Science Foundation: New Director Appoints University of Chicago Aide to Reactivated Deputy Post

Leland J. Haworth, incoming director of the National Science Foundation, announced last week that John T. Wilson, a former NSF official, would return to the Foundation as deputy director. The appointment, which is the first to be made by Haworth, has been extremely well received in science-administration circles.

Wilson became assistant to the president of the University of Chicago in 1961 after lengthy service with NSF, including 6 years as assistant director of the division of biological and medical sciences.

The NSF deputy directorship, which pays $20,500 a year, has been unoccupied since the resignation of C. E. Sunderlin in 1957. At that time, NSF instituted a reorganization which established the posts of associate directors, and director Alan T. Waterman decided that it would be unnecessary to continue the post of deputy.

The appointment appears to be in line with thinking that NSF has reached a point in its growth where closer attention at the top would prove beneficial. There is no talk of a far-reaching shake-up, but it is felt that a "revitalization" is in order.

Meanwhile, amid high tribute and many expressions of approval, Haworth's appointment was endorsed early this month by the Senate Labor and Public Welfare Committee and then speedily confirmed unanimously by the Senate. Both he and Wilson are expected to take office 1 July.

Plans are now under way for what is to be one of the most sentimental and significant occasions in relations between the scientific community and the federal government: a dinner in Washington, on 21 June, marking Waterman's retirement after 12 difficult, and often insufficiently appreciated, years as NSF's first director. There has been no dearth of publicity on difficulties arising from the Foundation's growing pains, but the generally untold and most meaningful story is that, under Waterman, NSF has evolved into a powerful and intelligent supporter of the nation's scientific community. This result was not inevitable; in fact at the outset, the odds were that the very opposite would happen. The fact that it did not is a testimonial to Waterman's performance.—D.S.G.

Science Exhibits: At Seattle Fair, Federal Funds, Scientists Helped, New Yorkers Try a Different Tack

Ever since the Great Exhibition at the Crystal Palace in London in 1851 set the style for international exhibitions, no world's fair has been complete without science exhibits. Science has been used in a variety of ways—to illustrate human progress, to flaunt national achievements, simply to create crowd-pleasing effects. Usually the fair-makers' motives are mixed, and the science exhibits are intended to serve a combination of purposes. Some visitors to the Brussels Fair in 1958 came away feeling that chauvinism about science, which is not new, had been given a strong ideological twist and that one thing the science-exhibit designers had in mind was to help fair-goers draw comparisons between Western and Communist science.

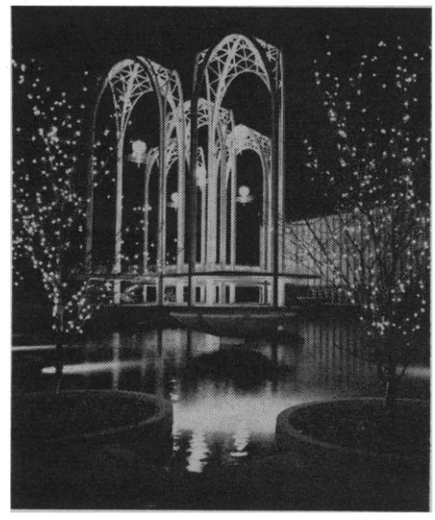
Generally, science exhibits have stressed the works and wonders of science and have leaned heavily toward displays of technology. At the Seattle World's Fair in 1962, planners of the United States science exhibit risked a display that was essentially science without technology, and they appear to have made a popular success of it.

At the New York World's Fair of 1964 and 1965, which opens next April, science will get its usual favorable mention in a number of foreign and domestic exhibits and will have a place of its own in a Hall of Science, which is intended to survive the fair as a permanent museum of science and technology for the city of New York. At this decidedly late date, however, the project is still on the drawing board.

If the science exhibit at Seattle emphasized science for science's sake to a greater extent than is customary, this seems mainly the consequence of two factors: scientists were more deeply involved than usual and so was the United States Government.

Technology has tended to dominate the science exhibits, probably because industry has been interested in linking science favorably to its products and because it has had the money and expertise to do the job. Exhibits typically have run to working models, dramatic effects like man-made lightning, and a priori glimpses into the future. And industry has put on some fascinating shows.

