DINOSAUR TRACKS FROM THE LOWER PURBECK STRATA OF PORTLAND, DORSET, SOUTHERN ENGLAND

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Dinosaur tracks from strata below the Cherty Freshwater Member, Lulworth Formation, Purbeck Limestone Group, of Dorset had not been recorded formally until 2002 when Professor Michael House published a preliminary note, in the *Proceedings of the Dorset Natural History and Archaeological Society*. He flagged the 2001 discovery of a number of blocks of the 'Thick Slatt', Hard Cockle Member, with casts of dinosaur tracks preserved on their lower surfaces, in a quarry on the Isle of Portland. New light is shed on the source of the tracks, and the history of their discovery is documented. The methods employed to record them are described. The traces are placed in their stratigraphic and palaeoenvironmental settings.

In this paper, how the tracks were made is described, and most importantly it is concluded that they are preserved as transmitted casts. Three distinct types of tridactyl track attributable to bipedal dinosaurs are recognized, as well as isolated tracks which are interpreted as belonging to quadrupedal dinosaurs. Evidence is presented to support the interpretation that one of the tracks assigned to a quadrupedal dinosaur was produced by a sauropod. Despite their apparent differences, it is suggested that the majority of the tridactyl tracks were left by one species of dinosaur which was almost certainly herbivorous and lived in groups. One trackway may have been made by a carnivorous dinosaur.

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INTRODUCTION

Dinosaur tracks (individual footprint/print) and trackways (two or more consecutive footprints/prints) recorded from the late Jurassic - early Cretaceous Purbeck Limestone Group of Dorset, southern England, in both manuscript and published accounts were thoroughly checked and documented (Ensom, 1995a, 1995b). Amongst these were three early records of tracks allegedly from the Lower Purbeck Beds, Catalogue Numbers 51, 52 and 55 (Ensom, 1995a). No.51 later proved to be a trackway horizon (i.e. two or more consecutive tracks or prints) in the 'Middle Purbeck Beds' at Worbarrow Tout, No. 52 was preserved on a fallen block on the shore of Worbarrow Tout and as such could not be assigned a 'Lower Purbeck' source with certainty, and No. 55 was a specimen recorded in the 19th Century, which does not appear to have survived in any collection. Ensom (1995a) noted the discovery by Jane Francis of tracks in the Transition Bed at the top of the late Jurassic Portland Limestone Group and immediately below the Purbeck Limestone Group on the Isle of Portland (Francis personal communication, 1994). A short note confirming this discovery was later published (Francis, 1996).

The absence of any confirmed tracks from the 'Lower Purbeck Beds' encouraged a continuing search for tracks in these beds as opportunity presented itself. During the 1980s research on the Purbeck Limestone Group on Worbarrow Tout (NGR SY 869 796) by one of us (Ensom, 1985a) revealed curious irregular depressions on the surface of stromatolitic limestones just above the Portland Limestone Group. These aroused suspicions that there may have been dinosaur activity this low in the Purbeck sequence (Julian Andrews personal communication, 1985), but despite careful observation, no unequivocal tracks were recorded.

In 2001, a chance find of the casts of dinosaur tracks on the basal surfaces of overturned blocks of limestone in the Coombefield South quarry complex, by a dog-walker with connections to the Isle of Purbeck, where dinosaur tracks were well known, quickly led to the discovery of a large number of dissociated tracks. They had been excavated and tipped during earlier stripping of the Purbeck Limestone Group to permit extraction of the commercially important Portland limestones from a quarry nearby. Some initial mapping and photographic recording of the tracks, while still on the tips, was carried out by Justin Delair and Michael House. Detailed mapping of all traceable evidence of these tracks was completed by Delair in 2004, after the death of Professor House, and once the blocks had been lifted clear of the waste tips. Ian West and Ms Caroline Clasby, both of Southampton University, carried out stratigraphical and sedimentological investigations, the latter as part of an undergraduate project. A short report on the discovery was written by House (2002), and Ensom (2006a) provides a brief report on work undertaken in 2003-2004. West (http://www.soton.ac.uk/~imw/portdino) gives a comprehensive review of these, and related, discoveries in their stratigraphical and sedimentological context. In conclusion, a verbal report of 'fossil footprints' found on Portland during September 1961, was relayed that month to one of us (JBD) by the late Ernest Oppé of Worth Matravers. If genuine this is of historical value only, as the finds were never verified and recorded; the stratigraphic horizon and locality at which they had been found is unknown. The presence of footprints remained a well kept secret by those who knew!