

NUCLEAR PHYSICS

Atom "Breeding" Plant

► SEVEN years after man first achieved the self-sustained release of energy from the atom, construction will start on a plant to "breed" energy-releasing atoms from the non-exploding variety.

On Dec. 2, 1942, the first atomic pile, built under the University of Chicago's athletic field stands, was brought to the point where neutrons from the fissioning, or splitting, of uranium 235 became sufficient to sustain and repeat the action. That was the most essential step toward the atomic bomb.

On Dec. 1 this year, the Atomic Energy Commission had transferred to it Naval Proving Ground property near Arco, Idaho, to be used as the site for another basic experiment in atomic energy. This will be the testing of the possibility of transmuting non-fissionable uranium into fissionable plutonium in a process that produces more fissionable material than it consumes. If the experiment is completely successful, the amount of fissionable material available for peaceful as well as possible military purposes will be increased by 140 times. The actual increase may not be as great as that, but scientists are sure they will have more fissionable material from the "breeder reactor" process than they start with. And any increase will be advantageous. Figures on the expected increase start from the fact that only seven-tenths of one percent of natural uranium is in the form of the fissionable uranium 235. The transmutation process allows use of the more plentiful though non-fissionable uranium 238.

"Breeders" will not solve the raw material problem overnight, but the application of the breeder principle is considered the biggest forward step in peacetime application of atomic energy.

On pencil and paper, AEC authorities are sure that the engineering applications

as well as the purely nuclear-physical ones of the transmutation can be made. But the final answer will not come until some time in 1951 when the breeder reactor goes into operation. No trial runs with models can be made. Breeding must be done on a large scale if at all, because, as in the atom bomb, there is the problem of critical size.

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GEOLOGY

Pacific Coast Was Balmly 50 Million Years Ago

► MODERN man, if he were transported back through geological time about 50 million years, would find a strange climatic situation in the Pacific area.

As far north as Puget Sound he would be in the tropics. He could sit under a palm tree, and watch the surf pound against coral reefs.

He could bathe in warm waters, and catch tropical fish. He would have to keep on the alert, however, for crocodiles.

This is a partial picture of a section of the ancient world being pieced together by Dr. J. Wyatt Durham, associate professor of paleontology at the University of California. It is based upon Dr. Durham's studies of fossil specimens of marine animals in the Pacific Coastal region during the Eocene epoch, and upon research by others in allied fields.

The scientist said that since the Eocene epoch there has been a gradual shift of the tropical climate southward. This gradual shift was interrupted by rapid fluctuations both north and south during the Ice Age.

Dr. Durham has also refuted the widely held theory that the poles and continents shifted around during this past age. He

points out that the evidence indicates no major shifts of either the poles or continents in the past 50 million years.

For example, advocates of the theory of shifting poles would place the Kamchatka peninsula within 15 degrees of the North Pole at one time in this past age. However, the fossils of marine life of Kamchatka for that period are representative of a warm water environment. These animals could not have existed within 15 degrees of the North Pole, therefore the pole must have been in approximately its present position.

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