Science exhibits, virtually by definition, are designed to educate, and their



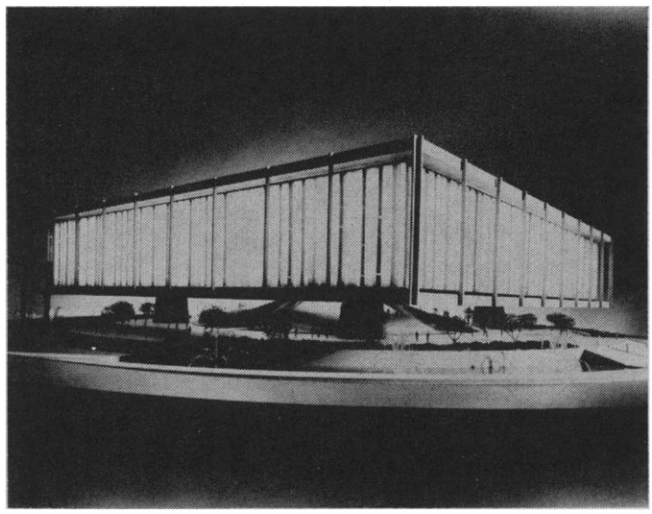
U.S. Science Exhibit, Seattle.

style and content have been governed by two main assumptions: (i) that people do not know much about science, and (ii) that a crowd in a fair-going mood does not want to spend too much time or effort in self-improvement.

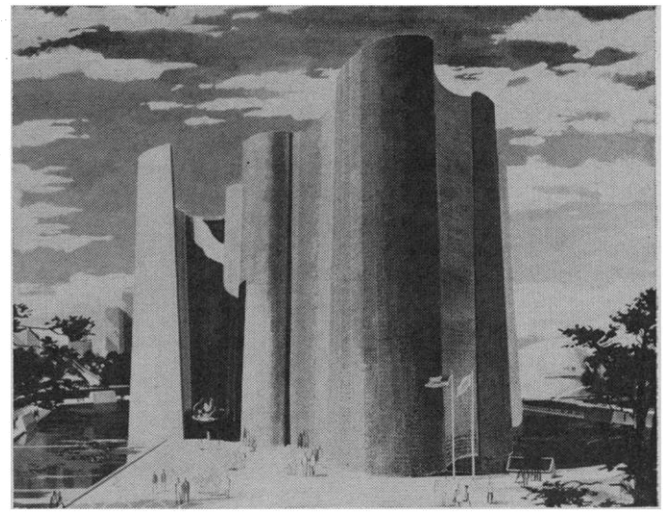
For the scientific community, the question of the responsibility of the scientist to help educate the public on science has been a perennial one. There are excellent arguments on both sides, but in this matter most scientists choose the role of monk rather than missionary. Certainly in respect to publicizing and interpreting science on the fair-grounds this has been true.

The bigger role assumed by scientists in shaping the Seattle exhibit seems to have been the result both of accidents and of trends. The promoters of the Seattle fair, which had a Century 21 theme, thought that science should play a prominent part in a fair dedicated to the next century. At the same time, a group of scientists, science administrators, and foundation officers of national note shared a feeling that there was serious lag in the popular understanding of science.

These two groups made common cause in an attempt to persuade the federal government to participate in the Seattle fair as sponsor of a large popular science exhibit. It was deemed appropriate that a federal pavilion be dedicated to science, since the federal government is now the biggest science contractor in the world and it is not difficult to make a case that the nation literally lives or dies by science. The proponents of the science exhibit apparently also reasoned that if the citizens and taxpayers understood more



Federal Pavilion, New York.



Hall of Science, New York. [Harrison & Abramovitz]

about science, they would be more willing to continue to support it.

Congress, of course, controls the federal purse, and the legislative history of the U.S. Science Exhibit goes back to 1958, when Congress passed a law calling on the President to cooperate with the Washington state fair group "to determine the extent to which the United States government should participate and be an exhibitor" at the Seattle fair.

