

population of olfactory nerves appear (right photo).

Might olfactory nerves be regenerated in people who have trouble smelling, thereby restoring or improving their sense of smell? "The phenomena of regeneration are applicable to all vertebrates and most likely to humans," says Graziadei. "Certainly it is possible," Metcalf says. □

## Mariner 10's cameras cold but functional

As Mariner 10 heads toward its encounters with Venus and Mercury, flight controllers at Jet Propulsion Laboratory in California have decided that they can live with one of the problems that turned up early in the flight. But the other one has them baffled.

Two heaters that were supposed to keep the spacecraft's TV telescopes warm failed to come on shortly after launch Nov. 3, "and apparently," says one official, "they're not going to come on." Parts of the instruments got as cold as 22 degrees below zero F., while they were taking test pictures of the earth and moon. But putting the telescope platform in its "stowed" position has warmed things up somewhat (the coldest parts—the telescope objective lenses—have come up to minus 16 degrees), and the electronic circuits of the vidicon units are being left on to protect the image tubes from the cold.

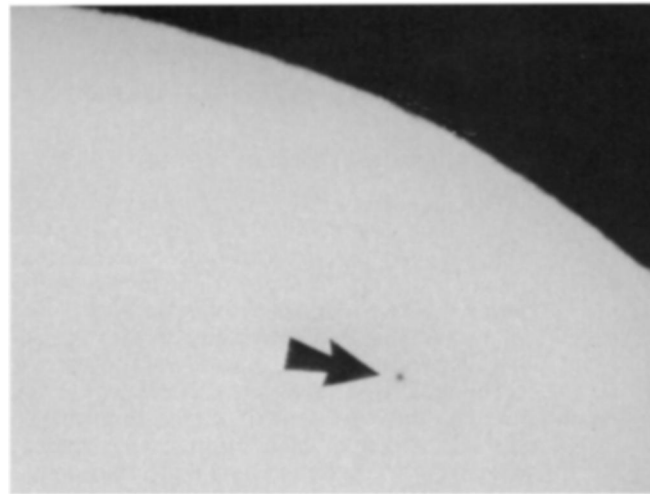
The puzzler is the plasma science experiment, designed to study the solar wind in front of and behind the spacecraft. The aft-looking part is fine. The forward-looking section, however, has somehow struck so that the energy levels it "sees" are above those of the solar wind. Engineers at Kennedy Space Center have been trying to reproduce the problem in a backup spacecraft on the ground, but to no avail. It may be related to the cold, although the actual reason is uncertain, in which case it may clear up as Mariner nears the sun. It might also be that a cover over part of the instrument failed to deploy properly, but the engineers have failed to find what would make it stick.

Meanwhile, on Nov. 10 and 11, flight controllers radioed advance instructions to the spacecraft's guidance computer to adjust its path slightly on Nov. 13. Without the change (which was somewhat larger than anticipated) Mariner would pass about 31,000 miles from Venus on the sunward side, instead of 10,000 miles away on the dark side (later bending in to 3,300 miles on Feb. 5, 1974). At the same time, the spacecraft was given a set of emergency instructions so that it can run its own Venus flyby just in case communications from earth should break down.

## Transit of Mercury

*Planet Mercury, 3,026 miles in diameter, moves across the face of the sun, 864,000 miles in diameter, Nov. 10 in one of only 13 such transits this century. Mercury, the innermost planet, took about 5½ hours to complete the transit.*

*Photo was taken by 8-inch telescope at Lincoln, Mass.*



Wide World

## Life-laden Cosmos 605: Cell studies in orbit

As preparations continued for the final Skylab mission to carry life forms such as spores, rice roots, gypsy moths and astronauts into orbit, the Soviet Union already had a lively space probe of its own circling earth. Cosmos 605 was launched Oct. 31 from Plesetsk, about 120 miles southeast of the White Sea, with an animated payload of rats, tortoises, insects and fungi.

The flight is being conducted to study the relationships between weightlessness and radiation, particularly, according to Soviet Deputy Health Minister Avetik Burnazyan. It will "investigate what functions and processes at the cellular level . . . are particularly sensitive" to those factors. "Serious attention" is also being devoted to the nervous, endocrine and other systems "that ensure the organism's adaptation to changing conditions."

The mission is apparently a continuation of studies which, at least in previ-

ous flights, have focused on the formation and development of radiation injuries in space. Different parts of yeast, seed and onion bulb samples, for example, were exposed to radiation before, during and after the flights of Vostok 5 (piloted by cosmonaut Valery Bykovsky in 1963), Cosmos 110 (which also carried two dogs during its 23-day mission) and Cosmos 368 (in 1970).

For Cosmos 605, the numbers of each life form were calculated to provide statistically meaningful data. Sensors were implanted in the rats' brains to measure the effects of cosmic rays on nerve cells. The most sophisticated aspect of the mission, however, is a newly developed monitoring system that registers the movements of each animal in its cage, keeps running totals and gives flight controllers periodic summaries of the animals' motor activity.

Cosmos 605 is believed due for recovery sometime this month. □

## Two honored for heart-research innovations

Over the past 28 years, the Albert Lasker Medical Research Awards have become the most prestigious American awards for biomedical research. For intriguing reasons the Lasker awards are often a ticket to Stockholm. Twenty-two Lasker awardees have gone on to claim a Nobel Prize (SN: 10/2/72, p. 365).

This week the 1973 Albert Lasker Clinical Medical Research Awards were made to William Bennett Kouwenhoven of the Johns Hopkins University and to Paul M. Zoll of the Harvard Medical School for their life-saving advances in the treatment of acute heart attacks—specifically for correcting abnormal heart rhythms.

In 1933 Kouwenhoven and his colleagues confirmed that electric shock could reverse ventricular fibrillation of the heart. Ventricular fibrillation—irregular contractions of the heart's ventricles—is a major cause of death

in acute heart attacks. He then developed devices for both open and closed chest defibrillation and, in 1958, originated external cardiac massage. Kouwenhoven made the final two contributions after he was 68 years of age and had retired from a career in electrical engineering.

Zoll showed in 1952 that when a human heart stops, it can be induced by externally applied electrical stimulation to resume beating. He then showed that externally applied alternating current countershocks are similarly effective in stopping ventricular fibrillation. He developed the theory and technique of continuous monitoring of heart rhythm. Pacemakers, which have saved tens of thousands of people from sudden and unpredictable death, are Zoll's invention. More than 60,000 Americans have received pacemakers; some 15,000 new pacemakers are implanted annually. □