

柄,向上部渐缩短,无柄,基部下方一片最大,长4.5—9厘米,宽3—4厘米,长三角形或长卵形,渐尖头,柄长7毫米,基部近心脏形,其他小羽片较小,几同形,二回羽状;二回小羽片5—6对,下先出,斜出,基部下方一片较大,有短柄(长3毫米),长三角形或长卵形,渐尖头,羽状深裂;末回小羽片为椭圆形或长卵形,无柄或合生,边缘有短而阔的钝锯齿。第二对羽片起渐短,长三角形或长圆形,渐尖头,三回羽裂;一回小羽片约7—8对,基部下方一片稍大,下先出,有短柄,长2.5—3.5厘米,三角形。叶为草质或薄草质,干后往往为黄色,叶轴被灰白长绒毛甚多,尤以分叉处为最多。叶脉明显。孢子叶全长8—10厘米,远比营养叶为短,自基部一对羽片的腋间或稍高处生出,细瘦,孢子囊穗为圆锥状,长4—5厘米,宽3—4厘米,2—3回羽状,被绒毛。

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本种最似绒毛阴地蕨,主要区别在于形体较细弱,营养叶早变黄色,孢子叶生于营养叶的基部一对羽片的腋间或稍高处,末回裂片的锯齿较短而钝。

6. 下延阴地蕨

Botrychium decurrens Ching, sp. nov.

根状茎粗而直立,顶芽被有浓密的长绒毛。总叶柄长达30厘米,宽6毫米,几无毛,或略被早落的疏毛。营养叶片大,长达30厘米,宽约38厘米,五角形,基部四回羽状深裂,向上三回羽状深裂,渐尖头;羽片约10对,斜向上,彼此呈复瓦状,下部数对相距6—5厘米,基部一对最大,长达25厘米或更长,宽达20厘米,三角形,柄长2厘米,渐尖头,三回羽状深裂;一回小羽片8对,下部互生,相距4厘米,下先出,向上对生,羽轴下方的小羽片远大于上方的,基部下方一片最大,长过20厘米,宽7厘米,二回羽状深裂;第二回小羽片约10对,小羽轴下方的各片大于上方的,基部下方一片稍大,长4.5厘米,宽3厘米,长卵形,渐尖头,基部近心脏形,有短柄,其余各小羽片均无柄,且合生下延,再次羽状分裂或深裂;末回裂片为长圆形,长约1厘米,宽约5毫米,分裂或不分裂,边缘有粗大的尖锯齿;其他一回小羽片除基部上方一片有短柄外,余无柄,合生,多少下延。第二对羽片较小,为长圆形,长达15厘米,宽7—8厘米,有短柄,二回羽状,下先出,小羽片无柄;自第三对羽片起均无柄,小羽片也均无柄,合生,并沿小羽轴下延。叶为草质,干后黄绿色,叶轴和羽轴略有少数绒毛,表面平滑。叶脉明显。孢子叶自营养叶的基部一对羽片的腋间生出,全长17厘米,远比营养叶片为短,孢子囊穗长10厘米,宽6厘米,三回分枝,复圆锥状,轴上有疏毛。

特产于四川。生林下。

本种与絨毛阴地蕨相近,但形体特大,上部羽片均无柄,一回小羽片均沿羽轴延生,末回小羽片也较大。

7. 絨毛阴地蕨 图版 II, 7

Botrychium lanuginosum Wall. List. (1828) n. 48; Hook. et Grev. Ic. Fil. (1829) t. 79; Hook. Gard. Ferns (1862) t. 29; Milde, Monogr. Botrych. in Verh. Zool. Bot. Ges. XIX (1869) 113-117; Fil. Europ. et Alt. (1867) 205; Christ, Farnkr. d. Erde (1897) 366; Diels in Engl. u. Prantl. Nat. Pflanzenfam. I, iv (1899) 471; C. Chr. Ind. Fil. (1905) 162; Tard.-Blot et C. Chr. in Fl. Indo-Chine VII, ii (1939) 11——*Botrychium virginianum* var. *lanuginosum* Moore, Ind. Fil. (1861) 213; Bedd. Ferns S. Ind. (1873) t. 67; Hook. et. Bak. Syn. Fil. (1874) 448; Bedd. Handb. Ferns Brit. Ind. (1883) 471——*Botrychium virginianum* Clarke in Trans. Linnr. Soc. II, Bot. I (1880) 588, non Sw. 1801——*Osmundopteris lanuginosa* Nishida in Journ. Jap. Bot. XXVII (1952) 276.

