

are doubly interactive: The visitor can manipulate things such as weights on swings while at the same time selecting and executing experiments with the help of a computer and video terminal. These kinds of exhibits, which were first developed by Eva Van Rennes at the Cranbrook Institute in Detroit, seem to be particularly appealing to both parents and children.

An exhibit area devoted to energy is perhaps less successful, in that it tends to present attitudes toward energy policy as though they were scientific conclusions whereas in fact they represent preferred answers to highly controversial questions.

Adjacent to the energy and mechanics exhibits is a special area that was occupied last fall by an IBM-sponsored exhibit on superconductivity, "The world of the supercold." That exhibit, which consists of diagrams and captions explaining temperature scales, the Joule-Thomson effect, Josephson junctions and squids, has left Baltimore in the meantime, going in February to the Naval Postgraduate School in Monterey, where it will stay until July.

The IBM show is unusual in that it makes no concession to the touch-and-manipulate style. The shows currently occupying Baltimore's special display space, an exhibit on holography and a selection of Harold E. Edgerton's strobe photographs, also are relatively traditional stylistically.

In yet another traditional kind of show, the work of Berenice Abbott, a contemporary of Edgerton who took physics photos with both aesthetic and scientific concerns in mind, currently is being exhibited at the New York Academy of Sciences. The Abbott exhibit is part of an ongoing series of shows on the place of modern physics in modern art, "Art at the Academy," which is run by Joelle Burrows and is sponsored by Novo Industri A/S of Denmark.

Alternative styles. The tenacity and vitality of traditional types of museums and museum concepts should not be underestimated. Nothing is more passive and less interactive than watching a film or a planetarium show, but planetariums continue to attract large crowds, and nothing is more successful than the IMAX or Omnimax film.

Zee Ann Mason of the Franklin Institute points out that many of the museum's most popular exhibits are historical artifacts such as the actual workshop of the Wright brothers or replicas of artifacts such as Galileo's telescopes. While the institute is absolutely not mainly a "glass case kind of place," Mason says, the historical objects often are very beautiful and the museum likes the interactive exhibits

to be more polished than is characteristic of the Exploratorium look. And by the way, she adds, the Franklin Institute already was interested in interactive exhibits before Frank Oppenheimer came along.

Eustace Mendis, a longtime staff member of the Ontario Science Center and another big name in science museum design, says they found at Toronto that many members of the public are turned off by exhibits done in the Exploratorium's most stripped-down style. "It seems to suggest complexity to them," Mendis says.

Everybody who has visited both the Exploratorium and the Ontario Science Center remarks on the strikingly different auras of the two museums, despite the similarity of the educational philosophies their designs reputedly are based on. While the Toronto center is open to the outside world, classy and relaxing, the Exploratorium resembles an airplane hangar in which children and adults dart about in a virtual frenzy to experience at least a fraction of the 600 exhibits. "The Exploratorium feels like a lab, Toronto like a corporate headquarters," Mendis says.

San Jose Technology Center. Mendis currently is working as the science director for the museum being planned for San Jose. Its focus is to be the science and technology associated with the electronics and biotechnology industries.

The Technology Center, which has been in planning for nearly a decade, is to have an exhibit area of about 200 000 square feet and is intended to be a hands-on learning center supported largely by the high-technology industries of Silicon Valley. Ricardo Legorreta, a noted Mexican architect, has been selected to do a site plan as well as designs for the center and an adjacent children's "discovery building." Peter Giles, a San Jose business consultant, has just joined the Technology Center as president.

The city of San Jose is expected to put up about \$30 million for construction of the museum and another \$5 million or so for site preparation. Backers of the museum hope to finalize an agreement with the city in the first half of this year. After that they will need to raise about \$36 million from private sources to support design and construction of exhibits. If all goes as hoped, ground could be broken for the center in 1989.

The Technology Center will be "similar to the older science museums in that we are unabashedly celebrating technology," Mendis says. "What is different is that the older museums all were done after the fact, after the first industrial revolution, while we are right in the middle of another technolo-

gical revolution. We don't know where we are going but we know the potentials."

The Technology Center will be concerned less with conveying what technology is than what it can do. "Gee, I didn't know this was possible, and wow, can you imagine what we will be able to do five years from now," is what the museum staff wants visitors to think and feel, Mendis says.

—WILLIAM SWEET

White takes up Oppenheimer's mantle at Exploratorium

Robert L. White of Stanford University has been named new director of the San Francisco Exploratorium, it was announced on 9 February. White will take office on 1 April as the successor to the late Frank Oppenheimer, who died in February 1985. Since Oppenheimer's death, Virginia Carolla Rubin has served as acting director and Robert Semper as deputy director.

White earned his BA in physics and mathematics and his MA and PhD in physics, all at Columbia University, in 1949, 1951 and 1954. After finishing his doctorate he joined Hughes Research Laboratories and eventually became associate head of the atomic physics department. In 1961 he became head of the magnetism department at GTE's Palo Alto Research Lab, where he participated in and directed research on magnetic materials, lasers and phosphors. He joined the faculty of Stanford University in 1963 and served as chairman of the department of electrical engineering from 1979 to 1986.

White also has been a Guggenheim Research Fellow at Oxford University and at the Eidgenössische Technische Hochschule in Zurich, a visiting professor at the University of Tokyo and Christensen Fellow at St. Catherine's College, Oxford.

White's most recent research has been on the development of an implantable electronic ear for the profoundly deaf, which has brought him into contact with work on perception and cognition. White says that he is "totally in agreement with and enthusiastic about the stated and traditional mission of the Exploratorium, which is to make science, art and perception comprehensible and fun for everyone. I hope to see the domains in which the Exploratorium has good exhibit coverage extended in the foreseeable future to include more mathematics—which is already in progress—chemistry, medicine and the life sciences, and to extend into the kinds of science that underpin our modern technology." □