

NUCLEAR PHYSICS

New Particles Discovered

Photographs of the forked tracks of two new mesons, elementary particles born of cosmic rays, have been made. They live an extraordinarily short time.

► TO the strange and almost unimaginable things within the cores of the universe's atoms are now added at least two new particles which are believed to be "elementary" although with extremely fleeting existences.

They are new kinds of mesons, particles born of cosmic rays. A team of California Institute of Technology physicists, led by Nobelist Carl D. Anderson, discoverer of one of the two most common meson particles (named the Greek letter pi), reported to the American Physical Society in Washington their capturing of 34 photographs of forked tracks showing the life and death of these new unstable neutral and charged particles. It took 11,000 pictures to get the 34 forked tracks.

Less than three years ago two such pictures of cosmic rays smashing through cloud chambers were obtained by Drs. G. D. Rochester and C. C. Butler of the University of Manchester, England, who presumed they were the spontaneous transformation of unknown particles.

Now there seems little doubt that the particles are real.

The tracks in photographs taken both in Manchester and in Pasadena can only be explained by the occurrence of entirely new kinds of particles, charged and neutral. They live an extraordinarily short time, only two ten-billionths of a second, compared with a millionth and a hundred millionth of a second for the usual mesons, called mu and pi.

One of the new particles, of which 30 photographs were obtained, is a neutral one which breaks down into two others, each of which carries a charge. One of these secondary particles, and possibly both, appears to be one of the well-known mesons.

The mass of this first type of particle is still to be determined. All that the Caltech scientists can say at present is that its mass may range anywhere from 500 to 1000 electron masses, or from 2200 to 2500 electron masses, depending upon the identity of the secondary particles.

The second type of particle, of which only four photographs were obtained, is a charged one which breaks down into two secondary particles, one of which is neutral and the other charged. There is not sufficient data on this type to allow for a computation as to its mass.

In the research team with Dr. Anderson were: Drs. A. J. Seriff, R. B. Leighton, C. Hsiao, and E. W. Cowan.

Because the universe and everything in it consists largely of the extremely con-

centrated nuclei of atoms, the great push in physical science today is to understand and explore these atomic cores. Protons (hydrogen hearts) and neutrons (atomic bomb trigger particles) are in the nuclei, with the strange mesons (positive, negative and neutral) sort of playing catch with themselves as protons change into neutrons and the other way around. If just what happens is better understood, more energy might be extracted from the atom in bombs or otherwise.

Science News Letter, May 6, 1950

MEDICINE

More ACTH from Pig Pituitary Powder

► MORE ACTH for treatment of patients with rheumatoid arthritis and certain other diseases is on its way.

Scientists at Tufts Medical School and Pratt Diagnostic Hospital in Boston have found a way to extract almost 100% of the anti-arthritis hormone from pig pituitary powder. Heretofore the yield of the hormone has been very small.

With the increased yield obtained by the new extraction method, the price may go down to one-fifth the present cost.

ACTH extracted by the new method is not yet on the market. But trials on patients here with arthritis, rheumatoid spondylitis, asthma, regional enteritis, eczema, another skin disease called neurodermatitis and lupus erythematosus gave satisfactory results.

An almost pure preparation of ACTH has also now been obtained by the scientists in Boston, Drs. E. B. Astwood, M. S. Raben, R. W. Payne and A. P. Cleroux. Their new extraction and purification methods were first announced in the BULLETIN OF THE NEW ENGLAND MEDICAL CENTER.

Science News Letter, May 6, 1950

MEDICINE

Streptomycin Method More Effective against TB

► STREPTOMYCIN, most promising drug yet found for the treatment of tuberculosis, can be made even more effective by a new method of using it reported at the meeting of the National Tuberculosis Association.

The new method consists in giving the mold chemical every three days for 120 days (four months) while during the same four months another chemical, para-amino

salicylic acid (PAS for short) is given every day. Advantage of the method is that it prevents or delays the development of streptomycin-resistant strains of tuberculosis germs.

