

Also planned for this summer's research is the launching of Navy rockets from the Wallops Island, Va., facility of the National Advisory Committee for Aeronautics. The idea is to take a picture of the storm's cloud system and its environment, covering a radius of about 1,000 miles, from a height of about 100 miles.

A different method of taking a hurricane's picture is also a Navy project: the hurricoon, a giant Skyhook balloon carrying a camera gondola. It can be sent to roughly the right area and later recovered because of a high altitude wind reversal occurring during summer in the latitude of the United States. The hurricoon will take one picture about every 15 minutes for 12 hours or more.

Cooperating this summer in the Bureau's hurricane research will be meteorologists from the University of Chicago, led by Dr. Herbert Riehl. They have been developing mathematical methods of predicting hurricane paths, some of which require electronic computers for solution.

One experiment the Weather Bureau is "ready and willing" to try, according to its chief, Dr. F. W. Reichelderfer, is to attempt to change a baby hurricane's direction of movement or intensity before it develops into a full-scale storm. Such an attempt would be made, however, only when conditions are right and there is no chance any harm might result.

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ASTRONOMY

Dispute Origin of Tektites

The origin of the mysterious tektites is currently being disputed, with evidence being offered that discredits theories claiming they come from the moon.

► **THREE SCIENTISTS**, one a Nobel Prize winner, disagree strongly with the theory that tektites are lunar particles ejected from the moon by impact of meteorites.

Tektites are glassy objects found in widely scattered groups around the world. Their origin has been a mystery since they were discovered, and many theories concerning their source have been proposed.

Recently Drs. C. M. Varsavsky of the Smithsonian Astrophysical Observatory, J. A. O'Keefe of the Army Map Service and T. Gold of Harvard College Observatory have all argued for the lunar origin of the tektites.

Not so, say Virgil E. Barnes of the University of Texas, Prof. Zdenek Kopal of the University of Manchester, England, and Dr. Harold C. Urey, University of Chicago Nobelist. In three separate reports in *Nature* (May 24) each presents his disproof of the lunar origin.

Mr. Barnes argues that tektites are found in groups, not as randomly arriving objects. Those found in different regions display different characteristics. This separation, both in time and in characteristics, "should

EVOLUTION

Fossil Skulls of Dog-Like Animal Go to Museum

► **FOSSIL SKULLS** of a dog-like creature that probably is related to the ancestor of today's dogs—an ancestor's ancestor—have been acquired by the Smithsonian Institution.

There is evidence this early "dog" was less intelligent than dogs now are.

The two "excellent" skulls of Daphoenus, an animal about the size of a collie, have both dog- and cat-like characteristics. This reflects the fact that Daphoenus lived some 35,000,000 years ago at a time when the dog and cat lines were less widely separated than today.

All the brain areas, as reconstructed from the skulls, were relatively smaller than those found in modern breeds of dog. This was especially true of the frontal lobes, said to be the seat of animal intelligence.

Daphoenus had a moderately long skull, a short face and a short muzzle which narrowed abruptly in front of the eyes. The smallness of the frontal lobes of the brain presumably accounts for the narrowing of the skull.

Dr. C. L. Gazin, Smithsonian curator of vertebrate paleontology, took the skulls from a fossil bed north of Harrison, Nebr.

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be sufficient in itself to discredit" the theory of lunar origin.

Dr. Kopal points out that probably the "most significant fact known about the terrestrial tektites is their clustering in certain localities constituting only a tiny fraction of the total solid surface of the earth. This fact suggests strongly that their origin must be sought much nearer to the terrestrial surface than the moon."

Nobelist Urey, who has suggested tektites may be associated with the impact of material from comets, explains that they have chemical compositions consistent with those of earthly sedimentary rocks. However, Dr. Urey reports it is very unlikely the moon underwent the same processes that produced the terrestrial sediments. Therefore, he argues, it is necessary to assume that igneous processes on the moon produced the very acid tektites. This is also improbable.

"In this case, the chemical processes on the moon have differed from those on the earth, because only rare terrestrial igneous rocks have compositions approaching those of tektites," Dr. Urey concludes.

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