

NEW GRAPTOLITES FROM THE MIDDLE CAMBRIAN OF THE SIBERIAN PLATFORM

by A. M. OBUT

ABSTRACT. Well-preserved Middle Cambrian graptolites from the Siberian platform deposits, some showing traces of fusellar structure, are described. One new order and two new families are erected: Archaeodendrida, Archaeodendridae, and Bulmanidendridae. The following species are described: *Archaeodendrum bulmani* gen. et sp. nov.; *Archaeolafoea olenekensis* sp. nov.; *Dithecodendrum grossithecatum* sp. nov.; *Bulmanidendrum magnificum* gen. et sp. nov.

THE first work on Cambrian graptolites of the Siberian Platform was published by Obut (1964). Two middle Cambrian genera *Dithecodendrum* and *Siberiodendrum* were described composing the family Dithecodendridae of a new order Dithecoidea.

Short descriptions of these graptolites were given by Bulman (1970) and placed along with the Dendroidea, Tuboidea, Camaroidea, Crustoidea, Stolonoidea but with their taxonomic position uncertain. 'The gross morphology', Bulman writes, 'of all such organisms, when poorly preserved, is little guide to their true affinity; and in the absence of detail concerning such features as the stolon system and the presence of fusellar tissue, it seems preferable to accept a large group of unclassified genera, some members of which may ultimately prove not to be Graptolithina at all' (p. V54).

Naturally any new data on the remains of these organisms will be useful since they included the ancient ancestors of better-known graptolites. In addition they can be successfully used in stratigraphical correlation and in the study of comparable Cambrian palaeogeographies for such distant regions as, for example, the Siberian Platform in Northern Asia and Victoria in Australia.

SYSTEMATIC DESCRIPTIONS

Order ARCHAEODENDRIDA nov.

Family ARCHAEODENDRIDAE nov.

Genus ARCHAEODENDRUM Obut gen. nov.

Type species. *A. bulmani* Obut sp. nov.

Diagnosis. Rhabdosomes slightly flexuous, composed of a slender stem and thecae produced by budding off the stolons; thecae elongate, isolated distally, narrowing towards their bases, arranged biserially in triad grouping of the same thecae in each series.

Affinities. The new genus has some affinities with the Australian genus *Archaeolafoea* (Chapman 1919; Chapman and Thomas 1936; Bulman 1970), which also had very

thin, flexuous stipes with elongate, conical thecae. However, it differs sharply from this genus in having the thecal arrangement in triad groupings.

This genus should compose Archaeodendridae fam. nov., belonging probably to the independent new order Archaeodendrida.

Age. Middle Cambrian.

Archaeodendrum bulmani Obut sp. nov.

Text-fig. 1e-g

Holotype. No. 3682/1, coll. I. A. Solovyev 1959 (text-fig. 1f, g).

Description. The stem of the stipes is undulating, up to 20 mm long and 0.15 mm in diameter. The stolon is arranged along the centre of the stem and has a diameter of 0.05 mm. From the concavities of the undulations on each side of the stipes three thecae are grouped at an angle of 30–45° to the axis. It is possible that the uppermost of them is a stolotheca. The length of the isolated distal parts of the thecae is 1.3 mm, and the width 0.2 mm. Their proximal parts are conical. In 10 mm of each series 5–6 triads of the thecae are present. The condition of the material does not allow observation of fusellar structure.

Locality, horizon, and association. Specimens No. 3682/1, 2 were found by I. A. Solovyev, 1959, in light-brown limestones of the middle part of the *Anomocarioides* Zone. This is directly below the *Lejopyge laevigata*–*Majaspis mirabilis* Zone on the Balaganaakh river in the interstream part of Olenek–Anabara, together with the following trilobites, determined by N. P. Lasarenko: *Anomocarioides limbatum* (Angelin), *A. limbataeformis* Lermantova, *Anomocarina* sp. indet., *Anomocare* sp. indet., *Centropleura* sp. indet., *Elyx* sp. indet., *Phalacroma* sp.

Genus *Archaeolafoea* Chapman, 1919
Archaeolafoea olenekensis Obut sp. nov.

