

doubted whether pouches were confined to females, and remained uncertain whether the species was dioecious or not. Clearly it is possible, though not yet proven, that *Thecalia* is hermaphroditic and that it forms an analogy with *Uncites* even closer than previously described.

The open pouches ("parathyridia") of the small Pennsylvanian rhynchonellacean *Cardiarina* are also found in all specimens (Cooper, 1956): this could be an independent development, in another hermaphroditic brachiopod, of rudimentary brood pouches similar to those of *U. beuthi* and *Milneria*.

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PRISTIOGRAPTUS LUDENSIS (MURCHISON 1839)— ITS SYNONYMY AND ALLIED SPECIES—AND THE POSITION OF THE WENLOCK/LUDLOW BOUNDARY IN THE SILURIAN GRAPTOLITE SEQUENCE

SIR,—A reinvestigation of the Salopian graptolite faunas of North Wales and of some of the type-specimens in the Elles and Wood Collections at the Sedgwick Museum, Cambridge and Birmingham University and a study of the graptolites of the Wenlock Shales and Wenlock Limestone and comparisons with Polish graptolite material (for which we are indebted to Dr. L. Teller of Warsaw), have together yielded significantly new information on the graptolite sequence of the Upper Wenlock and Lower Ludlow Series.

A comprehensive paper is in course of preparation, but the authors believe their conclusions to be of sufficient interest to merit prior publication; in particular since they affect the preparation of future maps of the Silurian based on graptolite sequences and the worldwide correlation of the Wenlock and Ludlow Series.

The main conclusions are as follows:

(a) *Pristiograptus vulgaris* (Wood 1900) and *P. gotlandicus* (Perner 1899) are junior synonyms of *P. ludensis* (Murchison 1839)—a revised name for the form described originally by Murchison as *Graptolithus ludensis* and later by Wood (1900) as *Monograptus colonus ludensis*. *M. gerhardi* Kühne 1955 is probably also a junior synonym (cf Jaeger 1964, p. 37).

(b) Whilst the type-specimen of *P. vulgaris* (Elles and Wood 1911, Pl. xxxvii, Fig. 10a) is conspecific with *P. ludensis* (Murchison 1839, Pl. xxvi, Fig. 2, and Wood 1900, Pl. xxv, Fig. 11) the specimen figured by Wood (1900, Fig. 10a), showing a straight proximal end, is not; and for this similar forms, some stratigraphically earlier than *P. ludensis*, we intend to create at least one new species.

(c) *P. ludensis* and straight pristiograptids have been found in the uppermost Wenlock Shales and the Wenlock Limestone of the Ludlow area, and it is clear that the graptolite zone of *P. ludensis* (as the "*vulgaris*" zone must now be called) belongs, largely if not entirely, to the Wenlock, as suspected as early as 1938 (Pocock *et al.* 1938, p. 102). As those authors point out (p. 102) "the alternative course—that the Wenlock Limestone . . . should cease to be of Wenlock age—is naturally undesirable".

Thus the base of the Ludlow Series as re-defined by Holland *et al.* (1963) at the junction of the Wenlock Limestone and Lower Elton Beds would appear to lie more or less at the base of the *Pristiograptus nilssoni* zone. This results in an unfortunate situation, in that the Wenlock-Ludlow boundary in the graptolitic facies has usually been taken at the base of the *P. ludensis* (*M. vulgaris*) Zone. Although this horizon might provide a useful datum, should it continue to be referred to as the Wenlock-Ludlow boundary it would involve the recognition of a Ludlow Series known to include the Wenlock Limestone: it is to be hoped that the base of the *nilssoni* Zone will prove acceptable to most as the Wenlock-Ludlow boundary.

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