

*Chiropteris reniformis* Kawasaki

*Tanaeopteris* sp. (? n. sp.)

*Nystroemia* sp. (cf. *N. pectiniformis* Halle)

*Pecopteris orientalis* Halle

*Cornucarpus?* *carinatus* Halle

以上的幾種化石,除了 *Tanaeopteris* sp., *Nystroemia* sp. (cf. *N. pectiniformis*) 不足以爲鑑定地層的根據以外,其中 *Chiropteris reniformis* Kawasaki, *Pecopteris orientalis*, *Cornucarpus?* *carinatus* 等幾種都是上石盒子系的標準化石,因此我們認爲這一個植物化石層的層位應該是屬於上部石盒子系的。

顧知微和張文堂二先生所採集的植物化石非常豐富,除了石盒子系的以外,還有很多山西系及太原系的化石,這些化石將在另外一篇文章中報道之。

此文是在斯行健教授的鼓勵和指導之下完成的,我們特在此深表謝意。顧知微和張文堂二先生惠予標本,我們也在此表示感謝之忱。

### 參 考 文 獻

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## AN ADDITIONAL SPECIMEN OF FORKED FROND OF *PROTOBLECHNUM WONGII* HALLE

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In a recently published account entitled “On a forked frond of *Protoblechnum wongii* Halle”, Dr. Sze has made known an interesting specimen of a forked frond of *Protoblechnum wongii* Halle found from the Shihhotze Series of S. E.

Shansi. He discussed in this paper the relationships of the genera: *Protoblechnum*, *Glenopteris*, *Supaia*, *Brongniartites?*, *Megalopteris* and "*Danaeopsis*" at great length and pointed out that the Chinese species is closely related to the Indian species hitherto commonly known as "*Danaeopsis*" *hughesi* Feistm. After this paper had been sent to Peking for publication, T. Y. Chow found another specimen of forked frond kept in our museum, but without a label. This specimen, as has been remarked by Sze (1955, l. c. Addendum), may represent a young frond of *Protoblechnum wongii*. According to the lithological character of the matrix, this specimen might also have been derived from the Shihhotze Series of Northern China.

In the course of examining the specimens collected by Messrs. C.W. Ku and W.T. Chang in 1953 from the Shihhotze Series of southern Hopei, the writers have found a new specimen of forked frond of *Pr. wongii* Halle with the characteristic pinnae still attached to one branch of the frond. Though the rachis of the present specimen is comparatively much slender than that of the specimen found from S. E. Shansi figured by Dr. Sze (1955, pl. 1, Fig. 1), the size and shape of the pinnae and the pattern of the venation are very characteristic of this species. In regard to the size and shape of the pinnae and the pattern of the venation, our specimen differs in no essential respects from the specimen described by Prof. Halle from the Upper Shihhotze Series of Central Shansi (1927, pl. 35, fig. 2). It is interesting that the bases of the pinnae of our specimen are contracted above and below, and only very slightly decurrent. There is no apparent wing.

Many authors have laid a considerable stress on the division and the shape of the frond of ferns and pteridosperms to be of a sufficient taxonomic importance, others still hold that the difference of frond alone does not warrant a generic separation. The discovery of the present specimen is at any rate of great significance, for it affords additional evidence in favor of supporting the view of Prof. Halle and Dr. Sze that the Chinese species *Protoblechnum wongii* Halle and the Indian species *Protoblechnum hughesi* (Feistm.) Halle are closely related. The frond of both the Indian and the Chinese species are now confirmed to be forked at the base part.

In creating this new species in 1927, Prof. Halle (1927, p. 135) had already expressed the view that this species "has a tendency to dichotomous branching, ...". It is interesting that in the spring of 1955 nearly 30 years after the creation of this species, evidence has been rapidly accumulating which proves that

the opinions expressed by Prof. Halle are well founded.

The writers are in complete accord with Dr. Sze that a similar bifurcating frond might also be found in the species of *Protoblechnum holdeni* (Andrews) Lesqueraux in the future investigations of the Upper Pottsville formation of Ohio, N. America and the same may be said for the species of the *Glenopteris* of the Wellington Shale of Kansas.

The plant-remains in association with *Protoblechnum wongii* Halle collected from the same bed of the same locality are as follows:

*Chiropteris reniformis* Kawasaki

*Taneopteris* sp. (? n. sp.)

*Nystroemia* sp. (cf. *N. pectiniformis* Halle)

*Pecopteris orientalis* Halle

*Cornucarpus?* *carinatus* Halle, etc.

On the evidence of fossils, the plant-bearing horizon might belong to the Upper Shihhotze Series.

The whole collection of Messrs. C. W. Ku and W. T. Chang contains numerous specimens of plant fossils derived from the Shihhotze Series as well as from the Shansi Series and the Taiyuan Series. This material will be dealt with in a forthcoming paper by the present writers.