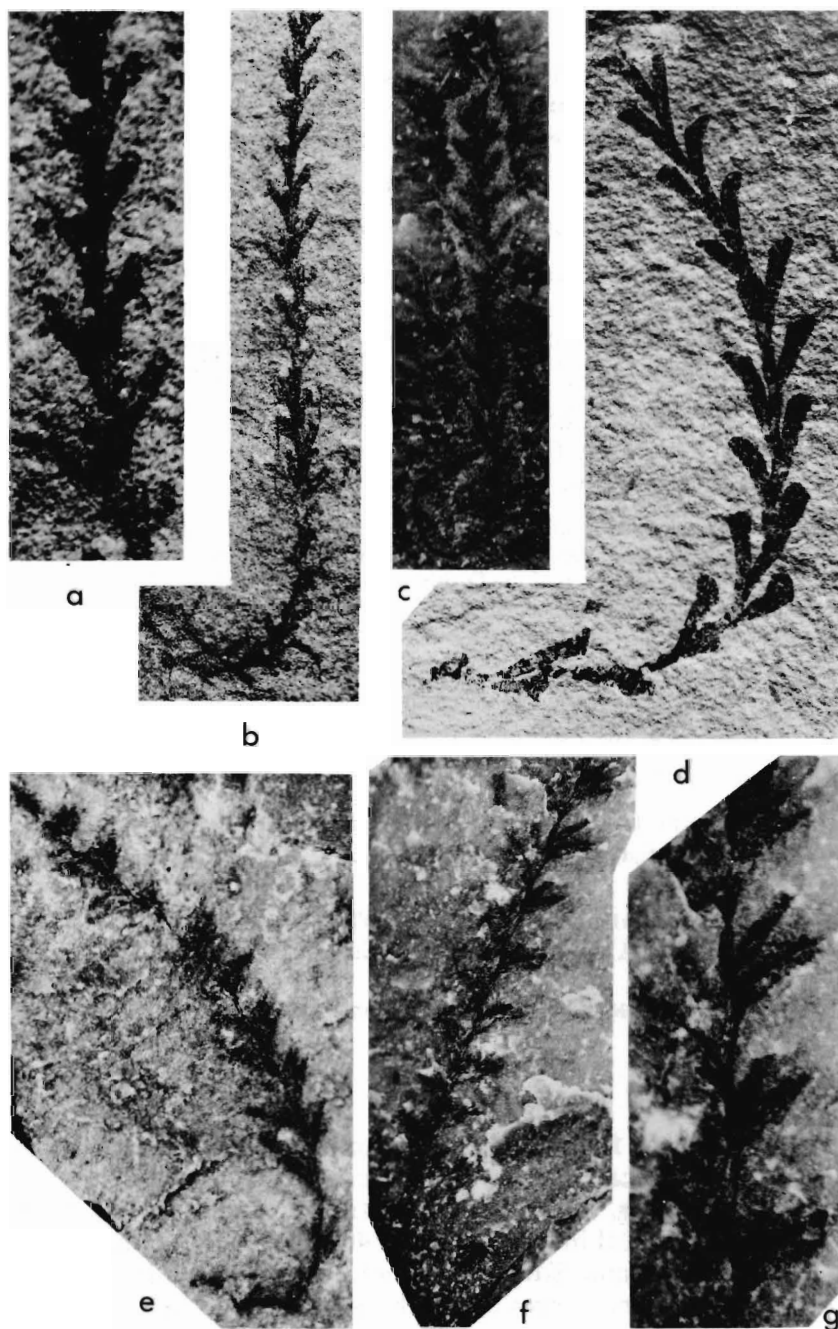
Text-fig. 1c

Holotype. No. 5521/1, coll. D. S. Yashin 1962.

Description. The stem of the stipes slightly undulating, up to 40 mm long and 0.2 mm in diameter. At the beginning it is coiled in a flat spiral, after which it takes a line directly upwards. The width of the stipes between the thecal ends is 3 mm. Thecae with isolate distal portions have a length of 2–2.5 mm, a diameter of 0.25 mm, and are inclined at 15–35°. In 10 mm there are 4–4.5 thecae.

