

THE LITHO- AND BIOSTRATIGRAPHY OF THE LIAS GROUP OF THE GLASTONBURY-SHEPTON MALLET AREA, SOMERSET

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This paper synthesises recent geological mapping by CRB, formerly of the British Geological Survey, with palaeontological data collected primarily by DTD over many years. In addition, it incorporates a wealth of data, both published and unpublished, to provide the first comprehensive overview of Lias stratigraphy and biostratigraphy across an area of rapidly changing thicknesses and lithologies.

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INTRODUCTION

The area is dominantly rural with only a few scattered hamlets. Except in the north and north-east, where Triassic Mercia Mudstone and Penarth Group rocks crop out, the area is everywhere underlain by strata of the Lias Group, although in the west there are extensive tracts of Alluvium, Peat, River Terrace Deposits and Head deposits which obscure the bedrock geology. The northern area lies on the southern flank of the Mendip Hills, with the southern part dominated by the east-west trending Pennard Hill capped with strata of the Dyrham and Beacon Limestone formations, and Glastonbury Tor rising to 158 m capped by the Bridport Sand Formation. Drainage is essentially to the west and north-west into the Somerset levels. Agriculture is the main industry of the area, with a predominance of dairy farming. There is little woodland, apart from on the steeper slopes of Pennard Hill. There are several newly planted apple orchards in the area.

The Glastonbury-Shepton Mallet area of this account comprises 1:10,000 sheets ST44SE (part), 54SW AND SE (parts), 64SW (part), 43NE, 53NW and NE and 63NW. Figures in square brackets are National Grid references and fall within 100-km square ST.

PREVIOUS WORK

The Glastonbury-Shepton Mallet area was first surveyed at the 1:63,360 scale and included on Old Series sheets 18 (published in 1850) and 19 (first published in 1845; third edition published 1899). There was no specific Old Series Memoir which covered the Glastonbury-Shepton Mallet area, but some details were included in the East Somerset and Bristol coalfields memoir (Woodward, 1876) and the regional Jurassic stratigraphic memoirs (Woodward, 1893, 1894). The area included in this paper falls on the New Series Glastonbury (296) Sheet which was first published at the 1:63,360 scale in 1969 as a provisional edition. This sheet was largely based on the Old Series Sheets 18 and 19, but also incorporated information from Sheet 296 of the Soil Survey of England and Wales published in 1955. The Glastonbury Sheet was republished without revision at the 1:50,000 scale in 1973. The whole sheet was resurveyed by the British Geological Survey at the 1:10,000 scale mainly

between 2001 and 2008. However, there will be no published 1:50,000 map, memoir and no more open-file reports. This paper is an attempt to rectify the lost opportunity for at least part of the Glastonbury area to produce a synthesis of the recent mapping. It combines this with notes and observations, usually on specific locations, by the many geologists who have visited this area, some of which are published in several journals.

The current area was surveyed by one of us (CRB) in 1982 and 2001-2008. The notes, observations and biostratigraphical data gathered by DTD over many years are incorporated in this account. In addition, valuable material seen, recorded and collected by the late Hugh Prudden and Kevin Page has kindly been made available to us. Some additional fossils from the Beacon Limestone have been identified by Dr. M.K. Howarth.

GEOLOGICAL TERMINOLOGY

In recent years, where possible, geological stratigraphical terminology has been rationalised and unified across the British Isles. Consequently, some generalised, older, terminology (i.e. 'Lower, Middle and Upper Lias') or even more recent names (i.e. Pylle Clay) have been replaced by formally defined units of regional or UK-wide extent. Both the old and new terminology is shown in Figure 1.

STRATIGRAPHY OF THE LIAS GROUP

Strata of the Lias Group underlie much of the area except in the north, north-east and extreme south-west. The group comprises a variety of lithologies including mudstones, alternating thin mudstones and limestones, limestones, sandy and silty mudstones, siltstones and very fine-grained sandstones. These characteristics are used to divide the Lias into lithostratigraphical units (Figure 1). The base of the Jurassic System is taken at the lowest occurrence of the ammonite *Psiloceras planorbis* in the lower part of the Blue Lias Formation. The Blue Lias thus spans the Triassic/Jurassic System boundary, but for convenience, it is treated in its entirety in this chapter.