

behavioral sciences

Psychological dependence on heroin

Heroin addicts who have kicked the habit frequently relapse and become addicted again. Social environment and psychological need for the drug have been cited as reasons for relapse. But some researchers have suggested that previous addiction may produce a biochemical change that increases susceptibility to narcotics.

Eddie Wei of the University of California at Berkeley and Horace Loh of Mendocino State Hospital in Talmage, Calif., tested the physical susceptibility theory. After morphine dependence was established in rats, withdrawal symptoms were produced by removal of the drug. When withdrawal was complete and the rats returned to normal they were again subjected to morphine. Control rats that had not been previously addicted were also subjected to the drug. After addiction was established, withdrawal was produced by the injection of an opioid antagonist. Body weight loss and withdrawal behavior were used as measures of dependence. The researchers report in the Aug. 18 *NATURE* that earlier addiction did not intensify dependence. Increased susceptibility of narcotic addicts to readdiction must be due mainly to psychological dependence, they conclude.

Sexual prejudice among psychologists

Male and female psychologists tend to disagree when evaluating traits associated with sex-stereotyped roles, say Norma Haan and Norman Livson of the Institute of Human Development at the University of California at Berkeley. Thirty clinically experienced professional psychologists independently evaluated a group of 50 individuals. Haan and Livson compared the judgments of the psychologists. They found that women psychologists are more sensitive to unfavorable male traits such as condescension and overconcern with power and self-control. Women see women as more intellectually competent and self-accepting than men see them. Men, the researchers found, are generally rougher on both men and women. The general theme of unfavorable traits men note in women is "bitchiness." In men they are more reactive to unmasculine traits such as passivity and dependence. The researchers conclude that these findings should be considered before psychologists undertake work on personality judgment.

Amino acid dating

Radiocarbon dating is an important tool of archaeologists for dating bones as old as 40,000 years. The age of bones older than that cannot be calculated by their carbon 14 content and must be estimated by less accurate methods. Jeffrey Bada of the Scripps Institution of Oceanography at the University of California at San Diego reports in the July *EARTH AND PLANETARY SCIENCE LETTERS* on an amino-acid-dating method.

Amino acids have two optical forms—the L- and D-isomers. Only the L-amino acids are found in living systems. After death L-isomers are slowly transformed to the D form. By measuring the ratio of D to L forms the age of a bone can be estimated if the temperature of the environment is known and if that temperature has not varied greatly. Bada has dated a shark vertebra at 8.7 million years and is now applying the amino-acid method to bones of prehistoric man found in the Olduvai Gorge of Tanzania, East Africa.

biological sciences

From our reporter at the 3rd Food-Drugs from the Sea Conference at Kingston, R.I.

Pesticide from the sea

Because the search for biologically valuable materials from sea organisms is still in its infancy, few pharmacologically active substances have yet been put to practical use. But Yoshiro Hashimoto of the University of Tokyo, and M. Saka and K. Konishi of Takeda Chemical Industries in Osaka report that they and their colleagues have developed and marketed a pesticide from the ocean.

Nereistoxin is a sulfur-containing amine found in a marine worm. A decade ago its chemical structure was confirmed and it was found to possess insecticidal activity. A number of derivatives of the compound were subsequently synthesized. One was found to be especially active against the rice stem borer, and to be less toxic to mammals than DDT and other commercial pesticides.

The derivative has been marketed in Japan under the name of Padan. It is widely used for controlling the rice stem borer and other insects. Annual production of the pesticide this year is 1,500 tons.

How the sea nettle nettles

The sea nettle, a venomous jellyfish found in the Chesapeake Bay and along other coastlines, inflicts painful skin wounds on swimmers who come into contact with the animal's tentacles. Dermatologists G. J. Carlton and J. W. Burnett of the University of Maryland School of Medicine are trying to determine the pharmacological basis of this injury, with an eventual goal of developing an antidote.

So far they have found that the stinging organelles in the tentacles—nematocysts—are of several types and go through various stages of development. The nematocysts contain a variety of organic chemicals, including 25 different toxins. When the toxins are placed in skin cell cultures they cause sodium to flood the cells. This flooding appears to be due to injury to the cellular membrane. The toxins also cause lysosomes (suicide packets) in the cells to release cell-destructive enzymes. The toxins do not seem to alter cell respiration or use of nutrients.

Fertilizing grass of the sea

Phytoplankton (one-celled, colonial plants) have been called "grass of the sea," since they serve as the basis for the oceanic food chain. As more and more oceanic life is exploited or threatened by pollutants, phytoplankton productivity may become of major ecological significance.

Leo J. Spencer and his fellow chemists at Duke University have evidence that when certain species of phytoplankton are exposed to an iron-deficient diet, they make organic compounds called hydroxamic acids. More than 50 of these acids have been isolated from terrestrial microbes. They are believed to serve as iron transport agents when the ferric ions they need are not available. Spencer proposes that if phytoplankton making the acids could be crossed with those that do not, or if phytoplankton might be fertilized with the acids, marine animal productivity in the oceans might be increased.