Comparison: *A. olenekensis* sp. nov. is distinguished from all Australian species of the genus *Archaeolafoea* (Chapman 1919; Chapman and Thomas 1936) by its lesser number of thecae per unit length.

TEXT-FIG. 1. *a, b. Dithecodendrum grossithecatum* Obut sp. nov. Holotype No. 8a/1, coll. A. E. Kleyser 1962, top of Djakhtar horizon, Olenek river. *b*, ×3. *a*, fragment of same specimen, ×6.5. *c. Archaeolafoea olenekensis* Obut sp. nov. Holotype No. 5521/1, coll. D. S. Yashin 1962. Tues-Salina Formation, Olenek river, ×2. *d. Bulmanidendrum magnificum* Obut gen. et sp. nov. Holotype No. 3063-b, coll. A. N. Vishnevsky 1962, top of the lower part of the Siligir horizon, Paastaakh river, left bank of the Olenek, ×2. *e-g. Archaeodendrum bulmani* Obut gen. et sp. nov. No. 3682, coll. I. A. Solovyev 1959, *Anomocarioides* Zone, Balaganaakh river in the interstream part of the Olenek–Anabara. *f*, holotype No. 3682/1, ×4. *g*, same specimen ×8.75 showing the thecal arrangement in triad groups and the stolon system. *e*, paratype No. 3682/2, ×4.



Locality and horizon. Specimen No. 5521/1-3, coll. D. S. Yashin 1962, Olenek river, 5 km NW. from the mouth of Suordakh river, Tues-Salina Formation, Middle Cambrian.

Order DITHECOIDEA Obut, 1964
Family DITHECODENDRIDAE Obut, 1964
Dithecodendrum grossithecatum Obut sp. nov.

Text-fig. 1a, b

Holotype. No. 8a/1, coll. A. E. Kleyser 1962.

Description. Rhabdosome flexuous at the beginning, then almost straight, more than 30 mm long and 2 mm wide. Autothecae cylindrical, arranged biserially, isolate distally, 1.5 mm long and 0.3 mm in diameter, with the thecal inclination at 25–35° to the axis of the rhabdosome. 5.5 thecae of each series in 10 mm.

Affinities. In the characters of the thecae and general structure of the rhabdosome the new species approaches closely *Dithecodendrum tenuiramosum* Obut, 1964, but differs clearly from it by its larger and longer thecae.

Locality, horizon, and association. Specimen No. 8a/1, coll. A. E. Kleyser 1962, from the right bank of Olenek river, 11 km upstream from the mouth of the Osip river. The beds containing these graptolites lie stratigraphically 40–45 m above the top of the Djakhtar horizon of the Middle Cambrian. Just above the graptolite layers, in limestone beds, *Oidalagnostus trispinifer* (Westergård), *Phalacroma glandiforme* (Angelin), and *Anomocarina siberica* (Holm and Westergård) were identified by N. P. Lasarenko.

Family BULMANIDENDRIDAE fam. nov.
Genus *Bulmanidendrum* Obut gen. nov.

Type species. *B. magnificum* Obut sp. nov.

Diagnosis. Rhabdosome flexuous, robust, with long slightly sinuous thecae, conical proximally and isolate distally, arranged biserially, with indistinct traces of fusellar structure.

There are no affinities with any other Cambrian genus. This genus is regarded as composing a new Middle Cambrian family Bulmanidendridae.

Bulmanidendrum magnificum Obut sp. nov.

Text-fig. 1d

Holotype. No. 3063-b, coll. A. N. Vishnevsky 1962.

Description. Rhabdosome flexuous, about 50 mm long and 6 mm wide between the apertural ends of the thecae. Thecae are conical tubes arranged biserially, isolate distally, up to 6 mm long, and with an apertural diameter of 1.3–1.5 mm, even occasionally 1.9 mm. Thecal inclination is 15–40° to the axis of rhabdosome. 1.5–2 thecae of each series in 10 mm. Stolons have not been observed. In the proximal part of the rhabdosome indistinct traces of fusellar structure can be seen.

Locality and horizon. Specimen No. 3063-b, coll. A. N. Vishnevsky 1962, Paastaakh river, left bank of Olenek; top of the lower part of the Siligir horizon, Middle Cambrian.

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