The troubles began in late May when Shimon Ofer, an Israeli chemist who was scheduled to speak at the meeting, was informed that his application for an entry visa had been turned down. A second would-be Israeli participant, E. R. Bauminger, was still awaiting action on her visa application when the conference was postponed. No explanation has been offered.

The IUPAC secretariat in Oxford, England, was informed of the visa difficulties early in June, and a cable was immediately sent to the conference organizers stating that unless the Israelis were allowed into India for the meeting, IUPAC would be forced to withdraw its sponsorship. IUPAC set a deadline of 19 June for the matter to be resolved. The conference organizers replied that the issue was under review "at the highest levels of government," but when no action had been taken by the deadline, IUPAC withdrew its support. "We had no alternative," says N. C. Williams, IUPAC's executive secretary.

Withdrawal of IUPAC support has only symbolic value. IUPAC essentially approves the scientific content of meetings it sponsors, but does not put up money nor participate in the organization. Nevertheless, withdrawal of IUPAC support is not taken lightly. In 1977, IUPAC withdrew its sponsorship of a meeting in Yugoslavia following denial of a visa to a South African scientist; the South African was admitted the following day, and IUPAC sponsorship was reinstated.

The Indian episode has raised doubts about the participation of Israeli scientists in future meetings in India. Officials at the Indian Embassy in Washington insist that there is no general policy to deny visas to Israeli scientists. The conference organizer, V. G. Bhide, also informed IUPAC, in a letter received 1 July, that the Indian government has given assurances that it has no intention of barring any bona fide scientist from participating in international conferences. Permission for Israeli scientists to enter India is based, said Bhida, not on visas but on landing permits issued at the airport when they arrive.

An official government statement will probably be needed to clear up the confusion before IUPAC will sponsor future meetings in India.

—Colin Norman

Solar Power Satellite Research Called Premature

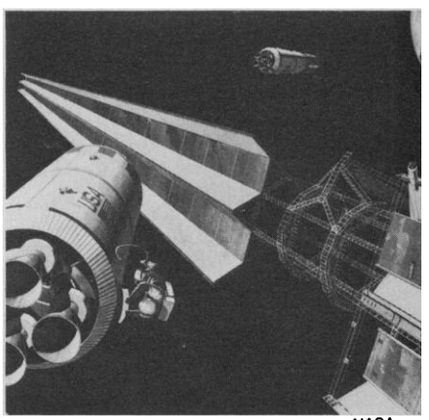
The National Academy of Sciences has found itself in the unusual position of recommending against the expenditure of research funds. In a report released last week, an Academy committee said that although solar power satellites might hold great potential for the 21st century, it would be premature to spend research and development funds on them in the 1980's.

Much of the needed research will be going on for other purposes, the report added. For now, NASA and the Department of Energy should simply keep a close eye on relevent technologies such as low-cost photovoltaics and the automated construction of large space structures, and periodically report to Congress.

"Electric Power from Orbit: A Critique of a Satellite Power System" is a product of the Satellite Power Systems Committee of the National Research Council, the academy's operating arm. It reviews a 3-year, $20-million DOE/NASA study of the SPS completed late last year. The review was performed at the request of DOE and largely with DOE funding. The committee relied heavily on the study's technical research, although it did consult frequently with independent experts. The National Science Foundation, which in 1979 was authorized to study the construction of SPS's with extraterrestrial materials, also helped fund the NRC review and was the official sponsor of the project.

The DOD/NASA study had considered a specific "reference" SPS system with 60 satellites spaced around the earth in geosynchronous orbit 36,000 kilometers over the equator. Each would hold a rack of photovoltaic cells the size of Manhattan Island, together with antennas for beaming power down to the earth in the form of microwaves. Upon its completion in 2030, the system's total output would be about 300 billion watts, half of the electrical generating capacity of the United States in 1980.

The NRC panel concluded that the DOE/NASA study, which included evaluations of the economic, social, political, and environmental impacts of such a project, was well-conceived and well-managed. However, it found the earlier study's price tag of $1.3 trillion for the SPS extremely optimistic. Despite economies of scale and expected advances in technology, the committee found that the costs of crystalline silicon cells are likely to be 10 to 50 times higher than that assumed in the reference system. NASA's cost goals for transport to low earth orbit were also low by a factor of 2 to 3. Finally, the committee pointed to cost overruns on even relatively well-understood aerospace projects. The reference system is "in concept, simple and attractive; but in actual scope, without parallel in human experience in the design, construction and operation of systems," says the report. The earlier study had estimated that the reference system would cost about $4000 per kilowatt of installed capacity. The NRC's most optimistic estimate is $10,000 per kilowatt. Conventional electric power currently costs about $1000 per kilowatt.



NASA

An artist's view of SPS

Building an SPS system with material mined on the moon or extracted from asteroids is an attractive idea, says the NRC study, but building the mines and transport systems would be even more complicated and expensive than the SPS itself.

The Office of Technology Assessment, which will soon release its own report on SPS, reaches similar conclusions about the time scale and difficulty of the endeavor. However, the OTA report points out that even a relatively modest SPS research program, funded at $5 million to $30 million per year, could make significant progress in defining relevant technologies and perhaps in lowering the cost of the SPS.

—M. Mitchell Waldrop