

Efraim Racker of Cornell University, for example. Winget and Spector cite use of this membrane reconstitution procedure as one reason for their successful isolation of a membrane protein involved in photosynthetic oxygen evolution.

Each portion of the photosynthetic process decoded ultimately will have numerous applications — control of plant growth and the development of herbicides, for example. Meanwhile, Winget prefers to view the isolation of a protein required for photosynthetic oxygen evolution as “a gain in knowledge on a basic level.”

“I can't say, ‘Now that we have this enzyme, we will be able to solve a food problem, an agriculture problem, a cancer problem or anything like that,’” Winget says; rather, the protein isolation is more like a long-awaited twist of Priestly's more than 200-year-old key. □

Kepone mimics female hormone

In 1975, male workers in a Virginia plant making the pesticide kepone were found to suffer symptoms that included tremors, irritability, memory loss and sterility (SN: 11/20/76, p. 324). Since then, scientists have learned more about how kepone actually triggers sterility.

For one thing, kepone creates a constant estrus in female mice. This finding suggests that it exerts sterility by mimicking the female reproductive hormone estrogen. But how does kepone, as an estrogenic mimic, actually bring about constant estrus? The answer now appears to have been found by Bruce Hammond and his co-workers at the University of Illinois at Urbana. They report in the *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES* that kepone competes with estrogen for receptors in the uterus.

The possibility that kepone might exert its estrogenic activities by interacting with estrogen receptors in the uterus of the female rat was especially intriguing because kepone has a chemical structure dramatically different from that of estrogen hormones. Tests were conducted both in live animals and in the test-tube.

Hammond and his team found not only that kepone interacts with estrogen receptors in the rat uterus, but that it competes with the estrogen hormone estradiol for these receptors. Although kepone's ability to bind to estrogen receptors is extremely small compared with that of estradiol, it might still be able to tie up the receptors if it is present in the body for any length of time, the researchers believe. In fact, kepone has already been found to have a long life in the body because of its unusual ability to accumulate in liver and fat tissues, and when female rats eat kepone for seven weeks, all enter constant estrus. □

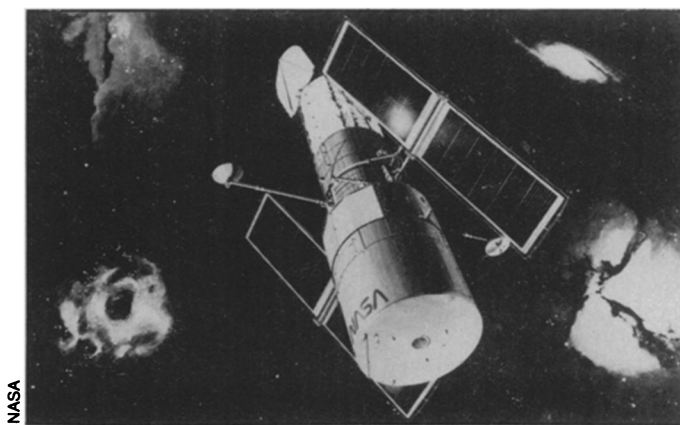
JANUARY 19, 1980

Institute to run Space Telescope

Late in 1983 or early in 1984, the U.S. space shuttle is scheduled to loft a huge, 10-ton satellite whose activities will center around a single instrument: the Space Telescope. Although the 2.4-meter instrument will be less than half the size of some telescopes now in use on earth, its 500-kilometer-high orbit, well above the obscuring atmosphere, is expected to let it see about 350 times the volume of space that can be studied from the ground, including stars only one-fiftieth as bright as those visible to earthbound observatories. Designed to last through the end of the century, it is to be serviced about every two and a half years by shuttle astronauts, and occasionally brought back to earth for overhaul and relaunching. The device is eagerly awaited both by stellar astronom-

says program manager Don Burrowbridge, is that the heavily instrumented device's full and complicated observing schedule (it may run virtually 24 hours a day) could prove too much of a coordination burden (and an expense) for NASA to do the job “in-house.” Although each of the telescope's five initial instruments will have its own principal investigators, for example, only the first two months of observing time will be exclusively theirs. Responding to the widespread interest in using the device, NASA plans to allow greater and greater numbers of outside observers to take part. After the first two months, the “development-phase science team” and the European Space Agency (which is providing one of the instruments as well as the telescope's solar panels) will be al-

The 2.4-meter Space Telescope, as it will appear in orbit after being carried aloft by the space shuttle.



ers, who will be able to see unprecedentedly faint and distant stars, and by planetary observers, who will be able to study the solar system's worlds with detail formerly limited to the brief visits of space probes.

Because of the heavy demand anticipated (and already in evidence) for the instrument's services, it will not be operated like one of the National Aeronautics and Space Administration's typical scientific satellites or probes. In fact, neither the scientific programs nor the day-to-day operations of the facility will be handled by NASA at all. Instead, the agency has asked potentially interested parties — universities, aerospace companies, consortia, etc. — to bid for a contract to design, set up and run a Space Telescope Science Institute. Housed at a site of the contractor's choosing, the institute would manage the various science programs, select the observers, plan and schedule operations, and even (from NASA's Goddard Space Flight Center in Maryland) operate the telescope itself. The bids, which will actually be detailed proposals for the institute's design and operation, are due at NASA by March 3, where the winner is expected to be chosen by August or September.

One reason for the institute system,

lowed only about 60 percent of the schedule time, with the rest going to outside astronomers. Half a year later, the balance will shift further, to 35/65, and twelve months after that to 25/75. By the time the telescope has been aloft for 30 months, the original science team will be out of the picture entirely, leaving the institute to coordinate the needs of astronomers from around the world, who may be using the instrument in numbers as high as 10 persons a day.

The institute approach, Burrowbridge adds, should also enable the Space Telescope program to be more “responsive” to the scientific community at large, an advantage echoed by some astronomers who feel that it gives a chance for the science to be managed in a less parochial way than if it were administered from within NASA.

Remarkably, the Space Telescope also appears to be on schedule and within its budget, according to a report to Congress this month from the U.S. Comptroller General. The report also concludes, however, that over its nearly 20-year lifetime, inflation and other factors may cause the overall program to cost as much as twice NASA's \$1.1 billion estimate. The report urges that more complete cost data be given to Congress. □

39