

## II.—Some Fossil Plants from Western Australia.

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The specimens submitted to me were derived from two localities.

The first of these was Mt. Hill (second hill about half mile from Trig. Station) and is represented by two specimens numbered [8050] and [8054] respectively.

Specimen [8050] (3 pieces) is a portion of a coniferous trunk, in which the structure is in part preserved. A transverse section has been made of the specimen, but the preservation of the wood, on microscopic examination, proved to be far too imperfect to permit even of generic determination. It is impossible to determine the age of the beds from which it was derived.

Specimen [8054] (2 pieces) has been cut across, and appears to be an arenaceous (?) rock containing a number of thin, eroded fragments or chips of wood, the structure of which is, for the most part, not preserved. Here and there, however, fragments of the wood appear to be petrified, but not sufficiently to permit of determination. The specimen affords no indication of the age of the beds from which it was derived. It is, however, probably *not* Palaeozoic.

The second locality was the main road on West boundary of M. 299, 28 chains South of the North-West corner, about three miles South of Mingenew. Altitude about 500 feet above Mingenew. 25 specimens, numbered [8104 A-Y], were forwarded to me from this locality.

### OTOZAMITES FEISTMANTELI, *Zigno.*

- 1881—*Otozamites Feistmanteli*, Zigno, *Flora. Foss. Oolit.* Vol. II., p. 90, pl. 34, figs. 6-8.  
 1900—*Otozamites Feistmanteli*, Seward, *Jurassic Flora* (Brit. Mus. Catal.) Vol. I., p. 221.  
 1907—*Otozamites Feistmanteli*, Salfeld, *Palaeontogr.*, Vol. 54, p. 182, pl. XIX., fig. 14.

This fossil frond is represented by 15 specimens [8104, A-O], each exhibiting one or more examples.

The fronds vary considerably in detail, both as regards the shape of the leaflets and the degree of imbrication. There is, however, every reason to believe that they all belong to the same species.

[8104 D.] is a good example of one type, in which the pinnules are short and overlap one another. The shape and nervation of the pinnules is well seen. They are attached to the upper surface of the rachis by a broad base, the upper angle of the base being auriculate. This frond appears to be quite identical with that figured by Zigno (*see above*) on fig. 8 of plate 34, from the Lower Jurassic of Italy. This species has also been determined from the Lower Oolite of Britain.

The fronds seen on specimens [8104 A, B, C, G, I, J, and K], are similar to [8104 D]; the nervation being well seen in [8104 C].

In [8104 F], also [8104 E and L], the pinnules are more elongate, their length being about 2 c.m. as compared with 1.3-1.4 c.m., in the case of [8104 D].

In [8104 M] the base of a small frond is seen where some of the pinnules do not exceed 3 m.m. in length, and are more oval in shape.

In [8104 H], the pinnules are less imbricated, and this feature is also seen in [8104 L], which shows two fronds, one with short, imbricated pinnules similar to [8104 D], and another larger frond with longer pinnules, more distant from each other.

In [8104 N-O] the pinnules are also less imbricated.

A comparison of the typical specimen [8104 D] with the figure given by Kurr of his *Zamites Mandelslohi* (Beitr. foss. Flora Jura format., Württembergs, 1845, p. 10, pl. I., fig. 3), would appear to indicate that the Australian frond may be identical with that occurring in the Lower Oolite of Germany. On the other hand, this matter remains in doubt, for the specimens recently figured under this name, from the Lias of Holzmaden, Württemberg, by Salfeld (Palæontogr., Vol. LIV., 1907, p. 182, pl. XVI., figs. 1a, 1b, 1c) do not appear to be specifically identical with the Australian leaves.

Feistmantel (Mem. Geol. Surv. New South Wales, Pal. No. 3, 1890, p. 147, pl. 28, figs. 9, 9a; refigured by Salfeld, *ibid.*, pl. XIX, fig. 14; *see also* Jack and Etheridge Geol. and Palæontol. of Queensland 1892, p. 381) has also compared a Queensland fossil, from the Talgai coalfield on the Condamine River, with *Otozamites Mandelslohi* (Kurr). Feistmantel's figure, however, appears to be rather carelessly drawn, or else the specimen is not very well preserved.

