

ICONES FILICUM SINICARUM

BY

REN-CHANG CHING, B. S.

FASCICLE 3

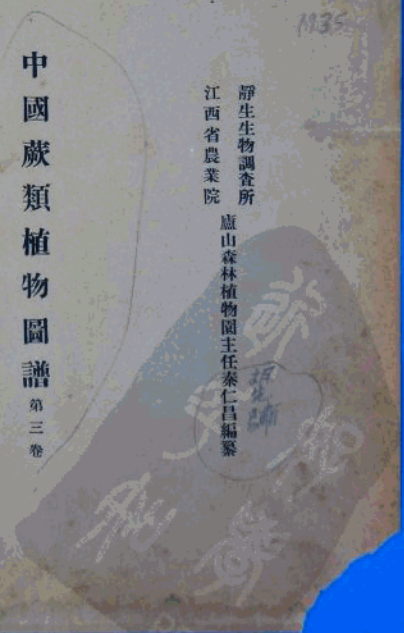
中國蕨類植物圖譜 第三卷

靜生生物調查所印行

靜生生物調查所
江西省農業院

廬山森林植物園主任秦仁昌編纂

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中 國 蕨 類 植 物 圖 譜

ICONES FILICUM SINICARUM

BY

REN-CHANG CHING, B. S.

KEEPER

THE LU-SHAN ARBORETUM AND BOTANICAL GARDEN
OF

THE FAN MEMORIAL INSTITUTE OF BIOLOGY AND
KIANGSI PROVINCIAL AGRICULTURAL INSTITUTE

FASCICLE 3, PLATES 101-150

第 三 卷

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PLATE 101

WOODSIA MACROCHLÆNA Mettenius

POLYPODIACEÆ

WOODSIA MACROCHLÆNA Mettenius ex Kuhn, Journ. Bot. (1868) 270; Linnæa 36: 126 (1869); C. Chr. Ind. Fil. 657 (1905); Suppl. III. 195 (1934); Fomina, Fl. Sib. et Orient. Extr. 5: 10 c. fig. (1930); Ching, Sinensia 3: 143. 1932.

Woodsia tessularis Hk. et Bak. (non Hance, 1861) Syn. Fil. 47 (1867).

Woodsia Brandtii Franch. et Sav. Enum. Pl. Jap. 2: 205, 616 (1879).

Woodsia japonica Makino, Bot. Mag. Tokio 18: 134 (1904); Ogata, Ic. Fil. Jap. 3: t. 149 (1930).

Woodsia sinuata Makino, Bot. Mag. Tokio 11: 64 (1897, non 1904); Christ, Bull. Acad. Géogr. Bot. 28: 157 (1909, non 1902).

Woodsia frondosa Christ in Fedde, Repert. Sp. Nov. 5: 12 (1908).

Rhizome short, erect, densely radicle, apex densely clothed in bright brown, lanceolate, acuminate, sparsely fimbriate *scales*; *fronds* fasciculated, stipe 2-10 cm long, stramineous or brownish, scaly at base, hirsute upwards, lamina 5-12 cm long, 2-4 cm broad, pinnate under pinnatifid acutish apex, *pinnæ* 5-12-jugate, the lower ones free, subsessile, the upper ones adnate, the basal pair springs from the prominent articulation of stipe, always somewhat smaller than those above, deflexed, ovate-deltoid, with more or less auriculate anterior base, the middle pinnæ 1.2-2 cm long, oblong-ovate, adnate with wingless rachis between contiguous pairs, lobato-sinuate or pinnatifid into oblong sinuate segments, rachis and both sides moderately clothed in ferruginous needle-like, articulated appressed hairs, no trace of scales; *texture* herbaceous, soft; *veins* in segments pinnate; *sori* large, terminal on veinlets, 1-2 to each lobe, or 4-6 to each segment, *indusium* cup-shaped, large, membranaceous, setose hairy, irregularly 4-6 cerosed at top; *sporangia* shortly stipitate.

Shantung: Chefoo, Schottmüller (type), August, 1861; *B. Drug* 285, Sept. 17, 1907; A. C. Malingay 13, August-Sept. 1862; Cowdry 644 (1920); *Forbes* 2233 (1881); Wei-hai-wei, C. G. Matthew, Sept. 1906. Shansi: E. Lieent (without locality). Manchuria: *Swinhoe* 6516 in herb. Hance, Port Arthur: *Miss Möller*, Oct. 28, 1928.

