NOTES
FROM THE
ROYAL BOTANIC GARDEN,
EDINBURGH.

VOL. VI.
Including Numbers XXVI-XXX.
1911-1917.

EDINBURGH:
PRINTED UNDER THE AUTHORITY OF HIS MAJESTY'S
STATIONERY OFFICE
By NEILL & CO., LIMITED,
AT 212 CAUSEWAYSIDE.

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Dates of the several Numbers of this Volume.

Number XXVI, pp. 1-63 for May 1911.
Number XXVII, pp. 64-126 for May 1911.
Number XXVIII, pp. 127-190 for May 1915.
Numbers XXIX-XXX, pp. 191-277 for January 1917.
List of Contents to Vol. VI, 1911–1916.

Catalogue of Library: A. Periodicals, Transactions of Societies, and the like .............................................. 1


Contributions to the Knowledge of the Old World Species of the Genus Mahonia. (With Plates I–XXXVII.) By H. Takeda, D.I.C. ................................................................. 209

New Species of Primula belonging to the Petiolaris-Sonchifolia Section. By W. G. Craib, M.A. ......................................................... 249

Primulas of the Petiolaris-Sonchifolia Section. By W. G. Craib, M.A. ................................................................. 257

NOTICE.

The plates for Mr Takeda's paper are not yet ready for issue.
ROYAL BOTANIC GARDEN, EDINBURGH.

CATALOGUE OF LIBRARY.

A. PERIODICALS, TRANSACTIONS OF SOCIETIES, AND THE LIKE.

Aarshefter fra Tromsö Museum. See Tromsö.


Abhandlungen der Königlichen Gesellschaft der Wissenschaften zu Göttingen. See Göttingen.

Abhandlungen der Naturhistorischen Gesellschaft zu Nürnberg. See Nürnberg.

Abhandlungen hrsg. vom Naturwissenschaftlichen Verein zu Bremen. See Bremen.


Abstracts of Reports of the British Pteridological Society. See Kendal.

Académie Internationale de Géographie Botanique [Le Mans]. Organe. See Monde (Le) des Plantes.

Acta Horti Botanici Universitatis Imperialis Jurjevensis. See Jurjew.


Acta Regiae Societatis Physiographicae Lundensis. See Lund.

Acta Societatis pro Fauna et Flora Fennica. See Helsingfors.

Acta Universitatis Lundensis. See Lund.

Adelaide Botanic Garden. See South Australia, Botanic Garden.
Administration Report of the Forest Department in the Bombay Presidency. See INDIA (Special), Bombay Presidency.

Administration Report of the Government Botanical Gardens and Parks, the Nilgiris. See INDIA (Special), Madras.

[Continued as]

(Vol. i wants titlep. and index; ii wants No. 1; iii wants titlep.)


(Vol. ii wants titlep. and index; vi wants No. 9; x wants No. 12; xii wants all except No. 2; xiii wanting.)


— Animal Product Series. No. 1, 2.

— Mineral and Metallic Series. No. 1-5, 8, 10-12, 14, 18-21.


— Entomological Series. No. 1-5, 8.

— Veterinary Series. No. 5, 7-16, 18-29.

— Special Veterinary Series. No. 1.

— Forest Series. No. 1-3.

— Medical and Chemical Series. No. 1-9, 11, 12, 15.

— Implement and Machinery Series. No. 1-5.

— Crop Disease and Peat Series. No. 1-3.


(Vol. iv wants No. 80.)
Agricultural Produce Statistics of Great Britain. See Great Britain and Ireland, Board of Agriculture.

Agricultural Research Association [of the North-Eastern Counties of Scotland]. See Aberdeen.

Agricultural Returns of Great Britain. See Great Britain and Ireland, Board of Agriculture.


Agriculture, Board of. See Great Britain and Ireland.

Ajmere. Forest Administration. See India (Special), Ajmere.

Alabama Agricultural Experiment Station. See Auburn (Alabama).


(Jahrg. lxvi (1895) wants Suppl.)


(Vol. i wants No. 8; ii wants pp. 117-164, 317-374, titlep. and index; iii wants No. 3, 5, 7, titlep. and index; iv, v are wanting; vi wants No. 1, 2; vii wants all except No. 1.)


American Forestry Association. See American Forestry Congress.


Amherst (Mass.). *Massachusetts Agricultural Experiment Station. Annual Report.* No. 19→ Boston, 1907→ 8°.


— — Register zu Deel i-ix. Amsterdam, 1893. 8°.


(*Deel xi wants at p. 502, 3 pls., and at p. 667, 3 pls.)*


(*Vol. v wants at p. 243, 1 pl., and at pp. 502-628, 6 pls.)*


*Anales del Instituto Fisico-Geografico y del Museo Nacional de Costa Rica.* See *San José de Costa Rica.*

*Anales de la Junta Central de Aclimatacion y Perfeccionamiento Industrial.* See *Caracas.*

*Anales del Museo de La Plata.* See *La Plata.*

*Anales del Museo Nacional de Montevideo.* See *Montevideo.*

*Anales de la Universidad Central de Venezuela.* See *Caracas.*


*Annalen des K. K. Naturhistorischen Hofmuseums.* See *Vienna.*

Annales de la Faculté des Sciences de Marseille. See Marseilles.

Annales de l’Institut Central Ampélologique Royal Hongrois. See Budapest.

Annales de l’Institut Colonial de Marseille. See Marseilles.


Annales du Jardin Botanique de Buitenzorg: See Buitenzorg.


[This magazine was now issued in two sections, “Zoologie” and “Botanique,” the latter with title]


(Table des matières, Paris, 1843, wanting.)


— 9° série. [By the same editor.] Tom. i-v→ Paris, 1905-07→ 8°.

(Table des matières for série 3-8 in 20th vol. of each. 7° série, tom. xiii, wants pl. 2.)

Annales de la Société Botanique de Lyon. See Lyons.


(Fasc. 1, 2 of vol. 1 wanting.)


Annals of Scottish Natural History. See Scottish Naturalist.


Annual Administration Report of the Forest Department, Madras Presidency. See India (Special), Madras.

Annual of the Boston Society of Natural History. See Boston (Mass.).

Annual Conference, Cryptogamic Society of Scotland. See Edinburgh.

Annual Progress Report of Administration, Forest Department, N.W. Provinces and Oudh. See India (Special), N.W. Provinces and Oudh.


Annual Progress Report upon State Forest Administration in South Australia. See South Australia.


Annual Report of the Agricultural Bureau of South Australia. See South Australia.
Annual Report of the Agricultural Experiment Station of the Oklahoma Agricultural and Mechanical College. See Stillwater (Okla.).

Annual Report of the Agricultural Experiment Station of the University of Tennessee. See Knoxville (Tenn.).


Annual Report of the Belfast Naturalists' Field Club. See Belfast.

Annual Report of the Board of Agriculture and Department of Public Gardens and Plantations of Jamaica. See Jamaica.

Annual Report of the Board of Park Commissioners of San Francisco. See San Francisco.


Annual Report on the Botanic Station, Tobago. See West Indies, Imperial Department of Agriculture.


Annual Report of the Bureau of Agriculture of Western Australia. See Western Australia, Department of Agriculture.


Annual Report of the Commissioner of Parks and Boulevards of the City of Detroit. See Detroit (Mich.).

Annual Report of the County Demonstration Farm, Cockle Park. See Newcastle-on-Tyne, County of Northumberland. Education Committee.


Annual Report on the Distribution of Grants for Agricultural Education and Research. See Great Britain and Ireland, Board of Agriculture.

Annual Report of the Division of Forestry, U.S. Department of Agriculture. See United States, Department of Agriculture.


Annual Report on the Government Gardens and Parks in Mysore. See India (Special), Mysore.


Annual Report of McGill University. See Montreal.
Annual Report on the Management of the Oudh Forests. See India (Special), Oudh.


Annual Report of the Marine Biological Association of the West of Scotland. See Millport.

Annual Report of the Massachusetts Agricultural Experiment Station. See Amherst (Mass.).

Annual Report, Merck's. See Darmstadt.


Annual Report of the Missouri Botanical Garden. See St. Louis (Miss.).


Annual Report of the National Association for the Promotion of Technical and Secondary Education. See London.


Annual Report of the Ohio Agricultural Experiment Station. See Ohio.

Annual Report of the Ohio State Board of Agriculture. See Ohio.


Annual Report of the Pennsylvania State College. See Harrisburg (Pa.).

Annual Report of the President of the University of Montana. See Missoula (Montana).

Annual Report of the Public Museum of the City of Milwaukee. See Milwaukee (Wis.).

Annual Report on the Puffin Island Biological Station. See Liverpool.


Annual Report of the State Historical Society of Wisconsin.  See Madison (Wis.).

Annual Report of the Texas Agricultural Experiment Stations.  See Austin (Texas).

Annual Report and Transactions of the Plymouth Institution and Devon and Cornwall Natural History Society.  See Plymouth.


Annual Report of the Vermont Agricultural Experiment Station.  See Burlington (Vt.).

Annual Report of the Veterinary Department, Board of Agriculture.  See Great Britain and Ireland, Board of Agriculture.

Annual Report of the Virginia Agricultural Experiment Station.  See Blacksburg (Va.).


Annual Review of the California Climate and Crop Service.  See United States, Department of Agriculture, Weather Bureau.

Anzeiger der Akademie der Wissenschaften in Krakau. See Cracow.

Arbeiten des Botanischen Instituts in Würzburg. See Würzburg.


Archives de l'Institut Botanique de l'Université de Liége. See Liége.

Archives du Musée Teyler. See Haarlem.

Archivio Triennale del Laboratorio di Botanica Crittogamica presso la R. Università di Pavia. See Pavia.


Arendt's Monatsschrift für Kakteenkunde. See Monatsschrift für Kakteenkunde.


Asiatick Researches. See Calcutta.

Assam. Agricultural Department. See India (Special), Assam.

— Forest Administration. See India (Special), Assam.

Association pour la Protection des Plantes. See Geneva.

Atti dell' Istituto Botanico dell' Università di Pavia. See Pavia.


Australia, Western. See Western Australia.
Bangalore. Mysore Government Museum. See India (Special), Mysore.
Batavia. See Buitenzorg.
Bayerische Botanische Gesellschaft. See Munich.
Beihefte zum Botanischen Centralblatt. See Botanisches Centralblatt.
Beihefte zum Tropenpflanzer. See Tropenpflanzer.
— Appendix, i, ii, iv, vi, vii, ix. Belfast, 1870-86. 8°.
Belgique (La) Horticole. Journal des Jardins, des Serres et des Vergers, par C. Morren (tom. i-v; tom. vi, vii par C. Morren et E. Morren; tom. viii-xxxv par E. Morren.) 35 tom. Liège, 1851-85. 8°. (Subtitle alters at vol. for 1865, and again at vol. for 1875.)
— Table générale . . . tom. i-xx (1851-70) (in tom. xx). Gand, 1871. 8°.
Bengal. Forest Administration. See India (Special), Bengal.
Bericht der Botanischen Sektion der Schlesischen Gesellschaft für vaterländische Cultur. See Breslau.
Bericht der Oberhessischen Gesellschaft fur Natur- und Heilkunde. See Giessen.
Bericht der Pflanzungen in Victoria (Kamerun). See Victoria (Cameroons).
Bericht der Senckenbergischen Naturforschenden Gesellschaft. See Frankfurt am Main.
Berichte der Bayerischen Botanischen Gesellschaft. See Munich.

Berichte der Deutschen Botanischen Gesellschaft. See Berlin.


Berichte der Schweizerischen Botanischen Gesellschaft. See Bern.


— — — Report of the Professor in Charge (E. W. Hilgard) to the Board of Regents. . . 1880. (Supplement. No. i.) 8°.


(Very incomplete.)


(Bd. xvii wants pl. 3; xxii wants portrait; xxiii wants any after No. 10).


(Jahrg. 1860-64 wanting.)


(Pp. 33-40 (1849) wanting.)


(Hft. lxv wanting.)

Biennial Report of the California State Board of Forestry. See California.


Blacksburg (Va.). Virginia Agricultural Experiment Station. Annual Report, 1900-01, 01-02. Blacksburg. 8°.

— — bulletin. No. 99, 100, 115-140, 142, 144-147, 154-169→ Blacksburg, 1899-1907→ La. 8°.


Board of Agriculture. See Great Britain and Ireland.

Board of Trade Journal. See Great Britain and Ireland.

Boletim do Museu Gêldi de Historia Natural e Ethnographia, Pará. See Para (Brazil).

Boletim da Sociedade Broteriana. See Coimbra.

Boletín de Agricultura, Minería, e Industrias, publicado por la Secretaria de Fomento, Colonización e Industria de la Republica Mexicana. See Mexico.

Boletin del Instituto Fisico-Geografico de Costa Rica. See San José de Costa Rica.


Bolton's Mauritius Almanac, 1852-54. See Mauritius.

— Forest Administration. See India (Special), Bombay Presidency.

— Verhandlungen ... Jahrg. i-lxiii→ Bonn, 1844-1907→ 8°.
(Jahrg. vi wants pp. 249-264 and Taf. 7, 10, 11; ix, pp. 421-428; xxii, Uebersichtskarte der Rheinprovinz.)
(From 1854-94 published with the Verhandlungen, and after 1906 with the Sitzungsberichte des Naturhistorischen Vereins der Preussischen Rheinlande.)


— — Conditions and Doings, as exhibited by the Annual Reports, 1865-68. Boston, 1865-68. 8°.
— — Jeffries Wyman Memorial Meeting, October 7, 1874. 8°.
— — Journal. Vol. i, No. 3; ii; iii, No. 1-3; iv, No. 2, 3; v, No. 1; vi, vii. [Boston, Mass.], 1836-63. 8°.
(Vol. vi-ix very incomplete; Vol. xxiv, pt. 3, 4 only; Vol. xxvii, pp. 7-330 only.)


[Continued as]


Index to vol. i-x, 1875-85. 8°.
(Vol. iii wants pt. 10; v, pt. 12; vi, pt. 9; viii, pt. 5; x, pt. 7, 8, 11, 12; xi, pt. 1.)


Botanical Gazette (Coulter's). 1876→ See Botanical Bulletin.

Botanical Locality Record Club. Reports. See London.


[Continued as]

(Vol. lxxi-1xxiv have a few pp. of supplementary matter paged independently, entitled "Companion to the Botanical Magazine.")


A new and complete index to the B. M. . . . to the end of 1904 . . . with a history of the Magazine by W. B. Hemsley. Lond., 1906. 8°.


Botanical Miscellany. See *Journal of Botany*.

Botanical Papers from the Transactions of the New Zealand Institute. See *Wellington* (N.Z.).


Botanische Hefte. See *Marburg*, *Botanischer Garten*.


Botanische Sitzungsberichte der Societas pro Fauna et Flora Fennica. See *Helsingfors*.


(Bd. lx, Abt. 2 wants No. 22; lxii, Abt. i wants Hft. i, 10-12, titlep. and index; lxii, Abt. 2 wants Hft. i, 2, 17-24, titlep. and index.)


(Bd. vii (1808) wanting.)


[Continued as]


— Generalregister über Bd. i-lx. Cassel, 1903. 8°.

(Bd. lxiv wants plates 3, 4; c wants titlep. and index.)


(Wants Bd. i, 1866.)


[Continued as]


[Continued as]

(1859-62, 64, 69-70 wanting.)

Botanist (The), containing accurately-coloured figures of tender and hardy ornamental plants, with descriptions . . . Conducted by B. Maund and J. S. Henslow. 5 vols. Lond., [1838-42.] Sm. 4°.

Botaniste (Le). Rédigé par P. A. Dangeard. 1re-10e série→ Caen, (Poitiers,) 1889-1907→ 8°.
— Table des matières des dix premières séries, (in 10e série).


Brandenburg. Botanischer Verein für die Provinz Brandenburg. See Berlin.

Braunschweig. See Brunswick.

(Bd. i wants pp. 213-220; ii wants pp. 1-50; vii wants pp. 375 onwards.)
(In Bd. ii of the Abhandlungen.)

— — — Verzeichniss sämtlicher Mitglieder . . . 1874-75. Breslau. 8°.

Bridgetown (Barbados). Imperial Department of Agriculture for the West Indies. See West Indies.


— Botanic Garden See Queensland Legislative Council.

— Queensland Acclimatisation Society. See Brisbane, Acclimatisation Society of Queensland.

— Queensland Department of Agriculture. See Queensland.


(Vol. v wants titlep.)


— Index to the Reports and Transactions, 1861-90. Lond., 1893. 8°.


— Lithographed Signatures of the Members . . . who met at Cambridge, June, 1833, with a Report, etc. Cambridge, 1833. 4°.

British Central Africa. Results of Nyasaland Meteorological Observations, 1894-1907→ La. 8°.

(Many numbers wanting.)

Royal Botanic Garden—Catalogue of Library. 20

— Central Committee. Catalogue of Articles transmitted by the Central Committee in B. G. to the Exhibition . . . in 1851. Fol.
— Royal Agricultural and Commercial Society of British Guiana. See Georgetown (Demerara).

British Imperial Calendar. See Great Britain and Ireland.


British Mycological Society. See Worcester.

British Pteridological Society. See Kendal.

Brookville. Indiana Academy of Science. See Indianapolis (Ind.).


— Tables générales, 3e série, tom. i-xxx (1881-95). Bruxelles, 1898. 8°.


Bruxelles. See Brussels.


— Magyar Botanikai Lapok. See Magyar Botanikai Lapok.


— — — Supplément i. Leide, 1897. La. 8°.

— — — Supplément ii. Tables . . . des volumes i-xv, et des deux suppléments. Leide, 1899. La. 8°.


— — Festschrift zur Feier seines 75 jährigen Bestehens (1817-1892). Leipzig, 1893. La. 8°.

— — Icones Bogorienses. See Icones Bogorienses.


's Lands Plantentuin. See Buitenzorg, Jardin Botanique.


Bulletin of the Agricultural Department of Armstrong College, Newcastle-on-Tyne. See Newcastle-on-Tyne.

Bulletin of the Agricultural Department, Assam. See India (Special), Assam.

Bulletin of the Agricultural Experiment Station, College of Agriculture, Cornell University. See Ithaca (N.Y.).

