COMMONWEALTH OF AUSTRALIA.

DEPARTMENT OF NATIONAL DEVELOPMENT.

BUREAU OF MINERAL RESOURCES
GEOLOGY AND GEOPHYSICS.

RECORDS.

1960/76

PLANT FOSSILS IN CORE 26, ROSEDALE No.1 BOREHOLE. VICTORIA.

by

Mary E. White.

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Rosedale No.1 Borehole was drilled by the Australian Paper Mills Developments Pty. Ltd. approximately one mile N.E. of Rosedale in S.E. Victoria. It penetrated a sequence of Tertiary fresh-water deposits to a depth of 2345 feet, at which depth a strong lithological unconformity was found, and Mesozoic spores were recorded at 2469 feet (P.R. Evans, personal communication). The bore hole was abandoned at 5836 feet in a sandstone.

Core 26, at 5259 - 5261 feet, contains plant fossils in the form of impressions with a thin film of surface carbon. No cuticle is preserved.

The plant impressions are of Taeniopteroid leaves of two types, of portions of Conifer foliage, and a small area of bark. They are referred to Yabeiella mareyesiaca (Geinitz) Oishi, Yabeiella crassa Jones & de Jersey, Elatocladus planus (Feist) and Brachyphyllum crassum Tenison-Woods.

Plate 1 shows a photograph of the core surface (X2). Two leaves of Yabeiella mareyesiaca are clearly shown, as are the fronds of Elatocladus planus and the piece of bark. However, irregularities of the surface and the nature of the impressions makes it impossible to illuminate all the Taeniopteroid leaf fragments for photography simultaneously. Text Figures 1 and 2 are therefore included to show the location of all the impressions referred to and details not clearly visible in the photograph. Full descriptions are given so that conclusions on the identity of the plants and the age idicated by the assemblage may be verified. The age of the sediments in which these impressions occur is the subject of controversy and there is no invertebrate evidence to date to clarify the position.

Description of Taeniopteroid Leaves.

Yabeiella mareyesiaca (Geinitz) Oishi.

Three terminal portions of leaves are present (leaves 1,2 & 3, Figure 1), showing the bluntly rounded apices. The midrib is seen to persist to the apex, tapering from the base to the top of the leaf. Lateral veins are closely crowded and parallel, averaging 24 per cm. and making an angle of between 72° and 75° with the midrib in the middle section of the leaves. The angle is more acute near the apex. The leaves have a maximum width of 1.8 cm. and taper gradually (.4 cm. decrease over 4 cm. on the two fairly complete leaves). No impressions show lower parts of leaves and there is no indication of narrowing towards a petiole. The lateral veins run into a marginal vein. Some lateral veins fork close to the midrib. The extension of the lamina beyond the marginal vein can only be seen over short lengths of the impression margins (see Plate 1) as the impressions

Taeniopteroid leaves with strong midribs and lateral veins, simple or forked, joining at their outer extremities to form a marginal vein are referred to the genus Yabeiella Oishi. Occasionally two adjacent lateral veins join or are connected by cross bars. Examples of leaves with these characters were first recorded under the genera Taeniopteris and Oleandridium, from which they are now distinguished by the presence of the marginal vein. Oishi (19[illegible] defined the new genus and described six species (two tentative and four definite) in material from Rhaetic strata in Argentina. Jones and de Jersey (1947) confirm three of these species, reduce one to variety status and create one new species in their collection from the Ipswich Series in Queensland. There is difficulty in delineating the species as there is considerable variation and some intermediate forms occur.

Yabeiella mareyesiaca (Geinitz) Oishi comprises the following:-

(a) Taeniopteris mareyesiaca Geinitz from the Rhaetic of Argentina.

(b) Oleandridium mareyesiacum Kurtz from the Rhaetic of Argentina.

(c) Taeniopteris dunstani Walkom (1917) described from the Ipswich Series in Queensland and recorded also in Triassic strata at Leigh's Creek, South Australia. (It occurs plentifully throughout the Ipswich Series, from the Khol stage at the base to near the mid of the Aberdare Shales at the top of the Series.)

(d) Yabeiella mareyesiaca Oishi from the Rhaetic of Argentina.

The range of size, average angles of lateral veins with the midrib and number of laterals per cm. is considerable. The specimens under consideration fall within the limits of the species. The blunt apex of the leaf separated it from Yabeiella brackebuschiana (Kurtz) which also occurs in the Ipswich Series, in the Argentine material and in Middle-Upper Triassic strata in South Africa.

Yabeiella crassa Jones and de Jersey.

Two portions of Taeniopteroid leaves with coarse secondary venation are present (Laminae 6 and 7, Figures 1-2) No.6 shows 3 cm. of midrib with lamina preserved on one side only. The margin is visible for 1cm. The second impression is fragmentary. In both there are 12 lateral veins per cm. several of which fork near the edge of the lamina. Many fork close to the midrib as well. The lateral veins are at an average angle of 78^{o} with the midrib over most of their length. They arise at approximately right angles to the midrib and curve slightly upward. The midrib is prominent. The marginal vein is close to the edge of the lamina. There is no indication of the shape of a complete leaf.

The type species was described from the Ipswich Series in Queensland.

Conifer Foliage and Bark.

