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On a species of Brachyphyllum from Mesozoic Coal Beds, Ipswich, Queensland.

By the Rev. J. E. Tenison-Woods, F.L.S., &c.

A very interesting discovery has been lately made at the Tivoli Mine, Ipswich, Queensland. The coal beds there have yielded a specimen of *Brachyphyllum*, closely allied to the well-known and common Oolitic *B. mammillare*, Brongt. It is associated with *Tæniopteris*, *Alethopteris australis*, *Equisetum rotiferum* (nobis), *Thinnfeldia adontopteroides Sphenopteris elongata*, etc. It was brought to me by Mr. Meston, who was then the proprietor of the mines, and was found amongst the shale in the workings immediately above the coal seam in somewhat impure coal.

BRACHYPHYLLUM CRASSUM, (an var *B. mammilare* ?)

Plant robust, thick, stem and branches repeatedly dichotomous. Leaves thick and fleshy, densely crowded, homodromous, short, broad, obtuse, conspicuously keeled, erect, and closely imbricate, slightly spreading. Branches and branchlets very little narrower than the parent stem and of equal width to the summit. All portions of the plant conspicuously curved. Three leaves visible in each spiral: about three rows in a centimetre. Length of leaves from 2 to 3 mill., breadth from 5 to 6 mill. Diam. of cauline stem at widest part 10 mill., of branchlets 8 mill. Length of shortest 18 mill. Longest diameter of plant 150 mill.: greatest width 105 mill., in which there are 13 bifurcations.

Amongst the fragments imbedded around the plant there are many portions of much narrower dimensions covered with rhomboidal depressions like a *Lepidodendron*. These are branches from which the leaves have been shed. They are about 30 mill. long, and 2 mill. wide, covered with lozenge-shaped depressions with a raised margin, of which two are exposed in each internode or spiral. They are also dichotomous and seem to proceed from the ends of the branches; some of them are straight and some curved, and they abound round the stems.

This very beautiful fossil which is so excellently preserved and so complete in its details resembles very closely in general habit the well-known *B. mammillare*, Brong., which is widely spread in Oolitic deposits of France, and Wiltshire, Oxford, and Yorkshire in England. But this fossil differs from every other known form in the thickness and shape of the leaves, and the continuous branching without much diminution of the diameter. In some cases the result of the branching is to give rise to a slightly thicker stem than the parent branch. Under the microscope also I find that the leaves are covered with a very fine granulation and the margins are slightly raised. The keel is sharp and raised, but not visible on all the leaves, which easily separate from the stem in the fossil, leaving a shapeless scar of brittle, shining coal.

There are no other plant remains in the slate except woody fragments, and the whole is covered with fine scales of silvery mica. I am inclined to the opinion that this is no more than a variety of the European fossil, but lest I should be causing confusion by a wrong identification, I give it another name. If, however, we had no other distinction between two species of trees than those which exist between these fossils, we should not be justified in separating them. There may, however, be distinctions in the inflorescence, which have not yet been discovered.

B. mamilare has been separated by Schimper from the plant wrongly so named by Lindley and Hutton, (See Foss. Flora, pl. 188 and 219, vol. 3. See also, Schimper, vol. 2, p. 336, *B. phillipsii*.)

In the Geological Magazine for Jany., 1869 (vol. 6, p. 5, pl. 2, figs. 12, 13) there are figures of rough branches of *B. mamillare*. Also Annales des Sciences Naturelles, 1 ser., vol. iv., plate 19, fig. 9, under the name of *Mamillaria desnoyersii*, Brong.

Vinger in his Genera et Species Plant Foss.. p. 308, regards *Brachyphyllum* as a Cycad.