Bulletin of the Agricultural Experiment Station of the University of California. See Berkeley (Cal.).

Bulletin of the Agricultural Experiment Station, University of Illinois. See Urbana (Ill.).

Bulletin of the Agricultural Experiment Station of the University of the State of Missouri. See Columbia (Miss.).

Bulletin of the Agricultural Experiment Station of the University of Tennessee. See Knoxville (Tenn.).

Bulletin of the Alabama Agricultural Experiment Station. See Auburn (Alabama).


Bulletin of the Botanical Department, Jamaica. See Jamaica.

Bulletin of the Bureau of Agriculture, Philippine Islands. See Philippine Islands, Department of the Interior.

Bulletin of the Bureau of Entomology, U.S. Department of Agriculture. See United States, Department of Agriculture.

Bulletin of the Bureau of Forestry, Philippine Islands. See Philippine Islands, Department of the Interior.


Bulletin of the Central Experimental Farm, Department of Agriculture, Ottawa, Canada. See Canada.

Bulletin of the College of Agriculture of the University of California. See Berkeley (Cal.).

Bulletin of the College of Agriculture of the University of Tokyo. See Tokyo.

Bulletin of the County Demonstration Farm, Cockle Park. See Newcastle-on-Tyne, County of Northumberland. Education Committee.

Bulletin of the Delaware College Agricultural Experiment Station. See Newark (Del.).

Bulletin du Departement de l'Agriculture aux Indes Neer-landaises. See Buitenzorg.

Bulletin of the Department of Agriculture, Brisbane. See Queensland.

Bulletin of the Department of Agriculture, Jamaica. See Jamaica.


Bulletin of the Department of Land Records and Agriculture, Bengal. See India (Special), Bengal.

Bulletin of the Department of Land Records and Agriculture, North-West Provinces and Oudh. See India (Special), N.-W. Provinces and Oudh.

Bulletin of the Division of Agrostology, U.S. Department of Agriculture. See United States, Department of Agriculture.

Bulletin of the Division of Botany, U.S. Department of Agriculture. See United States, Department of Agriculture.

Bulletin of the Division of Forestry, U.S. Department of Agriculture. See United States, Department of Agriculture.

Bulletin of the Division of Pomology, U.S. Department of Agriculture. See United States, Department of Agriculture.

Bulletin of the Division of Vegetable Physiology and Pathology, U.S. Department of Agriculture. See United States, Department of Agriculture.

Bulletin de la Fédération des Sociétés d'Horticulture de Belgique. See Belgium.

Bulletin of the Florida Agricultural Experiment Station. See Florida.

Bulletin of the Georgia Experiment Station. See Georgia.

Bulletin of the Hawaii Agricultural Experiment Station. See Hawaii.


Bulletin de l'Herbier de l'Institut Botanique de Bucarest. See Bucharest.

Bulletin of the Horticultural Department of the Michigan Agricultural Experiment Station of the State Agricultural College. See Michigan.

Bulletin of the Imperial Central Agricultural Experiment Station, Japan. See Japan.

Bulletin de l'Institut Botanique de Buitenzorg. See Buitenzorg.


Bulletin of the Iowa Agricultural College, Botanical Department, and Experiment Station. See Ames (Iowa).


Bulletin of the Kansas State Agricultural College Experiment Station. See Manhattan (Kansas).


Bulletin of the Maine Agricultural Experiment Station. See Maine.

Bulletin of the Massachusetts Agricultural Experiment Station. See Amherst (Mass.).

Bulletin Mensuel de la Société Française de Botanique. See Revue de Botanique.

Bulletin of Miscellaneous Information (Royal Gardens, Kew), 1887-1907→ Lond., 1887-1907→ 8°. (Many of the volumes have Appendixes.)


— IV. List of published Names of Plants introduced to Cultivation, 1876-1896. Lond., 1900. 8°.


Bulletin of Miscellaneous Information, Royal Botanic Gardens, Trinidad. See Trinidad.

Bulletin of the Mississippi Agricultural and Mechanical College Experiment Station. See Mississippi.

Bulletin of the New Jersey Agricultural College Experiment Station. See New Brunswick (N.J.).

Bulletin of the New York Agricultural Experiment Station. See Geneva (N.Y.).


Bulletin of the North Carolina State Board of Agriculture. See North Carolina.

Bulletin of the Office of Experiment Stations, U.S. Department of Agriculture. See United States, Department of Agriculture.

Bulletin of the Pennsylvania State College Agricultural Experiment Station. See Harrisburg (Pa.).


Bulletin de la Société Botanique de Lyon. See Lyons.

Bulletin de la Société Botanique Suisse. See Bern.


Bulletin de la Société Impériale des Naturalistes de Moscou. See Moscow.


Bulletin de la Société Royale de Botanique de Belgique. See Brussels.


Bulletin of the State Board of Horticulture of the State of California. See California.

Bulletin of the Texas Agricultural Experiment Station. See Austin (Texas).


Bulletin of the University of Wisconsin. See Madison (Wis.).


Bulletin of the Vermont Agricultural Experiment Station. See Burlington (Vt.).

Bulletin of the Virginia Agricultural Experiment Station. See Blacksburg (Va.).

Bulletin of the Wisconsin Natural History Society. See Milwaukee (Wis.).

Bulletin of the Wyoming Experiment Station. See Laramie (Wyoming).


Bullettino Bibliografico della Botanica Italiana. See Florence.


Bullettino della Società Botanica Italiana. See Florence.


--- --- Spray Calendar, 1897. S.sht. 8°.
Calcutta. AGRICULTURAL AND HORTICULTURAL SOCIETY OF INDIA. [Report of] General Meetings, 1873-75. Fol. (Only a few numbers.)


— Programme of Collections to be made for Indian Museum and Imperial Institute during 1898-99. Calcutta, 1898. 8°.


California. AGRICULTURAL EXPERIMENT STATION. See BERKELEY (CAL.).

— CALIFORNIA ACADEMY OF SCIENCES. See SAN FRANCISCO.

— CALIFORNIA STATE AGRICULTURAL SOCIETY. See SACRAMENTO.


— UNIVERSITY OF CALIFORNIA. See BERKELEY (CAL.).


Cambridge (Mass.). Ames Botanical Laboratory. See Ames (Iowa).


Cameroons. See Victoria (Cameroons).


— Central Experimental Farm. Bulletin. No. 2, 3, 6, 7, 9, 12-14, 16-18, 20, 21, 25, 31, 32, 34-53, 55, 56→ (Ottawa), 1887-1907. 8°, la. 8°.

— — General Index, 1886-1901. Ottawa, 1902. La. 8°.


(Map wanting.)


(1890-91 wants plates 48-50.)


— — General Index, 1863-84. Ottawa, 1900. 8°.


— Descriptive Note of the Sydney Coal Field, Cape Breton, Nova Scotia . by H. Fletcher Ottawa, 1900. La. 8°.


— The Barytes Deposits of Lake Ainslie and North Cheticamp, N.S . . . by H. S. Poole. Ottawa, 1907. La. 8°.


Canadian Institute. See Toronto.


[Continued as]

[Continued as]

*(Vol. v, No. 2, 4-8 only.)*

**Canadian (The) Record of Science.** See Canadian Naturalist and Geologist.

**Cape of Good Hope.** Agricultural Journal. See Agricultural Journal of the Cape of Good Hope.

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**Cape Town.** University of the Cape of Good Hope. Calendar for 1875. Cape Town, 1875. 8°.


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**Oficina Tecnica de Agricultura.** Organo. See Industria (La) Agricola.

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**Universidad Central de Venezuela.** Anales. Año v, tom. v, No. 4; Año vi, tom. vi, No. 1, 2; tom. vii, No. 3, 4; Año vii, tom. vii, No. 1-3→ Caracas, 1905-07→ 8°.

*(Vol. ii, titlep. and pt. 4 only.)*

**Cassel.** Societas pro Fauna et Flora Fennica. See Helsingfors, Sällskapet pro Fauna et Flora Fennica.

**Catalogue of Polish Scientific Literature.** See Cracow, Akademia Umiejetnosti.


*(Tom. xxi wants fasc. 2.)*


Central Provinces. Forest Administration. See India (Special), Central Provinces.


— — Ed. of 1885-86. Colombo. 8°.
— — Forest Administration. See India (Special), Ceylon.
— — Royal Botanic Gardens. See Peradeniya, Royal Botanic Gardens.


Chemical Papers from the Research Laboratory of the Pharmaceutical Society of Great Britain. See London, Pharmaceutical Society.

Cherbourg. Société Nationale des Sciences Naturelles de Cherbourg. Compte-rendu de la séance extraordinaire tenue...le 30 décembre, 1876...Cherbourg, 1877. 8°.
(The name of the Society was for a time "Société Impériale de Cherbourg.")


Cincinnati (Ohio). **Cincinnati Society of Natural History. Journal.** Vol. i, No. 1, 2; iv-xx—Cincinnati, 1878, 81-1906—8°.

(Vol. xi wants plate 1; xix wants No. 7.)

— — Index, vol. i-x. 8°.


[Subdivided as follows: ]


Circular of the Agricultural Experiment Station of the University of California. See Berkeley (Cal.).

Circular of the Bureau of Plant Industry, U.S. Department of Agriculture. See United States, Department of Agriculture.

Circular of the Bureau of Soils, U.S. Department of Agriculture. See United States, Department of Agriculture.

Circular of the Division of Agrostology, U.S. Department of Agriculture. See United States, Department of Agriculture.

Circular of the Division of Botany, U.S. Department of Agriculture. See United States, Department of Agriculture.

Circular of the Division of Forestry, U.S. Department of Agriculture. See United States, Department of Agriculture.
Circular of the Division of Vegetable Physiology and Pathology, U.S. Department of Agriculture. See United States, Department of Agriculture.

Circular of the Office of Experiment Stations, U.S. Department of Agriculture. See United States, Department of Agriculture.

Circular of the Section of Foreign Markets, U.S. Department of Agriculture. See United States, Department of Agriculture.

Circular of the Texas Agricultural Experiment Stations. See Austin (Texas).

Circulars and Agricultural Journal of the Royal Botanic Gardens, Ceylon. See Peradeniya.

Cohn (F.), editor. Beiträge zur Biologie der Pflanzen. See Beiträge zur Biologie der Pflanzen.


[Continued as]

Boletim, iv-xxi → Coimbra, 1886-1906 → 8°.

College Station (Texas). Texas Agricultural Experiment Stations. See Austin (Texas).

Colorado College Studies. See Colorado Springs (Colo.).

Colorado Springs (Colo.). Colorado College Studies. Vol. v-x.
Colorado Springs, 1894-1903. 8°.


— — General Series. No. 22. (1906.) 8°.


Columbus (Ohio). See Ohio.

Communications from the Millport Marine Biological Station. See Millport.


Congrès (2e) International d'Alimentation du Bétail. See Liège.

Congreso (xi) de Americanistas. See Mexico.

Connecticut Academy of Arts and Sciences. See New Haven (Conn.).

Contribizioni alla Biologia Vegetale. See Palermo, R. Istituto Botanico.

Contribuições do Museu Botanico do Amazonas. See Rio de Janeiro.

Contributions from the Ames Botanical Laboratory. See Ames (Iowa).

Contributions from the Botanical Department of the Iowa State College of Agriculture. See Ames (Iowa).

Contributions from the Botanical Department of the University of Nebraska. See Lincoln (Nebraska).

Contributions from the Botanical Laboratory of the University of Pennsylvania. See Philadelphia (Pa.).

Contributions from the Cryptogamic Laboratory of Harvard University. See Cambridge (Mass.).

Contributions from the Department of Botany of Columbia University. See New York.

Contributions from the Gray Herbarium of Harvard University. See Cambridge (Mass.).


Contributions from the U.S. National Herbarium. See United States, Department of Agriculture.

Coorg. Forest Administration. See India (Special), Coorg.


--- Festskrift udgivet af den ... Forening ... af dens Halvhundredatafsfest, den 12 April, 1890. Kjøbenhavn, 1890. La. 8°.

--- --- Inholdsfortegnelse. See Botanisk Tidsskrift.
(Bd. i wants No. 1, 2; ii wants No. 4, 6.)

Inholdsfortegnelse. See BOTANISK TIDSSKRIFT.


Cornell University. See Ithaca (N.Y.).


2e éd. 1874. Liége. 8°.
3e éd. 1875. Liége, 1875. 8°.
4e éd. 1876. Liége, 1876. 8°.
5e éd. 1877. Liége, 1877. 8°.
6e éd. 1878. Liége, 1878. 8°.
7e éd. 1879. Liége, 1879. 8°.
8e éd. 1880. Liége, 1880. 8°.
9e éd. Liége, 1881. 8°.
10e éd. Liége, 1884. 8°.
(2 copies of 9e éd.)


[Continued as]


(Tom. iv wants pt. 4.)

Rocznik Zarzadu. [Annual.] Rok 1888-93. w Krakowie, 1889-93. 8°.


Cryptogamic Society of Scotland. See Edinburgh.

Cumberland, Durham, and Northumberland County Councils. See Newcastle-on-Tyne.

Curtis’s Botanical Magazine. See Botanical Magazine.


Dehra Dun. Forest School. See India (Special), Dehra Dun.

Delaware College Agricultural Experiment Station. See Newark (Del.).


— — — Proceedings, etc. See Georgetown (Demerara).

Denkschriften der Königlichen Botanischen Gesellschaft zu Regensburg. See Regensburg.


Deutsche Botanische Gesellschaft. See Berlin.


— — — Beilage zu Bd. xii: C. Bauhini Catalogus plantarum circa Basileam . . . ed. 3 auctior, 1671. (Beilage of Bd. xii incomplete; xx wants titlep. and index.)


Deutschland. See Germany.
Dorpat. See Jurjew.


Dunedin Naturalists' Field Club. See Edinburgh.


East of Scotland Union of Naturalists' Societies. See Perth.


— Proceedings, 1855-56. Edin., 1855-56. 8°. (2 copies.)

(See also Annual Report, 1836-46, and Transactions, vol. v→)

— Transactions (and Proceedings, 1856→) Vol. i-xviii→ Edin., 1844-1907→ 8°. (2 copies.)

— Botanical Society Club. Anniversary Meeting, 1881 12°.

Caledonian Horticultural Society. See Edinburgh, Royal Caledonian Horticultural Society.


— Calendar, 1903-05. Edin., 1904-05. 8°.


— Roll, 1893, 97, 1906. 8°.


Edinburgh Social Union. Window Gardening. 1889. 8°.


— Bills of Shows. Fol.


— Premiums offered . . . in 1861, 1888. Edin. 8°.


— Chemical Department. Units to be used in determining the Commercial Value of Manures. (1892.) S. sh. la. 8°.


— Library. List of Books, etc., relating to Botany and Forestry, including the Cleghorn Memorial Library. Edin., 1897. 8°.


— Departmental Check-list of Plants, 1896. Edin., 1896. 8°. (2 copies.)


— List of Seeds collected, 1888-1907→ (Edin.) 8°.

(No list published for 1899.)

— — (Reports), 1855-56, 61, 63-78, and Additions to the Library, etc., 1879-80. Edin. 8°.


— — The Royal Botanic Garden, Edinburgh, with Key Plan, 1900, 02, 06. Glasgow. 8°.


— — Notice to the Members. [Extract from Minutes re the establishment of a Garden, 1820.] 8°.

— — Prize Lists . . . for 1839, 47, 48, 50-58, 60, 66, 75-78, 81, 89, 91-95, 97, 98, 1901, 02, 04-07→ 8°.


— — — Edin., 1748. 8°.

— — — Edin., 1756. 12°.

— — — Edin., 1783. 8°.

— — — Edin., 1792. 8°.

— — — Edin., 1817. 8°.

— — — Edin., 1841. 12°.


(For later Excursions see Transactions.)

(For later Proceedings see Transactions.)

— — [Report on 26th Annual Meeting, Dinner of Members, and Excursion, 7th and 8th Oct., 1879.] (Cuttings from the Gardeners' Chronicle, Oct. 18th, 1879.)

(Vol. xiv, pt. 2, 3 only; xvi, pt. 1, 2 only.)

(Vol. xiv wants No. 2; xv wants No. 11.)


(Vol. i wants pp. 1-78, 215-230.)


(Vol. xli, pt. 1, 2 only; xlv not yet published.)

School of Medicine of the Royal Colleges. Calendar, 1896-97, 1905-06. Edin. 8°.


— — Prize List and Rules, 1889, 91, 92, 1904, 05, 07→ Edin. 8°.

— — Transactions, Constitution, etc., 1888-95, 97-1907→ Edin. 8°.


— — Interim Report . . . as to the State and Operations of the Meteorological Society of Scotland. 1857. 8°.


— — — 3rd Series. Vol. vii-xii→ Edin., 1886-1906→ La. 8°


University of Edinburgh. Calendar, 1900-03. Edin., 1900-02. 8°.

— Examination Papers for Degrees in Arts (Honours and Ordinary), 1901-02, 02-03, 04-07. Edin., 1902-07. 8°.

— Examination Papers for Degrees in Bachelor of Science in all the departments, 1901-02, 02-03, 04-07. Edin., 1902-07. 8°.

— Examination Papers for Degrees in Medicine, 1902-07. Edin., 1903-07. 8°.


— — — Lists of current Periodicals. 8°.

— — — Monthly list of Additions . . . 1890-1906. 8°. (Very incomplete.)


Edinburgh Medical Calendar. Session 1864-65. 8°.

[Continued as]


Engler’s Botanische Jahrbücher. See Botanische Jahrbücher.

English Arboricultural Society. See Carlisle.


[Continued as]

The Essex Naturalist . . . Vol. i-xiv → Buckhurst Hill, 1887-1907 → 8°. (Vol. x wants pt. 5, 6; out of print.)


Experiment (Ga.). Georgia Experiment Station. See Georgia.

Experiment Station Record, U.S. Department of Agriculture. See United States, Department of Agriculture.


Farmers' Bulletin, U.S. Department of Agriculture. See United States, Department of Agriculture.

(Merged in The Scottish Farmer, 1897.)

Fédération des Sociétés d'Horticulture de Belgique. See Belgium.


Fernley Observatory. See Southport.

