

PHYSICS

3,500,000 Volt Gamma Rays From Artificial Radioactivity

THE MOST powerful radiation shot out from an atom here on earth, gamma rays of 3,500,000 volts, are produced when scientists at the California Institute of Technology "pull the trigger" of artificial radioactivity produced in the latest atom smashing.

Dr. R. A. Millikan told the National Academy of Sciences that his Pasadena colleagues, Drs. C. C. Lauritsen and H. R. Crane, had flung heavy hydrogen atoms at ordinary carbon in their giant million volt X-ray tube to such effect that there were produced gamma rays nearly a million volts more powerful than the strongest from naturally radioactive elements.

They worked with bombarding streams of particles hundreds of thousands of times as intense as the naturally radioactively produced helium particles with which Mme. Irene Curie-Joliot, Mme. Curie's daughter, and her husband, Prof. F. Joliot, produced the first artificial radioactivity just a few weeks ago.

So far artificial radioactivity has been produced in a dozen or more different ways. In every case it is a new kind of radioactivity unmatched in nature. The bombarding particles, either light or heavy hydrogen or helium atoms, join with the element attacked. A new un-

stable atom is formed and then after a while it explodes, giving off positive electrons in most cases in addition to gamma rays. In natural radioactivity the atoms doing the exploding are very heavy contrasted with the light atom that can be made artificially radioactive. In natural radioactivity also electrons are negatively charged instead of positively charged. In some of the complicated processes, which are very beautifully and mathematically expressible by the physicists, neutrons are produced.

So rapid is the experimental progress that Dr. Lauritsen decided at the last minute that he could serve science better by staying at Pasadena and continuing experiments than making the long trip to Washington to speak before the academicians and Dr. Millikan therefore presented his paper.

Experiments by Dr. Carl D. Anderson and Dr. Seth Neddermeyer, also reported by Dr. Millikan, showed that artificial radioactivity energies are unaffected by the intensity of the bombardment that gives birth to them. The flinging of atoms acts as a trigger and the unstable atoms created then proceed to blow up, always with the same general range of intensity of the particles and rays.

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written on papyrus, apparently was part of a Bible in a Christian church or monastery in Egypt. This ancient Bible first came to light in 1930, when A. Chester-Beatty purchased 190 leaves of it, and it was tentatively concluded that the various portions were written in the second, third, and fourth centuries.

At the time, it was supposed that all of the existing leaves were acquired by Mr. Chester-Beatty, Prof. Sanders said. The Chester-Beatty papyri included ten rather fragmentary leaves of the letters of Paul. The recent discovery, however, of thirty additional and better preserved leaves of the epistles suggests, he said, that as usual the Arab finders held back large sections of their find which will later come on the market at higher prices.

Preliminary study of this third century version of Paul's missionary letters is very enlightening as to problems of the text, Prof. Sanders reported. A distinctly Egyptian character of text has been noted, he said. In a comparison with certain types of Bible text that existed at the time, Prof. Sanders finds significant points of likeness and of difference. The manuscript is believed to have been written so early that it escaped the influence of the revised texts that began to appear in the great cities near the end of the third century.

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ASTROPHYSICS

Sunspots Related To Magnetic Storms

SUNSPOTS, which are beginning to freckle the sun's face again after a season of relative scarcity, appear to have an intimate connection with the occurrence of sharp fluctuations in the earth's magnetic field, causing trouble with telegraphic instruments and other upsets. So A. G. McNish of the Carnegie Institution of Washington stated, in the course of an address before the annual meeting of the American Geophysical Union.

"When sunspots are most numerous, magnetic storms occur most frequently," he said. "The storms temporarily change the earth's magnetism. After the storms are over, the earth's magnetism returns to its original condition, for which reason it is not possible to attribute the gradual long-time changes to the action of the sun."

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ARCHAEOLOGY

Rare Bible Manuscript Comes to America

THIRTY LEAVES of Bible manuscript written in the third century A.D. and containing large sections from the Epistles of Paul have been acquired by the University of Michigan, and preliminary study shows that they will bring added light on the order in which the world's most famous letters were written.

Prof. Henry A. Sanders of the University of Michigan made this announcement recently, speaking before the American Philosophical Society.

Biblical manuscripts of early Christian centuries are rare and extremely important to scholars seeking to trace the earliest word forms in which the New Testament was expressed. Since every copy of the Bible was hand written until the invention of the printing press, for many centuries no two copies were exactly alike, due to human inability to copy so large a work without making mistakes.

The University acquired its 30 leaves of the Bible in London. The text,