

The world's longest graptolite?

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An incomplete specimen of *Stimulograptus halli* 1.45 m long is recorded from the Aberystwyth Grits Formation north of Clarach, western mid-Wales. This is the longest graptoloid graptolite known. Assuming a growth rate similar to that of modern *Rhabdopleura* it lived for at least 25 years. Copyright © 2001 John Wiley & Sons, Ltd.

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1. INTRODUCTION AND HISTORICAL REVIEW

Exceptionally long graptolite rhabdosomes are of considerable interest for the constraints that they impose upon proposals for the mode of life of graptolites and also for the information that they can provide about the lifespan of a single graptoloid colony.

Regnéll (1949) and Bulman (1965) reviewed records of unusually long graptoloids and provided details of new specimens housed in the Swedish Museum of Natural History, Stockholm, and the Sedgwick Museum, Cambridge, respectively. The longest recorded specimens in either paper were O. T. Jones's (1909, p. 486) *Atavograptus atavus* (Jones, 1909) from the Rheidol Gorge, Wales 'which frequently reach a length of 2 or 3 feet [0.6–0.9 m] without any appearance of a beginning or of an end'. *Atavograptus atavus* has a maximum dorso-ventral width of 1.25 mm (in a specimen 0.76 m long; Jones 1909, p. 531). Wiman (1895, p. 306) had stated that monograptid graptolites could reach a length of more than 1 m, but did not provide any examples, and Hundt (1939) concluded, from examination of incomplete rhabdosomes, that specimens with a length exceeding 1 m must have occurred. Loydell (1993, p. 76) recorded specimens of *Stimulograptus halli* (Barrande, 1850) more than 1 m long from western mid-Wales and it is from this area that the specimen described herein was encountered.

2. DETAILS OF SPECIMEN

The specimen occurs 10 m south of a prominent normal fault on a seaward-dipping bedding surface, 25.5 m south of the first major headland north of Clarach. The British National Grid (Ordnance Survey) reference is SN 5857 8425; this is locality A20 of Loydell (1992, p. 10). The 'bed' is a thin (approximately 1 mm thick) hemipelagite between turbidite mudstones of the Aberystwyth Grits Formation. It is horizon g6 in the catalogue of the senior author's collection of graptolites housed in the British Geological Survey, Keyworth. The bedding surface, like many in the area, is slickensided as a result of bedding plane slip; this surface is particularly conspicuous because the slickensides run in more than one direction. The strata here are assigned to the lower part of the *Stimulograptus utilis* Subzone, the upper part of the *Spirograptus guerichi* Biozone (lower Telychian, Llandovery).

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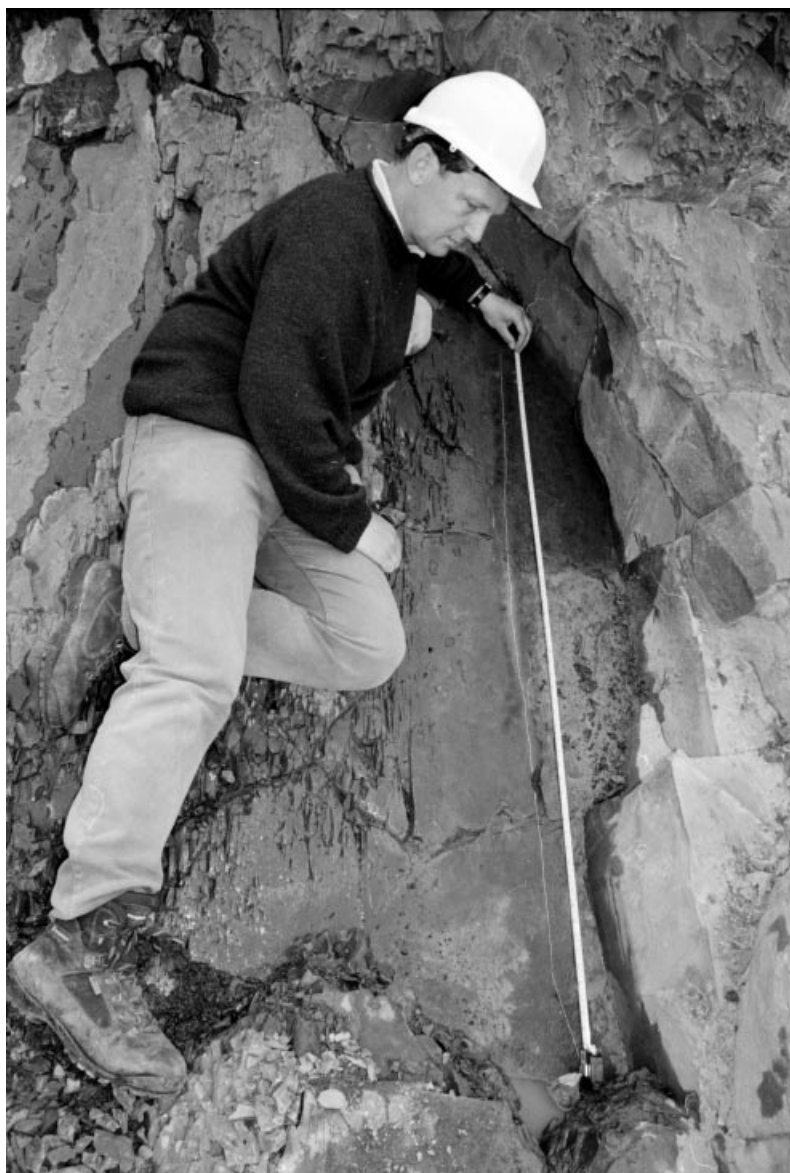


Figure 1. Exceptionally long *Stimulograptus halli* (Barrande) specimen from north of Clarach, western mid-Wales. Length of tape measure is 1.45 m. The contrast between the graptolite and the bedding surface has been enhanced digitally. The specimen was discovered in June, 1999 and was still visible in November, 1999 (Denis Bates, personal communication).

The specimen of *Stimulograptus halli* (Barrande, 1850) is 1.45 m long (Figure 1), but is not complete, the proximal end being missing. Preservation is poor distally, so it is not certain whether the specimen is incomplete distally also. It is in profile view. Dorso-ventral width increases steadily from 1.5–2.0 mm proximally (at the seaward end) to 2.5–3.0 mm distally. Given the measurements recorded by Loydell (1993) for proximal ends of *S. halli*, it is clear that the most proximal part of the specimen must have been some distance from the sicula and thus the overall length of the specimen when alive was most probably in excess of 1.5 m. Measurements of thecal spacing (kindly provided by Denis Bates) are 8.6 thecae in 10 mm in the proximal region of the specimen and 8.3 thecae in 10 mm

at the distal end, with intermediate values recorded from elsewhere along the length of the specimen. These measurements of thecal spacing fall within the range recorded by Loydell (1993) for the distal region of *S. halli*.

We do not wish to speculate here upon the mode of life of graptoloids but do concur with Regnéll's (1949, p. 6) statement: 'On the whole, the giant Monograptids . . . are very remote indeed from the ideal shape of a planktonic organism'. Any model of graptoloid palaeoautecology must account for such giant specimens.

In terms of graptolite lifespan, if one assumes graptoloid growth rates similar to those of modern *Rhabdopleura* (see Rigby and Dilly 1993) then this particular specimen of *S. halli* is likely to have lived for at least 25 years.

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