Field Columbian Museum. See Chicago.

Fiji Islands. Correspondence relative to the Fiji Islands. Lond., 1862. Fol.

Firenze. See Florence.

— Ergänzungsbände, 1892, 94, 95-97, 1901, 02, 05→ Marburg, 8°.
(From 1818-88 Flora was published by the Königl. Botanische [afterwards K. Bayerische Botanische] Gesellschaft zu Regensburg. See Regensburg.)


(The two latest volumes of a publication started in 1861.)

— Tables, tom. i-xv, in tom. xv; xvi-xix in tom. xix; xx-xxiii in the said volumes.

(1893 wants index and any after No. 10; 1894 wants No. 1; 1902 wants No. 2, 3.)

[Continued as]

The Gardeners’ Magazine. See Gardeners’ Magazine.


(Vol. vi wanting.)


Florist (The). Vol. i. Lond., 1848. 8°.

[Continued as]

The Florist and Garden Miscellany (wanting.)

[Continued as]


(No more published.)

Forstlich-phänologische Stationen Deutschlands. Jahresbericht. See Germany.


Fortschritte (Die) der Botanik, 1885-86, No. 7. Leipzig, 1887. 8°.

(No. 1-6 wanting.)


— Festschrift zur Erinnerung an die Eröffnung des neuerbauten Museums . . . am 13 Oktober, 1907. Frankfurt a. Main, 1907. La. 8°.


Gand. See Ghent.

— General Index to Vol. i-xx (1871-81). Compiled by W. Miller . . . Lond. 4°.


Garden (The) Gazette. Vol. i, No. 8, 12, 1903. (Melbourne.) 4°.

Garden (The) Oracle and Illustrated Horticultural Year Book. By Shirley Hibberd. 1880, 81, 83-1900. 20 vols. Lond. 8°.


Gardeners' (The) Chronicle, 1841-43. 3 vols. Lond. 4°.
[Continued as]

The Gardeners' Chronicle and Agricultural Gazette . . . 31 vols. Lond., 1844-73. 4°.
[Continued as]


(Vol. xlix (1901) wants No. 2507.)

(Some of the volumes have Supplement-Hefte.)


Gent. See Ghent.

- Prospectus and proposed Laws . . . Georgetown, 1844. 8°.

Georgia. State College of Agriculture and Mechanic Arts. Experiment Station. Bulletin. No. 28, 42. Atlanta, 1895-98. 8°.

German East Africa. Berichte über Land- und Forstwirtschaft in Deutsch-Ostafrika. See Berichte.


Giornale (Nuovo) Botanico Italiano. See Nuovo Giornale Botanico Italiano.


— Marine Biological Association of the West of Scotland. See Millport.

— Natural History Society of Glasgow. Proceedings. Vol. i-v, 1858-83. Glasgow, 1869-84. 8°. (A first part of the Proceedings is not included in vol. i.)

— — — Index to Vol. i-v, 1851 [sic]-83. Glasgow, 1885. 8°.


— — — Index to Vol. i-xx, 1841-89. Glasgow, 1892. 8°.


— Royal Philosophical Society of Glasgow. See Glasgow, Philosophical Society.

Gondal State. Administration. See India (Special), Gondal State.


Great Britain and Ireland. The British Imperial Calendar for 1902, 1903. Lond. 8°.


--- Agricultural Returns of Great Britain, with Abstract Returns for the United Kingdom . . . 1890-95. Lond., 1890-96. La. 8°.

--- Agricultural Returns. Statistical Tables showing Acreage under Crops and Grass . . . in the United Kingdom . . . 1892-96. (Lond.) La. 8°.

--- Communications . . . relative to the Husbandry and Internal Improvement of the Country. Vol. i. Lond., 1797. 4°.

--- Extracts relating to Pleuro-pneumonia in the United States. Lond., 1890. La. 8°.


--- Leaflets. No. 4, 14, 15, 26, 32, 33, 36, 53, 103, 140, 1893-1905. La. 8°.


(Report, 1901-02, wanting.)

— Return of Allotments and Small Holdings in Great Britain ... Lond., 1890. La. 8°.


— Reports on Dairy Farming in Denmark, Sweden, and Germany, 1892. Lond., 1892. La. 8°.


— Colonial Office. List, 1890-1901, 03, 04. Lond. 8°.


— Marine Biological Association of the United Kingdom. See Marine Biological Association.

— Peerage. See Dod's Peerage.


— Appendix. Handbook of British Fungi ... By M. C. Cooke. Lond., 1883. 8°.

Guinness Research Laboratory. See Dublin.

Haarlem. Repertorium Annuum Literaturæ Botanicæ Periodicæ. See Repertorium.

— Fondation Teyler. See Haarlem, Musée Teyler.


— Bijdrage tot de kennis der Koffie ... door W. L. A. Warnier. (De Indische Mercuri, 1899.) Amsterdam. 8°.


— Catalogus der Boekverzameling. 1ste Gedeelte. Haarlem, 1891. 8°.

— Catalogus der Nederlandsche West Indische Tentoonstelling. 1899. Amsterdam, 1899. 8°.


— Gids voor de Bezoekers van het K. M. te Haarlem. Amsterdam, 1900. 8°.


— Notice sur les Collections du Musée. Haarlem, 1876. 8°.


— Série ii. Vol. i-xx. Haarlem, 1883-1907→ 4°. (Vol. v (1896), pt. 2-4 only; vii, pt. 1, 2, 4 only; viii, pt. 2, 5 only.)


— Nederlandsche Maatschappij ter Bevordering van Nijverheid. Tijdschrift. Deel xli-lv (1878-92). Haarlem. 8°. (Dl. lv (1892), Stuk 1-4 only.)

— Nieuwe Reeks. Deel i-iv (1897-1906). Leiden. 8°. (Dl. ii (1898) wants April, Nov., Dec., and pp. 411-414; iii (1899) wants June; iv (1900) titlep. and index.)


Handlingar, Kongl. Fysiografiska Sällskapet i Lund. See Lund.


Harlem. See Haarlem.

Harrisburg (Pa.). Department of Agriculture, Pennsylvania. See Pennsylvania.


Harvard University. See Cambridge (Mass.).

Haslemere. Museum Gazette. See Museum Gazette.


[Continued as]

Helios. [A continuation of Monatliche Mittheilungen.] See Monatliche Mittheilungen.


— — Meddelanden. Hft. i-xxxii → Helsingfors, 1876-1907 → 8°.


— Societas pro Fauna et Flora Fennica. See Helsingfors, Sällskapet pro Fauna et Flora Fennica.

Hertfordshire Natural History Society and Field Club. See Watford.

History of the Berwickshire Naturalists' Club. See Alnwick.


— — Reports, 1858, 85. Hobart (Town), 1859, 86. 8°.

— Royal Society of Van Diemen's Land. See Hobart, Royal Society of Tasmania.

Honolulu (Hawaii). Hawaii Agricultural Experiment Station. See Hawaii.


Horticultural Directory and Year Book, 1894. Lond. 8°.


Hoshiarpur (Punjab). See India (Special), Punjab.

Hungary. Institut Central Ampélologique Royal Hongrois. See Budapest.


— University of Illinois. See Urbana (Ill.).
— Agricultural Experiment Station. See Urbana (Ill.).


[LContinued as]


Imperial Institute. See London, Imperial Institute.

— Agricultural and Horticultural Society of India. See Calcutta.
— Report, 1895/96-1902/03. Fol.
— Cinchona Cultivation. Correspondence relating to the introduction of the Cinchona Plant into India . . . 1852-63. (Commons, 118.) [Lond., 1863.] Fol.
— Copy of further correspondence relating to the introduction of the Cinchona Plant into India . . . 1863-66. (Commons, 353.) [Lond., 1866.] Fol.
— Reports . . . 1863-88, 1899-1900. Sm. fol.
India.—continued. Forest Department. Code of instructions for the conduct of office business and for the regulation of accounts. 2nd ed. Calcutta, 1881. La 8°.

India (Special). Ajmere. Forest Administration. Progress Report, 1876-77 . . . 1877. Fol.
— Bombay Presidency, including Sind Administration. Forest Department. Administration Report, 1876-1905→ Bombay, 1877-1906→ Fol. (1878/79, 1888/89 wanting.)
— Busahir. Suggestions regarding the management of the leased forests of Busahir, in the Sutlej Valley of the Punjab, by D. Brandis. Simla, 1881. Fol.
India (Special)—continued. COORG. Forest Administration. Progress Report, 1876-77, 93-94. (Bangalore,) 1877, 95. Fol.


— Lucknow Horticultural Gardens. See Lucknow.


— Forest Administration. Progress Report, 1876-77. 1878. Fol.

Royal Botanic Garden—Catalogue of Library. 57


— Field and Garden Crops of the North-Western Provinces and Oudh . . . by J. F. Duthie, and J. B. Fuller. 3 pts. Roorkee, 1882-93. 4°.

— Oudh. Note on an inspection of the Forests in Oudh in March and April, 1886, by B. Ribbentrop. Simla, 1886. Fol.


— See also India (Special), North-Western Provinces and Oudh.


India (The) List, Civil and Military, 1891-93. Lond. 8°.


Indian Museum. See Calcutta.


Institut Central Ampélologique Royal Hongrois. See Budapest.

International Horticultural Exhibition and Botanical Congress, 1866. See London.

Iowa Agriculture College. See Ames (Iowa).


—— —— Horticultural Division. Spray Calendar. S. sht. fol.

Jaarboek. See Botanisch Jaarboek.

Jaarboek van het Departement van Landbouw in Nederlandsch Indië. See Buitenzorg.


(Bd. xxxvi wants Hft. 3; xxxviii wants Hft. 3.)


Jahresbericht der forstlich - phänologischen Stationen Deutschlands. See Germany.


Jahresbericht der Naturhistorischen Gesellschaft zu Nürnberg. See Nürnberg.

Jahresbericht des Naturwissenschaftlichen Vereins zu Bremen. See Bremen.


[Continued as]


Jahresbericht der Pollichia. See Neustadt a.d. H.

Jahres-Bericht der Schlesischen Gesellschaft für vaterländische Cultur. See Breslau.

Jahresbericht des Vereins für Naturwissenschaft zu Braunschweig. See Brunswick.

Jahresberichte der Botanischen Staatsinstitute zu Hamburg. See Hamburg.

Jahres-Berichte des Naturwissenschaftlichen Vereins in Elberfeld. See Elberfeld.


— Board of Agriculture and Department of Public Gardens and Plantations. Annual Report, 1887, 89, 1900-07 → Kingston, 1888-1907 → Fol.


Jornal de Sciencias Mathematicas Physicas e Naturaes. Publicado sub os auspicios da Academia Real das Sciencias de Lisboa. Tom. i-ix, xii, No. 45 (1868-87). Lisboa, 1868-87. 8°. (Tom. iv wanting, also titlep. for vi, ix, x, xi.)


Journal of the Board of Agriculture. See Great Britain and Ireland, Board of Agriculture.

Journal of the Bombay Natural History Society. See Bombay.

Journal of the Boston Society of Natural History. See Boston (Mass.).


[Continued as]


[Continued as]


(Vol. ii, x, wanting.)

Journal of the Bureau of Agriculture, Perth, Western Australia. See Western Australia, Department of Agriculture.

Journal of the Cincinnati Society of Natural History. See Cincinnati (Ohio).

Journal of the Department of Agriculture of Victoria. See Victoria.


[Continued as]


(Vol. v wants No. 56; vi, No. 61-65, 65, 67, 69; vii, No. 4, 5; ix, No. 18; x, No. 2-5 and after 11.)


(Vol. xlii wants No. 2740.)

(A continuation of the Cottage Gardener.)


Journal of the Linnean Society. See London.


(Vol. vi wants No. 1.)

Journal (Neues) für die Botanik. See Neues Journal für die Botanik.
Journal of the Royal Dublin Society. See Dublin.
Journal of the Trenton Natural History Society. See Trenton (N.J.).
Journal of the West Australian Natural History Society. See Perth (W.A.).
\( \text{i} \text{ii}, \text{iv}, \text{v}, \text{vi} \text{ wanting} \).
Just's Botanischer Jahresbericht. See Botanischer Jahresbericht.
Kamerun. See Victoria (Cameroons).
Kansas Academy of Science. See Topeka (Kansas).
Kansas Experiment Station. See Manhattan (Kansas).
Kansas State Horticultural Society. See Manhattan (Kansas).

Kansas University Quarterly. See Lawrence (Kansas).


Kew Bulletin. See Bulletin of Miscellaneous Information.


— — Guide . . . by D. Oliver. 23rd ed. Lond., 1865. 8°.


— — 27th ed. Lond., 1875. 8°. (Wants pp. 33, 34.)


— — Route Map and Index to the most interesting objects . . . Lond., [n.’d.] 8°.


— — Catalogue of certain Succulent Plants (viz., Cactaceae, the genera Mesembryanthemum and Aloe) . . . [Lond., 1856.] 8°.
- Hand-list of Coniferae grown . . . Lond., 1896. 16°.
- 2nd ed. Lond., 1903. 8°.
- Hand-list of Ferns and Fern-allies cultivated . . . Lond., 1895. 16°
- 2nd ed. Lond., 1906. 8°.
- Hand-list of Herbaceous Plants cultivated . . . Lond., 1895. 8°.
- 2nd ed. Lond., 1902. 16°.
- 2nd ed. Lond., 1904. 8°.
- Hand-list of tender Monocotyledons, excluding Orchideæ, cultivated . . . 1897. Lond., 1897. 8°.
- Hand-list of tender Dicotyledons cultivated . . . 1899. Lond., 1900. 16°.
- Hand-list of Trees and Shrubs grown in Arboretum. 2 pts. Lond., 1894-96. 16°.
- 2nd ed. Lond., 1902. 16°.
- Records . . . (By John Smith.) [Lond.?], (1880?). 8°.
- Index, 1862-82. See Bulletin of Miscellaneous Information, 1890. App. iii.


Kingston (Jamaica). Board of Agriculture and Department of Public Gardens and Plantations. Annual Report. See Jamaica
— Agricultural Experiment Station. Annual Report, 13, 14 (1900-1901). Knoxville, Tenn., 1900-01. 8°.
— Bulletin. Vol. v, No. 1; ix, No. 4; x, No. 1; xi, No. 2-4; xiii, No. 3, 4; xiv, No. 1-4; xv, No. 1, 2; xvi, No. 1-4; xvii, No. 1-4; xviii, No. 2-4. Knoxville, Tenn., [1892?]—1905. 8°.

Koch's Jahresbericht. See Jahresbericht.

Kongl. Fysiografiska Sällskapets i Lund Handlingar. See LUND.

Kongl. Vetenskaps-Akademiens Handlingar, Stockholm. See StockholM.


Koninklijke Akademie van Wetenschappen te Amsterdam. See AMSTERDAM.

Krakow. See Cracow.

Kulu. See India (Special) Kulu.

Ladies' (The) Magazine of Gardening, by Mrs. Loudon. Vol. i. Lond., 1842. La. 8°. (No more published.)


Leiden. See LEYDEN.

Leipzig. Die Fortschritte der Botanik. See FORTSCHRITTE.


VEREENINGING VOOR DE FLORA VAN NEDERLAND. Verslag van de zesde algemeene bijeenkomst der Leden . . . 1851 8°. (pp. 197–309).

Library Bulletin, U.S. Department of Agriculture. See United States, Department of Agriculture.


2e Série. Vol. i–vii (xi–xvii) → Gand, 1895–1906 → Fol. (Vol. xiv wants all after livr. 6 ; xv is wanting.)


[Continued as]


Linnaean Society of London. See London.


—— —— Jornal. See Jornal de Sciencias.

—— Memorias. Classe de sciencias mathematicas, physicas e naturaes. Nova serie. Tom. i, pt. i, 2; ii, pt. i, 2; iii, pt. i; iv, pt. i, 2; v, pt. i, 2; vi, pt. i. Lisboa, 1854–81. 4°.


List of the Linnean Society of London. See London.


(No. v, xix, xxvi, xxxiii, wanting.)


Lloyd Library of Botany, Pharmacy, and Materia Medica. See Cincinnati (Ohio).


—— —— Schedule 14, 1899. Lond. 8°.


—— —— One and All Gardening, 1906. Lond. 8°.


--- Botanical Locality Record Club. Reports, 1873-77 (Vol. i), Quinquennial Appendix, 1878, 1878-82 (Vol. ii), 1884-86. Lond., 1874-1887. 8°.

--- Botanical Record Club. See London, Botanical Locality Record Club.


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--- General Index to the first twenty volumes of the Journal (Botany) and the botanical portion of the Proceedings, Nov. 1838 to June 1886 [By B. D. Jackson]. Lond., 1888. 8°.


--- Reports of Meetings, Nov. 1, 1900-1907 → 8°. (A few numbers wanting.)


--- General Index to vol. i-xxv. Lond., 1867. 4°.


NATIONAL AMATEUR GARDENERS’ ASSOCIATION. Constitution, Bye-laws, etc. 1905–07. Lond. 8°.

— Report, 1898, 99, 1904, 05. 8°.

NATIONAL ASSOCIATION FOR THE PROMOTION OF TECHNICAL AND SECONDARY EDUCATION. Address . . . by Professor Huxley . . . Nov. 29th, 1887. Lond. 8°.


— County Councils and Experiment Stations, by R. Warington. (Record Tech. and Sec. Educ., 1892.) 8°.

— Leaflets. 8° and 4°.


— Report of the proceedings of the Conference between the Executive Committee and representatives of County Councils . . . to discuss . . . the Education clauses of the Local Taxation Act, 1890 . . . Lond. 8°.

— Report of the proceedings of the Conference between the Executive Committee and representatives of County Councils . . . to discuss the needs of the country with regard to . . . Secondary Education . . . 1893 . . . Lond. 8°.

— Selected reports of Committees of County Councils and other schemes . . . for the utilisation of the new fund under the Local Taxation Act, 1890, for Educational Purposes. 2nd Series. Lond., 1891. 8°.


— Pharmaceutical Society of Great Britain. Calendar, 1884, 1900, 04-07 → Lond. 8°.


— The Pharmacopœia . . . tr. . . . by R. Powell. Lond., 1809. 8°.