The conifer foliage is of the type referred to Elatocladus planus (Feist). Each segment has a median vein. Such foliage is very common throughout Triassic and Jurassic strata and cannot be used to determine exact age.

The fragment of bark is of the general type referred to Brachyphyllum crassum Tenison-Woods. Bark impressions of this sort occur plentifully in Triassic and Jurassic strata.

Age of the Assemblage.

The presence of two species of Yabeiella associated with Conifer foliage indicates a Middle-Upper Triassic/Rhaetic age for core sample 26.

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Walkom, A.B., 1919. Mesozoic floras of Queensland. Pt.I. The flora of the Ipswich and Walloon Series. Qld. Geol. Surv. Publ. 157, p37.

PLATE 1.

Face of Core Sample 26, Rosedale No.1 Borehole. Magn. X2.

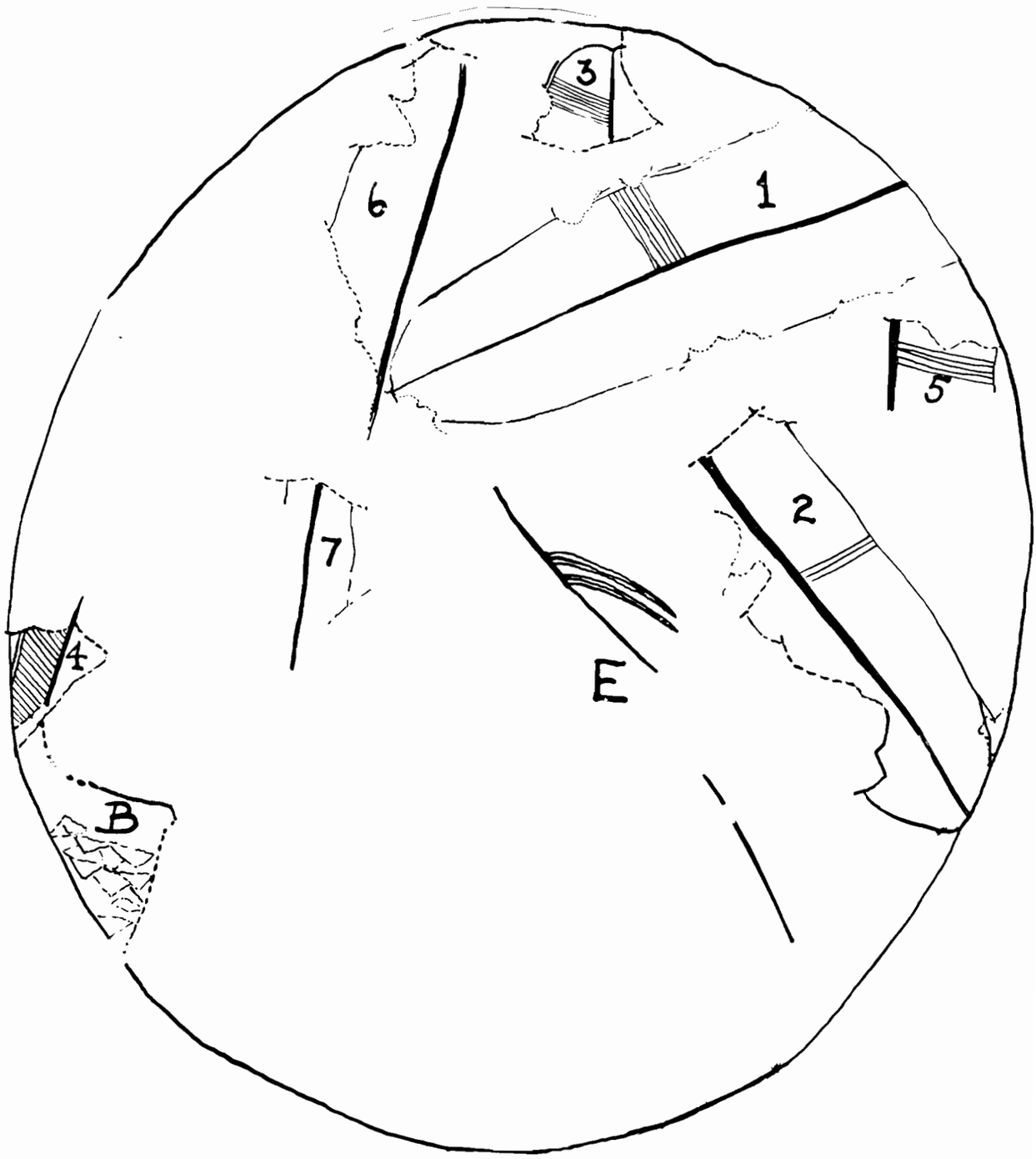
Two leaves of Yabeiella mareyesiaca (Geinitz) Oishi.

Fronds of Elatocladus planus (Feist)

Conifer Bark.

Text Figure 1.

Tracing of Plate 1 showing location of impressions.



Yabeiella mareyesiaca : Laminae 1,2,3,4 and 5.

Yabeiella crassa : Laminae 6 and 7.

Elatocladus planus fronds at E.

Brachyphyllum crassum bark impression at B.

Text Figure 2.

Yabeiella crassa Jones and de Jersey.

Portions of Taeniopteroid

Laminae with coarse secondary venation.

(Magnification X 2)