ARAUCHARIA HAASTII ETTINGSHAUSEN FROM
SHAG POINT, NEW ZEALAND

M. N. BOSE
Birbal Sahni Institute of Palaeobotany, Lucknow

ABSTRACT

An emended diagnosis, based on gross and cuticular features of Araucaria haastii Ettingshausen has been given here. It is found that the cuticle of A. haastii has a striking resemblance with Araucaria klinkii Lauterb.

INTRODUCTION

ARAUCARIA haastii was first described by Ettingshausen (1887) from Shag Point and Malvern Hills, New Zealand. Its cuticular structure and affinity were not properly known then. Fresh collections from Shag Point were made in 1947 by Prof. O. H. Selling, Riksmuseets, Paleobotaniska Sektion, Stockholm. The collections included four specimens of A. haastii. Out of these four, two had well preserved cuticle. The present study is based on these specimens as well as a specimen (pl. 1, fig. 1) from the British Museum (Nat. Hist.), London.

DESCRIPTION

Araucaria haastii Ettingshausen

Pl. 1-3, figs. 1-4. Text-fig. 1, 2a-b, e

1891 Araucaria haastii Ettingshausen, p. 255.
1919 Araucarites haastii (Ettingshausen) Seward, p. 269.

Emended diagnosis

Foliage shoot with closely set, spirally arranged, imbricate leaves, 2.5-7.5 cm. long and 1-1.8 cm. wide. Leaves ovate to lanceolate with a pointed apex. Lamina flat, its substance thick and keeled on lower side. Cuticle fairly thick, amphistomatic. Cells of upper and lower surfaces indistinguishable, showing rectangular to polygonal cells. Lateral- and end-walls more or less straight, sometimes undulated. Surface-wall smooth. Stomata on both sides arranged longitudinally in numerous single files. Stomatal apparatus monocyclic. Guard cells slightly sunken, thinly cutinized, aperture slit-like or oval. Subsidiary cells 4 (2+2), rarely 5 or 6; lateral- and end-walls straight, thick; surface-wall unspecialized.

LECTOTYPE — Specimen figured by Ettingshausen (1887, pl. 2, fig. 1).
LOCALITY — Shag Point, New Zealand.

COMPARISON

From the Eocene of Seymour Island Dusén (1908) described Araucaria imponens. His description was based on a detached leaf slightly incomplete at tip. A. haastii is closest to A. imponens as far as shape, size and position of the keel are concerned. But A. haastii differs from A. imponens in having broader leaves. The present species also resembles to some extent, the leaves described as Damarites carinata by Hector (1886, 1870). The leaves in the latter case are slightly narrower and smaller in size. A. nathorstii Dusén (1899) from Punta Arenas is different from A. haastii as the former has much smaller leaves and they are not keeled, also in A. haastii the leaves are mostly firmly attached to the axis. From the Upper Cretaceous beds of Kaipara Harbour, New Zealand, Edwards (1926) recorded Araucarites marshalli. The leaves of A. marshalli are smaller than the fully developed leaves of A. haastii and unlike the latter, the tip of A. marshalli is subacute and it is not keeled.

Among the recent Araucarias, A. haastii comes closest to A. klinkii Lauterb. Externally they resemble in size and shape, both are keeled on the lower side and they have parallel longitudinal stripes very close to each other. In both, stomata are in
TEXT-FIG. 1 — *Araucaria haastii* Ettingshausen, a, no. 4/1964-1, × 1, b, a few cells of lower cuticle, slide no. 4/1964-1A, × 200; c, an isolated leaf, no. 4/1964-2, × 1.
TEXT-FIG. 2 — a, b, c, *Araucaria haastii* Ettingshausen; a, lower cuticle showing distribution and orientation of stomata, slide no. 4/1964-1A, x 50; b, a stoma, slide no. 4/1964-2A, x 200; c, a few cells of lower cuticle, slide no. 4/1964-1A, x 200.

c, d, *Araucaria klinkii* Lauterb; c, a stoma, slide no. A/1, x 200; d, a few cells on lower side, slide no. A/1, x 200.
numerous longitudinal rows and they are in single files, inside each file stomata oriented longitudinally and the subsidiary cells are 4-6 in number. Like A. haastii the epidermal cells of A. klinkii on the upper and lower sides are indistinguishable. In A. klinkii, unlike A. haastii, the epidermal cells have sinuous walls, whereas, in A. haastii the walls of the epidermal cells are only at places slightly undulated.

DISCUSSION

The diagnosis of Araucaria haastii is based on seven specimens, which include the two figured specimens of Ettingshausen (1887). A request was made to the authorities of the Geological Survey of New Zealand for the type specimen and a cuticular preparation from the same, but they were not available. However, while visiting their museum in 1947, Prof. O H. Selling had the opportunity to examine the type specimen. Externally he found no difference between the type specimen and the specimens collected later. According to Ettingshausen the leaves had a thorny apex, but re-examination of his specimens did not show any such structure. His original description included a wood which he considered to be a part of the parent plant to which A. haastii belonged. Due to lack of any organic connection between the two, the diagnosis of the wood has not been considered here.

When Ettingshausen (1887) first described A. haastii, the genus Araucaria was known to have only two sections, i.e. sect. Eutacta and sect. Columbea Endlicher. But since then araucarias have been divided into four sections, namely sect. Eutacta Endlicher, sect. Intermedia White sect. Bunya Wilde and Eames and sect. Columbea Endlicher, sect. Intermedia White sect. Bunya Wilde and Eames (1952). The cuticle of A. haastii, as stated earlier, is similar to A. klinkii Lauterb, which was placed by White (1947) under the sect. Intermedia along with A. hunsteinii K. Schm. and A. schumanniana Warb. Therefore, at present, on the basis of cuticular structure A. haastii has provisionally been placed under the sect. Intermedia.

ACKNOWLEDGEMENT

The author is grateful to Prof. O. H. Selling, ex-Director, Paleobotaniska Sektion, Riksmuseets, Stockholm, for the material described in this paper and for allowing me to use his notes on the figured specimens of C. Ettingshausen. To Prof. Britta Lundblad, Director, Paleobotaniska Sektion, Riksmuseets, Stockholm, thanks are due for her helpful suggestions and kind permission to publish this work. The author is also grateful to her for the generous aid due to which it was possible for him to spend a few days in the Riksmuseets for completion of this work.

REFERENCES


EXPLANATION OF PLATE

PLATE 1