— Royal Horticultural Society. Arrangements for years 1890–1907 → Lond. 8°.


— National Rose Conference, 1889. See National Rose Conference.


— Regulations to be observed at the Exhibitions, 1857. Lond., 1857. 8°.


London. Royal Horticultural Society—continued. Transactions. 2nd Series. 3 vols. (1831-48). Lond., 1835-48. 4°. (Vol. ii (1818) is 2nd ed.; also 2nd ed. of Vol. i (1815), iii (1822); 3rd ed. of Vol. i (1820), ii (1822).)


— Scientific Committee. Botanical Certificates. 4°.


A. Mathematics. 1st–6th annual issue, 1902–07→
B. Mechanics. 1st–5th annual issue, 1902–07→
C. Physics. 1st–5th annual issue, 1902–07→
D. Chemistry. 1st–4th annual issue, 1902–06→
E. Astronomy. 1st–6th annual issue, 1902–07→
F. Meteorology. 1st–5th annual issue, 1902–07→
G. Mineralogy. 1st–5th annual issue, 1902–07→
H. Geology. 1st–5th annual issue, 1903–07→
J. Geography. 1st–6th annual issue, 1903–07→
K. Palaeontology. 1st–5th annual issue, 1903–07→
L. General Biology. 1st–5th annual issue, 1903–07→
M. Botany. 1st–4th annual issue, 1902–06→
N. Zoology. 1st–5th annual issue, 1904–07→
O. Human Anatomy. 1st–5th annual issue, 1903–07→
P. Physical Anthropology. 1st–3rd annual issue, 1903–05→
Q. Physiology. 1st–5th annual issue, 1902–07→
R. Bacteriology. 1st–5th annual issue, 1902–07→


— — Supplementary list of Journals. Lond., 1904. 8°.

Royal Botanic Garden—Catalogue of Library 72


— 1836, pt. i. Lond., 1836. 4°.


— Sleeping Sickness Commission. Reports. No. i-iv, vi, vii→ Lond., 1903-06→ 8°.


(Soc. xii wants pp. 1-476; xlii wants No. 2379 xlviiir wants No. 2487.)


— Special-certificate Examinations (for Members). Rules, etc. 2nd ed., rev. 1890. Lond., 1892. 8°.


University of London. Calendar, 1886-87. Lond., 1886. 8°.

Woburn Experimental Fruit Farm. See Woburn.


— Minnesskrift... med anledning af dess hundrâårsfest den 3 Oct., 1878. Lund, 1878. 4°.

Kongliga Karolinska Universitet. Acta Universitatis Lundensis. Lunds Universitets Års-skrift. Tom. ii–iv; v, Afd. 3; vi, Afd. 1, 2; vii, Afd. 1, 2; (Afdelningen för Matematik och Naturvetenskap, utgifven med Biträde af Physiographiska Sällskapet i Lund.) [After tom. vii this section, i.e. Afd. för Math. och Naturvet. was issued separately:—] viii–xvii, xix–xxv. [After tom. xxv was subdivided:—]


— Lunds Universitet, 1872–1897, af E. Tegnér. (Festskrift, 3de Afd.) Lund, 1897. 4°.


Madras. Agri-Horticultural Society of Madras. Proceedings, 1861, 62, 63, 64, 70. 8°.

(A few odd numbers.)


— Forest Administration and Department. See India (Special), Madras.

— University of Madras. Calendar, 1869-70. Madras, 1869. 8°.


[Continued as]

Annals and Magazine of Natural History. See Annals and Magazine of Natural History.


Maine Agricultural Experiment Station. Bulletin. No. 54. 1899. 8°.


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[Continued as]

Memoirs and Proceedings. See SUPRA.


Manila (P. I.). See Philippine Islands.


Marine Biological Association of the United Kingdom. 


Memorandum. No. i, ii (1884). [Information regarding the Society.] Fol.

[Proceedings at a Public Meeting held June 13th, 1885.] La. 8°.

— Report (and notice) of the Meeting held ... March 21st, 1884, for the purpose of forming a Society for the Biological Investigation of the Coasts of the United Kingdom. Lond., 1884. 8°.


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Société Botanique Néerlandaise. See Nijmegens.

Société Botanique Suisse. See Bern, Schweizerische Botanische Gesellschaft.


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(Vol. ii, 1889, wants titlep. and index; iii wants titlep. and index; x wants No. 12, titlep. and index; xi wants No. 20, titlep. and index.)

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— — Royal Society of Tasmania. See Hobart.
Tennessee. University of Tennessee. See Knoxville (Tenn.).

Texas Agricultural Experiment Stations. See Austin (Texas).


(In report for 1863 is a list of the Herbarium of British Roses, by J. G. Baker.)

[Continued as]


Thüringischer Botanischer Verein. See Weimar.

Tijdschrift uitgegeven door de Nederlandsche Maatschappij ter Bevordering van Nijverheid. See Haarlem.


(Vol. xliv–xlvi wanting; lvii wants No. 1495.)


(Vol. iii (1889) wants plate to Abell’s paper, p. 380.)

Tobago Botanic Station. See West Indies, Imperial Department of Agriculture.

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Transactions of the Canadian Institute. See Toronto.

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Transactions of the Guinness Research Laboratory. See Dublin.

Transactions of the Hertfordshire Natural History Society and Field Club. See Watford.

Transactions of the Highland and Agricultural Society of Scotland. See Edinburgh.


Transactions of the Kansas Academy of Science. See Topeka (Kansas).

Transactions of the Linnean Society. See London.

Transactions of the Malvern Naturalists' Field Club. See Worcester.

Transactions of the Manchester Microscopical Society. See Manchester.

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Transactions of the Philosophical Society of Victoria.  See Melbourne.

Transactions of the Plymouth Institution and Devon and Cornwall Natural History Society.  See Plymouth.

Transactions and Proceedings of the New Zealand Institute.  
See Wellington (N.Z.).


Transactions of the Royal Horticultural Society of London.  
See London, Royal Horticultural Society.

Transactions of the Royal Medico-Botanical Society of London.  


Transactions of the Royal Society of Arts and Sciences of Mauritius.  See Port Louis.


Transactions of the Royal Society of Victoria.  See Melbourne.

Transactions (Scientific) of the Royal Dublin Society.  See Dublin.

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Transactions of the Tyneside Naturalists' Field Club. See Newcastle-on-Tyne.

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Travaux de l'Institut de Botanique de l'Université de Stockholm. See Stockholm.


— Royal Botanic Gardens. Annual report, 1889, 93, 99, 1900, 02-05, 07 → Trinidad, 1890-1907 → Fol.

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(Vol. ii wants titlep.; v titlep. and index; viii index.)


— Yearbook, 1895-1906 © Washington, 1896-1907 © 8°. (1900, 02, 05 wanting.)
United States. Department of Agriculture — continued.


(No. 13, 15, 21, 27, 47, 73, 78, 84, 86–89, 100 pt. 3, 102 pt. 2, 112, 115, 117 wanting.)


Inventory No. 2 of Foreign Seeds and Plants imported by the Section of Seed and Plant Introduction. No. 1001–1900 (1899). 8°.


—— Division of Entomology. See United States Department of Agriculture, Bureau of Entomology.


—— Circular. No. 6, 8 [n. d.]. 8°.


—— Food Products, i–iii. Washington, 1894, 93. 8°.


—— Fiber Investigations. Report. No. 6, 9, 10. Washington, 1894–98. 80. (No. 6 wanting.)


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—— — Production of Coal in the United States from 1814 . . . to the close of 1904. S. sht. la. fol.


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Verhandlungen des Naturhistorischen Vereins der Preussischen Rheinlande und Westphalens. See Bonn.


Verhandlungen des Zoologisch-Botanischen Vereins in Wien. See Vienna.

Vermont Agricultural Experiment Station. See Burlington (Vt.).

Verslag omtrent den Staat van 's Lands Plantentuin te Buitenzorg. See Buitenzorg, Jardin Botanique.

Verslagen der Koninklijke Akademie van Wetenschappen. See Amsterdam.

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— Revised List of Fruit Trees, &c., Recommended for Cultivation as suitable for Marketing, Canning, Drying, Exporting, &c. Melbourne, 1894. 8°.

— Systematic Arrangement of Australian Fungi ... by D. M'Alpine. Melbourne, 1895. La. 8°.


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— **Philosophical Institute of Victoria. See Melbourne.**

— **Philosophical Society of Victoria. See Melbourne.**

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— **Royal Society of Victoria. See Melbourne.**


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— **K. K. Zoologische botanische Gesellschaft. See Vienna, zoologisch-botanischer Verein.**


— **Universal Exhibition, 1873. A catalogue of the Indian Department, by J. F. Watson. Lond., 1873. La. 8°.**

— **Universität. Naturwissenschaftlicher Verein. Mitteilungen. Jahrg. i, No. 1–8; ii, No. 9; iii, No. 1–8; iv, v→ Wien, 1903–07→ 8°.**


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— — — **Personen-, Orts- und Sach-Register, 1851–80. Wien, 1857–84. 8°.**

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— List of Foreign Institutions in Correspondence with the Smithsonian Institution, 1854, 1856. 8°.


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—— Tobago Botanic Station. Annual Report, 1901-02, 03-06 → Trinidad, 1902-06 → Fol.


—— Bureau of Agriculture. See Western Australia, Department of Agriculture.
Western Australia—continued. Department of Agriculture. Annual report...for year ending June 30th, 1897, 98. Fol.

— Investigation into the Poison Plants of Western Australia. 1898. Fol.


— Vol. i-xii (1900-05) → Perth, 1900-05 → 8°. (Vol. i wants January; v wants pt. 1, 2.)


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— Wisconsin Academy of Sciences, Arts, and Letters. See Madison (Wis.).

— Wisconsin Natural History Society. See Milwaukee (Wis.).

— Wisconsin State Agricultural Society. See Madison (Wis.).

— Wisconsin State Historical Society. See Madison (Wis.).

Woburn Experimental Fruit Farm. Report...2-7 → Lond., 1900-07 → 8°.


Wooster (Ohio). See Ohio Agricultural Experiment Station.


Wyoming Experiment Station. See Laramie (Wyoming).


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A Key to the Labiatae of China.

BY

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ment, Hongkong, China.

The following keys to the genera and species of the Labiate plants of China proper, and the enumeration of the species which accompanies them, were drawn up from the splendid mass of material assembled at Kew from the chief herbaria of the Old World, under the circumstances mentioned in my preliminary paper in this periodical (xxviii, 154), published two years ago. The characters and localities mentioned are taken from the actual specimens seen, and it has been possible to compare most of them with their original types. The only large collection consulted since the above paper was written has been the Labiates of the Hongkong herbarium, kindly entrusted to me by my friend and successor, Mr. W. J. Tutcher, Superintendent of the Botanical and Forestry Department of that important Crown Colony, which Sir Joseph Hooker once referred to in an official memorandum as the key to the botanical position with respect to China.

The keys have throughout been constructed on practical lines, and are based as far as possible on characters easily observable without minute examination. The enumeration on the same principle contains references only to the clearest and most readily accessible descriptions of the genera and species. These are followed in each case by the colour of the flowers, months of flowering, and natural habitat whenever the informa-
tion has been obtained. A list of the specimens seen from each province follows, the collectors' numbers being added for the convenience of students in herbaria not annotated by the writer. A classified list of determinations of plants numbered by the different collectors is appended to the paper.

My object in selecting the Labiatae out of all the families represented in the Chinese flora to examine at this time was to test whether botanical exploration had proceeded far enough to make possible the study of the phytogeographical division of the empire. For these attractive and easily preserved plants [Notes, R.B.G., Edin., No. XXVIII, May 1915.]
are probably better represented in our herbaria than most others. The writer is reluctantly forced to the conclusion that our present knowledge does not warrant the drawing up of any such scheme of plant areas for China, and the following suggestions are merely an indication of some obvious distribution lines which appeared in the preparation of the work. The apparent distribution along lines is doubtless due to the fact that, compared with the great bulk of the empire, the areas collected in are but isolated points, and the attempt to trace out an area of distribution results in lines connecting them.

1. Commencing then from Yunnan, the south-west corner of China, and probably the richest province in Labiates, many species (such as Leucas mollissima and Teucrium japonicum) extend due eastwards along the dry hills of S. China as far as Hainan and Kwangtung and northwards as far as E. Szechuen and Hupeh through Kweichow. Teucrium quadrifarium and Stachys kouyangensis, starting from the same province, pursue a north-eastern line, reaching as far as the Yangtze in lower situations, while such species as Plectranthus ternifolius, though common and characteristic in the southern uplands, extend no further north than Kweichow. Elsholtzia communis and E. polystachya, avoiding on the other hand the eastern part of this area, seem to follow the dry grassy mountain pastures through the centre of China as far as the middle of the northern boundaries in Shensi and Chili.

2. While the above species follow lines radiating out from Yunnan through the half quadrant east to north-east, many others, such as Orthosiphon rubicundus, Plectranthus Coetsa, Salvia hians, and Nepeta lamiopsis, are found to extend from Yunnan due north along the bare stony pastures which flank the lofty mountain ranges of Tibet as far as Ta-chien-lu in E. Szechuen. Dracocephalum tanguticum and D. heterophyllum reach still further north on the same line, running down to the lesser altitudes of Kansu; while the peculiar group of Elsholtzia species, with woolly flower-spikes, is represented by a succession of forms along the same range (viz. E. ianthina in Kansu, E. calycocarpa and E. eriostachya further south). All the species of north and south extension show, as usual, increasing altitude with decreasing latitude.

3. Coming now to denizens of damp and shady places which radiate from the south-west, Pogostemon fraternus and P. glaber, Scutellaria discolor, Craniotome versicolor, and Leucosceptrum canum reach from India only as far as the shady forests of S. Yunnan; Dysophylla verticillata and D. auriculata extend thence due eastwards to Kwangtung, while D. linearis reaches north-eastwards to Kweichow. Scutellaria rivularis has in the
same region a much wider range, adorning with its intensely blue spikes the margins of springs and rivulets as far north as the Yangtze and as far east as the damp upland woods of Fukien.

4. Transferring our attention now to the opposite or north-east corner of China, Plectranthus glauoides, Thyme (Thymus Serpyllum), Scutellaria scordifolia, and S. viscidula are known in the empire only from Shantung and Chili, the north-easternmost provinces. Plectranthus amethystoides, Mosla dianthera, and M. lanceolata are examples of the numerous species extending down the whole east coast on the dry grassy ranges so well known to mariners of the coastwise routes. Salvia miltiorrhiza, on the other hand, though abundant in the northern coastal provinces, does not reach further south than Chekiang and extends westwards to Hupeh.

5. Ajuga ciliata follows a diagonal south-west course from the north-east as far as central China, while such species as Nepeta Cataria continue the same south-west line across the whole country as far as Yunnan.

6. A few maritime species such as Hyptis suaveolens follow the salt marshes from the south as far as Fukien, but in this family, as in the rest of the Chinese flora, few species are restricted to saline regions.

7. Scutellaria macrantha, one of the finest Labiate plants of the flora, is confined, like a few other species, to the line of northern provinces.

8. The centre of China, viz. Hupeh and its neighbourhood, is, so far as records show, the home of an unusually large number of endemic species, such as Salvia Maximowicziana and Phlomis gracilis; but it must be remembered that the region has become better known than almost any other in consequence of the inclusion of Henry’s vast collections there in the material elaborated by Hemsley in his Enumeration of the plants of China in the Linnean Journal.

9. As regards endemic elements in the various provinces there is doubtless everywhere a comparatively large proportion of species exclusively confined to each of the numerous isolated and peculiar tracts which occur throughout the country, and every new mountain which is botanically explored yields its quota of novelties. In the writer’s own experience, a month’s sojourn on the central range of Fukien contributed some 30–40 new species to the flora; while three days on the sacred mountain, Hong Wong Shan, near Swatow, has enriched our knowledge with many beautiful species before unknown. Yunnan has a very large list of exclusive species, having been the hunting-ground of three most energetic collectors whose finds were examined and described by, or for, three of the most efficient
botanical establishments in the world. The centre of the province was known first from the collections of Delavay and the writings of Franchet at the Jardin des Plantes, Paris; the south from Henry's collections and the labours of Kew botanists, still in progress; the north from Forrest's explorations and the publications of the Edinburgh Botanic Garden. The romantic and adventurous journeys of the latter collector will, it is to be hoped, be described some day in book form, and they might make one of the most attractive narratives of botanical enterprise in China. Next to Yunnan, perhaps Szechuen is the best known from the writings and collections of Wilson, and especially from the Plantae Wilsonianae published by the Arnold Arboretum. Kwangtung, though less fortunate in its failure to attract horticultural collectors and in the absence of very large exhaustive collections in European herbaria, has had many earnest botanical students from the earliest times of European immigration. The collections of Hance and Ford, and in more recent times Matthew, Tutcher, and the writer, have been examined and described at different times and in many publications. But the province has the unique advantage of a complete descriptive flora (Flora of Kwangtung, by Dunn and Tutcher), and of a botanical establishment and fine herbarium at Hongkong. These three provinces have already been proved to have large endemic lists, and these are not likely to be greatly reduced. In a smaller degree the same may be said of the less explored regions; and when the mapping out of botanical regions comes to be undertaken, the existence of many specialised internal areas will doubtless be recognised.

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**KEY TO GENERA.**

1. Lower or horizontal lip or (when subregular) lobe of corolla entire . . . . . . 2. Lower or the erect lip 3-lobed . . . . . . 26.

