CHEMISTRY

Atoms Make New Laws

Hot atoms have energies 10,000 times greater than atoms in ordinary chemical combinations and fly through solutions at enormous speed.

➤ HOT ATOMS from atomic nucleus transformations follow new rules of combination, Dr. W. F. Libby of the University of Chicago told the symposium on nuclear chemistry at the American Chemical Society's meeting.

These hot atoms, with energies 10,000 times greater than those involved in ordinary chemical reactions, fly through solutions at enormous speed, due to recoil from such nuclear explosions as the emission of gamma rays. Such speeds, Dr. Libby reports, make the particles collide with the atoms of the solution and ricochet like bullets hitting a wall.

New types of chemical combination, resulting from these high energy collisions, are rather simple and predictable, according to the Chinese scientist. They can be used to make a radioactive hot atom replace an ordinary atom, thus tagging a compound whose subsequent progress through chemical reactions or life processes can be watched by following its radioactive behavior.

Radioactive iodine, for example, can be made to enter the molecule of an organic compound, containing ordinary iodine. In most molecules the hot iodine will replace its non-radioactive counterpart. If, in some cases, hot iodine replaces a carbon or a hydrogen atom, the resulting compounds can be separated by chemical means.

Quick Selection of Drugs

➤ A PROBLEM similar to finger-print classification or cataloguing the plants and animals of the world is posed for the chemist by the half-million chemical compounds isolated from natural sources or prepared in the laboratory. Steps used in solving the problem of organizing all available chemical and pharmacological information on anti-malarial drugs were outlined by Miss Elinor D. Hartnell of the division of chemistry and chemical technology of the National Research Council, with headquarters at Baltimore.

Miss Hartnell told of the work done during 1941-1945 by the Survey of Anti-malarial Drugs operating under joint supervision of the National Research Council, the Board for the Coordination of Malarial Studies and the Committee on Medical Research of the Office of Scientific Research and Development.

"The rapidity with which new compounds were tested and the sudden emphasis, as new chemical types developed promise, necessitated the creation of a new classification system capable of indexing any chemical compound which the pharmacologist could devise and which the chemist could prepare," said Miss Hartnell.

Although the system was developed to show the relationship between anti-malarial activity and chemical structure, it is equally satisfactory for any problem involving the classification of miscellaneous compounds, Miss Hartnell claimed. It is far simpler and more versatile than the old German system which has been in use since about 1910.

Under the new system complete information on any one of the more than 14,000 different drugs tested for anti-malarial activity could be made available in less than one minute, Miss Hartnell reported. The new system, she adds, brings together for the first time all compounds having identical structural features.

The anti-malarial research was a co-ordinated wartime program with chemical and pharmaceutical companies, universities and the governments of the United States and allied countries taking part. The classification system of the compounds studied is to be published in monograph form.

Elastic Nylon

➤ NYLON, nearly as elastic as rubber, has been produced on an experimental scale, according to Dr. Emerson L. Wittbecker of the E. I. du Pont de Nemours & Company.

Emphasizing that the development was still in the laboratory stage, he said that the elastic nylon is made from N-substituted polyamides.

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Nylon rope, as a yachting rope, is expected to meet with great favor because of its strength, elasticity, and resistance to rot and marine decay

UNBEATEN—This is Nordlicht, handsome German thoroughbred race horse that the Army recently displayed at Front Royal, Va. Army pedigree experts claim that Nordlicht is one of the finest horses ever produced in Europe and say that accurate records show that the five-year-old never lost a race. The American Jockey Club, final authority on horse racing in the United States, refuses to register the war prize, so Nordlicht's blood cannot be introduced into American racing breeds.

NUTRITION

Germs Become Guinea Pigs In Nutrition Tests

➤ GERMS INSTEAD of guinea pigs may be used in future tests of processed foods to show their nutritive value, Dr. R. A. Stewart and Dr. R. W. Carroll, of the Quaker Oats Research Laboratories, told members of the American Chemical Society. Promising results, they said, were obtained in preliminary tests, showing comparative growth responses of microorganisms fed on chemically modified amino acids, which are the building-blocks of proteins.

Other studies, made with the more conventional means of white rats as test organisms, showed that if cereals are overheated in toasting or other heat processing, the value of their amino acids is impaired. Ordinary chemical analyses failed to show the changes which these biological assays discovered.

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