

zon and R. D. Park of Duke University on the delayed emission of piercing gamma rays from uranium excited by neutrons. Taking Wilson cloud chamber photographs of the bombardment, the Duke scientists obtained, out of a great number, one highly interesting picture which may be the first evidence yet

found of a multiple fission of uranium. Previously it has been shown that uranium can be split into two parts by neutron bombardment. The new Duke pictures may reveal a splitting into three or more different products instead of the usual two. More work will be needed to clear this important point.

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GEOLOGY

Earthquake Records Show Mountains Have a "Keel"

Geological Society Also Learns of Submerged Falls And Glassy Layers Under Surface of the Earth

INTENSIVE studies of records of many California earthquakes have revealed the "keel" of the southern Sierra Nevada mountain range, Prof. Perry Byerly of the University of California told the Geological Society of America meeting at Berkeley, Calif.

One theory of geology, Prof. Byerly recalled, is that mountain ranges are masses of heavy rock "floating" in weak rock not unlike ships floating on the ocean. The new discoveries indicate that the mountain ranges have a keel.

Actually the keel seems to be a root of gigantic rock penetrating much deeper into the weak rock under the range than does the range itself. Bottom of the Sierra Nevada range appears to be at a depth of 20 miles. The keel goes down still farther.

Glassy Beneath Surface

FIFTY miles below the surface of the earth the ordinary crystalline structure of rocks gives way to a glassy condition, Prof. B. Gutenberg and C. F. Richter of California Institute of Technology told the geologists' meeting. Studies of

the records of earthquake vibrations have revealed this new knowledge.

Highly important to geology is the discovery for it has long been suggested that the earth consists of many concentric shells of different materials packed, one around another, like the layers in an onion.

"From all the evidence," Prof. Gutenberg said, "it may be calculated that certain physical properties change at a depth of about 50 miles. From other clues we conclude that this depth is probably that at which the crystalline structure of the rocks is replaced by a glassy condition."

Submerged Waterfalls Exist

GREAT mud-laden "waterfalls" deep down in the ocean are pouring the sediment of California rivers into ocean bottom basins, Prof. F. P. Shepard of the University of Illinois told the meeting.

About 150 miles west of San Diego and far under water is a submerged 10,000-foot mountain whose slopes have been found to be absolutely bare of the sediments which one might expect to

RADIO

Capt. N. H. Heck, U. S. Coast and Geodetic Survey, will be the guest scientist on "Adventures in Science" with Watson Davis, director of Science Service, over the coast to coast network of the Columbia Broadcasting System, Monday, August 28, 5:45 EDST, 4:45 EST, 3:45 CST, 2:45 MST, 1:45 PST. Listen in on your local station. Listen in each Monday.

find, Prof. Shepard said. Bare, too, are submarine canyons off the California coast out to depths of 5,000 feet. This raises the point of what happens to the tons upon tons of sediments borne to sea by California rivers.

According to Prof. Shepard: "A large amount of the sand poured in by rivers is brought back by the waves which distribute it on the beaches while the bottom currents carry the mud out over the (continental) sheaf into the deeper troughs and basins outside. The submarine canyons are kept clear of sediment largely by means of the great mud flows although currents are partly responsible."

Mountains Bring Sage-Brush

THE WIDE-SPREAD sage-brush of the Great Basin area of the far west probably got its start because the Sierra Nevada-Cascade mountain range rose up and blocked off moisture-bringing winds from the Pacific, Dr. Daniel I. Axelrod of the University of California told the geologists.

By a study of fossil plants he has been able to learn what plant life was like in the Late Pliocene era about 1,000,000 years ago.

About this time, Dr. Axelrod reported, a great change in the weather occurred in the west. On the northwest coast, over what is now Oregon and Washington, rainfall dropped from 25 inches yearly to the 13 inches it is today. And in southeastern California it fell from 12 inches yearly to the three inches of rain which now falls on the land.

The slow rise of the Sierra Nevada-Cascade mountains probably was the basic cause of this, Dr. Axelrod indicated. As they rose these ranges gradually intercepted more and more of the rain-bearing Pacific winds. Plants able to live in the increasingly drier climate prevailed. Sage-brush became king. A few of the Pliocene trees managed to survive—the pinyon pine, juniper, cottonwood and antelope brush—in Nevada. But generally they have continued to exist only in the mountains and on a few favorable sites bordering deserts.

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