

PHYSICS

Particles Are Re-Named

International group has worked out new nomenclature for the approximately two dozen sub-atomic particles. Hyperon suggested for those with mass between neutron and deuteron.

► A RE-CHRISTENING of fundamental particles of matter and a plan for naming new ones still to be discovered has been worked out by international agreement.

A new designation, hyperon, has been suggested for particles intermediate in mass between that of the neutron, the particle that triggers fission in the atomic bomb, and the deuteron, the nucleus of heavy hydrogen or deuterium.

The re-alignment of symbols was made necessary by the large number of new particles discovered in recent years in cosmic ray collisions. There are now about two dozen so-called fundamental particles recognized. Some of them exist for only a fleeting fraction of a second.

The nomenclature got so confused that when experts gathered for an international cosmic ray conference at Bagnères de Bigorre in the French Pyrenees last year, a group worked out the new symbols and is now announcing them in various scientific journals.

Americans in the group include Dr. B. Rossi of the Massachusetts Institute of Technology, Dr. C. D. Anderson of the California Institute of Technology, Dr. R. W. Thompson of Indiana University and Dr. B. Peters now in Bombay, India.

Groups of particles are labeled with ordinary capital letters. Greek letters are used to designate specific particles, except that the old familiar p for proton, hydrogen nucleus, and n for neutron are retained.

Among the light mesons, or L-mesons, are the most assuredly known mesons, called pi and mu. Among the heavy mesons are: tau-meson, which decays into three pi-mesons; kappa-meson, which breaks down into a mu-meson and two neutral particles whose natures are still unknown; chi-meson, which decays into a pi-meson and a neutral particle of unknown nature; and theta (with O superscript) meson, which previously was known variously as v or V with O superscript and subscripts 2 and 4.

The hyperons are designated by Greek capital lambda, with superscripts of O to show its neutral nature, or plus to show positivity. These have been called V particles, from the kind of track they make in photographic emulsions.

Then the physicists have decided to call a V-event the decay in flight of a K-meson or Y-particle. An S-event is decay at rest.

While the re-christening brings a little more simplicity for the specialists, the whole situation is still very complex compared with what used to be imagined when the only atomic particles really recognized were the electron, proton and neutron.

Some of the particles are known from only a few examples discovered in cosmic rays. The giant atomic accelerators, such as the \$20,000,000 machine generating 25 billion-electron-volt particles that will be operating at Brookhaven National Laboratory about five years from now, will duplicate immense cosmic energies and produce the rare particles plentifully. New ones will be discovered.

The stake of mankind in such research is understanding the ultimate nature of matter on the subatomic level. Considering that the whole atomic energy development has come out of atomic physics, the probing of these particles is one of the prime human endeavors.

Science News Letter, January 30, 1954

RADIO ASTRONOMY

Radio Star Found in Gemini Constellation

► A NEW, strong radio star has been discovered in the constellation Gemini, the twins, Drs. J. E. Baldwin and D. W. Dewhirst of Cambridge University, England, report in *Nature* (Jan. 23).

Radio stars send out energy just as stars you see do, but it is in the form of radio waves that are picked up here on earth by very sensitive receivers, known as radio telescopes, aimed at the heavens. Drs. Baldwin and Dewhirst used a new radio telescope, rigged up as an interferometer, to spot the radio star in Gemini.

They found its position was at the center of a mass of nebulosity known by the star catalogue number, IC443, which is located in the constellation of Gemini, the twins, visible almost directly overhead with its two bright stars, Castor and Pollux.

A photograph of this region of the sky, taken in red light with the 48-inch wide-eyed Schmidt telescope at Mt. Palomar, shows that the nebulosity is actually a system of faint arches, and that these arches are composed of filaments, the two scientists report.

The new radio star's shape and structure, they state, is "strikingly similar" to a large double-loop system in the constellation of Cygnus, the swan. Because of this similarity, they suggest a search for radio waves from these loops in Cygnus, a summer constellation now disappearing from view.

Their observations were made at a wavelength of 3.7 meters, or about 12 feet. The wavelength for frequencies in the middle of the standard broadcast band is about 1,000 feet.

Science News Letter, January 30, 1954

• RADIO

Saturday, Feb. 6, 1954, 3:15-3:30 p.m. EST.
"Adventures in Science" with Watson Davis, director of Science Service, over the CBS Radio Network. Check your local CBS station.
Dr. Raymond Crist, professor of geography, University of Florida, will discuss "Frontiers of the World."

TECHNOLOGY

Egg Whites from Fish Make "Delicious" Cake

► THE LATEST in true fish stories are cakes baked with synthetic egg whites made from fish waste — and they don't taste "fishy" either.

Dr. A. Guttman of the Atlantic Fisheries Experimental Station, Halifax, Nova Scotia, has found an economical method of converting fish waste into synthetic egg white by treating the waste at high temperatures and pressures. According to scientists at the station, cakes baked with the synthetic product look, smell and taste just like ones baked with natural fresh egg whites.

A commercial substitute for egg whites made from fish protein was first developed in Germany in World War II, but the process was costly.

Dr. Guttman's work may make it possible for the fisheries industry in Nova Scotia to make use of the very large volume of fish waste left after filleting. The new product is water soluble and foams like egg white. A pilot plant has been set up to test the economic possibilities of the process.

Fish waste can also be treated with an enzyme to produce an easily digested food for infants or for special diets. A number of experiments have been carried out to determine the most useful type of enzyme and the right conditions of treatment to avoid a bitter taste.

Science News Letter, January 30, 1954

BIOPHYSICS

Betatron Tube May Aid In Cancer Treatments

► A DOUGHNUT-LIKE vacuum tube has been invented to help fight cancer.

Designed to work on a commercial atom-smashing betatron, the device has a sealed-off vacuum and a beryllium window through which the cancer-fighting beam of electrons can pass.

T. H. Rogers of the Machlett Laboratories, Inc., and D. T. Scag of Allis-Chalmers Manufacturing Co., told the American Institute of Electrical Engineers meeting in New York that experimentally operated betatrons seem suitable for therapeutic work. These betatrons, however, had to be connected to vacuum pumps.

The new tube with its built-in vacuum, eliminates this inconvenience. It is interchangeable with the standard X-ray-producing "doughnut" of the Allis-Chalmers betatron unit.

Science News Letter, January 30, 1954