根状茎短粗,直立,有一簇粗健肉质的长根,包于鞘状的棕色托叶内的芽被有密长絨毛。总叶柄长12—18厘米,粗肥,多汁草质,干后扁平,宽达4—5毫米,有较密生的早落的灰白色长絨毛,尤以叶轴上的分枝处为多。营养叶片为五角状的三角形或卵状三角形,渐尖头,大小不一,一般长18—25厘米,宽24—27厘米或更大,下部3—4回羽状;侧生羽片6—8对,近于对生或基部的1—2对对生,有长柄,相距4—5厘米,斜向上方,基部一对羽片最大,三角形,长达15厘米(包括柄长2—3厘米),宽6—8厘米,渐尖头,2—3回羽状;一回小羽片8—9对,互生,有长柄,斜向上,照例为下先出,基部下方便一片最大,长可达9厘米,宽5厘米,五角状三角形,渐尖头,柄长1—1.5厘米,其余各对较小,但都有明显的柄,1—2回羽状;二回小羽片仍以基部下方便一片较大,为五角状三角形,渐尖头,长达3.5厘米,宽约2厘米(柄长约8毫米),基部心脏形,其余各对向上逐渐缩小,仍有短柄,一回全裂或深裂;末回小羽片或裂片为卵形或卵状三角形,无柄,边缘有粗大的重锯齿。第二对羽片较小,长圆披针形,渐尖头,基部较宽,长8—14厘米,基部宽4—5厘米,柄长1.5—2厘米,二回羽状或羽裂,一回小羽片8—10对,基部一对等大,下先出(有时上先出),阔三角形,渐尖头,基部心脏形,有短柄,上部各对逐渐缩小,均为渐尖头,以狭翅着生羽轴。第三对羽片起向上逐渐缩短,都有柄,皆为下先出。叶轴和羽轴上有长絨毛,尤以幼时为多。叶干后为绿色,薄草质。叶脉除中脉外不明显。孢子囊穗自第一和第二对羽片之间的叶轴上生出或有时由第二对羽片分枝点附近生出,比不育叶片为短,柄长5—7厘米,孢子囊

Botrychium Sw.

2. *Botrychium manshuricum* Ching, sp. nov.

Botrychium ramosum Wang Wei et al. in N. T. Liou, Fl. Pl. Herb. Chinae Bor.-Orient. I (1958) 21, f. 23, non Aschers. 1864.

Tota planta ad 28 cm alta, glaberrima, rhizomate breve, erecto, radicoso, stipite ad 17 cm longo, carnosio-herbaceo, sicco compresso, 4 mm lato; lamina sterili ambitu cordato-late-triangulari, bipinnatifiditate, 6 cm longa et lata; pinnis circa 6-jugis, infimis maximis, 3 cm longis, fere aequilatis, late deltoideis, sessilibus, fere ad costam in segmenta ambitu subrhomboida, 1.5 cm longa, 1 cm lata, basi sensim cuneata, contigua pinnatifidis; pinnis sequentibus segmentis pinnarum infimorum similibus, basi ad rachin connatis, sursum gradatim decrescentibus; textura tenuiter herbacea, in sicco viridi, glabra, margine segmentorum plus minusve remote crenata aut leviter crenato-incisa; nervis in segmentis furcatis, tenuibus, infra prominulis, supra obscuris. Panicula fertili ad 10 cm longa, obdeltoidea, e basi laminae sterili oriunda, petiolo ad 5 cm longo et infra medium 3 furcato suffulta, tripinnatisecta, ramulis laxis, patentibus, sporangiis sessilibus, brunneis, sparsis.

North-eastern China (Manchuria), Chang-pei Shan, Fu-soong Hsien, Tie-tsze Ho, in the vicinity of the hot spring, alt. 1710 m, under forest, leg. N. T. Liou No. 1663, VII, 24, 1950.

5. *Botrychium yunnanense* Ching, sp. nov.

Species inter *B. virginianum* (L.) Sw. et *B. lanuginosum* Wall. a prima differt panicula fertili e basi aut paulo supra basin rhachidis oriunda, dentibus segmentorum acutis, brevioribus paucioribusque, a secunda panicula nec a medio vel infra medium rhachidis egressa, dentibus segmentorum acutis, brevioribus; ab duobus foliis sterilibus minoribus, tenuioribus, in sicco flavescentibus aut flavescenti-viridibus recedente.

Yunnan, Tali, haut Tchang Chan, leg. Ducloux No. 55 (typus), XI, 22, 1905; Kunming, Gion-tso-sze, leg. R. C. Ching, VI, 1952; Mengtze, leg. Hancock, 1892—95; Soong-ming Hsien, Ko-tung, leg. K. M. Feng No. 50275, XI, 9, 1953; Kong-shan Hsien, Chiu-kiang, west of Champutung, leg. C. W. Wang No. 67157, XI, 1935, alt. 1700 m. Kwangsi, Ling-yin Hsien, Miao Shan, leg. R. C. Ching No. 7241, VI, 1928.

6. *Botrychium decurrens* Ching, sp. nov.

Species *B. virginiano* (L.) Sw. proxime affine, differt majore, subglabra, pinnis et pinnulisque sessilibus, basibus ad rachim rachillamque late decurrentibus, pinnulis basalibus primi ordinis valde catadromis et late labato-pinnatifidis, segmentis ultimis paucioribus, majoribusque, dentibus majoribus et magis patentibus.

Szechuan, without locality, West China Academy of Science No. 4729.

8. *Botrychium modestum* Ching, sp. nov.

Species *B. lanuginoso* Wall. valde affine, sed multo minor, pinnis lateralibus supra pinnam basalem magis angustioribus, lanceolatis, a se spatio lato separatis, solum simpliciter