

SCIENCE/ EDUCATION CONCENTRATES

Extraterrestrial protein

Evidence that proteinlike material may exist outside the confines of the earth has been obtained by Mary A. Saunders and Dr. Duane L. Rohlfing of the University of South Carolina, Columbia. When they mixed and heated amino acids identical to those reported in moon and meteorite samples, proteinlike polymers formed. Mrs. Saunders said at the ACS Southeastern Regional Meeting in Nashville, Tenn., last week. The scientists used the exact proportions of amino acids reported as possible constituents in the extraterrestrial bodies. ■

Sweet potato toxin

A second toxic compound, 4-ipomeanol, has been isolated from mold-damaged sweet potatoes by M. R. Boyd, Dr. B. J. Wilson, and Dr. T. M. Harris of Vanderbilt University, Nashville, Tenn. The compound is thought to be the agent responsible for the fatal lung edema of cattle that are sometimes fed the moldy tubers. Mr. Boyd told the ACS regional meeting. Another compound from black-rotted sweet potatoes, ipomeamarone, is toxic to the liver of animals. ■

Elm beetle repellent

Beetles that carry Dutch elm disease may be repelled from elm trees by injecting the trees with various quinones, says Dr. Dale Norris of the University of Wisconsin. A similar process occurs naturally in hickory trees, where 5-hydroxy-1,4-naphthoquinone in the bark repels the insects. Many quinones are effective, he says, but the crucial problem not yet solved is finding a way to distribute the chemicals within the tree. Dr. Norris says he has also isolated two unidentified chemicals that attract beetles to elm trees. ■

Structure of matter

Interatomic distances and the number of atoms and widths of coordination shells can be determined about each element in crystals, amorphous solids, liquids, or gases, using a method devised by University of Washington physicists Dale E. Sayers and Edward A. Stern and Boeing physicist Farrel W. Lytle [Phys. Rev. Lett., 27, 1204 (1971)]. They use their point-scattering theory of x-ray absorption fine structure to invert experimental data to obtain a radial structure function that contains the desired information. ■

Transport in nerves

The nervous system apparently has a mechanism for cell-to-cell transfer of information-bearing macromolecules. Dr. Bernice Grafstein and Dr. Robert Laurens of Cornell University, Dr. Bruce McEwen and David Forman of Rockefeller University, and Dr. Marion Murray of University of Chicago find that tritium-labeled amino acids and sugars are transported from the retina to the brain's visual cortex within 10 hours. ■

Sweetener from rosin

A new sweet compound whose sweetness is dramatically dependent on structure has been discovered by Dr. Akira Tahara, Dr. Tadashi Nakata, and Dr. Yasuo Ohtsuka of Japan's Institute of Physical and Chemical Research. They find that one of four stereoisomers of the diterpene 4 β -10 α -dimethyl-1,2,3,4,5,10-hexahydrofluorene-4 α ,6-dicarboxylic acid—synthesized from pine tree rosin—has 1300 to 1800 times the sweetness of sucrose [Nature, 233, 619 (1971)]. The other three stereoisomers have no taste. ■

Orientation with enzymes

The concept that reaction velocity in enzymic reactions may be sensitive to small changes in the orientation of the reacting atoms has been further substantiated. Dr. Daniel E. Koshland of the University of California, Berkeley, told the 15th conference of the Robert A. Welch Foundation in Houston last week. Dr. Koshland finds that by placing angular methyl groups to alter the orientation of carboxyl groups on hydrosynornanones, for example, rate changes of 10³ can be observed in lactonization rates. ■

New tranquilizers

A new class of tranquilizers, triazolobenzodiazepines, was described last week by Dr. Allan D. Rudzik of Upjohn Co. at an international symposium on benzodiazepines at Milan, Italy. Laboratory tests show that the compounds are central nervous system depressants. They are up to 30 times more potent than diazepam, but no more toxic. Dr. Rudzik says the new chemicals could lead to development of specific acting psychotherapeutic agents with fewer side effects. ■

Biphenyls in ocean

Polychlorinated biphenyls (PCBs) have been found in practically all plant and animal specimens in the first open ocean search for PCB and DDT. Woods Hole Oceanographic Institution scientists also found DDT in most specimens. DDT and PCB levels in specimens from the Atlantic Ocean generally ranged from 1 to 100 p.p.b., Dr. George R. Harrey says, but up to 1500 p.p.b. PCB was detected in zooplankton. Contrary to expectations, however, this high level was not found in fish that feed on zooplankton. ■