

U. Scientists Find Sub-Atom Particles

An entirely new class of sub-atomic particles more than 10 times heavier than any previously known, has been discovered by a group of scientists at the University of Utah.

The find, which may have "revolutionary implications" for modern physics, was announced this week by Dr. Jack W. Keuffel and Dr. Haven E. Bergeson at an International Conference on Cosmic Rays being held in Hobart, Tasmania.

They said the newly found particles play a central role in the transfer of ultra-high energy in cosmic ray collisions.

THE 'VEHICLES'

The new particles are described as the "vehicles" by which the conversion of ener-



Jack W. Keuffel
... important discovery

gy and matter take place in sub-atomic interactions.

The size and energy of the new theoretical particles make it impossible to physically observe these processes at work, but Keuffel and his team have made predictions about what should happen in cosmic ray areas that can be measured.

ON TARGET

So far these predictions have been right on target in measurements made by a 2,000-ton cosmic ray detector buried in an abandoned silver mine three miles under a mountain in Park City.

"If these findings are verified by other researchers, their impact on the theories of particle physics would be comparable to the discovery of atomic energy in nuclear physics," Keuffel said.

X-RAY EARTH

Scientists are unable to say what practical results might come out of this fundamental find, but if these ultra-high energies can be harnessed it might be possible to use them to x-ray the inside of the earth or find underground ore.

"The long-range effects of this new knowledge are imponderable . . ." Keuffel said.

Scientists in the early 1960s postulated the existence of such a super-heavy, high-energy particle, but after a long search gradually began to lose interest when it appeared their instruments were not powerful enough to produce the particle.

100 TIMES GREATER

The cosmic rays being studied by Keuffel produce energy levels some 100 times greater than can be created in any artificial proton accelerator.

The existence of the new particles came to light as the U. of U. team measured cosmic rays plunging deep inside the earth. Some of their findings didn't quite fit with expected theories.

Two years of testing, in an effort to account for these differences, led to the discovery of the new particles, which have not yet been verified
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with weaker man-made instruments.

However, Keuffel said that he expects scientists doing cosmic ray research in California and England to confirm the Utah conclusions within the next two or three years.

The underground measuring devices at Park City are part of a million-dollar experiment financed by grants from the National Science Foundation to study some basic questions in the structure of matter.