There would appear to be a distinct possibility that his frond from Queensland may be identical with the fossils under discussion here, but until his figured specimen (in the Min. and Geol. Mus., Sydney) has been compared with the West Australian leaves, it will be difficult to form any opinion on this point.

So far as I am aware Feistmantel's record is the only species of *Otozamites* as yet found in Australia, though Tenison-Woods

(Proc. Linn. Soc. New South Wales, 1883, vol. VIII., p. 151) has described the same species from another locality in Queensland, *i.e.*, the Darling Downs near Toowoomba.

Thus while there may be some uncertainty as to the identity of the Australian fossils with Kurr's species *Otozamites Mandeslohi*, there is every reason to regard them as specifically identical with the *O. Feistmanteli*, Zigno, of the lower Jurassic of Italy and England. Professor Seward (*ibid.* p. 221) has diagnosed this species as follows:—"Frond narrow, linear; pinnae short and broad, attached to the upper face of the rachis by a broad base, of which the upper corner is slightly auriculate; the apex is bluntly rounded, the tip being directed upwards. Venation of the *Otozamites* type."

*cf.* PAGIOPHYLLUM. *sp.*

[8104 X-Y]. A portion of a Gymnospermous twig occurs on this specimen associated with a frond of *Otozamites Feistmanteli*, Zigno. The preservation is unfortunately very poor, and it is not possible to determine even the genus with certainty. It appears to stand nearest to the genus *Pagiophyllum*, and with it may be compared the *Pagiophyllum Kurri* of Schimper from the Lias of Germany (see Salfeld, *ante*, p. 186, pl. XIX., fig. 1: also the *Araucaria peregrina* of Kurr, *ante*, p. 9, pl. I., fig. 1). Tenison-Woods has figured (*ante* p. 165, pl. 4, fig. 1) an obscure specimen under the name *Cunninghamites Australis*, *sp. nov.*, which may also be compared with this fossil. Tennison-Wood's specimen was obtained from the Mesozoic beds of Rosewood, Ipswich, Queensland.

#### FOSSIL WOODS,

[8104 P, Q, S, T, U.] Fragments and casts of fossil stems, in which the structure is not preserved. They are indeterminable, and of no value. The ribbed specimen [8104 U] has been cut across, but it is obviously not petrified, and consequently no sections were made of it. It is probably not the pith cast of an Equisetaceous genus, but of Coniferous origin. [8104 T] shows what may possibly be a ribbed pith cast, and part of the wood lying more externally. It is, however, impossible to determine its position in the Vegetable Kingdom. [8104 R] is a poor cast of a branching or leafy twig, and is also indeterminable.

#### INDETERMINABLE.

[8104 V-W]. A minute fragment of what appears to be the apical portion of the pinna of a frond. Each pinnule appears to possess a well marked mid-rib, but otherwise the nervation is not seen. The specimen is far too fragmentary and badly preserved to be determinable.

[8104 W] also shows two small seed-like bodies, which are indeterminable.

CONCLUSIONS AS TO THE AGE OF THE BEDS IN THE SECOND  
LOCALITY.

Of the specimens examined, the fronds of *Otozamites Feistmanteli*, Zigno, and the specimen compared with *Pagiophyllum*, alone afford any evidence as to the age of the beds.

These plants occur in the Jurassic of Europe, and possibly also in (?) Jurassic beds in Queensland. So far as a comparison with the European fossils is concerned, the age would appear to be *earlier* rather than *later* Jurassic. *O. Feistmanteli*, Zigno, occurs in the Lower Jurassic of England and Italy, and possibly also in Germany. *Pagiophyllum Kurri*, with which [8104 X-Y] may be compared, is a Lower Jurassic fossil from Germany. As regards the plant bearing beds elsewhere in Australia, the flora of beds, probably of Jurassic age, in Queensland at Talgai (Condamine River), the Darling Downs, and Rosewood, West of Rockhampton, affords the closest comparison with the specimens from Western Australia.

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