MIT Science Reporter

Meteors Believed Source of Tektites

By James Vellmex

Last Thursday night found Channel 2's "MIT Science Reporter" at the Harvard University Museum, with guest Professor William H. F. Pinson, Geology, explaining "The Mystery of Tektites." This glass-like substance, found in various parts of the world, is believed to have originated in outer space.

While examining several tektite specimens before the TV cameras, Pinson stated that the glass is formed from the fusing of meteoric material as it encounters the earth's atmosphere traveling at a rate faster than escape velocity (7.1 miles per second). As the meteorite strikes the ground, the impact causes it to explode, and pieces of tektite are dispersed in all directions.

The explosion results in a crater which far exceeds the original dimensions of the meteorite. The formed crater in Arizona, for example, was certainly not created by a 5-meter diameter. Neither was a crater created in Germany, which measures 25 miles across, produced by a meteorite of that diameter.

The scattered tektite are concentrated in three major areas: the Pacific, the continental United States, and Czechoslovakia. Each group of tektites can be distinguished from the other by its own characteristics. The Pacific samples are similar in that they exhibit chemical homogeneity, i.e., that they all originated from a single source. The localization of the three groups also suggests that they came from a main body and did not have time to disperse by the time they reached the earth.

Further evidence that this strange material did not originate on our planet is found in its percentage of water composition. Measurements reveal that the amount of water in tektite is much lower than that in volcanic, main-maid, or A-bomb glass. But one might argue that any object from outer space should have induced radioactivity from cosmic rays. This type of radiation, however, has a rather short half-life, and the tektites, which reveal no such induced radioactivity, must be more than 50,000 years old.

In fact, they are dated at millions of years old, and the interval between large-scale meteorite collisions is 30,000 million years.

Assuming that tektites do come from outer space, they have a few important practical applications. Their composition can tell us much about the materials that are to be found on other planets. And with their shields intact, shapes may provide the best design for rocket nose cones which must pass through the earth's atmosphere at high speeds and still remain intact.