

Paxton plants sent from Melrose in 1938, the same year in which Hodson¹ published the only account of its occurrence in England.

I am indebted to Mr. J. B. Goodey for his invaluable assistance and advice.

MARY NOBLE

Department of Agriculture for Scotland,
Seed Testing, Plant Registration and
Plant Pathology Station,
Edinburgh 12. Feb. 16.

¹ Hodson, W. E. H., *Ann. App. Biol.*, 25, 406 (1938).

Fossil Burrows from the Pre-Cambrian Ajibik Quartzite of Michigan

THE 'hard rock' below the pre-Cambrian unconformity has been searched for fossils the world over, but the results are still few and frequently indistinct. Fossils, ranging from real to very dubious, have been described from the pre-Cambrian of Canada, Finland, India and the United States. The present note announces a new find from Michigan. A more complete report is under preparation.

Small slabs of ripple-marked quartzite were collected in the vicinity of the Ropes gold-mine, north of Ishpeming, Michigan. The specimens show gently curving sinuous marks on the bedding surfaces. The marks are tentatively interpreted as fossil burrows, particularly interesting because of the well-established Middle Huronian age of the formation. Some of the burrows measured were up to 2 ft. in length; but most of the traces are a few inches long and 3-5 mm. wide. They are slightly raised, non-annulate and very gently to broadly sinuous. Transverse thin sections cut through the marks show that they are not simple trails such as are produced by recent millipedes, gastropods, or by floating objects. Instead they appear to be uniform, sinuous ropes of sand, closely following the uneven bedding surfaces, but separated from them by a thin film of ferruginous material much the same as the coating of the bedding planes themselves.

I am completely ignorant of the type of organism which made the burrows. It would appear that the animal was digging on the surface or at a slight depth, following the old bedding planes. Such behaviour is not illogical, for a scavenger might very well find sufficient food on the old surface. The sand-filling of the burrows may or may not have passed through the digestive tract of the creature, although the complete absence of annulate structure and the broad

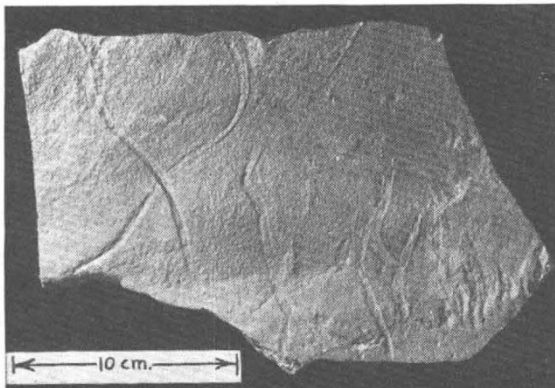


Fig. 1. Stratigraphically lower surface of a quartzite slab bearing the casts of several burrows

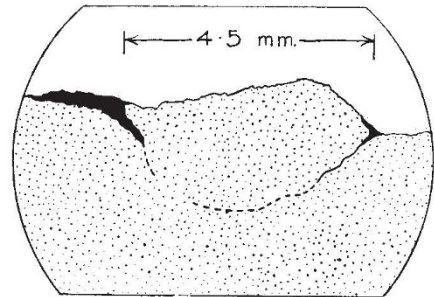


Fig. 2. Sketch of transverse section through a filled burrow. The sand filling is identical with the surrounding sand

curves of the traces would seem to indicate that the movement was fairly rapid.

The Ajibik quartzite is a very hard, moderately pure, massive rock, grading upward into the Siamo slate, which in turn is overlain conformably by the Negaunee iron formation. Helium age-determinations¹ made on magnetite from mines in this formation indicate an age of $c. 1,200 \times 10^6$ years. The mines are only a few miles distant from the Ajibik locality.

HENRY FAUL

Department of Geology,
Massachusetts Institute of Technology,
Cambridge 39, Massachusetts.

¹ Hurley, P. M., and Goodman, C., *Bull. Geol. Soc. Amer.*, 54, 305 (1943)

D.D.T. as a Residual Insecticide against *Anopheles maculipennis*

THE article by Muirhead-Thomson¹ on D.D.T. and *Anopheles gambiae* adds support to my belief that the same conclusions may apply to *A. maculipennis* varieties. During service in Italy in 1944 and 1945, I was concerned with the effect of D.D.T. in areas where *A. maculipennis* var. *labranchiae* and var. *typicus* were the common varieties. Mosquito catches, and other observations, made in areas where 'domestic' resting places had been treated with 5 per cent D.D.T. in kerosene, suggested that control was not so complete as at first appeared. None of this evidence was conclusive, but it did indicate that the fall in mosquito numbers seen in houses treated with D.D.T. did not represent a comparable reduction in the total mosquito population of the area. It suggested to me a repellent rather than a lethal action of D.D.T.

On the basis of such observations as I made, I wrote a Service memorandum in September 1945. This pointed out that our knowledge of the reactions of mosquitoes to D.D.T. was incomplete, suggested that outside resting-places might be utilized by mosquitoes in areas treated with D.D.T., and emphasized that the kill was questionable. I suggested a series of experiments to test these points, but Service conditions did not permit of their completion. Yet Muirhead-Thomson's findings with *A. gambiae*, arrived at independently, support my earlier observations; with this additional evidence, I consider that the value of D.D.T. as a malaria control measure is also open to doubt in areas where *A. maculipennis* var. *labranchiae* is the vector.

D. ETHERINGTON

Biology Department,
Northern Polytechnic,
Holloway, N.7.

¹ Muirhead-Thomson, R. C., *Nature*, 163, 109 (1949).