

CHEMISTRY

Man and Rat Are Proved To Be Vitamin Factories

➤ A MAN and a rat can do something that microorganisms cannot, except in one case. A microscopic creature named *Acetobacter suboxydans* is the sole member of his kind to be able to turn pantothenyl alcohol into the B-complex vitamin pantothenic acid.

But man and his experimental opposite number, the laboratory rat, can do it with ease, according to Dr. Saul H. Rubin, director of the nutrition laboratories of Hoffman-LaRoche, Nutley, N. J. He reported his joint researches with Dr. J. M. Cooperman, Miss M. E. Moore, L. Dreker and J. Scheiner, before the American Chemical Society's division of agricultural and food chemistry.

Dr. Rubin stated that pantothenyl alcohol, which is more stable and satisfactory than the acid to use in pharmaceutical preparations, is changed in the body of a mammal to the acid form which the body needs, with full vitamin activity. This allows the pharmaceutical manufacturer to put the vitamin-forming alcohol into his preparation, where it will stay unchanged until the patient swallows it and makes his own pantothenic acid out of it on the spot in the place where it is needed.

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BACTERIOLOGY

Virus Murders Germ By Stealing Phosphorus

➤ THE CHEMISTRY of death in a bacterium attacked by a much smaller virus particle was described to the American Chemical Society meeting in Atlantic City, N. J., by Dr. Seymour S. Cohen of the University of Pennsylvania school of medicine. Essentially, it is a theft of phosphorus.

The virus particle, which is tadpole-shaped, has in its make-up a phosphorus-containing compound, nucleic acid. The bacterium has two kinds of nucleic acid, different from the one in the virus, as well as other phosphorus-containing substances. In a virus-infected microbe, the processes by which it normally made use of phosphorus it obtained from its environment were all shunted to the production of the kind of nucleic acid the virus wanted. The bacterium could not grow, and eventually died.

This might all be very comforting to

observe in a germ; but Dr. Cohen reminded his hearers that essentially the same process happens to our own cells when they are invaded by the viruses of such diseases as smallpox, yellow fever and poliomyelitis.

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CHEMISTRY

Germ-Killer in Garlic Produced Synthetically

➤ A PENICILLIN-LIKE germ-killing substance known to be present in garlic can now be produced synthetically, Dr. L. D. Small of the Sterling-Winthrop Research Institute announced at the meeting in Atlantic City, N. J., of the American Chemical Society. Several entirely new compounds chemically related to it have also been made; these control disease germs that resist other antibiotic drugs.

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PHYSICS

Whirling in Simple Tube Separates Hot and Cold Air

➤ HOT AIR from one end and cold air from the other come from a 15-inch-long tube into which compressed air is fed. There is no special heating or cooling equipment.

It is an improved piece of laboratory apparatus, developed by a Westinghouse

scientist from a German invention. The device achieves a long-cherished dream of scientists: to separate the elements of heat and cold that are present in every gas. It may never be applicable commercially in the refrigeration or heating field, but it has definite applications in the science laboratory.

In the device, compressed air enters into a nozzle at the right end of the tube where it strikes a steel spiral that converts it into a whirlpool of rapidly spinning gases. The air in the center of the whirlpool becomes cold almost instantly, while that toward the outside becomes hot. The cold air is drawn off through a small opening at the right end of the tube, and the warm air through a similar opening at the other end. The device has no moving parts, and is inexpensive to construct.

The German inventor, R. Hilsch, claims that in his device he produced one jet of air as hot as 154 degrees Fahrenheit and another as cold as 10 degrees Fahrenheit. He predicted a possibility of obtaining air at over 400 degrees hot and also air whose temperature would be 50 degrees below zero. The instrument, made by Gaylord W. Penney, does not deliver air of widely separated temperatures, but the tube is of large diameter so that measuring instruments can be placed inside to study what is happening in the whirlpool.

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HOT-COLD PIPE—This tube separates hot and cold air. Compressed air is whirled by a steel spiral to make the difference in temperature.