**NEW DATA ON THE 'GIANT' OBOLID FAUNA (BRACHIOPODA)
FROM THE ARMORICAN QUARTZITE FACIES (LOWER ORDOVICIAN)
OF THE IBERIAN PENINSULA**

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The Armorican Quartzite (=Armorican or Cruziana Sandstone) is a characteristic facies of mature quartzite, found throughout south-western Europe, present in the Lower Ordovician (Floian) of Brittany, Normandy, Portugal and Spain. In the United Kingdom, clasts from conglomerates of Triassic age near Budleigh Salterton, Devon (see Cocks & Lockley, 1981) are identified, with a high degree of confidence, as pebbles of Armorican Quartzite from the Armorican Massif in north-west France. In Bohemia and Morocco, chronological equivalent of the Armorican Quartzite do not develop Cruziana-sandstone facies. The Armorican Quartzite is characterised by the widespread presence of trace fossils deposited on a wide shelf in Ibero-Armorica (Gutiérrez-Marco et al., 2017), belonging to the *Cruziana* and *Skolithos* ichnofacies, which are representative of various settings in a range of wave-dominated to tide-dominated shallow-marine environments (Gutiérrez-Alonso et al., 2007). Body fossils are rare in the Armorican Quartzite, being most typically associated with concentrations of vertical burrows of *Daedalus* (= *Vexillum*, = *Humilis*), a common ichnogenus in the *Skolithos* ichnofacies. They represent post-depositional colonisation of storm deposits by wormlike bulldozers, maybe large polychaetes or enteropneusts. These vertical cone-shaped burrows are produced by animals that were opportunistically exploiting recently deposited storm-beds, harvesting for silt-size organic particles or meiofauna living in within the sand interstices (Neto de Carvalho et al., 2016). Such trace fossils are also recorded in the Lower Ordovician of Morocco (as *Vexillum*), SE France (Montagne Noire) and diverse places in North Africa, Middle East and the Arabian Peninsula (Seilacher, 2000). Trace fossils such as *Cruziana* and *Daedalus* (identified as *Heimdallia* but this genus is a junior synonym of *Daedalus* (see Fillion & Pickerill, 1990)) are recorded in what is regarded as an extension of the Armorican Quartzite facies in eastern Newfoundland, as well as large-sized *Lingulobolus* species (over 30 mm long; see Walcott, 1912) from Lance Cove, Bell Island, Newfoundland (Bell Island Group, upper Tremadocian, Lower Ordovician).

The brachiopod faunas are developed either as rare but extensive linguliform beds formed by centimetric to decimetric accumulation of highly fragmented taxa, usually difficult to identify (Emig & Gutiérrez-Marco, 1997), or by complete specimens (even including conjoined valves) preserved at the base of those storm sandstone sequences colonised by *Daedalus* (see Fig. 1.5). The faunas consist of low diversity assemblages (sometimes monotaxic) of 'giant' linguliform brachiopods including *Ectenoglossa lesueuri* (Rouault) (Fig. 1.4), *Lingulobolus brimonti* (Rouault), *L. hawkei* (Rouault), *Lingulepis crassipyxis* Havlíček (see *Lingulepis* sp. on Fig. 1.2), *Tomasina criei* (Davidson), *Pseudobolus? salteri* (Davidson), and a new bizarre 'giant' linguliform taxon (see Figs 1.1, 1.3) recognised so far in the Armorican Quartzite of northern Portugal only (Sá 2005). The brachiopods found in the Armorican Quartzite in France and Iberia were described and identified in works published since the middle of the 19th Century, a.o. by Rouault (1850) [later revised by Davidson (1880)], Guillier (1881), and Coke & Gutiérrez-Marco (2001). Cocks & Lockley (1981) reassessed the brachiopod fauna described by Salter (1864) from the Budleigh Salterton Pebble Bed. The distinctive elongated spatulate glosselline *Ectenoglossa lesueuri* is present in the Armorican Quartzite in England, Brittany, Normandy, Sarthe, Montagne Noire and the Central Iberian Zone of Portugal and Spain. Moreover, the two species of *Lingulobolus*, *L. hawkei* and *L. brimonti* have been identified from Brittany, Normandy and England; *L. brimonti* has been identified in the Lower Ordovician of the Montagne Noire (Courtessole et al., 1985, Havlíček, 1980) and also in the Lower Ordovician of Algeria (see Cocks, 2000), whereas *L. hawkei* is known from Portugal (see Perdigão, 1971; Coke & Gutiérrez-Marco, 2001, and Neto de Carvalho, 2006). This association of large linguliform brachiopods is represented in comparable lithostratigraphic successions restricted in south Gondwana, i.e. Ibero-Armorica, SW England, Algeria, Serbia and possibly Saudi Arabia (Gutiérrez-Marco et al., 2017). It is typical of the Gondwanan high-latitude inshore-shelf fauna. However, equivalent inner-shelf assemblages from Bohemia (*Leptembolon-Thysanotos* fauna) show palaeogeographical connections with the upper Tremadocian-lower Arenigian more temperate deposits of Baltica, south Urals, northern Iran and the central Andes (Gutiérrez-Marco et al., 2017). In

Fig. 1. 1, 3 – Obolidae gen. et sp. indet. from Guadramil, Portugal; 2 – *Lingulepis* sp. from El Pobo inlier, Guadalajara, Spain; 4 – *Ectenoglossa lesueuri* (Rouault), Guadarranque sincline, Cáceres, Spain; 5 – Specimen showing the relationship between the vertical burrows of ichnofossil *Daedalus* and the position of *Lingulobolus* sp. (see white star); Sierra Menera inlier, Guadalajara, Spain. Scale bars, 10 mm, except 5 (= 50 mm).

the Ranovac-Vlasina unit of eastern Serbia, Lower Ordovician sandstones have yielded the most inshore assemblage including ‘giant’ linguliform brachiopods such as *L. hawkei* and *P? salteri* (Gutiérrez-Marco et al., 1999), both of which are recorded in the Armorican Massif and (as transported elements) in SW England.

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