Corea: Ouen San, U. Faurie 101 (type of *W. frondosa*). Quelpert: U. Faurie 5610, 2172 (f. typica).

Japan: Prov. Chochiō, *Kramer* 1569 (type of *W. Brandtii*); C. G. Matthew, July 23, 1906.

For further comment and discussion about this distinct but hitherto much neglected fern, readers are referred to my paper on the genus *Woodsia* in Sinensia 3: pp. 143.

Plate 101. Fig. 1. Habit sketch, f. typica (natural size). 2. Upper middle pinna, showing venation and sori ($\times 6$). 3. Sorus with indusium ($\times 20$). 4. The same, cut vertically ($\times 20$). 5. Scales and hair from the base of stipe ($\times 16$). 6-7. Hairs from rachis and leaf surfaces ($\times 30$). 8. Basal pinnæ attached to the articulation of stipe ($\times 20$). 9. Sporangium (greatly enlarged). 10. Spores (greatly enlarged).

第一百零一圖
大囊岩蕨(水龍骨科)

WOODSIA MACROCHLAENA Mettenius

地下莖短而直立，頂部具橙黃色之披針形密鱗片；葉簇生，柄長二至十粉，淡黃褐色，基部具鱗片。上部邊緣被剛毛，葉體長五至十二粉，寬約二至四粉，一回羽狀分裂，下部小葉無柄，基部一對着生於葉柄頂部之節上，較小，下向，上部小葉與中肋合生，長約一、二至二粉，橢圓卵形，波狀分裂，或深裂，中肋及兩面被短剛毛，不具鱗片，紙質；葉脈羽狀分裂；子囊羣形圓，着生於側脈之頂，蓋為圓杯形，膜質，被剛毛，頂部開裂，口具四至六數齒齒。

分布：山東北部，河北，陝西，東三省；朝鮮及日本亦產之。

本種為亞洲東北部特有之種，最初在山東煙台發現，現為華北常見之品。

附註：1. 本種全形(自然大)，2. 中部小葉，表明其葉脈及子囊羣着生狀(放大六倍)，3. 子囊羣與蓋(放大二十倍)，4. 同上，垂直切開(放大二十倍)，5. 葉柄基部之鱗片及剛毛(放大十六倍)，6-7. 葉體上之剛毛(放大三十倍)，8. 基部一對小葉着生於葉柄之節上(放大二十倍)，9. 子囊(高倍放大)，10. 孢子(高倍放大)。





WOODSIA MACROCHLAENA Mettenius

大蕨岩蕨

PLATE 102

WOODSIA MANCHURIENSIS Hooker

POLYPODIACEÆ

WOODSIA MANCHURIENSIS Hooker, 2nd. Cent. Ferns t. 98 (1861); Syn. Fil. 48 (1867); Milde, Fil. Europ. et Atlant. 168 (1867); Christ, Farnkr. d. Erde 283 (1897); Diels in Engl. u. Prantl: Nat. Pflanzenfam. 1: 4. 161 (1899); C. Chr. Ind. Fil. 657 (1905); Fomin, Fl. Sib. et Orient. Extr. 5: 9 (1930); Ogata, Ic. Fil. Jap. 5: t. 249 (1933).

Dicalpe manchuriensis Trev. Nuov. Giorn. Bot. Soc. Ital. 7: 160 (1875).

Physematum manchuriensis Nakai, Bot. Mag. Tokio 39: 176 (1925).

Woodsia insularis Hance, Ann. Sci. Nat. IV, 15: 228 (1861); Diels in Engl. u. Prantl: Nat. Pflanzenfam. 1: 4. 161 (1899).

