

SCIENCE NEWS OF THE WEEK

Seeking a Skyhook for Skylab

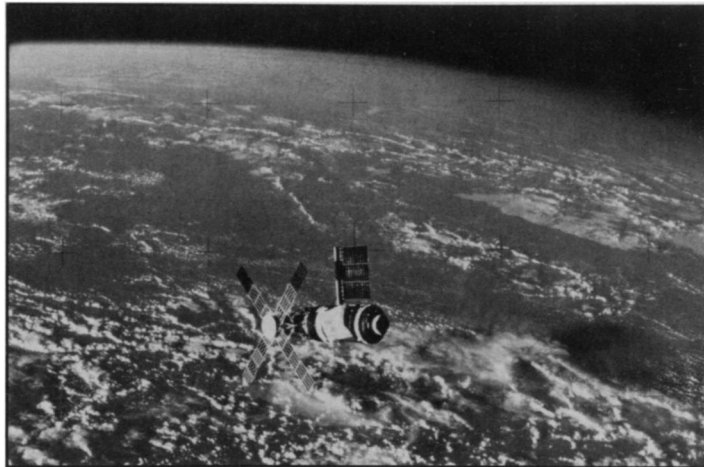
Skylab, the nearly 100 tons of orbiting workshop that was home to three crews of astronauts following its 1973 launching, inspired a number of early proposals for future uses, ranging from refurbishment for yet-unspecified purposes to conversion into a testbed for space-manufacturing techniques. For now, however, there is a more immediate concern: the possibility that the space station's decaying orbit may lead to a premature and fiery end in earth's atmosphere, or even that some pieces may survive all the way to the surface. The 266-by-281-mile orbit in which Skylab's last crew left it has already decayed to a 245-by-255-mile one. And *tempus*, it appears, *fugit*.

In hopes of lifting Skylab into a higher, longer-lived orbit, the National Aeronautics and Space Administration last year contracted with the Martin-Marietta Corp. to design a remotely steered rocket motor called a "teleoperator propulsion unit." Carried aloft and deployed by the space shuttle, the device would be equipped with a television camera through which an astronaut in the shuttle could see to direct the docking maneuver with Skylab. Plans called for the mission to be carried out on the shuttle's fifth orbital flight, scheduled for February of 1980.

Then time became more critical still. Late in 1977, some researchers predicted that sunspot activity during the upcoming solar maximum would be considerably higher than previously expected, with the most sunspots occurring in the first half of 1980. This could relate to increases in the extent and turbulence of the upper atmosphere, and thus to the rapidity with which Skylab could be dragged down to its doom.

As a result, NASA is tentatively planning to send its Skylab-lifting booster on the third shuttle flight rather than the fifth. The third flight is now scheduled for October of 1979, assuming that development difficulties do not delay it, but it is possible that the hard-to-predict sunspot effects could start showing up even by then.

Thus, in the latest of its time-stretching maneuvers, NASA is now considering an attempt, as early as this April, to bring Skylab back to life. Timed so that the sun would be falling directly on the workshop's electricity-producing solar panels, the scheme calls for sending radio signals in hopes of reactivating the laboratory's communication system. If that works, Skylab's attitude-control thrusters would be instructed to fire so as to place the whole station in a slow tumble, calculated to reduce the drag of the atmosphere and give the orbit-raising project a few precious months of leeway. Anything could go wrong: The communications system may not respond, the control jets may not fire,



Skylab, then with one solar panel stuck closed, as seen by its approaching first crew.

NASA

the planned shuttle flight may be delayed.

Even if everything works as planned, Skylab's future is not completely assured. None of those early ideas for what to do with the facility have become full-fledged plans, though there is some discussion of removing selected components (possibly

during a 1981 shuttle flight) for return to earth. Thus it is still possible that NASA may use the remote-control booster to send Skylab on a controlled atmospheric reentry, for which its descent path would be known, rather than lifting it to a longer-lived position. □

Saccharin and cancer: Another look

Last November the president signed into law an 18-month moratorium on the saccharin ban proposed by the Food and Drug Administration. The purpose of the moratorium was to gather more information about any relationship between the sweetener and bladder cancer. What new information will Congress have by June 1979?

Two major studies are now getting underway. One, by the National Academy of Sciences, may review the scientific literature, consider risk-benefit analysis and look at social and economic impacts of regulating the sweetener. The other study seeks more epidemiological data for a better analysis of the problem.

The new research project was proposed by the Food and Drug Administration "saccharin working group." The 11-member team recently completed an evaluation of available epidemiological data: three studies of diabetes, two historical studies of bladder cancer as saccharin use increased and three comparisons of hospitalized patients. The group concludes there is currently neither enough evidence to accept or reject the hypothesis that in humans use of saccharin increases risk of bladder cancer. However, they say the studies "provide some assurance that no epidemic of saccharin-induced bladder cancer has occurred."

The working group proposes a new study that will attempt to avoid the pitfalls of those of the past. It will include suffi-

cient numbers of people — 3,000 to 4,000 newly diagnosed cases of bladder cancer. It will use controls (2 for each cancer case) chosen from the general population, rather than from hospitals where even the control patients are likely to be overweight and use saccharin. Participants will come from selected high- and low-risk areas. The interview will also cover hair dye use, fluoridation of water, occupational exposures and smoking. "We're not going to all this effort just for saccharin," says Guy R. Newell of the National Cancer Institute.

This massive survey will use the reporting mechanisms of the NCI Surveillance Epidemiology and End Results Reporting Program and the New Jersey State Health Department. The study will be jointly sponsored by the FDA and NCI. Newell says this is the first time a regulatory agency and a research group have teamed up on a public health problem. The estimated expense of \$1.35 million will be paid partly out of the \$1 million Congress appropriated to the FDA for seeking saccharin information and from NCI, EPA and other governmental agencies.

Newell says it will take about a year to collect the data, so they hope to have the first rough analysis by the congressional deadline. Complete analysis will take a few months more. While no study can be entirely definitive, this project is designed to reveal a saccharin effect as small as a 10 percent excess risk of bladder cancer. □