DISCUSSION

A KITCHEN MIDDENS WITH BONES OF EXTINCT ANIMALS IN THE UPPER LAKES AREA[1]

RECENT evidence of ancient man associated with extinct bison has been found this winter in the drainage of the St. Croix River—which river for a considerable distance is the boundary between Minnesota and Wisconsin.

October 28, 1934, a farmer brought to the University of Minnesota some large bison bones which he had recently found in a bog occupying an old lake bed on his farm. Since then some 1,500 bones, mostly bison, have been recovered from the deposit. The bones were found at an as yet undetermined depth of from 10 to 18 feet below the surface of the bog in a deep marl bed covered by three feet of peat. A few bones of elk and caribou were in the deposit, but most of the bones are of a large-horned bison determined as *Bison oliverhayi* Figgins.[2] No bones of *Bison bison* have been found. The bones now recovered represent at least 40 individuals. Most of them are of young animals ranging from calves to those of three years. But remains of at least six adults also have been secured. Many of the bones show that they were food refuse. Cuts and scratches made as by flint implements are present on some 20 per cent. or more of the bones. A few of the recovered specimens are broken as if to extract the marrow. Several have been burned. Nearly all the bones are in excellent preservation; even some of the rib cartilages are preserved.

A small number of artifacts as well as the many bones have been recovered. These include a few artifacts made of elk and bison bones, one artifact of oak wood and a few of stone. The artifacts are quite unlike those associated with modern North American Indians in the area.

Many sticks and small logs cut by beavers were found in one part of the deposit. Like the bones, they are in an excellent state of preservation. The wood is largely oak, although some fragments of alder and willow were also found.

The age of this kitchen-middens deposit in the marl has not been determined. The marl lies on red drift of the Wisconsin glacier. The succeeding young gray drift of the Wisconsin glacier, the last phase of the Wisconsin, stopped some five miles short of the site. We also call attention to the fact that bison bones of similar measurements, now in the U. S. National Museum, were found under 6 feet of peat on Wisconsin red drift at Crosby, Minnesota, in 1923. Those bones were described by the late Oliver P. Hay[3] as *Bison occidentalis* Lucas. From his description on page 2 we quote as follows: "We can be certain therefore that *Bison occidentalis* lived in Minnesota until the middle of the last glacial age. How much longer we can not now determine." Hence the problem of ancient man in late glacial time or early post-glacial time is again thrust into our faces by this new find in the area of the Upper Lakes.

Post-note: As this notice was about to be mailed to the editor of SCIENCE, a copy of *The American Anthropologist* for April–June, 1935, came to hand with Dr. Schultz's article on the Scottsbluff bison quarry. Because the extinct bison in said quarry is the same as that in the St. Croix marl bed, we add a statement regarding the antiquity of the Scottsbluff site from the closing paragraph of Schultz's important article: " . . . it would seem that to propose a late Pleistocene dating for this site is not too radical. Though many puzzling facts remain to be interpreted and future work in this area will undoubtedly permit the drawing of less tentative conclusions, the writers feel confident that such a dating will not prove to be far wrong, and, if modified, is much more likely to be extended downward than upward"[4] (p. 318).

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STUDIES OF CRYSTALLINE VITAMIN B_1 VII. ITS RELATION TO PATHOLOGICAL STATES

SUPPLIES of crystalline vitamin B_1 obtained by a recently developed method[1] offered the possibility of clinical trial of this material. Confirmation of the anti-neuritic activity of the crystals was obtained by treatment of thirteen cases of human beriberi through the cooperation of A. J. Hermano in Manila, Philippine Islands.

Rats on a vitamin B_1 free, but otherwise supposedly complete diet show complete freedom from polyneuritis with amounts as low as 1-2γ of the crystals per day, but the growth is slight. Increase of the vitamin dosage even up to approximately 100 times that necessary for prevention of paralytic symptoms effects increasingly greater weight gains. Evidently gross B_1 insufficiency is possible without manifestations of polyneuritis.

These results suggest that similar insufficiencies may be present in man, due to inadequate diets, idiosyn-

[1] A preliminary notice.
[2] J. D. Figgins, *Proceedings of the Colorado Museum of Natural History*, Vol. XII, No. 4, pp. 16–42, December 5, 1933.
[3] Oliver P. Hay, *Proceedings of the U. S. National Museum*, Vol. 63, Art. 5, pp. 1–8.
[4] C. Bertrand Schultz and Loren Eiseley, *The American Anthropologist*, New Series, April–June, 1935, Vol. 37, No. 2, Part I, pp. 306–319.
[1] R. R. Williams, R. E. Waterman and J. C. Keresztesy, *Jour. Amer. Chem. Soc.*, 56: 1187, 1934.