There was brisk opposition in Congress to federal participation in domestic fairs, but a way was devised to include funds for the Seattle exhibit in the displays and exhibitions section of the foreign aid bill. Washington state's senators Warren G. Magnuson and Henry M. Jackson, who had also served as matchmakers between the fair's managers and the scientists, were particularly effective in encouraging congressional assent. In 1959 Congress appropriated $9 million, and 2 years later it added a final $900,000 for the project.

Responsibility for the federal pavilion was placed in the Department of Commerce, and a special office for an exhibit commissioner and staff was set up. Philip M. Evans was the first commissioner. He was succeeded in April 1961 by Athelstan Spilhaus. Some people outside government feared that the science exhibit would fall victim to one kind of politics or another or be ensnarled in bureaucratic red tape, but these gloomy predictions do not seem to have been borne out. Congress obligingly amended the law to give the commissioner latitude to deal with the special problems he faced. For example, funds were made available until expended, rather than being made returnable to the Treasury at the end of the fiscal year. The commissioner was authorized to accept loans and gifts, and regulations on contracting and payments were made more flexible than usual.

Certainly tensions developed between Commerce and Fair officials and persons concerned with the science theme, but these appear to have been kept at a tolerable level.

Representatives of the National Science Foundation, the National Academy of Sciences, and the American Association for the Advancement of Science gave the Seattle management advice which resulted in the formation of an 18-member advisory panel of scientists for the exhibit, called the National Science Planning Board.

Developing a Theme

The planning board first met in the summer of 1958, and discussions went forward for a year or so with science-oriented federal agencies contributing proposals. In the words of the Commerce Department's final report on the conference, published in March 1963, "At this point many assumed that the U.S. Science Exhibit would display scientific research performed by various parts of the U.S. government, or, if not that, the best of U.S. governmental and private research. . . . It was only later, after many conferences, that the ultimate storyline of the U.S. Science Exhibit began to take shape—the history, development and nature of science—devoid of gadgetry, advertising and chauvinism."

Some 400 consultants and advisors from the scientific community are credited with giving a helping hand, but the main burden of close supervision fell to an eight-member advisory committee on scientific theme, content, and presentation. This committee, headed by Orr E. Reynolds, now director of bioscience programs for the space administration, was made up of eight men living in the Washington, D.C., area who were members of the original planning board. Half were from outside government and half were in federal service.

In undertaking to make science popular, the scientists had a fresh and somewhat cautionary precedent in the science exhibits at the Brussels Fair of 1958. American scientists had helped on the technical exhibits there, and though pure science had been represented, there was a feeling that some of the exhibits had gone over the heads of the fairgoers.

An important boost was given the Seattle science exhibit by architect Minoru Yamasaki and his associates, who contributed what has been judged a milestone in exhibition architecture. The pavilion's artfully simple complex of five buildings around a courtyard with a centerpiece of open vaulted towers gave a feeling of a close or cloister and suggested to many a temple of science.

In strict terms of fitting into the exhibit's grand design, industry contributed to the exhibit to the tune of about $1 million. The largest single amount of $250,000 came from an airframe and missile manufacturer with headquarters in the state of Washington. This particular contribution went to help pay for the "Spacearium," a theater in which was shown a film called *Journey to the Stars*, which seems to

have been the most popular single exhibit in the pavilion.

The science exhibit got a good press, and by the rough calculus of the box office—about 7 in 10 of the roughly 10 million people who paid at the fair gate saw the science exhibit—the science pavilion was a success.

A more refined evaluation by social scientists is contained in a report financed by a $70,000 grant from the National Science Foundation to the University of Washington's Institute for Sociological Research.

The researchers set out to answer two main questions: (i) Do attitudes change after exposure to the science pavilion? (ii) How effective is the science pavilion in imparting information? They used polling techniques on visitors at the pavilion itself and measured crowd flow by such means as the time-lapse camera.

A majority of those interviewed gave the pavilion the highest ranking among attractions at the fair. Specific comments tended to be favorable but vague. Negative comment centered on the difficulty of understanding some exhibits and on crowded conditions of viewing.

The responses indicated that the exhibit stimulated changes in attitude which were significant but not of great magnitude. As for how much information it imparted, general conclusions were hard to draw. The survey seems to have served a practical purpose in identifying mistakes and providing hints on how to avoid these mistakes in the future.

