ON THE OCCURRENCE OF A NEW SPECIES OF *PHLEBOPTERIS* IN JAPAN

By

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With 3 Text-figures

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Phlebopteris is one of the most interesting Mesozoic ferns, belonging to the Matoniaceae. Recently HIRMER and HOERHAMMER[1] summarized and discussed the fossil Matoniaceae, in which they recognised the following four genera as valid, viz., *Phlebopteris* BRONGN., *Solenocarpus* SCHENK, *Matonidium* SCHENK and *Matoniella* HIRMER and HOERHAMMER. The above named authors, who examined the type-specimen of *L. elegans* PRESL, the genotype of *Laccopteris*, pointed out that PRESL's specimen did not belong to Matoniaceae but to Marattiaceae. Therefore, they proposed to apply hereafter the generic designation *Phlebopteris* BRONGNIART, the genotype of which is a true Matoniaceae, to the majority of species hitherto described under the generic name *Laccopteris*.

Gutbiera and *Andriana* are also Mesozoic ferns belonging to the Matoniaceae closely resembling *Laccopteris*. HIRMER and HOERHAMMER pointed out the generic identity of these two genera with *Phlebopteris*, though HARRIS[2] already had done so.

The genus *Phlebopteris* comprises, according to HIRMER and HOERHAMMER, four valid species, viz., *P. Brauni* (GOEPPERT), *P. Muensteri* (SCHENK), *P. angustiloba* (PRESL) and *P. polypodioides* BRONGNIART.

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(1) M. HIRMER and L. HOERHAMMER: Morphologie, Systematik und geographische Verbreitung der fossilen und rezenten Matoniaceen. Palaeontographica, Bd. 81, 1936, pp. 1–70.

(2) T. M. HARRIS: The Fossil Flora of Scoresby Sound East Greenland. Part 1: Cryptogams (Exclusive of Lycopodiales). Med. om Grønland, Bd. 85, No. 2, 1931, p. 70.

Phlebopteris shows a wide geographical distribution throughout the Mesozoic. In Asia, *P. Brauni* was described from Tonkin(1), *P. polypodioides* from the Jurassic of Manchuria(2), Korea(3) and China.(4)

HIRMER and HOERHAMMER(5) considered two fragments of pinnules described by NATHORST(6) from Katazi near Ryôseki in Sikoku as fertile pinnules of his *Pecopteris Geyleriana* NATH., to be specimens of *P. angustiloba*. Unfortunately, NATHORST's specimens are now abroad, and the present writer can not make any statement on the original specimens which are fragmentary and apparently unsatisfactorily preserved. The present writer could not find such fertile specimens among numerous specimens of fossil plants collected by Assistant-Professor ÔISHI at the Ryôseki area.

The specimen which the present writer wishes to report in this note is one which certainly belongs to the category of *Phlebopteris* in the sense of HIRMER and HOERHAMMER and specifically is identical with neither of the species above referred to. The description follows:

Phlebopteris Takahasii sp. nov.

Text-figs. A–C (type specimen).

Description: A sterile frond of unknown size and form. Pinna or frond more than 12 cm. long, with thick axis (rachis?) 4 mm. across. Ultimate segments or pinnules long and narrow, linear, 5 mm. broad and more than 3 cm. long, somewhat expanded at the base and fused laterally, leaving narrow sinus between two adjacent ones, and at a wide angle to the axis of the pinna. Midvein prominent, straight. Lateral veins delicate, oblique at the proximal and nearly at a right angle at the distal portion, forking dichoto-

(1) After HIRMER and HOERHAMMER: Op. cit., 1936, p. 14: a specimen which ZEILLER considered as a young frond of *Dictyophyllum Nathorsti*.

(2) F. KRASSER: Fossile Pflanzen aus Transbaikalien, der Mongolei und Mandschurei. Denkschr. d. K. Akad. d. Wiss. Wien, Bd. 78, 1906, p. 539, Pl. I, Fig. 12.

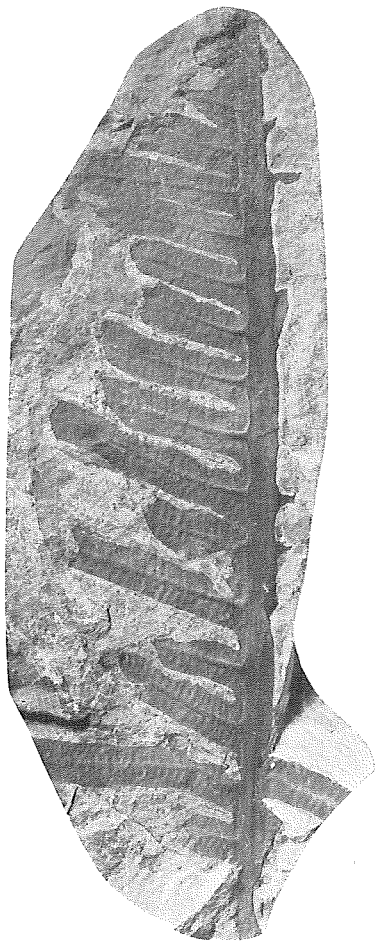
(3) S. KAWASAKI: Some Older Mesozoic Plants in Korea. Bull. Geol. Surv. Chosen (Korea), Vol. IV, Pt. 1, 1925, p. 9, Pl. XI, Figs. 39, 41; Pl. XII, Fig. 42; Pl. XXXIV, Fig. 94; Pl. XII, Fig. 43.

(4) H. YABE: Atlas of Fossils. Tôkyô Geograph. Soc., 1920, Pl. II, Fig. 1.

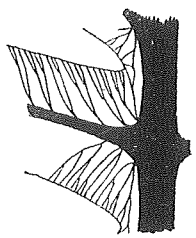
(5) M. HIRMER and L. HOERHAMMER: Op. cit., 1936, p. 31.

(6) A. G. NATHORST: Beiträge zur mesozoischen Flora Japans. Denkschr. d. K. Akad. d. Wiss. Wien., Bd. 57, 1890, p. 48, Pl. IV, Figs. 3, 4, 5.

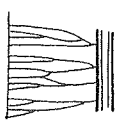
mously once or twice, first close to the midvein and then midway or near the margin, occasionally anastomosed with cross bars; those in the fused part springing up from a low archaed running close to the axis between bases of two adjacent midveins.



A.



B.



C.

Phlebopteris Takahasii sp. nov.

A. Type-specimen, ×1. (Reg. No. 7839).
B and C. Proximal and distal portions of a pinna respectively, showing venation, ca. ×3.

Comparison: An allied species is *P. Brauni,* but the present species is distinguishable from it in that the former has larger pinna, longer pinnules and a more crowded venation.

Occurrence: Dark-gray silt-stone near Isimati, Toyora-gun, Yamaguti pref., in association with *Zamites toyoraensis* ÔISHI[1], *Brachyphyllum expansum* (STERNB.) and *Hildoceras* of upper Liassic; Nisi-Nakayama Bed (Upper Liassic). Coll. by Mr. M. HAYASAKI.

In conclusion, the present writer wishes to express his cordial thanks to Assistant-Professor SABURÔ ÔISHI from whom he received valuable suggestions during the course of the work. Thanks are also due to Mr. HAYASAKI, donor of the specimen.

The specific name is dedicated to Mr. E. TAKAHASI, who first examined the specimen and suggested its being a new species.

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(1) S. ÔISHI: A New Species of *Zamites* from the Nisi-Nakayama Bed, Yamaguti Prefecture. Journ. Fac. Sci., Hokkaidô Imp. Univ., Ser. IV, Vol. III, No. 1, 1935, p. 98, Text-fig.