

ANTHROPOLOGY

Ape-Man Victim of Fire

► PROMETHEUS, THE African ape-man widely believed by scientists to have been the first to use fire, is now judged to have been the victim of an accidental fire instead of using it to cook dinner.

Dr. Kenneth P. Oakley, anthropologist of the British Museum in London, came to this conclusion after a visit to the Cave of Hearths in the Makapansgat Valley, Central Transvaal. There he saw the four-foot-thick layer of what appeared to be cindery ash that African anthropologists have called the "basal hearth."

This "hearth" is generally regarded as the oldest proved evidence of the use of fire by Stone Age man in Africa.

Two unusual features of the "hearth" were noted by Dr. Oakley. In the first place, the layer of ash contained no fragments of charred bone to indicate that it had been used to prepare a prehistoric barbecue. Then, too, the ash lay directly on a clean surface of stalagmitic dripstone. This dripstone normally forms in such limestone caves, but generally only in the deep interior of caves.

On the other hand, Dr. Oakley points out, men do not usually light fires in the deep recesses of caves, but only at their openings.

Yet, he reasons further, if the dripstone had formed at the back of this particular

cave and then later a cliff fall had opened the cave up and brought what had been a deep recess up to a newly opened entrance, the scientist would expect to find a layer of soil or rock debris on the dripstone under the remains of the fire.

Samples of the ash from the basal hearth as well as that from overlying hearths were gathered by Dr. Oakley to send to London and Chicago for radiocarbon dating.

To check the value of the samples for the purpose, Dr. Oakley submitted pilot fractions to the British Museum for assay. No carbon was found in the sample from the "basal hearth," Dr. Oakley reports in *Nature* (Aug. 7).

This means that the ash is not the remains of a wood fire. It could be, Dr. Oakley suggests, calcined bat guano. The guano of insect-eating bats consists mainly of insect wings and wing covers, and is highly inflammable.

Of course, there is a possibility that Stone Age Man may have used bat guano instead of wood as fuel for his cooking fires. However, Dr. Oakley, because of the absence of charred bones and because the ash layer rests directly on the dripstone, is of the opinion that the fire was ignited from a natural grass fire burning outside the cave.

Science News Letter, September 11, 1954

PHYSICS

Power Without Limit

► A SOURCE of power without limit for the world lies in the same kind of reaction that occurs in the hydrogen bomb, the fusion of light chemical elements, Sir John Cockcroft, director of Britain's Atomic Energy Establishment at Harwell, predicted in his presidential address before the physics section of the British Association for the Advancement of Science meeting in Oxford, England.

Before we come to the end of our uranium fuel reserves, Sir John, a pioneer in atomic research, foresees the use of the conversion of some of the mass of hydrogen and other light elements into energy. Fusion will be turned from destruction to peaceful use, just as fission of uranium is now being applied to power plants.

"Energy is the essential basis for a highly developed civilisation," Sir John said. "The application of nuclear fission, wisely guided, can ensure that for a millenium ahead mankind has all the energy needed to supply his ever-growing needs."

Reviewing work on the constitution of the hearts of atoms, Sir John explained:

"We now have clear evidence for the building up of 'shells' of protons and neutrons in nuclei leading to singularities in nuclear properties as the shells are filled.

Thus the abundance of nuclear species with closed shells is higher than normal, they have more stable isotopes, their structure of excited levels is simpler.

"All this can be explained by invoking the type of nuclear force, which is characteristic of strong interaction between nuclear spin and orbital momentum. The energy levels can be calculated and filled up progressively rather like atomic shells are filled up, and the shell picture emerges.

"Nuclear structure differs, however, from atomic structure because there is no counterpart to the overriding strength of the nucleus in determining the electron orbits.

"So the collective motions of nuclei become important and they can have vibrational and rotational motions which can be checked experimentally."

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CHEMISTRY

New Kind of Silica Made and Identified

► A NEW kind of silica was produced and identified by Dr. Paul R. Keat, now of the Norton Co., Worcester, Mass., while

he was doing graduate work at Rutgers University, New Brunswick, N. J.

The silica is a very fine crystalline substance less dense and with a lower refractive index than quartz, the silicon-oxygen combination that is familiar in sand. It was manufactured under high temperature and pressure during laboratory experiments, using silicic acid or silica gel as the source of the silica.

The structure of the new silica is unique, and seems to be the cause of a slight contraction with temperature up to about 1,020 degrees Fahrenheit. Its identification is reported in *Science* (Aug. 27).

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