Possible beneficiaries of the Seattle experience are the planners for the New York World's Fair. New York plans a separate science exhibit, but the origins and apparent aims of the science exhibit there differ markedly from those of the Seattle exhibit.

First and foremost, the science exhibit will not be a federal project. There will be a federal pavilion at the fair on Flushing Meadow—Congress has appropriated $17 million for construction and costs of operating for 2 years—but the theme will be "challenge to greatness," and, in the words of the exhibit commissioner, "the exhibit will dramatize the benefits mankind derives from the cultural and economic advances possible under a democratic society." A citizen's advisory committee with its representation weighted toward industry and the arts is working with the Department of Commerce staff. Science will be only one element in the mixture.

Federal science and technology may be separately represented elsewhere, however. National Aeronautics and Space Administration officials are considering the possibility of having an all-NASA exhibit in the form of a 351-foot inflatable replica of a Saturn V rocket, which would be placed horizontally to provide 10,000 square feet of exhibit space for NASA hardware as well as to demonstrate features of the big booster itself and the Apollo spacecraft on its nose. NASA, which does things big, would use the replica, for the rest of the decade, as a traveling exhibit in its education program.

The city of New York plans to build its Hall of Science building with $3.5 million transferred recently from its capital improvements budget. The funds were originally earmarked for incinerator reconstruction on Manhattan. City officials, in making the plan public, said that exhibits and displays representing an estimated $3.5 million will be provided by contributing participants and donors. The project has been turned over to the Port of New York Authority, which is running the transportation section of the fair, and Port Authority officials say that final plans for the exhibits will be revealed in July.

Cross Purposes

In order that the Hall of Science may become a permanent museum of science and technology after the fair, the city council has amended the administrative code to enable a private nonprofit corporation to "construct and operate" the museum on terms acceptable to the city.

World's Fair president Robert Moses has been getting opposition to his plan for a museum from one interested group which says that the Hall of Science is being built at the wrong time in the wrong place.

The critics are the holders of a charter from the Board of Regents of the University of the State of New York as trustees of a projected New York museum of science and technology. These trustees, all prominent citizens, say they had spent 15 months in planning and mustering community and foundation support for the science center when the proposal for the science exhibit and museum on the fair site was detonated under them.

In April, members of the board of trustees issued a stinging statement, saying that the "World's Fair proposal has nothing at all to do with the New York Museum of Science and Technology," and going on to criticize the project on the grounds of haste, high cost because of inflated construction costs, and small size, and questioning whether Flushing Meadow is the best place for the science center. The statement also suggests that there is no guarantee that the exhibit will be "anything more than a trade show for science-based exhibitors," and concludes, "If the City is truly interested in a science exhibit at the Fair, there is substantial uncommitted space already under construction which could be used at a far lower cost. If the City, on the other hand, is really interested in a permanent science facility, the small and hastily conceived Fair building is hardly a promising beginning. The only conclusion is that the proponents of the Fair building are interested primarily in putting up another building on the Fair grounds, regardless of cost or value."

On the other hand, New York has been without a science center since the late 1940's when a small museum of science and technology in Rockefeller Center closed its doors, and the new plan has received support. The city government seems solidly committed to the Flushing Meadow solution, and the project won the seal of approval in a New York *Times* editorial.

Fair president Moses has done so much for so long as a park and road builder and urban renewer that New Yorkers tend to confuse him with the right of eminent domain. And even though the fair has reportedly been troubled with exhibitions failing to materialize and exhibitors reneging, with planning snarls and road-building delays, fair officials insist that all, including the science exhibit, will be well, and Moses seems to have earned the right to be given the benefit of the doubt.

The Seattle science exhibit, however, appears to have become both the ideal and the standard for science exhibits, for the time at least, and the New York exhibit will have to stand comparison. And it will have to do it without the bolster of federal funds, long lead time, and warm solicitude from the scientific community.

Longer-term prospects for a science museum for New York are complicated by the differences between the Regents' trustees and the city. Attempts are being made to mediate these differences, but if the trustees remain adamant, New Yorkers will have cause to wish that Moses were a Solomon.—JOHN WALSH