

Condor cooperation

The program to study and breed California condors suffered a setback last year when a condor chick, presumably suffering from fear-induced stress while being handled by a researcher, died (SN: 7/26/80, p. 54). Now, given the cooperation of the hard-to-catch birds and California wildlife agencies, in the next year the U.S. Fish and Wildlife Service will trap nine of the birds, nearly a third of the known population. The first two birds, says Glen Smart, staff specialist for endangered species for the Fish and Wildlife Service, may be trapped as soon as next month if California approves the trapping permit.



F. C. Sibley/U. S. Fish & Wildlife Service

The demise of the birds is blamed variously on environmental pollution (their habitat is within 50 miles of Los Angeles), pesticides, destruction of habitat and indiscriminate shooting. During the first year of the program six of the birds will be fitted with transmitters and released. Three of the birds of proper age and sex will be held for captive breeding, two at the San Diego Wild Animal Park and one at the Los Angeles Zoo, where one condor already resides. In the program's second year, Smart says, the remaining six birds may be held for captive breeding.

Out of the power plant, into the fire

Although the problems of storing or disposing of radioactive and hazardous wastes are far from solved, scientists at Los Alamos National Laboratory are encouraged by test results of an experimental incinerator. The specially designed incinerator reduces lightly compacted low-level radioactive waste to 1/100th of its original mass and volume, and breaks down hazardous chemicals into nonhazardous ones. Known carcinogens such as polychlorinated biphenyls, for example, are reduced to water, carbon dioxide, and sodium chloride. The project was funded by the Department of Energy (DOE).

Lee Bourdin, head of the project, says the process has "great promise" although regulatory, environmental, and legal obstacles may have to be surmounted. DOE plans to build a demonstration incinerator at a commercial nuclear plant, Bourdin reports. A low-level radioactive waste incinerator would cost about \$1 million, pre-installation, while costs for a hazardous waste incinerator would depend on the chemical.

Resuscitation regulation

Possoms routinely feign death to ward off predators, but sea turtles incidentally ensnared in trawl nets, particularly shrimp trawls, aren't kidding. According to a report in the Sept. 2 Federal Register, sea turtles caught and held under water are "physiologically stressed and often become comatose and appear dead." A turtle often recovers after its lungs are drained, the report says, but if a comatose turtle is thrown into water before recovering, it will drown.

The National Marine Fisheries Service, seeking to save endangered species of sea turtles, requires fishermen to attempt to resuscitate sea turtles caught during fishing operations. The rules require fishermen to place the turtle on its back and pump its breastplate with hand or foot, or to place the turtle on its breastplate and elevate its hindquarters several inches for one to 24 hours.

The new Syrtis Major

Perhaps the longest-known surface feature on Mars is Syrtis Major, a great dark triangle almost surely portrayed in a sketch — said to be the first ever to show meaningful detail on the planet — made by Christiaan Huygens in 1659. Spacecraft such as the orbiting Mariner 9 have revealed it in detail: a wind-streaked plain, surrounded by blasted craterlands on the north, west and south, with huge Isidis basin to the east. And yet, says one research team, the famous feature is still misunderstood — and misnamed.

In the maps prepared in the early 1970s from Mariner 9's imagery, it was officially dubbed Syrtis Major Planitia, "planitia" being a term agreed upon by a convention to denote a low level plain. Generally round, and said to be marked with concentric and radial fractures, it was taken to be the volcanically filled-in result of a major meteorite impact, though there seemed to be a shortage of the kind of material that ought to have been ejected by the blow. Now Gerald G. Schaber of the U. S. Geological Survey and colleagues report that it is not an impact feature at all, but just a volcanic region, and that it is not a low plain but a high one — whose name the scientists want officially changed to Syrtis Major *Planum*, connoting the revised elevation.

Martian surface elevations, says Schaber, were produced from Mariner 9's data only by the somewhat indirect method of using the orbiter's ultraviolet spectrometer to calculate atmospheric pressure differences on the basis of local variations in molecular scattering. The technique produced notable successes (former UVS team member Arthur L. Lane of Jet Propulsion Laboratory says it correctly determined the huge volcano Olympus Mons to be some 25 kilometers high, when early photo analyses were suggesting less than 7), but now, says Schaber, there is radar. The Mariner 9 maps, he says, show Syrtis Major as rising about five kilometers over some 20° of longitude, nearly 1,200 km. Earth-based radar studies from Arecibo in Puerto Rico and Goldstone in California, however, indicate a far steeper slope, rising to the same height in only one-fourth the horizontal distance and producing a lofty expanse more like a "planum."

As to its origin, Isidis to the east is clearly an impact structure (complete with a gravitationally conspicuous concentration of mass beneath the surface), but not, say the authors, Syrtis Major. Instead, Schaber reasons, the Isidis impact probably fractured the crust at nearby Syrtis, allowing the magma of subsequent volcanism to flow out — the latest flows can still be seen, he notes — and set up the collapse of the overlying terrain. In fact, Schaber told the recent Third International Colloquium on Mars (held in Pasadena), Viking photos and the radar data reveal signs of a second volcano-tectonic episode within the main plain — a previously unrecognized, circular collapse zone 280 km wide.

Martian duststorms in the balance

It has long been suggested that significant shifts in the Martian climate may accompany cyclic changes in the planet's axial tilt, perihelion position and other factors, which can cause long-term insolation changes leading to periodic thickening and thinning of the atmosphere. According to James B. Pollack of the NASA Ames Research Center in California, one phenomenon affected by these pressure swings is the duststorms that, with the present atmospheric surface pressure of about 7 millibars, blanket the planet every year or few. If a warming cycle frees enough trapped carbon dioxide to triple the pressure, he calculates, the thicker atmosphere might not get much dustier, since it would reduce the temperature differences that drive the winds. A three-fold reduction in pressure, however, he says, could bring the storms to an end, since wind capable of moving dust in such thin "air" would have to be nearly supersonic.