This method has been used in treating 102 patients at the Army Tuberculosis Center, Fitzsimons General Hospital, Denver, Carl W. Tempel reported.

Of the 102 patients, 18 have to date been treated for 120 days and 14 for 150 days by the new method without the emergence of streptomycin-resistant germs. By contrast, in another group given streptomycin alone every day for 120 days, almost three-fourths, 73.5%, developed streptomycin-resistant germs. In still another group given streptomycin and PAS every day for 120 days, resistant strains developed in 53.1%.

Science News Letter, May 6, 1950

GENERAL SCIENCE

Bronk New President Of National Academy

► DR. Detlev W. Bronk, president of the Johns Hopkins University, will become president of the National Academy of Sciences, the "senate" of American science, on July 1, as the result of the quadrennial election held in Washington.

He will succeed Dr. A. N. Richards of the University of Pennsylvania, now NAS president.

Dr. Bronk is chairman of the National Research Council, the operating body of the Academy. He is a biophysicist.



NAS PRESIDENT—Dr. Detlev W. Bronk, president of Johns Hopkins, was recently elected president of the National Academy of Sciences.

Dr. Roger Adams, head of the Chemistry Department at the University of Illinois, was elected foreign secretary. Dr. Walter S. Hunter, Brown University psychologist, and

Dr. Oliver E. Buckley, president of the Bell Telephone Laboratories, were elected to the Academy's council.

Science News Letter, May 6, 1950

CHEMISTRY

Water, Oysters Take to Plastic Packaging

➤ THE modern, plastic way is to fetch a bag of water—not a pail. It is done with pliable synthetic materials—polyethylene, polyvinyl or cellulose films or coatings.

Plastic bags of water are souvenirs of the National Packaging Exposition in Chicago, Ill.

Oysters in their own juice are one of the foods shipped now in transparent plastic packages.

Science News Letter, May 6, 1950

MEDICINE

Predict '50 Polio Surge

➤ MORE cases of polio will be reported this year than last, but this does not mean that the 1950 epidemic will be worse than last year's record outbreak. The diagnosing and reporting of many more mild cases and the reporting as polio of cases which are something else will bring the total up, according to Dr. Justin M. Andrews, deputy officer in charge of the federal government's Communicable Disease Center in Atlanta.

However, some medical men who work with epidemic diseases—epidemiologists—are predicting that 1950 will see a surge of polio actually greater than last year's 42,000 cases. They base this opinion on a comparison of the number of cases so far this year with the number during the same period last year.

Actually, the entire history of polio is so erratic that it makes predictions almost impossible. Many workers in the field believe that not enough knowledge about the disease has been accumulated to make predictions possible.

Indeed, some epidemiologists believe that because so many persons, having had the disease last year, are now immunized against it, the 1950 polio outbreak might thereby be held down.

Arguing against the prediction of more polio this year, these experts point out that as some diseases receive publicity they become "fashionable" among doctors. General practitioners are prone to look for the symptoms of diseases in the public eye.

Many other virus diseases produce clinical illness simulating polio. A form of mumps, two forms of equine encephalomyelitis and

the St. Louis type of encephalitis are among these diseases.

Science News Letter, May 6, 1950

MEDICINE

Electric Eye Gives Safer Hypo Injections

➤ THE hypodermic injections of penicillin, vitamins and anesthetics your doctor or dentist gives can be even safer in future, thanks to a new electric eye machine for inspecting them.

The machine, developed by RCA Victor, is an adaptation of a similar machine for inspecting beverage bottles to see that there is no dirt or other gross contamination in them.

A very much more sensitive machine was needed, however, for inspecting ampules, the small glass containers in which medicines for hypodermic injections are sealed and sterilized. Heretofore this inspection has been done by girls and women in drug manufacturing plants. Because even trained, experienced inspectors did not always agree on whether there was a tiny speck of lint, glass or other contaminant in an ampule, it was impossible to have standards which could be enforced by the Food and Drug Administration.

To solve this problem and make ampules even safer, 16 members of the American Drug Manufacturers Association had the RCA Victor engineers devise the electronic ampule inspecting machine.

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