Rhizome short, erect; **scales** light brown, thin, ovate-lanceolate, acuminate, clothing the apex; **fronds** caespitose, stipe short, terete, 2.5 cm long, glossy, stramineous, sparsely scaly, lamina lanceolate, 10-30 cm long, 2.4 cm broad, or even broader, membranaceous, clear light green, glabrous on both sides, deeply bipinnatifid under pinnatifid acuminate apex, rachis glabrous, deeply sulcate above; **pinnæ** 15-40-jugate, oblique, sessile, the lower ones much abbreviated and opposite, the upper ones alternate, 1-3 cm long, oblong-obtuse, base truncate, deeply pinnatifid; **segments** 5-8-jugate, oblique, oblong-ovate, obtuse, entire or slightly sinuate; **veins** pinnate, 2-3-jugate, veinlets fine, oblique, fall short of the margin with enlarged apex; **sori** large, on the anterior basal veinlets of each segment, below the sinus, **indusium** large, globose, gray, thin membranaceous, opening with a toothed edge of the contracted mouth at the top.

Shantung: Chefoo, *Hancock* 11; *W. R. Carter*, Sept. 1889; *E. Faber* 1060, Oct. 1898; Tai-Shan, *Jacob* 39, July 11, 1923; *K. S. Hao* 1730, July 10, 1931 (partly). **Manchuria:** *C. Wilford* 1094 (type), July-August, 1859; *H. E. M. James*, May-August, 1886; *Komarov* 2; Chien-shan, *J. Ross* 594 (1877); Kirin, *F. H. Chen* 201 (1931). **Hopei:** Tsang-ho, *M. S. Clemens* 6038A, August 9, 1913; Changli, *M. S. Clemens*, Oct. 13, 1913.

Also Corea and Japan.

One of the most distinct species of the subgenus *Physematum*, characterized by light green, membranaceous glabrous leaves and large, membranaceous sac-like indusium opening by the contracted mouth at the top. Its occurrence in North China is said to be by no means common. *W. insularis* Hance, based upon Clarke's plant from Sagalien, only represents a small form of this species, evidently growing in a dry situation.

Plate 102. Fig. 1. Habit sketch (natural size). 2. Pinna, showing venation and position of sori ($\times 5$). 3. Sori with one side of the indusium removed ($\times 50$). 4. Spores (greatly enlarged). 5. Scale from rhizome ($\times 30$).

第一百零二圖
滿洲岩蕨(水龍骨科)

WOODSIA MANCHURIENSIS Hooker

地下莖短而直立，端具橙黃色卵狀針形之鱗片；葉叢生，柄長二至五粉，呈暗棕色，有光澤，近基部略具鱗片，葉體披針形，長十至三十粉，寬二至四粉，或較寬，薄紙質，淡綠色，兩面光滑，二回羽狀深裂，小葉十五至四十對，斜出，無柄，下部裂片較小，對生，上部小葉長一至三粉，互生，橢圓形，鈍頭，基部亞截形，羽狀深裂，裂片五至八對，斜出，卵狀圓形，鈍頭，全緣，或呈波形；葉脈羽狀分叉，二至三對，頂稍膨大，不達葉緣；子囊羣大，着生於上方基部葉脈，呈圓球形，薄膜質，頂部開一小口。

分布：山東，河北，東三省；朝鮮及日本亦產之。

本種之特點為其光綠色薄紙質之葉體及其球形膜質之子囊羣蓋。

附註：1. 本種全形(自然大)，2. 小葉(放大五倍)，3. 子囊羣及其蓋(放大五十倍)，4. 孢子(高倍放大)，5. 地下莖上之鱗片(放大三十倍)。





WOODSIA MANCHURIENSIS Hooker

滿洲岩蕨

PLATE 103

DAVALLIA MARIESII Moore

POLYPODIACEÆ

DAVALLIA MARIESII Moore ex Baker, Ann. Bot. 5: 201 (1891); C. Chr. Ind. Fil. 212 (1905); Nakai, Bot. Mag. Tokio 39: 120 (1925).

Davallia bullata Franch. et Sav. Enum. Pl. Jap. 2: 208 (1877); Christ in Warburg, Monomia 1: 86 (1900).

Rhizome thick, 7 mm across, long-creeping, densely scaly; *scales* large, imbricate, lanceolate from broadly ovate base, fimbriate, ferruginous on the growing tip, but whitish on the old part; *frond* far apart, articulated at base, stipe 6-10 cm long, stramineous, naked, terete underneath, grooved on the upper side, lamina deltoid-pentagonous, 8-14 cm long and broad, shortly acuminate, tripinnate; *pinnæ* 6-7-jugate, rather shortly petiolate, the basal ones much the largest, deltoid, 5-7 cm long and broad; *pinnules* 6-7-jugate, shortly petiolulate on narrowly winged rachilet, the lower basal ones the largest, oblong-ovate, 2.5-4 cm long, 1-1.5 cm broad, ovate-oblong, base cuneate-decurrent, deeply pinnatifid into 5 linear, blunt or bifid uni-nerved segments; *texture* coriaceous, glabrous on both sides; *indusium* brown, tubular, coriaceous, twice as long as broad, overtopped by two horns of generally unequal length.

