am-1pm
"Build Your Own Robot Workshop" Share a high tech adventure with your child or a young friend (age 10 to 15). In the Museum's popular Robot Workshop, each adult-child team builds a mobile sensing robot ("Peppy" or "Medusa") with the help of Museum staff and takes it home to dazzle friends and family. Robot building kits available at the Museum Store. Kit $38.95; Workshop (including all tools and batteries) $20 per team; Museum members, 10 percent discount, Please register early! Each child must have an adult partner and a kit. TO REGISTER: Call the Store (617)426-2800, ext.307. Tuesday-Sunday 10am-5 pm, Friday until 9 pm. Credit cards accepted.

WINTER HOURS:
Visit The Computer Museum Tuesday-Sunday, 10am to 5pm (Fridays until 9pm). Closed Monday except Boston school holidays and vacations. Closed Thanksgiving, Christmas, and New Year's Day. Public tours Saturday and Sunday at 1:30 and 3pm. Summer hours: daily.

ADMISSION:
Adults $5.00, students and elders $4.00.

Half price Friday evenings. Free to Museum members and children under five.

For more information, call our talking computer at **(617)423-6758**.

The Computer Bowl

N Days And Counting...

To sharpen your wits in preparation for the next Computer Bowl in 1990, the NEWS tried to stump you with this technological teaser in the last issue:

Which popular computer was introduced in a one-time television commercial during Super Bowl XVIII? The answer is...the Macintosh. Here's the next teaser:

Who coined the word "automation"?

Look for the answer in the November / December NEWS.

To Join:

Members get free admission for one year; The Computer Museum NEWS, a bi-monthly newsletter of Museum activities; the Annual, a richly illustrated journal of computer history; invitations to exhibit previews and member-only events; advance notice of exhibitions and lectures; a 10% discount on purchases over $5 in The Computer Museum Store; and the opportunity to buy admission pass booklets at significant savings.

Individual Memberships
☐ $30 One-year
☐ $50 Two-year
☐ $20 One-year student*

Family Memberships
☐ $45 One-year
☐ $80 Two-year

Contributing Memberships
☐ $500 Donor
☐ $250 Sponsor
☐ $100 Friend

Yes, sign me up! My check, payable to The Computer Museum, is enclosed in the amount of $_____.

Or, charge my ☐ MasterCard, ☐ Visa, ☐ American Express.

Card#_____ Expiration Date_____ Signature_____

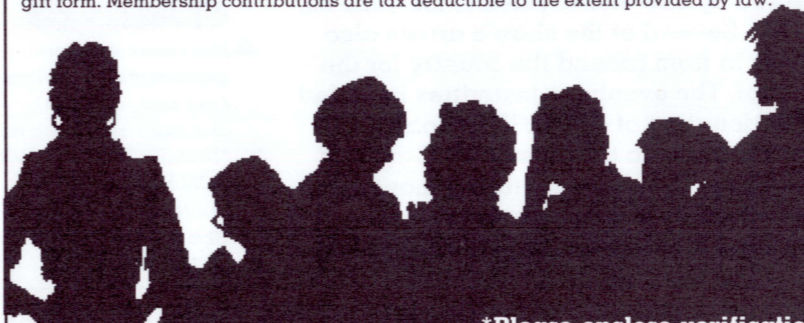Name_____ Name for 2nd Family Card_____

Street_____

City/State/Zip_____ Telephone (___)_____

Company Name_____

Street_____

City/State/Zip_____ Telephone (___)_____

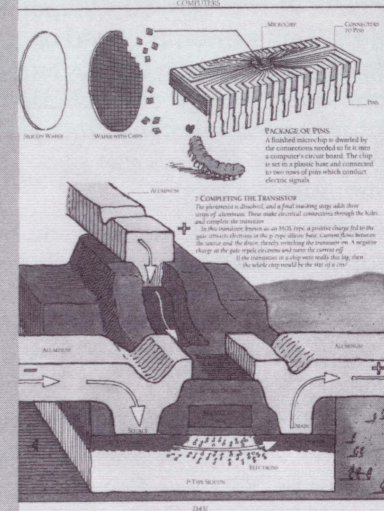☐ Please contact me about volunteering at the Museum.

Will your company match your gift? ☐ Yes ☐ No If yes, please send appropriate matching gift form. Membership contributions are tax deductible to the extent provided by law.

*Please enclose verification.

The Way Things Work...

Did you know zippers and pyramids have something in common? For people who want to know how things work but are afraid to ask, The Computer Museum Store has just the thing—David Macaulay's beautifully illustrated reference book *The Way Things Work*. From "levers to lasers" and "cars to computers," the prize-winning author takes you on an enchanting, fact-filled tour of the world of machines. Using a "woolly mammoth" to explain principles, he discusses the crucial inventions of our times from airplane and telephone to robots and television. (Macaulay is on the Walk Through Computer Advisory Committee. See story, page one.) Book costs $29.95 (Members, $26.95). To order, call (617) 426-2800, extension 307.

Credit: © 1988 by David Macaulay

The Computer Museum
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(617) 426-2800