

Unrefrigerated fresh milk

Fresh milk in cans? According to Harold Swaisgood of North Carolina State University's Department of Food Science, unrefrigerated fresh milk may well become "commonplace" in 5 to 10 years. Pasteurized milk on the market today must be refrigerated to prevent the bacteria remaining after partial sterilization (exposure to heat that is both short-term and not ultra high) from souring the milk. Sterilization, while killing all bacteria, creates an unpleasant taste. However, Swaisgood, Violeta Janolino and H. Robert Horton have isolated and immobilized an enzyme that restores the familiar fresh milk flavor when heat-treated milk is passed over it.

Sulfhydryl oxidase, found in raw milk, converts the sulfhydryls produced in milk proteins by heating them to a disulfide state. The reversed chemical process changes the "cooked" flavor without adding substances to the milk or reversing its sterilization. With refrigeration unnecessary until after the container is opened, this process would result in high energy savings for both distributor and consumer. The researchers are continuing their studies of sulfhydryl oxidase to discern its possible role in prevention of the settling of protein particles to the bottom of the container, a common occurrence in the storage of fresh milk.

Bangladesh free from smallpox

Bangladesh will go down in history not only as the symbol of the worldwide concern for the increasing problem of malnutrition, but now, in the ninth year of a ten-year campaign to eradicate smallpox (SN: 2/1/75, p. 74), it is the last Asian country to have been officially declared "smallpox-free." Two months after the discovery and arrest of a final outbreak in the village of Shekhpara, 12,000 World Health Organization workers have concluded an intensive house-to-house search through 150,000 villages of Bangladesh, finding no further cases of *Variola major*, the severe form of smallpox that kills up to 30 percent of its victims.

While a two-year follow-up continues in Bangladesh and other recently endemic countries, approximately 100 cases per month of a milder form of smallpox, fatal to only one percent of its victims, is still reported in Ethiopia. However, WHO campaign director Donald A. Henderson expects that by next spring, the increased surveillance of these outbreaks will clear the infection from Ethiopia as well, the last smallpox-ridden country in the world.

Auto accident epidemic

Human error is the causative factor in as much as 96 percent of the world's auto accidents. And traffic accidents are reaching increasingly epidemic proportions. In an attempt to change the fatalistic acceptance of accidents as "a way of life," the World Health Organization is launching a new campaign for 1976: the research and development of systematic approaches to auto safety and accident prevention.

Among WHO's startling statistics: For every 1,000 vehicles involved in accidents, one person in industrialized countries and eight in developing countries are killed. Traffic accidents are the number one cause of death among young adults in the United States, Chile, Costa Rica and Venezuela. In Dehli, India, almost 50 percent of traffic fatalities are pedestrians, and according to a police spot-check, one in four truck drivers entering Dehli are drunk. Also in Dehli evidence indicates that drivers with defective eyesight cause the majority of road accidents involving severe injuries and fatalities. Worldwide surveys document the correlation between accidents and poor visual perception.

The space-station surge

As ideas of manned, artificial colonies in space continue to draw public interest, recent and imminent studies for the National Aeronautics and Space Administration are focusing on a somewhat less futuristic step in the same direction: modular space stations.

In a just-completed, year-long study sponsored by NASA, the McDonnell Douglas Astronautics Co. has proposed a sectional station to be assembled in orbit from units carried aloft by the space shuttle. A cylindrical core module, about 50 feet long, would be placed in orbit for a five-year stay and augmented by 23-foot logistics modules and 27-foot payload modules that would be replaced at 90-day intervals. Initially a four-man design (with 90-day crew rotations), the system would be made expandable to accommodate 12 or even 24 people. The plan suggests possible orbits ranging from about 115 to 345 miles above the earth.

In April, NASA plans to fund a pair of 18-month, \$700,000 studies (each twice the cost of the McDonnell Douglas effort) to examine the possibility of even more elaborate stations. These would be designed to spend at least a decade in orbit, with the possibility of operating from fixed, geosynchronous positions some 23,000 miles up. Although the initial components would have to fit inside the space shuttle for delivery, the idea is far enough in the future, says a NASA official, that later extensions might not need to be "shuttle-limited."

Like the proposed "space colonies" currently being popularized by Princeton physicist Gerard K. O'Neill (SN: 9/6/75, p. 149), the modular stations are being considered for tasks such as microwave transmission of solar power to earth as well as for diverse research projects including long-term physiological studies. Even the smaller McDonnell Douglas design has been proposed as an orbiting propellant depot to refuel upper-stage boosters that would carry payloads beyond the altitude capabilities of the shuttle.

Starting storms on Mars

The latest in the list of possible triggers for Martian dust storms has been suggested by Douglas W. Johnson, Paul Harbeck and Robert R. Reeves of Rensselaer Polytechnic Institute in Troy, N.Y. Supported by laboratory studies using a simulated Martian soil of silica gel particles in a low-pressure carbon dioxide atmosphere, they propose in ICARUS (26:441) that CO₂ absorbed by subsurface soil layers during the night can sometimes be explosively released by morning heating, carrying fine dust particles into the atmosphere. The rising CO₂ is blocked by upper soil layers until it reaches a pressure sufficient to rupture the surface. The effect would vary with local warming rates, microtopography and subsurface turbulence.

A decade and going strong

Pioneer 6, believed to be the longest-running interplanetary spacecraft ever launched, passed its 10th birthday on Dec. 16—and it's still going strong. Built by TRW Systems in Redondo Beach, Calif., the probe is part of an illustrious family tree that includes Pioneer 1, NASA's first spacecraft (launched when the agency was only 10 days old); Pioneer 4, first U.S. spacecraft to escape earth's gravity; Pioneer 10, first probe to visit Jupiter and destined to be the first manmade object to leave the solar system, and Pioneer 11, due to be man's first visitor to Saturn in 1979. Numbers 6 through 11 are still operating (the first four of them in solar orbit), and, says project manager Charles F. Hall, "Pioneer 6 is such a good spacecraft that we may get another 10 years out of it."