

STATE GEOLOGICAL SURVEY

Lawrence

John C. Frye
Executive Director and
State Geologist

February 2, 1953

Raymond C. Moore
Director of Research and
State Geologist

Mr. John de la Montagne
Department of Geology
University of Wyoming
Laramie, Wyoming

Ash Deposit
1 mi. NE of
Sportsman's Lake
Albany County

Dear Mr. Montagne:

Your volcanic ash samples arrived in good condition, and have been examined.

The petrographic methods which we have used in our work on Kansas volcanic ash are of value only if the glass is apparently completely fresh and unaltered. Thus the only part of the material which I was able to work with was the large pale grayish chunk in the bottom of the carton. I am sorry to report that the characteristics of this glass do not completely match those of any Kansas ash deposits which we have studied, so we cannot give you any help on its correlation. The average refractive index is approximately 1.500-1.501 (slightly higher than the Pleistocene Pearlette). The shard shape is rather similar to Pearlette, but the glass seems slightly thinner. No known Kansas Pliocene ash beds having this index have this shard shape. The material also contains more feldspar than do any of the Kansas ash samples.

The Crystal imprints in the pink material are new to us, and we cannot seem to make any guesses as to their origin.

I have run x-ray diffraction patterns on the pink material and also on the normal weathered ash, with the following results: The weathering products from the glass in both cases are a mixed-layer clay mineral and a smaller quantity of montmorillonite. The pink material contains more montmorillonite than does the other. The basal spacing of the mixed-layer mineral is 10Å, air-dried, and 11.5 Å, glycerated.

This will explain why the clay does not swell in water, but I am afraid it does not help any with your crystal problem.

Sincerely yours,

ss/ Ada Swineford
Petrographer

AS:smb