A LOWER LIAS SECTION IN THE RIVER TILL, LINCOLNSHIRE

by

P.E. Kent

Summary

The paper describes in detail a temporary section of Lower Lias clays, of the *obtusum* and *oxynotum* zones exposed during deepening of the River Till in Lincolnshire.

Introduction

Dredging operations in the River Till, seven miles north-west of Lincoln, in 1939-40 exposed Lower Lias rocks in the new channel and the writer was able to examine excavated rock soon afterwards. The rocks were exposed over a distance of $1\frac{1}{2}$ miles in the stretch of the river north of Till Bridge (SK 908798) and virtually continuously for $\frac{3}{4}$ mile north of Thorpe Bridge (SK 905806). The succession was built up almost entirely from excavated and rain washed material but the low dip and the shallow excavation of the solid clay, about 2 feet, made bed-by-bed collecting easy, although it rendered the estimation of thickness of the larger intervals, groups of beds, less reliable.

A number of other temporary sections in the corresponding part of the Lias have since been seen but none has shown an equal richness of ammonites. This unique section, is therefore, somewhat belatedly, put on record.

The ammonites were identified by the late Dr. L.F. Spath and ascribed by him to the *Asteroceras obtusum* and *Oxynoticeras oxynotum* zones, estimated at 75 and 45 feet respectively.

For a general account of the Liassic rocks of the Lincoln area, see Swinnerton and Kent (1949).

Tabulated section in the River Till

	Dark grey fine ferruginous sandstone, weathering light brown, with *Pseudopecten*, *Pinna*, occasional *Gryphaea*, and *Bifericeras* sp. (Sandrock)	Seen to 6 inches
	Light blue silty very micaceous clay, weathering pale	about 10 feet
Oxynotum Zone	Blue grey unfossiliferous shaly clay Blue shale with pale septarian limestone and ironstone nodules. *Avicula* sp., *Gagaticeras* sp.	about 30 feet
	Blue shale with small brown ironstone nodules, many of which contained small ammonites, including *Hemmimicroceras* sp. and *Parechioceras* sp.	about 5 feet

Mercian Geologist, Vol. 5, No. 2, 1974. pp.143-144.

	Blue grey fine clayey shale	)
	Blue grey very silty clay, weathering pale, with phosphatic pebbles. Fossils include *Gryphaea*, an acute belemnite, *Promicroceras* sp. juv. and *Asteroceras* sp.	)
	Brownish shaly clay with ironstone nodules, yielding *Asteroceras* cf. *stellare*	) about 40 feet
Obtusum Zone	Bluish grey silty clay and shale, with a 3 inch bed of very fine brown micaceous sandstone. Clay yielded Ostrea, small pectens, and a fragment of *Epophioceras* aff. *carinatum*; the sandstone yielded *Gryphaea* and *Entolium*?	)
	Hard purplish ironstone (comparable with the top bed of the Frodingham Ironstone) and yellow-brown ironstone, with large *Gryphaea*, belemnites of *acutum* type. *Epophioceras* aff. *landrioti* in the purple ironstone, *Asteroceras* sp. in associated limestone and shale.	say 3 feet
	Slightly silty dark grey clay, weathering pale, with 3" - 9" nodules of hard and soft white argillaceous limestone crowded with fossils - including *Astarte* sp., *Promicroceras* aff. *marstonense*, and *Xipheroceras* sp. juv. ("ammonite marble").	probably about 20 feet
Obtusum Zone (continued)	Yellow brown sandy and shaly ironstone, with phosphatic nodules. Large broad *Gryphaea*, pectens, *Cardinia* sp., rare belemnites, and rolled *Hippopodium* (one partly embedded in phosphatic nodule).	about 1 foot
	Purple and dark grey ferruginous shaly clay (similar to the clay equivalent of the Frodingham Ironstone in the southernmost workings) with red ironstone nodules yielding *Promicroceras* sp. and *Xipheroceras*?	

Discussion

The exposures in the winding river course cover a horizontal distance of 2,200 feet across the strike. The total thickness of the beds is therefore probably of the order of 100 - 120 feet, but it was not easy to allocate thicknesses to the individual clay beds. The uppermost sandstone (at SK 9009818) is evidently at or near the level of the sandy beds ("Sandrock) at the top of the *oxynotum* zone at Brant Broughton and hence of the Sandy Shales of the Vale of Belvoir, while the lowest beds appear to be equivalent to the top beds of the Frodingham Ironstone. The excavations thus probably include the whole of the *A. obtusum* and *O. oxynotum* zones, which are tentatively estimated at 75 and 45 feet in thickness respectively.

Reference

SWINNERTON, H.H., and KENT, R.E. 1949. *The Geology of Lincolnshire*, Lincs. Nat. Union, Lincoln.

P.E. Kent, F.R.S., D.Sc., Ph.D.,
38 Rodney Road,
West Bridgford,
NOTTINGHAM.