Shantung: Chefoo mountains, *Faber* 58; *Carles* (1888); *R. Zimmermann* 545, May 5, 1902; *Maingay* 5 (1862); *Hancock* 5; Tsingtau, Lao Shan, *F. H. Sha* 528 in herb. Shantung Univ., July 18, 1932; Yuchiaho, Mooping, *T. N. Liou* 905, May 27, 1930. Kiangsu: Haichow, Hai-shan, *Jacob* 7, 86, 890.

Japan: Ex Hort. Veitch (type); Nagasaki, *Maximowicz* 116 (1863).

Corea: *Taquet* 2339; Söul, *Warburg*.

Formosa: *Hancock* 115, 119.

This fern is a native of the northeastern Asia and a close relative of *D. bullata* Wall. of Eastern India, which differs, however, in larger and less divided frond, shorter, rufous-brown and very shaggy scales with scarious margin and in more shortly petiolate basal pinnæ. The difference in the scale between this and the Indian species was first noted by Moore himself, as shown by an enlarged sketch on the type sheet in the herbarium at Kew.

Plate 103. Fig. 1. Habit sketch (natural size). 2. Ultimate pinnule, showing venation and shape of indusium ($\times 10$). 3. Scale from rhizome ($\times 10$).

第一百零三圖
海州骨碎補(水龍骨科)

DAVALLIA MARESII Moore

地下莖肥大，肉質，蔓生，橫行，具披針形之密鱗片，長達一粉餘，灰白色或白晝黃色；葉散生，葉柄長六至十粉，稻桿色，光滑，葉體呈五角形，長寬各八至十四粉，失面，三回分裂，一回小葉六至七對，具短柄，基部一對最大，長寬各五至七粉，二回小葉六至七對，具短柄，中肋具狹翅，基部一對較大，卵圓形，長二·五至四粉，寬一至一·五粉，自基部漸狹，深裂，裂片約五數，線形，鈍面，成二裂，具一葉脈；革質，兩面光滑；子囊羣近於葉緣，蓋為管狀，革質，黃色，長二倍於寬，端部具小角狀葉質。

分布：山東及江蘇北部沿海；日本，朝鮮及台灣亦產之。

此為亞洲東北部特有之種，與印度北部產之 *Davallia lullata* Wall. 相似，然葉體形小而分裂較甚，莖上鱗片亦較長，且呈瓦覆狀，故得區別。

圖註：1. 本種全形(自然大)，2. 末回小葉，表示其葉脈及子囊羣蓋形狀(放大十倍)，3. 地下莖上之鱗片(放大十倍)。





DAVALLIA MARIESII Moore

薄州骨碎補

PLATE 104

DAVALLIA ORIENTALIS C. Christensen

POLYPODIACEAE

DAVALLIA ORIENTALIS C. Christensen ex Wu, Bull. Dept. Biol. Sun Yatsen Univ. No. 3: 104 t. 43 (1932); No. 6: 4 (1933); Ind. Fil. Suppl. III. 63 (1934).

Davallia elegans Hk. (non Sw. 1801) Florul. Hongk. in Journ. Bot. (1857) 333; Syn. Fil. 95 (1867); Benth. Fl. Hongk. 461 (1861).

Davallia divaricata Christ (non Bl. 1828), Bull. Soc. Fr. et Belg. 28: 260 (1868); Dunn & Tutch. Fl. Kwangt. & Hongk. 337 (1912); Merr. Enum. Hainan Pl. in Lingnan Sci. Journ. 3: 11 (1927).

Davallia denticulata Merr. l.c. (non Mett. 1867).