2. Upper tooth of calyx very broad . . . . . . 3. Upper tooth little, if any, broader than others . . . . . . 13.

3. Upper tooth of calyx decurrent on tube . . . . . . 10. Upper tooth not decurrent . . . . . . 4.


5. Flowers in compact spikes or heads . . . . . . 6. Inflorescence loose . . . . . . 8.

6. Flowers in globular heads . . . . . . 5. Acrocephalus. Flowers in oblong or linear spikes . . . . . . 7.
7. Leaves ovate serrate
Leaves oblong crenate

8. Calyx cylindric pitted
Calyx campanulate

9. Fruiting calyx 3-4 times as long as broad
Fruiting calyx twice as long as broad

10. Calyx lobes shut together in fruit
Calyx campanulate in fruit

11. Corolla tube distinctly exserted
Corolla tube hardly exserted

12. Corolla lobes nearly equal
Lower lobe longer, deflexed

13. Corolla gibbous at base or distinctly 2-lipped
or inflorescence loose
Corolla tube cylindric, hardly 2-lipped; inflorescence compact

14. Corolla distinctly 4-lobed
Corolla 5-lobed

15. Leaves pinnatifid
Leaves not deeply lobed

16. Stamens 2
Stamens 4

17. Calyx teeth setaceous
Calyx teeth triangular or lanceolate

18. Corolla bilabiate; stamens decline
Corolla lobes spread into a flat limb; stamens divericate

19. Filaments bearded at centre
Filaments glabrous

20. 3 or more leaves whorled together
Leaves opposite in pairs

21. Leaves sessile or subsessile
Leaves long-stalked

22. Calyx divided nearly to base
Calyx shortly lobed

23. Flowers in dense axillary whorls
Flowers in terminal or axillary often dense racemes

24. Anthers 4; calyx teeth lanceolate
Anthers 2; calyx teeth subulate

25. Calyx plumose, pappus-like
Calyx subglabrous

10. Anisochilus.


2. Geniosporum.
3. Mesona.

31. Scutellaria.

7. Orthosiphon.
1. Ocimum.


17. Hyptis.

8. Plectranthus.

17. Hancea.

19. Mosla.
18. Perilla.

50. Amethystea.
19.

11. Hancea.

21.

12. Pogostemon.

20. Mentha.

26. Upper lip of corolla much shorter than the lower, bifid or o
Upper lip as long as, or longer than, the lower, entire

27. Flowers minute, in crowded cymes
28. Stamens included
Stamens exserted
29. Flowers in dense woolly spikes
Flowers in racemes

30. Upper lip of corolla entire or emarginate
Upper lobes of corolla 2 or 4, equal
31. Flowers in small corymbed spikes
Inflorescence not corymbose
32. Leaves small entire
Leaves moderate or large, crenate or serrate
33. Calyx bilabiate
Calyx teeth equal
34. Stamens 2, anthers on long-equitant connective
Stamens 4
35. Calyx 13-15-nerved
Calyx 5-10-nerved
36. Calyx bilabiate
Calyx teeth equal and sinuses equal
37. Bracts bristle-like; corolla tube hardly exserted
Bracts broader or corolla tube far exserted
38. Calyx with 5 distinct veins, others obscure
Nerves of calyx 15 distinct
39. Flowers in dense terminal spikes without bracts
Flowers in loose inflorescences or with conspicuous bracts
40. Stamens included in corolla tube
Stamens exserted
41. Leaves inciso-lobate
Leaves crenate or serrate
42. Upper lobe of calyx broad, winged
Calyx lobes subequal

* The division of *Dracocephalum* from *Nepeta* was recognised by Linnaeus and most subsequent botanists as depending upon the bilabiate form of the calyx in the former, the latter having 5 equal calyx teeth. The irregularity of the bilabiate calyx of *Dracocephalum* consists in either (1) having one broad upper lobe and 4 small narrow ones below, or (2) having 3 teeth united nearly to the top, the remaining 2 free from each other and from the 3 united ones.
43. Flowers in a single terminal spike; filaments bifid at top.
   - Flowers in panicled racemes
42. Paralamium.
44. Calyx with 10 equal teeth
   - Calyx 5-toothed with occasionally 5 intermediate smaller ones
44. Leucas.
45. Style equally bifid
   - Style entire, or lobes very unequal
45.
46. Corolla tube saccate on lower side
   - Corolla tube cylindric or equally dilated above
49. Eurysolen.
47. Nutlets fleshy when ripe
   - Nutlets dry when ripe
48. Gomphostemma.
48.
49. Nutlets rounded at top
   - Nutlets truncate, often with a raised rim at top
48.
50. Leaves trifid or calyx teeth spinose
   - Leaves entire or lobed, teeth not spiny
51. Stamens longer than corolla
   - Stamens included under upper lip
36. Anisomeles.
52. Nutlets supported on conspicuous gynophore
   - Nutlets sessile
43. Loxocalyx.
52.
53. Plant shaggy with long silky hairs
   - Plant without long silky hairs
46. Eriophyton.
54. Leaves not lobed; calyx teeth soft
   - Leaves pinnatifid or calyx teeth spinous
41. Lamium.
40. Leonurus.
55. Flowers in dense whorls
   - Flowers in stalked cymes
45. Phlomis.
47. Microtoena.

   Leaves softly hairy, regularly closely crenate; calyces thickly glandular with few soft hairs. 1. O. sanctum, L.
   Leaves nearly glabrous, nearly entire; calyces with few glands, setose 2. O. basilicum, L.

   Flowers white.
   Szechuen: O-mi-shan, 1899, Hugh.
   Hainan: Henry, 8709.

   Flowers purple, August. Woods.
   Chili: Pekin, Bretschneider.
   Chekiang: Hickin.
134  Dunn—A Key to the Labiatae of China.

Yunnan: Mengtze, Henry, 11,375; Ducloux, 512.
Kiangsu: Shanghai, Faber.
Yunnan: Yunnan-sen, Maire, 24; Mengtze, 5000 ft., Henry, 11,375; Ducloux, 512.
Kwangtung: Ford, 140; Swatow, Wukingfu, Dalziel.

Geniosporum strobiliferum, Wall.; Fl. Brit. Ind. iv, 610.
Flowers white with purple veins. Dry forests.
Yunnan: Pu-erh, Henry, 13,393.

Leaves obtuse at apex, acute or acuminate at the base, glabrous
Leaves acute at apex, obtuse at base, thinly hairy beneath

Flowers September.

Flowers blue, April to November.
Kwangtung: Phoenix Mt. near Swatow, Dunn; Hongkong New Territory, cult. Tutcher.

Nosema prunelloides, Prain.
Mesona prunelloides, Hemsl. in Journ. Linn. Soc. xxvi, 267.
Flowers pink, blue, or white, April to October. Rocky slopes.
Hainan: Katsumata; Shun Cheong, Ford, 457; Pakhoi, Playfair.

5. Acrocephalus, Benth.; Fl. Brit. Ind. iv, 611.
Herb
Shrub

Flowers white or pale purple.
Yunnan: Szemao, Henry, 12,610.

Flowers September.
Yunnan: Valley of Yangtze below Pung-tzu-la at 9000 ft., Forrest, 582.

Moschosma polystachyum, Benth. ; Fl. Brit. Ind. iv, 612.
Flowers flesh-coloured.
HAINAN: Henry, 8181.


1. Corolla longer than the stamens
Corolla much shorter than the stamens
2. Corolla slender; leaves suddenly narrowed
   into slender petioles
   Corolla broad; leaves gradually narrowed
   below, sessile or subsessile
3. Corolla more than 2 cm. long
   Corolla less than 1.5 cm. long

   Flowers white, July and August. On rocks in shady places.
   KWANGTUNG: Ford, 146 (partly); West River, Sampson, 18th July 1872; Lungchow, Morse, 531.

   Flowers pink, red, or purple, May to September. Barren grassy slopes and pine woods.
   SZECHUEN: Tung valley, 4500 ft., Wilson, 4349.
   YUNNAN: Ducloux, 17; Yunnan-sen, Maire, 219, 1758, 2004, 2181, 2693; common in pine woods on the sides of the Hoching and Lichiang ranges at 8000–9000 ft., Forrest, 126; south end of Lang-kong valley, Forrest, 5584; Mengtze, 5000 ft., Henry, 9800, Hancock, 66.
   HAINAN: Sam-shan-sze, Dunn’s Chinese collector.

3. Orthosiphon stamineus, Benth. ; Fl. Brit. Ind. iv, 615.
   Flowers blue.
   HAINAN: La-tai-si, Ford, 460; Henry, 8533; Tingan (Katsumata) Hongkong Herb. 5556.

   Plectranthus cardiaphyllus, Hemsl. l.c. 269.
   Flowers white.
   SZECHUEN: S. Wushan, 7500 ft., Henry, 5770, Wilson, 4348, 4348A.
   HUPEH: Chien-shih, Henry, 5770A, 6993, 6050.

1. Leaves whorled in threes
Leaves opposite

2. Calyx with 2 nearly entire lips; corolla spurred
Calyx with 5 nearly equal teeth

3. Corolla tube 4–6 times as long as the calyx
Corolla tube not more than twice as long as the calyx

4. Flowers racemose
Flowers paniculate

5. Upper lip of the corolla about equal to the lower
Upper lip of the corolla 3 times as long as the lower

6. Leaves ovate
Leaves linear-oblong

7. Corolla widely gibbous at the base
Corolla cylindric at the base

8. Leaves blunt, subsessile
Leaves acute, stalked

9. Leaves distinctly stalked
Leaves sessile or subsessile

10. Leaves stellately tomentose
Leaves without stellate tomentum

11. Leaves rugose
Leaves flat

12. Teeth of fruiting calyx \( \frac{1}{2} \) of its tube
Tube of fruiting calyx equal to the teeth

13. Leaves cordate
Leaves not cordate

14. Flowers racemose
Flowers paniculate or in axillary cymes

15. Calyx teeth, at least in fruit, 4 times the teeth
Calyx tube not more than twice the teeth

16. Corolla 9–10 mm. long; seeds oblong
Corolla 5–6 mm. long

17. Corolla widely gibbous at the base
Corolla nearly or quite cylindric at the base

1. *ternifolius.*

2. *macranthus.*

3. *Prainianus.*

4. *angustifolius.*

5. *Bulleyanus.*


7. *stria tus.*

8. *leucophyllus.*

9. *rudosus.*

10. *sculponiatus.*

11. *excisus* (var. *racemosus*).

12. *rubescens.*

13. *phyllopodus.*

*P. rubescens*, Hemsl., is a glabrous-leaved form of a species which includes scabrous- and densely pubescent-leaved plants connected together by various intermediates. The shape of the corolla, calyx, and leaves, and the red colour of the plant are uniform in all. *P. Coelsa* differs in its large branching habit, its calyx 3 mm. not 5 mm. long, and its calyx teeth \( \frac{1}{4} \) not \( \frac{1}{2} \) of the tube.
18. Corolla tube 3-4 times longer than the calyx; calyx 1 mm. broad and long, calyx teeth blunt
   Corolla tube not more than twice as long as the calyx
   7. striatus.

19. Leaves acute or acuminate
   Leaves blunt
   15. Henryi.

20. Inflorescence woolly
   Inflorescence not woolly
   16. eriocalyx.

21. Leaves grey-pubescent beneath
   Leaves nearly glabrous beneath
   17. Cavaleriei.

22. Corolla widely gibbous at base
   Corolla cylindric at base or nearly so
   18. glaucocalyx.

23. Corolla 5-6 mm. long
   Corolla 7-15 mm. long; leaves glabrous

24. Leaves obtuse or acuminate; flowers in narrow panicles or in axillary cymes
   Leaves cuspidate; flowers in spreading panicles
   12. excisus.

25. Leaves shortly acuminate
   Leaves obtuse
   20. Rosthornii.

26. Corolla 7 mm. long
   Corolla 1.1 cm. long
   21. ricinispermus.

27. Corolla 7-9 mm. long
   Corolla 1.2-1.4 cm. long
   22. adenanthus.

28. Leaves lanceolate, acute, cuneate at the base
   Leaves ovate, abruptly acuminate at the base
   15. Henryi.

29. Fruiting calyx teeth short, triangular
   Fruiting calyx teeth long, acute
   18. glaucocalyx.

30. Corolla widely gibbous at the base
   Corolla cylindric at base or nearly so
   24. nervosus.

31. Flowers 1.2-1.5 cm. long
   Flowers 5-10 mm. long
   31. Flowers
   32. Leaves linear-oblong
   Leaves ovate
   4. angustifolius.

33. Flowers in axillary cymes; leaves obtuse
   Flowers in loose panicles; leaves acute
   23. irroratus.
   25. Forrestii.

34. Inflorescence woolly or tomentose
   Inflorescence glabrous or pubescent
   16. eriocalyx.

35. Flowers in racemes
   Flowers in panicles or cymes
   12. excisus (var. racemosus).

* P. irroratus, Diels, in cultivation has larger leaves and fewer flowers.
36. Flowers 8–10 mm. long
   Flowers 5–6 mm. long
   37. Leaves acuminate or acute
   Leaves obtuse
   38. Flowers in axillary cymes
   Flowers in panicles
   39. Shrub; leaves finely serrate
   Large herb; leaves coarsely serrate, acuminate

40. Bracts serrate
   Bracts sub-entire

41. Whole plant pubescent; panicle spreading
   Plant subglabrous; panicle narrow

42. Leaves all radical
   Leaves cauleine

43. Flowers in axillary cymes
   Flowers paniculate

44. Leaves ovate
   Leaves oblong or linear oblong

45. Leaves cuneate at the base
   Leaves rounded at the base

46. Calyx 1 mm. long and broad; calyx teeth blunt
   Calyx more than 1 mm. long

47. Inflorescence paniculate
   Inflorescence of axillary cymes; leaves densely pubescent and reticulate beneath

48. Inflorescence subglabrous
   Inflorescence woolly

49. Corolla with a long slender spur
   Corolla with a broad spur of moderate length


Flowers whitish to lavender, September and November.

Dry open mountain sides.

Kweichow: Tchen-lin-tcheou, Bodinier et Martin; Tou-tcheou, Cavalerie, 2573.

Yunnan: Mountains east of Szemao at 5000 ft., Henry, 9020, 9020 A; Salween-Irrawadi divide, 5000–7000 ft., N. of Ya-ko, Forrest, 1043; Tali-fu to Tengyueh road, Forrest, 1007.

Kwangsi: Lungchow, Morse, 134.
Kwangtung: Mainland opposite Hongkong 2000-3000 ft., Hance, 745; common on the bare uplands above Taipo, Dunn.

   Flowers violet to rose-purple, August to September. Moist banks of streams, sides of marshes, etc., and in dense jungle.
   **Szecuwen**: Omi, Wilson, 5118A, b.
   **Kweichow**: Pin-fa, Cavalerie, 363.
   **Yunnan**: Mingkwang-Irrawadi divide at 7000-8000 ft., Forrest, 961; Teng-yueh, Howell, 126.

   Flowers violet, August.
   **Kweichow**: near the cascades, Pin-fa, Cavalerie, 362.

   Flowers dark or light purple. Grassy mountains.
   **Hupeh**: Fang, Wilson, 2577.
   **Yunnan**: Ducloux, 274 (fide Henry); Mengtze, 5000-5500 ft., Henry, 10,069, 10,069A; near Yunnan-sen, Maire, 2497, 2600.

   Flowers deep blue, June. Dry situations among scrub and shady pastures.
   **Yunnan**: eastern flank of Tali range at 9000-10,000 ft., Forrest, 4554.

   Flowers white, November.
   **Yunnan**: Forests south of Szemao at 4000 ft., Henry, 12,721.
   **Hainan**: Hung-mo (Lai Distr.), B. C. Henry, Nov. 21, 1882.

   *P. Gerardianus*, Benth.; Fl. Brit. Ind. iv, 617.
   **O. glabrescens**, Van. l.c, 168.

* P. Gerardianus, Benth.: see Notes Bot. Gard. Edin. xxxvii, 156.
Flowers from pale blue or white to dark red, June to January. Forest, woods, scrub, damp shady places, grassy mountains.*

**Szechuen** : W. China at 1200 ft. to 2800 ft., Wilson, 4376, 4377; Yangtze banks, W. China, Wilson, 4379.

**Hupeh** : Ichang, Henry, 2926; Chang-yang, Henry, 7689, Wilson, 2651; Mt. Omi, Wilson, 5120.

**Kweichow** : Ko-te-pang-kaou, Esquirol, 214; Kouy-yang, Bodinier, 2480.

**Yunnan** : Ducloux, 266, 554; Maire, 313, 425, 647, 1293, 1582, 2030, 2344; mountains N. and S.E. of Mengtze, 5000-6500 ft., Henry, 9042, 9043, 9073, 9796, 9797, 9840, 10,071, 11,166, 11,266, 11,286; Mi-lê district, Henry, 10,071A, 10,072; Yuen-chang at 3500 ft., Henry, 11,576; Szemao, W. Mountains, at 5000 ft., Henry, 12,475; Teng-yueh, Howell, 26; Yangtze Valley between Tzu-ko and Shih-ku at 6000-7000 ft., Forrest, 18; eastern flank of Tali range, Forrest, 6820; Yunnan-sen, Bodinier.

**Kwangtung** : Wong-yu, Tate; Lo-fou-shan at 3100 ft., Ford, 47; Lantao, Dunn; Lienchow River, Matthew.


Flowers blue, August to October.

**Szechuen** : Min Valley, 4000-9000 ft., Wilson, 4321, 4322; between Ta-chien-lu and Chengtu, Hosie.


Flowers, July to October.

**Szechuen** : Tung Valley, 1200 m., Wilson, 4319; between Ta-chien-lu and Chengtu, Hosie.


Flowers white with rose or purple spots.

**Szechuen** : Ta-chien-lu, Pratt, 529.


Flowers very fragrant, blue or dull yellow, sometimes with a purple blotch on the lower lip, August to October. Moist valleys, pine woods.

**Kweichow** : Gan-pin, Bodinier, 1942.

**Yunnan** : Ducloux, 220; Maire, 26, 400, 520, 1609, 2023, 2318; foot of mountains at Mengtze, Hancock, 430, Henry, 9235; Pu-erh at 4500 ft., Henry, 13,492; north of Tali-fu, 8000-

* In shady places the flowers are paler, the leaves larger and often more pubescent.
11,000 ft., Forrest, 597; eastern flank of Lichiang range, 9000–10,000 ft., Forrest, 6345; Tung valley, Wilson, 4387–88.

Flowers yellow, red, or purple, July to October. Ditches.
Szechuen: N. Wu-shan, Henry, 7049, Wilson, 4385; S. Wu-shan, Henry, 4855; Chang-yang, Wilson, 1682A.

Flowers purple, August to October. Banks of streams.
Hupeh: Ichang, Henry, 974 (type).
Szechuen: W. China at 5000 ft., Wilson, 4375; Nan-chuan, Rosthorn, 1164; Lung-mo-ai, Rosthorn, 861.

