

More on mousse

Floating pancake mousse may be short-lived because of flaking. This may sound like a culinary tip from a recipe for a whimsical breakfast, but it's really an observation from some serious research aimed at detailing the fate of mousse — the orange-brown water-in-oil emulsions that form after an oil spill.

The mousse research — reported in the March 19 *NATURE* — was conducted by John S. Patton and Mark W. Rigler of the University of Georgia at Athens and Paul D. Boehm and David L. Fiest of Energy Resources Co. Inc. in Cambridge, Mass. These mousse sentries gathered data after the June 3, 1979, blowout of the Ixtoc I offshore oil rig in the Gulf of Mexico (SN: 12/15/79, p. 405; 10/25/80, p. 267). As the Ixtoc I mousse drama unfolded before their eyes, the researchers found that it involved four characters: sheen, pancake, flake and skin. From an ultra-thin oil sheen, skin-covered, gram-sized pancakes formed. Weathering processes cracked the skin on the pancakes, which then "flaked" into dense, microgram-sized mousse packages. The flaking process exposed unweathered mousse that emerged from the pancakes as a sheen, which in turn formed more skin. The process repeated itself, "ultimately breaking down the mousse pancake," Fiest and colleagues report. "Flaking of stable, water-in-oil emulsion particles seems to be a significant intermediate in the open-sea dispersion of the Ixtoc I oil spill. The process causes an increase in the surface-to-volume ratio of spilled oil which would accelerate surface-dependent evaporative dissolution and photochemical weathering and enhance the rate of microbial colonization."

A skin by any other name

The bilayer artificial skin that previously had met with success in seven burn patients (SN: 1/3/81, p. 4) now boasts three more victories. A total of 10 patients — who range in age from 3 to 60 years and had suffered third-degree burns over 50 to 90 percent of their bodies — have been treated with the skin, report its developers, I. V. Yannas of the Massachusetts Institute of Technology and John F. Burke of Massachusetts General Hospital. The other development in this research is the way the scientists are describing it. In January, Burke and Yannas said the skin is composed of a silicone top layer bonded to a bottom layer that consists of the fiber collagen and the polysaccharide (carbohydrate polymer) glycosaminoglycan (GAG). But "the public was having a hard time understanding silicone and collagen-GAG," Burke says. Now, he and Yannas say the artificial skin is made from cowhide, shark cartilage and plastic. The skin is the same: The silicone top layer is the plastic, the collagen comes from the cowhide and the GAG comes from shark cartilage.

From poison dart to irregular heart

The Indians of Colombia and Ecuador long ago learned to rub the ends of their blowdarts on the frog *Dendrobates tricolor*; they had discovered the toxic effects of the class of compounds, *Dendrobatid* alkaloids, secreted by the frog. Now, Larry Overman and colleagues of the University of California at Irvine report in the April 8 *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY* the synthesis of one of those alkaloids — the third frog-secreted compound they have reproduced in the laboratory.

The latest alkaloid, Toxin 251 D, belongs to a chemical subclass of powerful cardiotonics, or heart regulators. It eventually may be used to treat certain heart ailments. Moreover, the researchers' relatively simple, 10-step synthesis of the complex Toxin 251 D paves the way to the synthesis of chemically related, more powerful cardiotonics, such as pumiliotoxin B.

Heart disease: An early start

How do U. S. youngsters stack up against those in other countries when it comes to heart disease risks such as cholesterol, obesity and smoking? The answers are provided in a survey conducted by the American Health Foundation in New York City and reported in the March *PREVENTIVE MEDICINE*: U. S. 13-year-olds rank only ninth among their peers in 13 nations in the amount of cholesterol in their bodies. (Finland's 13-year-olds rank first, and Finland has the highest adult rate of heart disease in the world.) In contrast, U. S. 13-year-olds rank third, behind 13-year-olds in Greece and Yugoslavia, in weight, and fourth in cigarette smoking.

Drug for sleep apnea

Apnea is a serious sleep disorder in which a person stops breathing periodically during the night. In some victims the condition is so serious that a physician must perform a tracheostomy — insert a tube in the throat to get air into the lungs. The patient wears a plug over the hole during the day, then unplugs the hole before going to sleep (SN: 3/26/77, p. 207). Now a drug has been found that can help some sufferers of apnea avoid or postpone the need for a tracheostomy, Kingman P. Strohl of Harvard Medical School and colleagues report in the March 27 *JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*. The drug is medroxyprogesterone acetate, a breathing stimulant.

Strohl and his team reasoned that, in apnea patients, the drug might increase respiratory drive to upper airway muscles and chest. The researchers gave the drug to nine patients and found that four of the nine responded to it with a decrease in apnea episodes during the night and in drowsiness during the day. When these four patients were taken off the drug, apnea episodes and daytime drowsiness increased.

Visualizing tooth decay without X-rays

A technique called optical spectroscopy may eventually offer dentists a means of diagnosing tooth decay without resorting to X-rays.

R. R. Alfano and S. S. Yao, physicists with the City University of New York, used optical spectroscopy to see whether decayed and nondecayed regions of teeth differ in the light spectra they give off or in their fluorescent lifetimes. As the researchers report in the February *JOURNAL OF DENTAL RESEARCH*, the spectrum from decayed regions differed from that of nondecayed regions. "This may offer a non X-ray method for diagnosing dental caries in humans," they conclude.

New drug for high blood pressure

A particular class of drugs, adrenergic nerve cell inhibitors, are highly effective against high blood pressure. But the only such drug now commercially available in the United States, guanethidine, can cause toxic side effects such as impotence, ejaculatory dysfunction, diarrhea and low blood pressure. Now another such drug — guanadrel sulfate — has been found that is similarly effective without producing toxic side effects, at least at low doses, report Marvin I. Dunn and John L. Dunlap of the University of Kansas College of Health Sciences and Hospital in Kansas City in the April 24 *JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*.

Guanadrel sulfate was tested on 199 patients with mild, moderate or severe high blood pressure and was found to be effective against all levels of the condition. The reason it does not produce side effects is that, unlike guanethidine, at low doses it has a short onset and offset of action.