

Satellite restored after two years

The Meteoroid Technology Satellite was launched by NASA on Aug. 13, 1972, to study the number, speed and damage potential of micrometeoroids. But only nine days after launch the satellite's battery overheated, and cautious engineers shut down the main telemetry system, leaving only a solar-panel-powered backup system that provided data on all but one of the probe's three experiments.

Now, more than two years later, flight controllers have successfully reactivated the main system. MTS is whole again.

The attempt had not been made earlier because of fears that, if the battery were dead, it might be impossible to switch back to solar power: this would have sacrificed the one operating experiment. With data from the experiment in hand (including the valuable discovery that double-walled panels offer six times the micrometeoroid protection of single thicknesses), the decision was made to try reactivating the battery. The fact that it worked was a technological gain in itself: It had been believed that the battery could sustain temperatures no higher than 95 degrees F., yet it had reached 147 degrees when shut down.

The main telemetry system, together with the two experiments dependent on it, was reactivated to help solve a mystery. An instrument counting the numbers of meteoroid impacts had showed an initially high reading that steadily decreased throughout its nine days of life. Officials hope the revived instrument will last through Aug. 31, 1975, yielding data that may contain clues to the puzzling readings.

Five years working on the moon

The atomic-powered instrument package left on the moon by the Apollo 12 astronauts in 1969, designed to last for a single year, is still going strong, and looks so healthy that it may last into 1977, more than seven times its originally foreseen lifetime.

The Apollo Lunar Scientific Experiment Package, more manageably known as ALSEP, was set up by astronauts Charles Conrad and Alan Bean on Nov. 19, 1969, during the second of their two forays onto the lunar surface. The package (which was followed by other ALSEP's on subsequent moon visits) included a seismometer to listen for moonquakes and meteor impacts, a magnetometer to hunt for traces of a magnetic field, a spectrometer to study the solar wind, an ion detector to seek trapped charged particles near the surface and a cold-cathode ion gauge to measure the density of the rarified atmosphere, if any. Their messages continue.

Whitcomb does it again

Richard T. Whitcomb, NASA's superstar aeronautical designer, has received yet another major award, the 1974 Wright Brothers Memorial Trophy.

Head of the Transonic Aerodynamics Branch at the agency's Langley Research Center in Virginia, Whitcomb is noted for several major contributions to present and future aircraft design, including the supercritical wing.

The Wright Trophy, a miniature replica of the plane that made the first sustained heavier-than-air flight from Kitty Hawk, joins tributes to Whitcomb that include a \$25,000 design award from NASA, the 1973 National Medal of Science and others.

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Warm water for agriculture

Instead of dumping waste hot water from industrial processes into lakes and streams, where it stimulates the growth of algae, the Environmental Protection Agency suggests factories work out arrangements with local farmers to use the hot water to help grow their crops. Agency scientists have just completed a five-year project in Oregon aimed at demonstrating feasibility of the idea, and they are encouraged by the results.

The waste water could be used in two different ways, either to stimulate root growth through underground irrigation during cold weather, or to spray orchard trees to help prevent frost damage. (The water would still freeze on the trees, but in doing so it uses up enough heat to prevent damage and to protect buds.) Soil heating significantly increased the number and weight of early spring asparagus, increased growth of lettuce and cucumbers and permitted early marketing of rhododendrons on the test farms. Spraying peach orchards allowed production of full crops during periods when unprotected orchards suffered significant losses.

EPA officials foresee the time when waste warm water could become a sought-after commodity, with the main source being the nation's electric power generating plants.

Magnetic separation of wastes

Magnetic separation of iron and steel scrap from municipal solid waste is both simple and profitable, according to an article in the fall BULLETIN of the National Center for Resource Recovery, and the necessary equipment can be "quickly and easily added to an existing shredding installation." Steel containers alone may amount to 5.4 million tons of waste per year—4.0 percent of the annual domestic steel production. Some 90 percent of this waste could be recovered using existing technology, concludes the report.

Some caution is needed, for the recovered metal must be "clean," that is, it must not contain a lot of organic material that will burn during smelting, possibly overloading air pollution control equipment. Still, from each ton of garbage, \$2.50 to \$3.50 gross revenues can be obtained at today's prices, with ready buyers available.

Lasers against the smog

The Environmental Protection Agency has developed a lidar (the laser light equivalent of radar) apparatus capable of measuring the boundaries of air inversions in their early stages and thus act as a kind of early warning system for smog hazards. A laser beam is directed into the air and the amount of light reflected back is measured. Since the amount of reflection depends on the atmospheric concentration of aerosols, which tend to concentrate at the boundaries between warm and cool air, temperature inversions can readily be mapped. EPA is preparing to install a lidar unit for routine use in its regular monitoring programs.

Climate by computer

Computer simulation of complex systems like the atmosphere is a tricky business, but two IBM scientists are trying to use computers to answer at least one pressing question: Is dust pollution contributing to the global cooling trends? Their tentative answer is negative. "Initial results indicate that the effect of dust on the earth's [climate] has been overestimated."

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