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LII.—*On a small Bennettitalean Flower from the Wealden of Sussex.* By W. N. EDWARDS.

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[Plate XII. figs. 1-3.]

THE present description of a *Bennettitalean* flower is based on a single specimen (V. 3175) in the Geological Department of the British Museum (Natural History), forming part of the Rufford Collection, and registered as "Wealden, near Hastings." It is preserved as a carbonized impression, consisting of a whorl of expanded bracts (regarded as microsporophylls) radiating from a rather prominent central region, the diameter of the flower being 16 mm. The sporophylls were originally probably about ten to twelve in number, but the specimen is incomplete on one side, and only seven are seen clearly. Each individual sporophyll is about 4-5 mm. in length, and varying in width from 2-4 mm., with a bluntly rounded or truncated tip. No structural details can be made out in the centre of the flower, which, however, is slightly protuberant, but there are some small round or oval swellings or markings at the bases of some of the sporophylls, and from some of these microspores have been obtained. The mass of spores shown on Pl. XII. fig. 3 (and several similar masses) were obtained in the region marked A of fig. 2, where there was a roundish or oval swelling—presumably a synangium—in a position which must apparently have been at or near the base of one of the broken-off sporophylls. At the point B (Pl. XII. fig. 2), where there is a distinct oval marking, a few microspores were also obtained, but none was found in the centre of the flower, nor any recognizable tissues. The spores are thin-walled and appear to be roughly spherical, with the usual tiradiate marking of spores produced in tetrads. They are about .02 mm. in diameter. With the spores are a few fragments of tissue which might be pieces of synangium-wall. The distal ends of the sporophylls are too much carbonized to yield any cuticle. The specimen is not sufficiently well preserved to show the number and arrangement of the synangia, but they were apparently few—perhaps four at the base of each sporophyll, two on each side (*cf.* Pl. XII. fig. 2 at B). There do not appear to be any sterile bracts, though one must note the possibility that the synangia may have been borne on much reduced sporophylls round the central axis, and that they became closely adpressed to the

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Figs. 1-3, *WILLIAMSONIELLA VALDENSIS*, Sp. n.Figs. 4-5, *PARKA DECIPIENS*, Flem.

whorl of larger bracts, which were really sterile. This, however, scarcely seems a probable explanation.

The specimen evidently belongs to the *Williamsoniaceæ*, and is believed to be the smallest fertile flower of that family yet described. The only member of the family hitherto recorded from the Wealden of England is the large *Williamsonia carruthersi*, Sew., of which the male organs are unknown (Seward, 1895, p. 157). The generic attribution of the present specimen is not a simple matter, but the very small size, and particularly the reduction of the microsporophylls and pollen output, would seem to point against a reference to *Williamsonia*, even if the specimen is regarded as a unisexual (male) flower. No comparison is possible with *Williamsonia minima*, Saporta, which is too ill-preserved to be of any value (Seward, 1895, p. 155), and the comparatively small *Williamsonia* (?) *huitzilopochtli*, Wieland, from the Liassic of Mexico (Wieland, 1914, p. 98, pl. xxvii. fig. 7 and pl. xxviii.), seems to be of quite a different type, and, indeed, is compared with the winged seeds of *Gnetum*. The proportionately large size (6–7 mm. in diameter) of the prominent central portion of our specimen suggests that this may have been an ovulate region, in which no trace of structure has been preserved, and if this assumption is made a comparison immediately becomes possible with *Wielandiella*, Nath., and *Williamsoniella*, Thomas, which are bisexual. Both these genera are characterized, as regards the male part of the flower, by a smaller number of synangia and simpler microsporophylls than in *Williamsonia*. In the present case there is, however, nothing comparable to the "palisade ring" described by Nathorst (1909, p. 22) in *Wielandiella* from the Rhætic of Scania, whereas if my interpretation of the bracts in the Wealden flower as microsporophylls is correct, they show a very close resemblance to those of *Williamsoniella coronata* from the Middle Estuarine series of the Yorkshire coast (Thomas, 1915, p. 118). This species had no sterile bracts, and the central ovuliferous axis was surrounded by twelve to fourteen microsporophylls with rounded ends, bearing four to eight synangia. The microsporophylls of the Wealden specimen seem to me to be of essentially the same type, though the whole flower is somewhat smaller. Furthermore, the microspores are of the same size (c. .02 mm.) and about the same shape (appearing circular or occasionally elliptical). Those of *Wielandiella* are larger and navicular in shape. Spores of *Williamsonia whitbiensis* and *W. setosa* described by Nathorst (1911, p. 18, pl. iv. fig. 11), though apparently of a similar shape, are about twice the size, while

those of *Williamsonia spectabilis* and *W. pecten*, also figured by Nathorst (1909, pl. ii. figs. 8-15), are very elongated, and may be as much as .065 mm. in length. In the case of the small flower originally described by Nathorst (1909, p. 20) as *Williamsonia* (?) *liquieri*, and subsequently referred by Thomas (1915, p. 134) to his new genus *Williamsoniella*, the spores are from .025 to .03 mm. in diameter, and usually round or elliptical. If, then, the size and shape of the spores is a sound guide to affinity, we have here an additional reason for referring the present specimen to the genus *Williamsoniella*, even if the structure of the central axis remains uncertain.

I therefore propose to name it *Williamsoniella valdensis*, sp. n.

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EXPLANATION OF PLATE XII. FIGS. 1-3.

- Fig. 1.* *Williamsoniella valdensis*, sp. n., Wealden, Hastings, Sussex. Rufford Coll. Brit. Mus. Nat. Hist. Geol. Dept., V. 3175. About nat. size. Photo P. Dollman.
Fig. 2. The same, enlarged, showing probable synangia at B. Photo P. Dollman.
Fig. 3. The same. Mass of microspores from near the point A in fig. 2. $\times 380$. Photo F. W. Edwards.

LIII.—*Note on Parkia decipiens.*

By W. N. EDWARDS.

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[Plate XII. figs. 4 & 5.]

A VERY full account of the morphology and histology of *Parkia decipiens*, Fleming, was recently given by A. W. R.