Flowers blue or white, May to September. Mountain meadows and borders of pine forests.
Yunnan: eastern flank of Tali range at 8000–11,000 ft., Forrest, 4555–56; hills of Yangtze-Mekong divide, 6000–10,000 ft., Forrest, 595.

Flowers white with mauve dots.
Hupeh: Ichang, Henry, 2727, 2763, 3086, 3094.

Flowers lavender-coloured, September and October. Sandy wastes.
Szechuen: Mt. Omi, October 1904, Wilson, 5125.
Yunnan: Valley of Yangtze, between Chi-tien and Chin-ho, elevation of 6000–7000 ft., October 1904, Forrest, 587; near Yunnan-sen, Maire, 1599, 2024, 2040; sandy wastes on mountains

* P. racemosus, Hemsl.: see note in Notes Bot. Gard. Edin. xxxvii, 158. This form is confined to C. China and can only be distinguished from P. excisus, Maxim., by its racemose flowers; its leaves are stalked or sessile, cuspidate or not, whereas in the latter they are always stalked and always cuspidate.
† P. leucanthus, Diels: the only difference observable in the type specimens of this and P. phyllopodus, Diels, is in the pubescence of the leaves.
near Mengtze, September 1893, 5500 ft., Hancock, 73; Mengtze at 4500 ft., Henry, 9811.

   KWEICHOW: Esquirol, 834.

   Flowers lilac, August to September. Grassy places.
   CHILI: Peken, Carles, Hemeling, Bretschneider, 600, Satow; W. Hills, Peken, Carles; Miao-fêng-shan, Peken, W. Hills, Hancock, 75.
   SHANTUNG: Williamson; I-tu-hsien, Ching-chou-fu, Couling, 73A; grassy slopes on Lou-Shan, Tsingtau, Dunn.

   Flowers reddish, bluish, or white, August to October. Grassy mountains, forests, and wooded cliffs.
   SZECHUEN: W. China at 6000 ft., Wilson, 4380, 4384.
   HUPEH: Ou-tan-scion, 2090 m., Silvestri, 2079; Nanto, Henry, 2983.
   YUNNAN: Mengtze, N. and S.W. mountains at 6000-8000 ft., Henry, 10,075, 10,238, 10,073, 10,073A, 11,279, 13,774; Szemao, south forests at 5000 ft., Henry, 12,698.

   Flowers October.
   SZECHUEN: Nanchuan, Tien-sheng-chiao, Rosthorn, 1122.

   Flowers pink, September to October.
   HUPEH: Fang, Wilson, 1682; Patung, Wilson, 2819; Yu-koan-tin at 6000 ft., Silvestri, 2082, 2082A; Ou-tan-scion, Silvestri, 2083, 2083A, b.
   SZECHUEN: Chang-yang, Wilson, 2652.

   Flowers purple or blue, May to August. Grassy slopes and pine woods.
   SZECHUEN: W. China at 3000 ft., Wilson, 4574; Tung valley, Wilson, 4382.
   YUNNAN: east of Tali range, 10,000-11,000 ft., Forrest, 4557; Mengtze, 6000-7000 ft., Hancock, 567, 5000 ft., Henry, 13,792, 10,067, 10,067A.
23. **Plectranthus irroratus**, G. Forrest ex Diels l.c. 228.
   Flowers blue, July. Stony pastures and dry shady places among undergrowth in pine forests.
   **YUNNAN**: eastern flank of Lichiang range, 9000–10,500 ft.,
   *Forrest*, 2507, 6143.

   *Teucrium Mairei*, Léveillé.
   Flowers June to November.
   **KWEICHOW**: Pin-fa, *Cavalerie*, 587.
   **KWANGTUNG**: N. River, *Ford*, 25 (type); Lienchow River, *Matthew*.
   **YUNNAN**: *Maire*, 1615, 2483.

   Flowers blue, July to August. Open mountain meadows and grassy glades in pine forests.
   **YUNNAN**: eastern flank of Lichiang range, 11,000 ft.,
   *Forrest*, 2851, 6243, 6462.

   *P. inflexus,*† Vahl.
   *P. sinensis,*‡ Miq. in Journ. de Bot. Néerl. i, 115.
   Flowers slaty blue, January to September. Rocky hills.
   **CHEKIANG**: Ningpo (Faber), *Hongkong Herb.* 333.
   **FUKIENT**: Fooochow, *Carles*, 679.
   **KIANGSI**: Kewkiang, *Bullock*.

   Flowers bright blue, June to August. Ledges of cliffs and dry stony pastures.

   * P. *inflexus*, Vahl: this MS. name was taken up by Bentham in his Addendum to the Monograph of Labiatae, but appears to be inseparable from *P. amethystoides*.
   † *P. sinensis*, Miq.: the description does not distinguish it from the rather variable *P. amethystoides*, Benth., which is frequent in the region in which Miquel's plant was gathered.
Yunnan: eastern flank of Lichiang range, 9000–12,000 ft., Forrest, 2333, 6313, 6395, 6603.


Szechuen: Wu-shan, Wilson, i429.


Flowers pale purplish blue, September. Among scrub and grass.

Yunnan: western slopes of Tsan-shan range, 9000–10,000 ft., Forrest, 897.


Flowers blue, July. Margins of pine forests.

Yunnan: eastern flank of Lichiang range, 10,000–11,000 ft., Forrest, 2564, 6207.


Flowers a dirty yellow, September. Dry rocky situations, margins of forests.

Yunnan: Hoching and Lichiang valley, 8000–12,000 ft., Forrest, 624, 6056, 6394.


Flowers lilac.

Yunnan: Szemao forest at 4500 ft., Henry, 12,339.


Flowers, November.

Chekiang: Hickin.

Fukien: Foochow, Carles, 734.


1. Lip of corolla 5 times longer than the tube

Lip 3 times the tube

2. Pubescent plant with papery leaves

Glabrous with succulent leaves


Flowers lilac or purple, October to November. Rocks in shady places.

Kweichow: Shin-gny-hien, Esquirol, 1058 (type).
Yunnan: Mengtze at 4600 ft., S.E. mountains at 4000-6000 ft., Henry, 9222, 9222a, Hancock, 235.

Flowers purple.
Yunnan: Szemao, W. mountains at 5000 ft., Henry, 12,537; Pu-erh at 4500 ft., Henry, 13,498.

Plectranthus carnosifolius, Hemsl. in Journ. Linn. Soc. xxvi, 269.
Flowers purple and white.

Whole plant grey-strigose . . . . . 1. **sinensis**.
Plant subglabrous . . . . . 2. **pallidus**.

Flowers, October.
Hainan: Lam-ko, B. C. Henry (Hance, 22,207).

Flowers red.
Yunnan: Szemao, south forests at 4000 ft., Henry, 12,675.

Hyptis suaveolens, Poit.; Fl. Brit. Ind. iv, 630.
Flowers, March to December, blue. Salt marshes.
Fukien: Amoy, Hance, 1485.
Kwangtung: Chao-chau-fu, Dalziel; Hongkong, Ford, 73; Swatow, Dunn; Macao, Hance, 1485.
Hainan: Henry, 8736.


1. Leaves long-stalked; calyx glabrous or with spreading hairs . . . . . 2.
Leaves narrowed into very short stalks; calyx with adpressed pubescence . . . . . 1. **Dielsianus**.
2. Flowers black when dry; lower calyx teeth setaceous.
   Flowers pale when dry; calyx teeth all triangular.

3. Flower nearly twice as long as calyx.
   Flower only slightly longer than the calyx.

4. Calyx nearly glabrous; hairy part of filament exerted.
   Calyx hairy; hairy part of filament included.

   Flowers rose, November. In scrub on dry rocky hillsides.

   Flowers red. Damp sandy ground.
   **Yunnan**: Szemao forest at 4600 ft., *Henry*, 11,699.

   Flowers red or purple. Shady woods.

   Flowers white tinged with pink. Woods.

   Flowers pale purple.
   *P. parviflorus*, Benth. in Fl. Hongkong. 275 (non alibi).
   Flowers January.


1. Leaves opposite
   Leaves verticillate

2. Stem and leaves hirsute
   Stem and leaves glabrous or nearly so
3. Flower spike 5 mm. thick
   Flower spike 12 mm. thick  4. linearis.

4. Leaves 3 in a whorl, oblong-lanceolate
   obtuse
   Leaves 4–10 in a whorl, linear, acute  4. Sampsoni.

   Flowers pink, January to August. Ditches.
   Yunnan: Szemao, 4500 ft., Henry, 12,311.
   Kwangtung: Hongkong and neighbourhood, Lamont, 570,
   Harland, 468, Champion; Lo-fou-shan at 1000 ft., Ford, 3;
   Wampoa, Hance; Pakoi, Playfair; Ha-hang, Hongkong New
   Territory, Wong Kei.
   Hainan: Henry, 8168.


   Flowers pink to lavender, September. Wet places.
   Kweichow: Tsin-tchen (Martin), Bodinier, 1946.
   Yunnan: Szemao, 4500–5000 ft. Henry, 12,226 & a, 12,628.

   Flowers August. Damp situations.
   Kwangtung: Canton, Sampson (Hance, 10,946).

   Flowers August, red. Ditches, padi fields.
   Kweichow: Ten-chang, Esquirol, 155.
   Kwangtung: Swatow, Tai-yong, Dalziel; Canton, Hance,
   11,448; Hoi-fung, Lo Quai; Lienchow River, Matthew.
   Hainan: Tingan, Katsumata.


Colebrookia oppositifolia, Sm.; Fl. Brit. Ind. iv, 642.
   Flowers white, December. Grassy mountains.
   Yunnan: Shih-ping at 3000–4000 ft., Henry, 11,593,
   11,593a, 11,593b; Menglte at 5500 ft., Henry, 10,921; Szemao
   at 4500 ft., Henry, 12,740; Red River forests, Hancock, 248.

1. Bracts linear or subulate
   Bracts broad, blunt or acuminate

2. Leaves white-tomentose beneath, rugose
   Leaves not tomentose, flat

3. Leaves abruptly acuminate below into a slender stalk
   Leaves cuneate at the base, sessile; raceme tail-like

4. Leaves on slender petioles, rounded or shortly acuminate at base
   Leaves sessile

5. Leaves large; plant shrubby large
   Leaves small; humble annuals

6. Flower spike slender, interrupted; bracts subulate
   Flower spike stout, continuous; bracts linear

7. Bracts strongly ciliate
   Bracts pubescent

8. Corolla tube 4 times as long as calyx
   Corolla tube less than twice calyx

9. Flowers 4-5 mm. long; whole plant roughly hairy
   Flowers 9 mm. long; whole plant, except the inflorescence, glabrous

10. Leaves nearly smooth above and almost glabrous beneath; calyx teeth linear, contracted together in fruit
    Leaves scabrous above, pubescent beneath; calyx teeth short, triangular, open in fruit

11. Leaves gradually narrowed to the base; calyx and corolla adpressed-pubescent
    Leaves abruptly acuminate below; calyx and corolla woolly

12. Leaves entire
    Leaves crenate or serrate

13. Leaves all linear or linear-lanceolate, sessile
    Leaves ovate or stalked

14. Stem tall, erect, simple; bracts nearly glabrous, reticulate, truncate, a little retuse or shortly cuspidate
    Stem branched or short and decumbent; bracts woolly, rounded or conspicuously cuspidate

1. rugulosa.
2. Myosurus.
3. flavia.
6. communis.
5. pilosa.
7. polystachya.
8. Stauntonii.
9. ochroleuca.
11. integrifolia.
15. Spike unilateral; plant annual
   Spike multifarious
16. Flowers purple
   Flowers yellow
17. Leaves small, ovate; flower spike ovate
   Leaves oblong or linear; spike cylindric, woolly
18. Leaves nearly glabrous on both sides, serrate
   Leaves pubescent on both sides, crenate-serrate
19. Calyx teeth reflexed in fruit
   Calyx teeth erect in fruit
20. Annual with one-sided spike of yellow flowers
   Perennial with quadripartite purple flowers

1. Elsholtzia rugulosa, Hemsl. in Journ. Linn. Soc. xxvi, 278.
   Flowers white, yellowish, or lavender, August to October.
   Dry grassy and stony pastures and woods.

   **KWEICHOW**: Tsin-gay (*Laborde*), *Bodinier*, 2711.

   Flowers dull yellow, August. Dry open places in scrub.
   **YUNNAN**: Eastern flank of Tali range at 7000–8000 ft., *Forrest*, 7220.

   Flowers fragrant, yellow to orange, May to September.
   Moist shady places.
   **SZECHUEN**: W. China at 4500 ft., *Wilson*, 4339.
   **CHEKIANG**: *Hickin*.
   **YUNNAN**: *Ducloux*, 520; Mengtze, north forests at 8000 ft., *Henry*, 10,239; among the hills in the neighbourhood of Yunnan-sen, *Maire*, 1778, 2036, 2171, 2174; eastern flank of
Lichiang range, 7000–9000 ft., Forrest, 4693, 6283; Yangtze valley above Na Le, 5000–8000 ft., Forrest, 523.

   Frequently recorded from S. China, but the voucher specimens seen by me prove to be E. communis, Diels.

   Dysophylla Mairei, Léveillé.
   Flowers white, pink, or lilac, September to October. Fields and dry pastures.
   Yunnan: Ducloux, 580; Tong-tchouan, 4500 m., Maire; Mengtze at 6000 ft., Henry, 9233, 9711; Yunnan-sen, Maire, 1204, 2035; Ming-kwang valley, 6000–7000 ft., Forrest, 947; northern end of Lichiang valley at 9000 ft., Forrest, 6680; Mekong at 6000–9000 ft., Forrest, 583, 588.

   Flowers pink or white, October. Waste ground, woods, and open grassy places on clay.
   Shensi: N. Shensi, Giraldi, 597.
   Kweichow: Pin-fa, Cavalerie, 1426.
   Yunnan: Ducloux, 509; common at 6000–11,000 ft. in all the valleys, Forrest, 628, 830, 831; Mengtze at 4600 ft., Hancock, 230, Henry, 9726; Mi-lê District, Henry, 9892; Yunnan-sen, Maire, 632, 1202, 1206, 1623.

   E. Dielsii, Léveillé l.c. ix, 441.
   E. Souliei, Léveillé l.c. ix, 248 (non 218).
   Flowers yellow, pink, or white, July to October. Open shrubby pastures, dry stony ground, margins of pine forests.
   Chili: Zu-lu (Lan-yi-san Province), Giraldi; Satow.
   Szechuen: Ta-chien-lu, Soulié, 781, Hosie; W. China, Wilson, 1299A, 4314.
Hupeh: Fang, Henry, 6755.
Kweichow: Kouy-yang, Bodinier, 1944.
Yunnan: Yunnan-sen, Maire, 127, 634, 1235, 1300, 1637, 2173, 2310, 2602, 2604; Ducloux, 565; eastern flank of Tali range at 7000–9000 ft., Forrest, 4694, 4759; eastern flank of Lichiang range at 9000–11,000 ft., Forrest, 2681, 6333, 6549, 6617, 6718; Teng-yueh, Howell, 77; Mengtze at 5000–6000 ft., Henry, 6996, 11,305.

8. Elsholtzia Stauntoni, Benth.; DC. Prodr. xii, 160.
   Flowers September.
   Chili: mountain west of Pekin, Forbes; Nan-kau, Williams (Hance, 14,608); Pekin, Bretschneider, 77.

   Flowers pale yellow.
   Yunnan: Mengtze at 4700 ft., Henry, 9136.

    Flowers white, fragrant.
    Yunnan: Mengtze at 5500 ft., Henry, 9250, 9250A, 10,070.

    Chili: Jehol, Staunton (olim in Herb. Banks, Benth.).

    Flowers pink. Open or wooded boggy ground.
    Yunnan: Mengtze, 5500–7000 ft., Henry, 9950A, 9950B, 10,305; Mi-lê District, Henry, 9950A; Yunnan-sen, Maire, 1203, 1543, 2037; Ming-kwang valley north of Li-shih-toa-ho at 6000–7000 ft., Forrest, 934; eastern flank of Tali range at 8000–10,000 ft., Forrest, 7209.

    E. Argyi, Léveillé l.c. viii, 425.
    E. Feddei, Léveillé l.c. ix, 218.
    Flowers lilac, September to November. Stony pastures and cultivated fields.
    Shensi: Thiu-kio-tchien, Giraldi.
    Chili: Peking, Hemeling, Bretschneider, 576.
    Shantung: Chefoo, Carles, 343; Bullock, 343; Tsingtau, Dunn.
152  Dunn—A Key to the Labiatae of China.

Hupeh: Chang-yang Mts., W. Hupeh, Wilson, 1745, 4364, 5717; Ichang, Henry, 135, 159, 955, 2674.
Szechuen: Tongolo, Soulé, 226-27; Ta-chien-lu, Hosie.
Kiangsu: Chusan, Home, R. Brown; Shanghai, Carles, 406; Si-o-le-kiao, d’Argy.
Chekiang: Ningpo, Home.
Kiangsi: Kewkian, Carles, Hickin.
Kweichow: Pin-fa, Cavalerie.
Yunnan: eastern flank of Lichiang range at 9000-10,000 ft., Forrest, 6699; abundant in Mekong and Yangtze valleys, 5000-11,000 ft., Forrest, 622; Yunnan-sen, Maire, 1205, 1640, 1762, 2317, 2494.
Kwangtung: Lienchau River, B. C. Henry.


Flowers pale yellow, September. Moist ground.
Yunnan: Ching-tun plateau, 12,000-13,000 ft., Forrest, 625.


Flowers purple, July to October. Marshy stony ground.
Yunnan: Ducloux, 510; Yunnan-sen, Maire, 1624; Szemao, E. Mts. at 5000 ft., Henry, 12,670; Ming-kwang Valley north of Machung at 6000-7000 ft., Forrest, 946; Lichiang valley at 8500 ft., Forrest, 6729; eastern flank of Tali range at 7000-9000 ft., Forrest, 7042, 7195; Tali-fu and Ting-chuan valleys at 6500-8000 ft., Forrest, 585.

16. Elsholtzia ianthina, Dunn.

Dysophylla ianthina, Maxim. ex Kanitz Növquyt. gyujtesek grof. Szeckenyi (1891) 46.

