DREPANOSAURID (REPTILIA: DIAPSIdA) REMAINS FROM A LATE TRIASSIC FISSURE INFILLING AT CROMHALL QUARRY (AVON, GREAT BRITAIN)

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The Late Triassic terrestrial fauna from fissure infillings at Cromhall Quarry, Avon, England, is well known and comprises a diversity of tetrapods (Robinson, 1957; Fraser and Walkden, 1983; Fraser, 1985, 1988a, b). The most abundant genera are sphenodontids, mainly Planoccephalosaurus (Fraser, 1982; Fraser and Walkden, 1984), Cleosaurus (Robinson, 1973; Fraser, 1988a) and Diphydontosaurus (Whiteside, 1986). Aside from sphenodontids, the sphenosuchian crocodile Terres-trisuchus is quite common, as are two undescribed pseudosuchians (Fraser, 1994). Remains of procolophonids and the gliding reptile Kuehnessaurus are also present (Fraser, 1988b). In addition to fossils attributable to named taxa, a variety of problematic elements have been collected, some of which have been described previously (Fraser, 1988b). Included among this material are some small, elongate vertebrae that exhibit a distinct morphology somewhat reminiscent of the cervical vertebrae of pterodactyloid pterosaurs (Fraser, 1988b). Nonetheless, differences noted between the Cromhall vertebrae and typical pterosaur cervical vertebrae preclude their referral to pterosaurs. The Cromhall vertebrae are re-examined here in light of recent descriptions of a variety of drepanosaurid material. Drepanosaurids are a group of rather obscure, small tetrapods adapted to an aquatic or arboreal lifestyle.

Institutional Abbreviations—AUP, Aberdeen University Palaeontol-ogy Collection, Aberdeen, Scotland; MBSN, Museo Brembano di Scienze Naturali (S. Pellegrino, Bergamo, Italy); MCSNB, Museo “Ca’fè” di Scienze Naturali Bergamo, Bergamo, Italy; MFSN, Museo Friuliano di Scienze Naturali, Udine, Italy; MPUM, Museo di Paleontologia Università di Milano, Milan, Italy.

THE DREPANOSAURIDAE

The family Drepanosauridae was erected by Olsen and Sues (1986) and first diagnosed by Berman and Reisz (1992). They are a group of diapsid reptiles that were initially known only from the Late Triassic Calcare di Zorzino (Zorzino Limestone) and Dolomia di Forni (Forni Dolostone) formations of northern Italy. In the past decade, there has been a tremendous increase in the knowledge of drepanosaurids, due in part to the discovery of additional specimens from Italy as well as more thorough descriptions of the original material (Renesto, 1994a, b, 2000; Renesto and Paganoni, 1995).

Two of the four named genera, Drepanosaurus (Pinna, 1980) and Megalancosaurus (Renesto, 1994a), originate from northern Italy, and the remaining two, Dolabrosaurus (from the Petrifed Forest Formation, Chinle Group, New Mexico (Berman and Reisz, 1992)) and Hypuro-nector (Colbert and Olsen, 2001), have been described from the U.S.A. Hypuronector is a small tetrapod from the Newark Supergroup that for many years was informally known as the “deep-tailed swimmer” (Ol-sen, 1980), but was shown by Colbert and Olsen (2001) to be a drepanosaurid. Furthermore, an undescribed small reptile from the Late Triassic Calcare di Zorzino (northern Italy) that is distinct from Drepanosaurus and Megalancosaurus, is undoubtedly also a drepanosaurid (see Renesto, 2000:fig. 11).

The basic morphology is similar in all known drepanosaurid genera (Berman and Reisz, 1992; Renesto, 1994a, b, 2000; Colbert and Olsen, 2001). All are small to medium sized (10–50 cm) diapsid reptiles sharing the following characters: barrel shaped trunk; a long, deep, laterally compressed tail; dorsal vertebrae with high neural spines (in some taxa the anterior dorsal vertebrae are expanded cranio-caudally at their distal ends); zygapophyses lying very close to the midline; caudal vertebrae with very deep hemal processes and with prezygapophyses overlapping nearly half the length of the preceding centra; ribs mostly holocephalous, slender, and triangular in section; gastralia absent; shoulder girdle with a very high, narrow, rod-like scapula, gently bent cranially; coracoid flat, somewhat expanded caudally; pelvic girdle with a high iliac blade, a rather narrow pubis and an ischium that is elongate caudally; femoral shaft lacking sigmoid curvature; tarsus and carpus modified to allow high mobility of both manus and pes (Renesto, 1994a, b, 2000); fifth metatarsal straight; narrow, long ungual phalanges with well developed flexor processes.

Renesto (2000) considered many of these characters indicative of a scansorial life style, while other authors (Pinna, 1980; Berman and Reisz, 1992; Colbert and Olsen, 2001) believed that at least some genera (Dolabrosaurus and Hypuronector, as well as some Megalancosaurus specimens) were aquatic. Although the deep tail is suggestive of an aquatic habit, it was apparently incapable of lateral undulation (Renesto, 1994b) and, except for Hypuronector, the tail has a prehensile end that tends to contradict an aquatic lifestyle.

The taxonomic position of the Drepanosauridae is still uncertain, and a phylogenetic analysis is outside the scope of the present paper. Therefore, following Dilkes (1998), we consider them Archosauromormaph in-certae sedis.

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** Abbreviations: c, centrum; hyp, hypapophysis; na, neural arch; ns, neural spine; poz, postzygapophysis; prz, prezygapophysis.