CHEMISTRY

Artificial Protein Fibers

Synthetic meat better than beefsteak and fabrics silkier than silk may result from this major advance in organic chemistry.

➤ THE ARTIFICIAL manufacture of protein fibers announced at Harvard promises:

Synthetic meat better than beefsteak.

Chemical germ fighters better than penicillin and streptomycin.

New factory-made textiles silkier than silk.

And a new approach toward building artificially the chemical structures which are the basis of life.

This is what Dr. Robert B. Woodward, Harvard's 30-year old chemist, did:

He linked together by the thousands the simple nitrogen-containing structures (amino acid anhydride molecules.) He made the first successful synthesis of fibrous protein molecules as complex as those in the living human body or other living structures. He induced protein molecules to polymerize (join one to another in long chains) in much the same way that hydrocarbon molecules polymerize to form synthetic rubber.

Artificial Antibiotics

Already artificial compounds like some of the germ-killing substances produced by soil bacteria have been made in the Harvard laboratories. The new artificial antibiotics are promising in chemical structure and similar to the natural gramicidin, tyrocidin and bacitracin germ-killers. But they are too recently made to be tested yet in actual germ-fighting.

Giant protein molecules in thick and viscous solution have been squirted through a hypodermic needle into the air to make a silk thread, the way a spider does it. Thin films of the new plastic have been made—first of a new protein family of plastics that may become as well known as rayon, nylon and cellulose sheeting.

Dr. Woodward found that previous experimenters were on the wrong track when they expected protein molecules to link up by losing water. Loss of carbon dioxide allows the linkage in the newly-discovered process.

In the description published in the Journal of the American Chemical Society (June), Dr. Woodward and his associate, Dr. C. H. Schramm, tell in formulae their method of growing the fairly simple amino acid anhydrides into complex polymers in the chemical solvent, benzene, with a very small amount of water to start the reaction. Throwing off carbon dioxide, the molecules join in long chains that can weigh a million times the hydrogen atom—a size that has never before been achieved in artificially made protein.

The door has been opened by these researches to the study of complex protein products basic to life itself. A new chemical view of blood, meat, milk, hair, fingernails, and thousands of other things in the animal body is now possible. The new synthesis may bring us closer to synthesis of protein or meat-like food from inorganic or non-agricultural materials.

Dr. Woodward worked out a synthesis of quinine in 1944, but this chemical manufacture of the anti-malarial chemical was too complex to be practical. However, his new fibrous protein synthesis appears to be capable of development with important possibilities in biology. medicine, plastics and technology.

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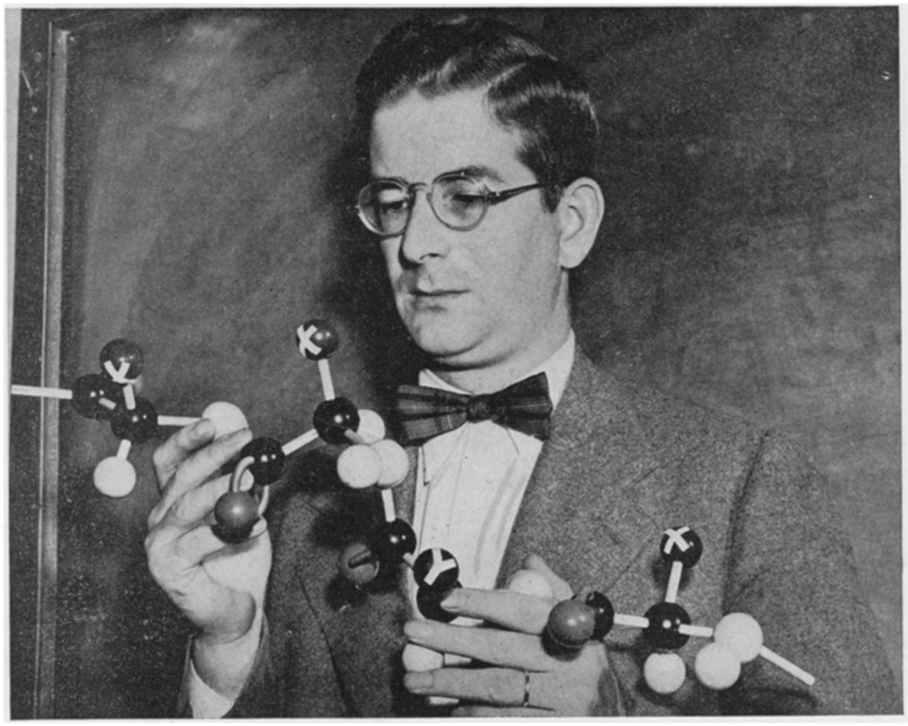

PROTEIN MAKER—Robert B. Woodward, associate professor of chemistry at Harvard University, discovered the synthetic protein analogy. He is holding a model showing the structure of molecules common to proteins such as hair, muscle, silk and fur and his new synthetic substances. The balls marked "X" and "Y" show the elements which are not the same in every protein and cause the difference in their properties.

BACTERIOLOGY

Small Germ Discovered; Named After Big Texas

➤ TEXAS has received a new distinction which even the most zealous of Texans may not appreciate. The Lone Star State has had a germ named after it: *Salmonella texas*. It is very small germ, at that.

The new species was isolated by U. S. Public Health Service workers from the digestive tract of a four-year-old boy in Hidalgo county, whose mother said he had been having abdominal pains and diarrhea for about a week. It is described in *Public Health Reports* (May 30) by Dr. James Watt, surgeon, and Misses Thelma M. DeCapito and Alice B. Moran, bacteriologists.

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