THE LITHOLOGY AND SEQUENCE OF THE QUILON BEDS

BY K. K. MENON

(Department of Geology, University of Kerala, Trivandrum)

Received August 18, 1966

(Communicated by Prof. L. Rama Rao, F.A.Sc.)

ABSTRACT

Four new beds of clay and shale, observed to underlie the Padappakara limestone of Burdigalian age are recorded and described. The base is not seen. A pattern for their correlation in the four known localities in Quilon based on lithologic and stratigraphic similarities is outlined.

The exclusive occurrence of the detrital Warkala laterite overlying the limestone bed at Padappakara is explained as due to overlapping. The source of the lignite debris, noted for the first time in the Quilon beds, is postulated as an old unknown bed either underlying or having existed nearby, but later removed by erosion or diastrophism. The proximity of the source of the Quilon sediments is supported by the presence of graphite in the sediments.

INTRODUCTION

PREVIOUS studies of the Quilon beds have been chiefly concerned with the rich and varied invertebrate fauna of the limestone. The age is considered as Burdigalian or upper part of lower Miocene and equivalent to upper Gaj (Eames, 1950, p. 239).

The Quilon beds which underlie the Warkala series are represented by limestone and clay at Chathanur and Nedungolam (Kumar and Pichamuthu, 1933, p. 89) whereas at Padappakara, the type area, the limestone alone was hitherto known to be present. However, during recent studies, four new beds were observed beneath the limestone which are described in this paper and a tentative correlation with similar ones in other localities is outlined.

PADAPPAKARA CLIFF SECTION

Padappakara (58D/9: 76° 38′ 20″; 8° 58′ 40″), located on the eastern side of the Ashtamudi lake, is chiefly composed of laterites of the Warkala series.
The Lithology and Sequence of the Quilon Beds

The cliff section, fringing the lake is about 16 m. thick, the upper 13 m. being detrital laterite followed successively downwards by limestone, sandy clay, carbonaceous clay, carbonaceous shale and sandy clay. The base is not seen. The limestone is about 5 m. above the lake level, and together with the underlying beds forms the Quilon beds.

LITHOLOGY

*Detrital laterite.*—Laterite is the only bed of the Warkala series represented and is almost as thick as that at Warkala. It is capped by a reddish-brown ferruginous gravel. Lower down, it becomes yellowish-white and lithomargic. The base is gritty, current-bedded and conglomeratic due to the presence of clay galls.

*Quilon limestone.*—The limestone bed, 60 cm. thick, underlies the laterite as a narrow ledge less than a metre broad, exposed for nearly 9 metres. Three sets of vertical joints are well developed and filled with colloidal silica and ferruginous matter. The surface is yellowish-white, much weathered and crumbled to a depth of 15 cm. Its contact with the laterite is uneven and strongly suggests an unconformity, a conclusion which is supported by the occurrence of the overlying pseudoconglomerate. The rock is highly fossiliferous with *Archaia malabaricus* (Eames, 1950, p. 235) as the characteristic fossil.

The limestone is typically bluish-grey but turns yellowish-brown on weathering. Some of the fossils, particularly *Archaia malabaricus* are also similarly coloured. The rock is compact and very tough with a subconchoidal to uneven fracture. Under the microscope it is seen to be medium-grained, equigranular and composed of minute grains of calcite. Chemically it is high in calcium with nearly 2% magnesium and 6 to 15% silica (Krishnan, 1960, p. 554). Pyrite grains, including framboidal forms (Rust, 1935, p. 407) are common in thin sections and insoluble residues.

An interesting feature, not reported previously by others, is the presence of small pieces of a brown substance identified as lignite embedded in the limestone, particularly near the surface. These are angular to somewhat worn and the largest piece measured 8 mm. × 3 mm. (Fig. 1). A small bit scooped out was identified to be non-vascular plant tissue under the microscope (Fig. 2).

*Sandy clay.*—The limestone is underlain by a thin bed of non-calcareous sandy clay about 15 cm. thick. It is brownish-grey, plastic, weathered, friable and resembles a clayey soil. A few minute fossil shells, angular grains of quartz, felspar, garnet and graphite were also recognised.