Rhizome thick as a small finger, fleshy, wide-creeping, densely clothed in bright brown lanceolate scales to 1 cm long or longer; *frond* far apart, stipe glabrous, brown, terete below, deeply bisulcate above, 30-60 cm long, 4 mm thick at the base, lamina ample, 60-90 cm each way, deltoid, 4-pinnate or 5-pinnatifid; *pinnæ* about 10-jugate, alternate, long-petiolate, the basal ones much the largest, deltoid, 20-30 cm long, 12-18 cm broad, acuminate, the upper ones gradually smaller, the middle ones broadly lanceolate, 15 cm long, 6 cm broad, with about 10 pairs of *pinnules*, which are petiolulate, the anterior basal one much the largest, deltoid, acuminate, the others smaller with unequal base; *pinnules* of 2nd. order sessile, 1-1.5 cm long, pinnatifid into elongate denticulate segments; *texture* rigidulous coriaceous, glossy; *veinlets* in the segments oblique, one to each tooth; *sori* submarginal, one to each tooth, *indusium* tubular, twice as long as broad, apex truncate, with projecting teeth above.

Hainan: Yih Tsoh Mao, *F. A. McClure* 9717 (type); Nodosa, Lin Fa Ling, *W. Y. Chun* 1799; *McClure* 7919; Five Finger Mt., *McClure* 8363, 8678; Hung Mo Shan, *W. T. Tsang* 17771. Kwangtung: Man Sei Ho, *Tutcher* 19505; Lohfau Shan, *C. Ford* (1883); *N. K. Chun* 41276; Swatow, *Dalziel*, Sept. 1899. Hongkong: *Champion* 552; *Matthew* 72 (1905); May 18, 1904; April 12, 1907; *C. Wright* (1853-56); Lantau Island, *C. L. Tso* (1929); *Borther* (1856); *Alexander*. Kwangsi: Yao Shan, *S. S. Sin* 3698, Sept. 26, 1925. Lin-yen Hsien, outside of the south city gate, *R. C. Ching* 6665, 6761; Seh Fang Dar Shan, on the border of Tonkin, *R. C. Ching* 1860. Yunnan: Szemeo, *Henry* 13111.

Tonkin: Mt. Bana, *Clemens* 3855; environs de Chobo, *Pétrot*, April 14, 1926, Chapa, *Pétrot* 3306; Cao-Bang, *Pétrot* 2740; *Billet* 4182; *Bon* 3257.

The present species has hitherto been generally considered as identical with the Malesia-Polynesian *D. divaricata* Bl. from which it differs in thinner leaves, greenish color, even when dried, much longer and more ascending sciriferous veinlets and in longer, narrower indusium with exerted sterile margin as high as the sorus itself.

Swartz cited Canton as the type locality for his *D. elegans* (Syn. Fil. pp. 132, 347), but this is certainly wrong, for his species, actually based upon Thunberg's plant from Java, agrees exactly with *D. denticulata* of Malesia-Polynesia, not known from China. The same mistake was since repeated by Hooker, Bentham and other authors on the flora of South China.

Plate 104. Fig. 1. Habit sketch (natural size), 2. *pinnule* of 2nd. order ($\times 8$), 3. Sorus, with part of indusium removed ($\times 25$), 4. Scale from rhizome ($\times 12$).

第一百零四圖
華南骨碎補(水龍骨科)

DAVALLIA ORIENTALIS C. Christensen

地下莖大如小指，肉質，蔓生，橫行，具光亮黃褐色披針形葉鱗片，長逾一粉；葉散生，柄長三十至六十粉，自基部以上光滑，黃褐色，葉體大，長寬約各六十至九十粉，呈三角形，漸尖頭，四回羽狀分裂，一回小葉約十對，互生，具長柄，基部一對最大，長三角形，長二十至三十粉，寬十二至十八粉，漸尖頭，上部各對漸小，中部一對為寬披針形，長十五粉，寬六粉，具二回小葉約十對，三回小葉長約一·五粉，無柄，羽狀，深裂，末回裂片細長，有鋸齒；葉係革質，光滑，葉脈細密，分佈，每一數至一鋸齒；子囊羣近於葉緣，每鋸齒一個，莖管狀，長二倍於寬，端呈截形，其上具小角形之葉質。