Flowers June to August. Wet meadows or shallow water.
Kansu: south of Tetuaz River, Przewalski, 387; foot of northern ridge, Przewalski, 96.


Flowers July.
Szechuen: Tsa-ku-lao, Rosthorn, 2543.


Flowers yellow.
Kansu: H. F. Ridley.
Szechuen: Tongolo, Soulé, 375; Ta-chien-lu, Soulé, 93; Pratt, 884.

Flowers rose-lavender, September to November. Exposed rocky places.

**Yunnan**: Yunnan-sen, Bodinier, 2547; Maire, 1542, 2396; Yuan-chang at 5000 ft., Henry, 9368B; Mengtze at 6000 ft., Henry, 9368, 9368A; summit of Sung-kwei pass at 11,000-12,000 ft., Forrest, 7371; mountains west of Tali-fu at 9000 ft., Forrest, 586; eastern flank of Lichiang range at 9000-10,500 ft., Forrest, 2997.


**Keiskia japonica**, Miq. l.c.

**Kiangsu**: recorded there by Hemsl. in Journ. Linn. Soc. xxvi, 279.


1. Corolla tube expanded at middle to 4 times its width below
   2. Corolla tube cylindrical

2. Corolla tube 1.3 cm. long
   3. **Cavaleriei**

1. **Hancea sinensis**, Hemsl. in Journ. Linn. Soc. xxvi, 310, t. 6.

Flowers dark purple, July.

**Szechuen**: Ta-chien-lu, Pratt, 152; Omi, Faber, 666, 681 (types), Wilson, 5124, 5132; W. China, Wilson, 4373 (4000 ft.).

**Yunnan**: Mengtze, S.E. Mts., Henry, 9196.


**Plectranthus nudipes**, Hemsl. in Journ. Linn. Soc. xxvi, 272.

**Szechuen**: N. Wushan, Henry, 7037; Kuan-shien Mts. at 5000 ft. (50 miles north-west of Chengtu), Ferguson.


* The position of **Hancea** next to **Keiskia** in the *Saturineae* instead of in the place (*Prasicae*), suggested by its author, Hemsley, requires explanation. When established by that author its fruit was unknown and, *Prasieae* and *Saturineae* not being entirely distinguishable except by the characters of the nutlets, he doubtfully placed it in the former. Ripe fruits having now been received from Léveillé, and the nutlets proving to be naturally quite dry, it may be placed in *Saturineae* as Léveillé himself suggested to me. It is only distinguished from *Plectranthus* by the expansion of its corolla into a limb of five flat lobes, by the divaricate, not declinate, stamens. A certain accommodation of species is necessary in consequence of this unexpected affinity. *Plectranthus nudipes*, Hemsl., is here transferred to **Hancea**, **Hancea Hemsleyana** and **Prainiana**, Léveillé, to *Plectranthus*. 

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DUNN—A KEY TO THE LABIATAE OF CHINA. 153

1. Whole plant shaggy
   Plant glabrous or pubescent
   Calyx 1.1–1.3 cm. long; seeds white
   Calyx 6–7 mm. long; seeds reddish
   1. ocyoides.
   2. avium.
   3. nankinensis.


   Flowers white.
   HUPEH: Henry, 4455, 4971.


   Flowers white, October. Cultivated.
   CHILI: Pekin, Bretschneider, 577, Carles, 140.
   FUKIEN: Foochow, Carles, 733.
   YUNNAN: S.W. China, Bourne, 2; Salween and Irrawadi basins, Forrest, 871; Yunnan-sen, MAIRE, 25, 734, 2614.
   KWANGTUNG: Swatow, Dunn.


   Flowers pink, April to September. Waste ground.
   CHILI: Pekin to Jehol, Staunton.
   HUPEH: Henry, 4356; Hokiang, Henry, 692; S. Wu-shan, Wilson, 2659; Ichang, Henry, 459, 1050, 2607, 3023, 2258A.
   KIANGSU: Shanghai Hills, Carles, 15.
   CHEKIANG: Hickin.
   FUKIEN: Foochow, Carles, 15.
   KWEICHOW: Tsin-gay, Cavalerie, 2709, 2710.
   KIANGSI: Lungchow, Morse, 520.
   KWANGTUNG: Hongkong, Forbes, Faber, Carles, 348, Main-gay, 536, 537, Hance; Macao, Callery, 158; Canton, Hance, 6546; Lantao, Dunn.


1. Flowers within large bracts
   Flowers bare
   1. chinensis.
   2.

2. Seeds reticulate
   Seeds opaque smooth; leaves long-stalked ovate, crenate-dentate; seeds spherical, opaque
   2. Cavaleriei.
   3.

3. Seeds closely reticulate, deeply pitted
   Seeds loosely reticulate, flat
   3. lanceolata.
   4. dianthera.
   *M. Fordii*, Maxim. in Mél. Biol. xii, 525.
   Flowers June to September.

   **Hupeh**: Ichang, *Henry*, 2240, 4325.
   **Chekiang**: *Hickin*.
   **Fukien**: Foochow, *Carles*, 725.

   Flowers rose, September. Stream banks.
   **Kweichow**: Pin-fa, *Cavalerie*, 530.

   *Calamintha Argyi*, Léveillé l.c. viii, 423.
   Flowers purple, September to October. Fields.

   **Shantung**: Tsingtau, *Zimmermann*.
   **Kiangsu**: hills near Shanghai, *Carles*, 225.
   **Chekiang**: *Hickin*; Ningpo, *Faber*, 61, 81, 334, 1710.
   **Fukien**: Amoy, *Hance*, 1484 (type); Foochow, *Carles*, 772.
   **Kiangsi**: Kewkiang, City Wall, *Carles*, 226; *Shearer*; Lushan, *Bullock*, 62.
   **Kiangsu**: Sin-kia-wei, Souo-se, d'Argy.

   *M. soochouensis*, Matsuda?
   *M. punctata*, Maxim. in Mél. Biol. ix, 436.
   Flowers pink, August to September. Roadsides.

   **Shantung**: Chefoo, *Faber*, 116.

Dunn—A Key to the Labiatae of China.

Kiangsu: Shanghai, Carles, Maingay, 534.
Fukien: Foochow, Carles, 736.
Kwangtung: Lo-fou-shan at 3100 ft., Ford, 40; Hance, 22,288; Swatow, Thayionga, Dalziel; Kwai-sin, Lo Quai; Lienchow River, Matthew; Ma-lo-tong, Tutcher.


Flowers in short terminal racemes
Flowers in axillary whorls

Flowers October. Stream sides.
Kweichow: Tin-fan, Cavalerie, 1933.

Flowers lavender, September and October. Ditches and marsh-edges.
Chili: Pekin, Bretschneider, 578–79.
Shantung: Ching-chou-fu, Couling.
Shensi: Giraldi.
Szechuen: Henry, 7210.
Hupeh: Nanto, Henry, 2637, 2735; Ichang, Henry, 66, 72; W. Hupeh, Wilson, 2528A.
Kiangsu: Shanghai, Maingay, 539, Carles.
Fukien: Foochow, Carles, 690.
Yunnan: Ducloux, 208; eastern flank of Lichiang range at 9000 ft., Forrest, 2559; Lichiang valley, Forrest, 2560; Tali valley, Forrest, 4531; base of eastern flank of Tali range, Forrest, 6807; Mengtze at 4500 ft., Henry, 10,428, 10,428A; Szemao, W. Mts., Henry, 10,428B; Yunnan-sen, Maire, 923.
Kwangtung: Hongkong, Saiwan, Hance, 2982; Kwaisin, Lo Quai; Sun Wai, Tutcher.


Leaf-serrations acuminate, pungent
Leaf-serrations blunt

1. Lycopus lucidus, Linn.; DC. Prodr. xii, 178.
Flowers July. Water sides.
Chili: Pekin, Bretschneider, 598; Staunton.
Shantung: Wei-hai-wei, Dunn.
Hupeh: Henry, 5197; Patung, Henry, 4597; W. Hupeh, Wilson, 1537.
Kiangsu: Shanghai, Faber.
Yunnan: Yunnan-sen, Maire, 657, 1220, 1877, 2527; Mengtze, rare, Hancock, 207; Szemao, Henry, 12,618.
Kwangtung: Kwai-sin, Lo Quai.
   Flowers bluish white, August.
   **CHILI**: Pekin, Bretschneider, 583.
   **KWEICHOW**: Tou-an-gué, Cavalerie, 2480.


   Flowers pink, July to October. Dry grassy places.
   **SHENSI**: Giraldi.
   **SZECHUEN**: Ta-tsien-lu, Pratt, 604, Hosie.
   **HUPEH**: Henry, 623; Ichang, Henry, 2140, 2414; Hankow,
   Carles; W. Hupeh, Wilson, 1520; Silvestri, 2060.
   **KIANGSU**: Chinkiang, Carles, 478.
   **CHEKIANG**: Barchet; Wenchow, Bowring.
   **KIANGSI**: David; Kewkiang, Shearer.
   **YUNNAN**: Lichiang range at 8200 ft., Forrest, 2528; eastern
   flank of Tali range at 7000–9000 ft., Forrest, 4532; base of
   eastern flank of Lichiang range at 8000–9000 ft., Forrest, 5767;
   Mengtze, Henry, 11.137, Hancock, 209; Yunnan-sen, Maire,
   314, 1590, 2692.


   Flowers whitish, June to September. Grassy slopes.
   **CHILI**: (Pierson), Hance, 7103.
   **SHANTUNG**: Chefoo hillsides, Carles, 333. Williamson,
   Maingay, 46; Wei-hai-wei, Matthew, Dunn.


   xi, 298.
   Flowers rose, June. Sandy hills.
   **KWEICHOW**: Tin-lan, Cavalerie, 3778.
   **YUNNAN**: Yunnan-sen, Maire, 1843.


Bracts minute
   Bracts varying from the length of the pedicel
   to the length of pedicel and flower
together
   1. *gracilis*.
   2. *Clinopodium*.
1. **Calamintha gracilis**, Benth. in DC. Prodr. xii, 232.


Flowers lilac or pink, April to September. Dry grassy or waste places.

**SHANTUNG**: Faber, 304.
**SZECHUEN**: Chien-shi, W. China, Wilson, 911.
**HUPEH**: Henry, 1957; Ichang, Henry, 252, 1198.
**Kiangsu**: Shanghai, Carles, 354.
**FUKIEN**: Foochow, Carles, 611; Yuen-ki, Dunn.
**YUNNAN**: Ducloux, 8.
**KWEICHOW**: Hoang-ko-chou (Seguin), Bodinier.
**KWANGTUNG**: Chaochoufu, Dalziel, Dunn; Sai-chu-shan (Sampson), Hance, 13,045; Hongkong, Peak District common, Dunn, Ford, 145; Pakwan, Hance, 7489; Hongkong, Victoria Peak, Bodinier, 1131.

2. **Calamintha Clinopodium**, Benth.

*Key to Varieties of C. Clinopodium.*

1. Bracts as long as the calyx . . . 2.
   Bracts shorter than the calyx . . . 3.
2. Leaves medium in size . . . var. *typica*.
   Leaves large . . . var. *discolor*.
3. Bracts from half as long to nearly as long as the calyx . . . 4.
   Bracts less than half the calyx . . . 6.
4. Stem creeping; bracts few . . . var. *repens*.
   Stem erect or ascending . . . 5.
5. Flowers large, twice as long as the calyx; hairs spreading . var. *megealantha*.
   Flowers small; bracts few; hairs deflexed . var. *chinensis*.
6. Leaves large . . . var. *pratensis*.
   Leaves small . . . 7.
7. Stem branched erect; hairs spreading . var. *umbrosa*.
   Stem decumbent; bracts few; flowers small . . . 8.
8. Heads small, numerous . . . var. *polyccephala*.
   Heads few . . . var. *nepalensis*.

var. *typica*.

**Calamintha Clinopodium**, Benth.; Fl. Brit. Ind. iv, 650.
Flowers pink. Grassy places.

**YUNNAN**: Mengtze at 5000 ft., Henry, 9231A; N.W. Yunnan, Monbeig, 214.
var. **discolor.**


Flowers pale rose-purple, June and July. Grassy open glades in forests.


**Yunnan**: south of Red River from Manmer at 6000 ft., *Henry*, 9766; eastern flank of Tali range at 9000–10,000 ft., *Forrest*, 4527 (type).

var. **repens.**

*Calamintha repens*, Benth. ; *DC. Prodr.* xii, 233.

Flowers, June.


var. **megalantha.**


Flowers rose, June to August. Open ground.

**Yunnan**: eastern flank of Lichiang range at 10,000–11,000 ft., *Forrest*, 6322, *Forrest*, 2476 (type).

var. **chinensis.**

*Calamintha chinensis*, Benth. in *DC. Prodr.* xii, 233.

Flowers pink, May to November. Waste fields and grassy places.


**Shantung**: Maingay, 45 ; Wei-hai-wei, *Matthew*.


**Chekiang**: Barchet.

**Kiangsi**: Shanghai, *Faber*.

**Fukien**: Amoy, *Hance*, 7581.


**Kwangtung**: North River, *Hance*, 7581.

**Hainan**: Katsumata.

var. **pratensis**, Dunn.


var. **umbrosa.**

*C. umbrosa*, Benth. in *DC. Prodr.* xii, 232.


*Melissa umbrosa*, Bieb.

Flowers rose to purple, May to July. Stony and grassy ground.
HUPEH: Henry, 943, 3661; Ichang, Henry, 757, 1013, 2778; Hankow, Carles.

KIANGSU: Shanghai, Carles, 355; Tsacapan, d'Argy.

FUKIENT: Amoy at 1700–1800 ft., Hance, 1483; Foochow, Carles, Dunn.

YUNNAN: Mengtze at 5000 ft., Henry, 1,1824; eastern flank of Lichiang range at 9000–10,500 ft., Forrest, 2309A; Tali valley at 6700–8000 ft., Forrest, 4528; eastern flank of Tali range at 7000–9000 ft., Forrest, 4522; Yunnan-sen, Maire, 778, 2042, 2187, 2303, 2694.

KWAN TUNG: Swatow, Thai-yong, Dalziel.

var. polycephala.


Flowers pink, September. Hedges.

KWEICHOW: Gan-pin, Bodinier, 1941.

YUNNAN: common on Mekong-Yangtze divide at 10,000 ft., Forrest, 4529.

var. nepalensis.

Melissa nepalensis, Benth.

Flowers rose, August. Dry stony places.

HUPEH: Ichang, Patung, Henry, 3661, 4841.

YUNNAN: Momien, Anderson; eastern flank of Tali range at 7000–8000 ft., Forrest, 4529.


Melissa parviflora, Benth.; Fl. Brit. Ind. iv, 651.


Flowers rose-purple to whitish, July to August. Open stony or bushy ground.

HUPEH: Omi-shan, Wilson, 5130.

KWEICHOW: Pin-fa, Cavalerie, 488, 3055.

YUNNAN: Tali range at 6700–8000 ft., Forrest, 4538, 7286; Yunnan-sen, Maire, 780, 2158, 2651, Ducloux, 116; Mengtze, forests to north at 8000 ft., Henry, 10,214, 10,214A.


1. Flowers large . . . . . . . . . . . . . . . . . 2. Flowers small . . . . . . . . . . . . . . . . . 18.

2. Leaves pinnate . . . . . . . . . . . . . . . . . 3. Leaves simple . . . . . . . . . . . . . . . . . 6.
3. Exserted part of corolla tube longer than the lobes
   Exserted part shorter than the lobes
4. Terminal leaflet similar in shape to the side ones, less than twice as long
   Terminal leaflet linear-oblong, more than 3 times as long as the side ones
5. Upper lip of blue corolla straight; leaflets at least 7 in number; calyx cylindric, 3-4 times longer than broad
   Upper lip of yellow or blue corolla hooded; leaflets at most 5 or very rarely 7; calyx campanulate, not twice as long as broad
6. Corolla tube cylindric or gradually wider above calyx
   Corolla tube suddenly enlarged above the calyx
7. Most of the leaves widely hastate
   Leaves not widely hastate
8. Corolla tube ½ longer than calyx
   Corolla tube 2-3 times calyx
9. Leaves round in outline
   Leaves oblong, cordate or sagittate
10. Corolla tube less than twice as long as the campanulate calyx
    Corolla tube 2-3 times the calyx
11. Calyx cylindric, half the corolla tube
    Calyx campanulate, one-third of corolla tube
12. Flowers in dense verticils subtended by large bracts
    Flowers fewer and bracts small
13. Leaves tomentose beneath
    Leaves pubescent beneath
14. Calyx cylindric; leaves truncate at base
    Calyx campanulate; leaves sagittate
15. Leaves white-silky tomentose beneath, elliptic
    Leaves not tomentose beneath; hastate or cordate
16. Calyx cylindric, as long as the exserted part of corolla tube
    Calyx campanulate, half as long as exserted part of corolla tube
17. Upper leaves truncate or sagittate at base
   Upper leaves cuneate at base
1. trijuga.
2. yunnanensis.
4. miltiorrhiza.
5. Roborowskii.
6. tricuspis.
7. campanulata.
8. cynica.
10. hians.
11. Przewalskii.
12. glutinosa.
13. brevilabra.
14. digitaloides.
15. umbratica.
16. Bulleyana.
17. castanea.
18. Leaves lanceolate narrowed to a short petiole; flowers under 1 cm. in a dense terminal panicle. Leaves pinnate or cordate; flowers over 1 cm. in long interrupted racemes.

19. *Salvia japonica.*

   Flowers deep lavender, September. Dry open places.
   **YUNNAN**: Lichiang valley at 8500 ft., Forrest, 65, 2813, 6562.

   Flowers violet, blue, or purple, August. Exposed rocky slopes.
   **KWEICHOW**: Hin-y-hien Mountain, Bodinier, 1504. Lung-chen-po, Esquirol, 572.
   **YUNNAN**: Ducloux, 159; Tali range, Forrest, 2047, 4543, 7248; Yunnan-sen, Maire, 217, 1294, 2220, 2266, 2661, 7248; S.W. Mentgze at 4600–6500 ft., Hancock, 61 (type), Henry, 10,053.

