

ARMED FORCES INSTITUTE OF PATHOLOGY
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15 December 1964

Dear Doctor Roberts:

Thank you for the interesting skeletal fragments that you sent from the NASA Construction Site. I have examined these specimens, X-rayed them, ground sections from the femoral shaft, and microradiographed __the ground sections.

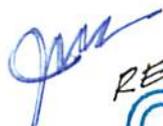
Grossly, these bones have the chalky, friable texture of old archeologic skeletal material. X-rays show the dense, ground-glass cortex that is quite common in archeologic material also. The ground sections are somewhat opaque in many areas as is typical in partly fossilized bone. These semi-opaque areas represent the fortuitous deposit of minerals (and) crystals-usually calcium-from the action of ground water. They do not polarize as well as the surrounding bone, since the crystals are deposited in a random, non-biologic manner without the anatomic orientation that normal bone crystals have. Microradiographs of the ground sections show these same areas to be rather radiopaque and scattered throughout the cortex in (a) non-biologic pattern. Calcium has been leached out around many of the osteocytic lacunae, and heavy mineralization has been added to other (areas), particularly around Haversian canals.

All of this is typical of archeologic bone that has been subjected to ground water action for several hundred years. There is considerably more mineralization, leaching, and alteration of the light transmission in the specimens you sent than in comparable sections from the Philippines that are 500 years old and the 1000 year old Pre-Eskimo bones that I have. The material you sent is comparable to archeologic bone from Indian Knoll Kentucky, that is about 7000-8000 years old. Although postmortem conditions do affect the mineralization and microscopic appearance of bones, I believe that it is improbable that this much leaching and mineralization could occur in less than 1000 years under most conditions. My best guess is that these are the bones of an American Indian from the Archaic Period, probably about 5000-8000 years old, and that they are the bones of a young adult male in this thirties.

I am enclosing duplicate slide, X-rays, and microradiographs (for) your interest. Thank you again for sending in the specimens. With best regards.

Sincerely yours.

Ellis R. Kerley, Ph.D


RECONSTRUCTED
COPY