分布：廣東，廣西，香港，瓊洲島及雲南南部；安甌安南亦產之。

本種為亞洲南部大陸特有之種，形態極類馬來羣島所產之 *Davallia divaricata* Bl. 所不同者，為其較薄之葉質，子囊羣較狹長，子囊羣着生之葉脈亦較長而幾為向上。

圖註：1. 本種全形(自然大)，2. 二回小葉(放大八倍)，3. 子囊羣及一部分之莖(放大二十五倍)，4. 地下莖上之鱗片(放大十二倍)。





DAVALLIA ORIENTALIS C. Christensen

華南骨碎補

HUMATA ASSAMICA (Bedd.) C. Christensen

POLYPODIACEÆ

HUMATA ASSAMICA (Bedd.) C. Christensen, Contr. U. S. Nat. Herb. **26**: 293 (1931); Ind. Fil. Suppl. III. 112 (1934).

Acrophorus assamicus Bedd. Ferns Brit. Ind. t. 94 (1866).

Leucostegia assamica J. Sm. Hist. Fil. 84 (1875); Bedd. Handb. Ferns, Brit. Ind. etc. 51 (1883); Suppl. 13 (1892).

Davallia assamica Baker in Hk. Syn. Fil. ed. 1. 452 (1868); ed. 2. 467 (1873); Clarke, Trans. Linn. Soc. II. Bot. 1: 445 (1880).

Davallia micans Mett. ex Baker in Hk. Syn. Fil. ed. 1. 95 (1867).

Humata micans Diels in Engl. u. Prantl: Nat. Pflanzenfam. 1: 4. 209 (1899).

Rhizome thick, wide-creeping, densely scaly; **scales** large, lanceolate, acuminate, hair-pointed, spread, silvery-brown, denticulate; **frond** far apart, stipe slender, firm, naked, rufo-stramineous, 5-10 cm long, lamina lanceolate, 15-28 cm long 5-7 cm broad, acuminate, base hardly narrowed, tripinnatifid; **pinnæ** 20-30-jugate, alternate, lanceolate-falcate, shortly petiolate, unequal at base, the basal ones deltoid-lanceolate, with subequal and cordate base, to 4 cm long, 2.5 cm broad at the base, acuminate, rachis narrowly winged from the middle upward; **pinnules** 7-10-jugate, sessile, ovate-oblong, 1.2 cm long, 5-8 mm broad, the lower ones deeply pinnatifid with 5-7 segments, of which the lowest are pinnatifid, the upper ones 3-2-dentate, rachilets with a few large, brown, broadly ovate appressed scales underneath, surfaces naked, glossy in living state; **texture** coriaceous; **veinlets** hardly distinct, pinnate or bifurcate in segment; **sori** submarginal in ultimate lobes, mostly with a horn above, **indusium** suborbicular, broader than deep, glossy, rounded and free all around, except the broad base which is attached to the leaf tissue.

Yunnan: Shweli-Salween divide, *G. Forrest* 24500; South of Tengyueh, *G. Forrest* 26681, June, 1925; between Tengyueh and the Burmese border, *J. F. Rock* 7312; between Kambaiti and Tengyueh, *J. F. Rock* 7589; Salwin, *H. Handel-Mazzetti* 9564.

Bothan: Mishee, *Griffith*; *Jordon* (type).

Munipore: *Clarke*; and also Upper Burma: *Forrest* 26604.

This distinct species which was previously known only from Bothan and Munipore of North-western India, is very near *H. Griffithiana* of the same region, differing mainly in its lanceolate and shortly petiolate fronds and in the presence of a few large broadly ovate scales on the lower part of rachilets underneath. Our plate based upon *Forrest* No. 26681.

The genus *Humata* is closely related to both *Davallia* and *Leucostegia*, from the former it differs chiefly in thick leathery, shining, pale-colored reniform or suborbicular indusium attached only by its broad base, generally less divided frond of more rigid texture and the pale-colored scales on the rhizome, from the latter, in somewhat dimorphous and less divided frond of more thick texture and glossy leathery indusium. In fact, its affinity to *Leucostegia* seems to be too close to warrant a generic separation, particularly when the present species is taken into consideration.

Plate 105. Fig. 1. Habit sketch (natural size). 2. Pinnule from the middle pinna ($\times 8$). 3. Scale from rhizome ($\times 14$). 4. Scale from the lower part of rachilet underneath ($\times 14$).