   Flowers blue, June to November. Grassy places along rivers.
   **FUKIEN**: Yuen-fu River, *Carles,* Dunn.

   **S. pogonocalyx,** Hance in Journ. Linn. Soc. xiii, 85.
   Flowers blue, rose, or yellow, May to August. Cultivated fields and grassy places.
   **CHILI**: Fuping, *Chanet,* 546; Ming tombs, *Bodinier,* 144; Pekin, *Satow,* Hemeling, *Forbes,* Hance, 6514, 11,432, Bretschnieder, 586, Hancock, 44, Bushell; Pekin Hills, *Carles,* 159; Great Wall at Tinghai, Sandilands.
   **SHANTUNG**: *Carles*; Chefoo, Perry, Swinhoe; Kiaochau, Dunn.
   **GANWHAI**: Wuhu, *Carles.*
   **CHEKIANG**: Barchet.
   **KIANGSU**: Shanghai, *Carles,* 160.
   **KIANGSI**: Kiukiang, *Shearer,* Forbes.
   **KWEICHOW**: Tong-chang, *Esquirol.*
KANSU: Przewalski.

6. Salvia tricuspis, Franch. in Bull. Soc. Phil. Par. sér. 8, iii, 150.
Flowers pale yellow or pink. Cultivated fields.
SZECHUEN: Ta-chien-lu, Soulié (type), 627; Tongolo, Soulié, 238; W. China at 8500 ft., Wilson, 4346-47.

S. Forrestii, Diels l.c. 235.
Flowers orange, June to August. Alpine meadows and open glades in forests.
YUNNAN: Lichiang and Tali ranges at 9000-12,000 ft., Forrest, 2394, 4548, 5678.

SZECHUEN: Ta-chien-lu, Pratt, 71; Wu-shan at 6500 ft., Wilson, 4342.

Flowers yellow, white, or purple, July to August.
SZECHUEN: O-mi-shan at 6000 ft., Henry, 672, Wilson, 4343, 5126; Tchen-kéou-tin, Farges, 31.
HUPEH: Henry, 6822; Fang, Henry, 6864 (type), Wilson, 1688, 2349, 2399.

10. Salvia hians, Royle; Fl. Brit. Ind. iv, 653.
S. Prattii, Hemsl. in Journ. Linn. Soc. xxiv, 316.
Flowers purplish-rose, June to September. Rocks and stony pastures.
SZECHUEN: Ta-chien-lu, Soulié, 600, Pratt, 491, 546; Tongolo, Soulié, 300.
YUNNAN: Tse-kou, Monbeig; eastern flank of Lichiang range at 11,000-14,000 ft., Forrest, 2919, 5754, 5811, 5970.

S. tatsiensis, Franch. in Bull. Soc. Philom. Par. sér. 8, iii, 3, 149.
Flowers blue, August. Alpine meadows.
KANSU: Tangut, Przewalski.
SZECHUEN: Ta-chien-lu, Soulé, 203; Tongolo, Soulé, 313; Kaupai, Tsa-ku-lao, Rosthorn, 2516.

Flowers purple, September.
SZECHUEN: Wilson, 4344 (7000–9000 ft.).
CHEKIANG: Ningpo, Ford, 90.

13. **Salvia brevilabra**, Franch. in Bull. Soc. Phil. Par. sér. 8, iii, 3, 149.
Flowers purple, July.
SZECHUEN: Ta-chien-lu, Soulé, 97, Pratt, 614, Wilson, 4345 (10,000–12,000 ft.).

Flowers yellow with pale violet markings, April to May.
Dry shady pine forests.
YUNNAN: eastern flank of Lichiang range, Sung-kwei, 8000–9000 ft., Forrest, 2031, 5619.

Flowers blue, September to October.
CHILI: Jehol, *David*, 2122; Peking, Breitschneider, 593; Taihanling, *Bullock*, 43; Carles.
SZECHUEN: Ta-chien-lu, Hosie.

Flowers yellow to rose, July to August. Stony pastures and shady forest glades.
YUNNAN: Lichiang and Tali ranges at 10,000–12,000 ft., Forrest, 602, 2262, 2548, 4545, 4546 (type), 4547, 6079, 6831, 6953, 6988.

Flowers canary-yellow, September. Stony pastures.
YUNNAN: eastern flank of Lichiang range, Forrest, 2938.

Flowers blue, all the year. Fallow and cultivated fields, and on rocks.

Widely scattered from Chili and Shantung to Yunnan and Kwangtung.


*S. tuberifera*, Léveillé l.c. 422.
*S. Cavaleriei*, Léveillé l.c. ix, 220.
*S. Delavayi*, Léveillé l.c. ix, 220.
*S. scapiformis*, Hance l.c. 1885, 368.
*S. Piazeskkii*, Maxim. in Mél. Biol. xi, 304.
*S. Fortunei*, Benth. in DC. Prodr. xii, 354.
*S. chinensis*, Benth. l.c. 355.

Flowers blue, red, purple, or rarely white, March to October. Shady places near brooks and on wood borders. Widely distributed in China from Shensi to Yunnan and Kwangtung.


*Lophanthus rugosus*, Fisch. et Mey.; DC. Prodr. xii, 369.


Flowers pink to rose-purple, May to September. Woods.

Kiangsu: Shanghai, Faber.
Chili: foot of Mt. Conolly, Pekin, Carles.
Fukien: Buongkang, Dunn.
Shensi: Tu-kia-po, Giraldi.
Chekiang: Ningpo, Faber.
Hupeh: W. Hupeh, Wilson, 2508, Henry, 424; Ou-tanscien, Silvestri, 2044.

Kweichow: Kou-yang, Bodinier, 2486.

* The species is extremely variable, and many forms have received specific names; but they are so closely connected by the intermediates in the large series now before me, and they are so devoid of any geographical significance, that it appears most reasonable to treat the whole as unspecific. The constant characters are the raceme or panicle of small blue flowers, cylindric calyx, protruded corolla tube, upper straight concave lip, and reflexed 3-lobed lower one. The degree of protrusion of the tube and the stamens is certainly in some cases sexual. The leaves vary through a very wide range; they are even occasionally digitate or pedate through the division of the lower leaflets of a trifoliolate leaf (*Morse*, 4). Hemsley's var. erythrophylla has the upper lip shorter and the stamens protruded from earliest anthesis, but the intermediates are numerous.

1. Leaves pinnatifid
   Leaves ovate or rotund, crenate or serrate

2. Terminal lobe of leaf large, deeply crenate
   flower twice as long as the calyx
   Terminal and all the lobes linear; flower exceeding the calyx by one quarter

3. Leaves complanate
   Leaves distichous

4. Spike of flowers dense, continuous
   Flowers in interrupted spikes or distant verticils, or in panicles

5. Flowers few together in the axils of the stem-leaves
   Flowers in terminal whorled cymes

6. Corolla tube shorter than the long hair-pointed calyx teeth
   Corolla tube much longer than the acute (not hair-pointed) calyx teeth

7. Leaves large, acute
   Leaves small, obtuse

8. Corolla 2 cm. long
   Corolla 1 cm. long

1. Nepeta lavandulacea, Linn. f.; DC. Prodr. xii, 370.
   Flowers purple to violet, November. Waste and barren places.
   KANSU: Przewalski.
   KWEICHOW: near Kouy-yang, Bodinier, 2011.

2. Nepeta tenuifolia, Benth.; DC. Prodr. xii, 370.
   Flowers pale lilac, September.
   CHILI: between Pekin and Jehol, Staunton; Pekin, Men-tou-kou, Carles; Pekin, Breischneider, 605, Skatshkoff, Bullock, 42; Jehol, David, 2119.

   Flowers pale purple, July. On scree.
   SZECHUEN: 16,000 ft., Kingdon Ward.

   Flowers bright blue, July to August. Grassy rocky slopes.
Szechuen: at 9000–11,000 ft., Wilson, 4334; Ta-chien-lu, Pratt, 472, Soulié, 260.
Yunnan: S.W. China, Monbeig; eastern flank of Lichiang range, 11,000–12,000 ft., Forrest, 2666.

5. **Nepeta Glechoma**, Benth.; DC. Prodr. xii, 391.
Flowers blue or purple, April to May.
Shantung: Chefoo, Hancock, 4; Wei-hai-wei, Matthew.
Szechuen: W. China, Wilson, 4361.
Hupeh: W. Hupeh, Wilson, 223, Henry, 3840; Ichang, Henry, 655, 3397, 3840, 3724, 5259A.
Kiangsu: Shanghai, Maingay, 540, Carles; Nanking, Faber, 912.
Chekiang: Hoochow, Carles, 162.
Kiangsi: Kewkiang, Faber, 585.
Fukien: Dunn.
Yunnan: N.W. Yunnan, Monbeig 212; Yunnan-sen, Maire, 637.
Kwangtung: Hongkong (rare), Hance, 1146.

Calamintha albiflora, Vaniot l.c. 181.
Flowers white or rose-purple, June to December.
Shantung: Chefoo, Hance, 2275 (Swinhoe).
Szechuen: Wilson, 4386.
Hupeh: Patung, Henry, 6156.
Kweichow: near Kou-yang, Bodinier, 2030; near Gan-pin, Martin.
Yunnan: N.W. Yunnan, Monbeig, 213.


Chekiang: Ningpo, Everard.

Flowers blue, April to August.
Hupeh: Ichang and Patung, Henry, 1132, 1986, 3978; Sui-fu, Faber, 685; above Wan on the river Yangtze, Faber, 701; W. Hupeh, Wilson, 483.
Kwangtung: Lienchow River, Matthew.

1. Leaves pinnatifid
   Leaves entire or toothed

2. Bracts pectinate, prickly
   Bracts entire or without prickles

3. Upper calyx tooth ovate, entire
   Upper three teeth combined into a 3-toothed lobe

4. Leaves linear, entire
   Leaves ovate, crenate

5. Floral leaves spinoso-serrate at the base; flower spike interrupted
   Floral leaves crenate at the base; flower spike dense

6. Calyx pubescent, teeth acute
   Calyx asperous, teeth spinose

7. Flowers few together; upper leaves stalked, serrate, usually ovate cordate
   Flowers in dense verticils; upper leaves usually sessile, oblong, finely serrate or crenate, usually truncate or acute at the base

8. Calyx lobes linear, hair-pointed
   Calyx lobes lanceolate acute

9. Middle and upper leaves sessile
   Middle and upper leaves with slender stalks

10. Bracts lanceolate
    Bracts linear

11. Calyx segments narrow, subulate
    Calyx segments narrow-lanceolate

12. Corolla 2½ times the calyx
    Corolla 1½ times the calyx

13. Corolla 3 times the calyx
    Corolla twice the calyx

   Flowers blue to deep purple, August to September. Stony meadows.
   **KANSU**: *Przewalski*.
YUNNAN: eastern flank of Lichiang range at 11,000–12,000 ft.,* Forrest, 3033, 6490; Chung-tien plateau, Forrest, 604–05 (12,000–13,000 ft.).

Flowers mauve, July. Dry hilly places.
CHILI: Jehol, David.

Flowers blue, August to October. Ditches.
CHILI: Pekin, Bretschneider, Satow, Hancock, 62 (2000 ft.);
Miao-feng-shan, Carles.
KIANGSI: Sarchy (rare), David, 2918.

Flowers white.
KANSU: Przewalski, Hosie, H. F. Ridley.

Flowers dark purplish-blue, July. Limestone drift.
YUNNAN: eastern flank of Lichiang Range at 11,000–12,000 ft., Forrest, 6214, 2730.

*D. rupestre*, Hance.
Flowers blue, October. Grassy slopes.
CHILI: Pekin Mountains at 8000 ft., Hancock, 6; Miao-feng-shan at 6000 ft.; Hance, 14,881, Carles; Siao-wu-tai-shan, Moellendorf.

Flowers May.

Flowers blue, purple, or rarely white, March to November.
Wet shady places.

* In the higher altitudes of its range the flowers are larger (up to twice the size of the Tangut types).
Key to Varieties and Forms of Dracocephalum urticifolium.

Leaves ovate, var. typica—
Normal form of type . . . . (1) forma normalis.
Flowers racemose . . . . (2) forma racemosa.
Stems emitting stolons, which root and flower . . . . (3) forma radicans.
Leaves slightly fleshy . . . . (4) forma carnosa.

Leaves oblong-lanceolate, var. angustifolia—
Normal form . . . . (5) forma normalis.
Flowers racemose . . . . (6) forma racemosa.
Stems emitting stolons, which root and flower . . . . (7) forma radicans.

(1) var. typica, forma normalis.
Szechuen: Omi-shan, Wilson, 5121.
Hupeh: Hsing-shin, Wilson, 1852; W. Hupeh, Wilson, 323, 2774; Chang-yang, Wilson, 1129.
Yunnan: Mengtze at 7000 ft., Hancock, 24.

(2) var. typica, forma racemosa.
Szechuen: S. Wu-shan, Wilson, 1051; Pao-kang, Wilson, 2280; W. China, Wilson, 4368, 4370, 4370A, 4371; Ta-chien-lu, Pratt, 350.
Hupeh: Patung, Henry, 1408, 6109, 6109A; W. Hupeh, Wilson, 755, 962.

(3) var. typica, forma radicans.
Szechuen: Tchen-kou-tin, Farges, 1125.
Yunnan: Szemao at 9000 ft., Henry.

(4) var. typica, forma carnosa.
Szechuen: Omi-shan, Faber, 299, 860-61 (2500-4000 ft.); N. Wu-shan, Henry, 7041, 7088.
Hupeh: Patung, Henry, 4700; Paking, Wilson, 2565, 2565A.

(5) var. angustifolia, forma normalis.
D. pinfaense, Léveillé l.c.
Hupeh: Patung, Henry, 5330; Chang-sha, Henry, 6322; W. Hupeh, Wilson, 595; Chien-shi, Wilson, 744, 969, 1970, 2774A.
Kiangsi: Kiukiang, Maries.
Kweichow: Esquirol, 57, Cavalerie; Kouy-yang, Bodinier, 2284.
Yunnan: Mengtze, Henry, 13,695; Yunnan-fu, Ducloux, 614.
(6) var. **angustifolia**, forma **racemosa**.


**Hupeh**: Chienshi, *Henry*, 5798.

**Kweichow**: Cavalerie, 1034; Kai-chow, Cavalerie, 2781; Longly, Cavalerie, 826.

(7) var. **angustifolia**, forma **radicans**.

**Kweichow**: Bodinier.

In the following the determinations of the forms were not noted:

**Hupeh**: *Wilson*, 1405.

**Yunnan**: eastern flank of Tali range at 9000–10,000 ft., *Forrest*, 7037, 7115, 4536.

9. **Dracocephalum sibiricum**, Linn.


*Nepeta macrantha*, Fisch.; DC. Prodr. xii, 387.


Flowers blue, September.

**Kansu**: *Przewalski*.


Flowers light blue.

**Szechuen**: *Wilson*; cultivated by Messrs. Veitch in 1906.


Flowers dark blue with base of corolla yellow, July. Stony pastures.


**Yunnan**: eastern flank of Lichiang range, 10,500–11,500 ft., *Forrest*, 2601, 6177.


*Nepeta coerulescens*, Maxim. in Mél. Biol. xi, 306.

**Kansu**: *Przewalski*.

*Nepeta Stewartiana*, Diels l.c. xxv, 237.
Flowers blue, July to September. Grassy glades in forest.

**Szechuen**: W. China at 11,000 ft., *Wilson*, 4366.
**Yunnan**: eastern flank of Lichiang range, 9000–12,000 ft., *Forrest*, 598, 2960, 6284, 6447.


*Nepeta tenuiflora*, Diels l.c. xxv, 237.
Flowers blue, August. Open grassy slopes and glades.

**Yunnan**: eastern flank of Lichiang range, 9000–11,000 ft., *Forrest*, 2657.


1. Leaves truncate at the base, or ovate or orbicular

Leaves not truncate at base, linear or oblong, obtuse

2. Leaves truncate at the base, or sinuate or dentate

Leaves cuneate, rounded or cordate at base, crenate or serrate

3. Leaves oblong, obtuse, sinuate-dentate throughout

Leaves ovate or sinuate-dentate only below

1. *scordifolia*.

4. Leaves sinuate dentate throughout; flowers subtended by short bracts

Leaves sinuate-dentate in their lower third part; flowers subtended by leafy bracts; racemes terminal

2. *rivularis*.

5. Racemes axillary

Racemes terminal

3. *Franchetiana*.

4. *sp*.

6. Racemes axillary

Racemes terminal

7. *sp*.

8. *sp*.

7. Leaves stalked

Leaves sessile

5. *angulosa*.

6. *sessilifolia*.

8. Leaves mostly radical

Leaves at flowering time all cauline

7. *Tayloriana*.

9. Leaves cuneate or rounded at base, entire or sinuate

Leaves truncate or cordate at base

10. *sp*.

15. *sp*.
Dunn—A Key to the Labiatae of China. 173

10. Leaves reticulate beneath, rounded at top
   Leaves with veins not prominently netted beneath
   8. obtusifolia.
11. Leaves densely pubescent beneath
   Leaves glabrous
   12. Leaves entire or coarsely serrate
   Leaves sinuate-dentate
   9. javanica.
12. Leaves conspicuously 3-nerved
   Leaves penni-nerved
   10. irinervata.*
13. Leaves less than 5 cm. long
   Flowers glabrous
   4. Vaniotiana.*
14. Leaves over 10 cm. long
   Flowers axillary; root fibrous
   11. stenosiphon.*
15. Petiole more than 1/4 of blade
   Petiole less than 1/4 of blade
   12. yunnanensis.
16. Leaves usually orbicular, obtuse, less than 2.5 cm. long
   Leaves elliptic, over 5 cm. long
   13. discolor.
17. Racemes long and terminal
   Racemes on short lateral branches
   14. indica.
18. Leaves acute
   Leaves obtuse
   15. Wongkei.
19. Leaves oblong-elliptic, blunt
   Leaves linear-oblong, entire
   16. cyrtopoda.
20. Leaves bidentate, distinctly stalked
   Leaves entire or crenate, subsessile
   17. Forrestii.
21. Flowers viscid-hairy; leaves obtuse
   Flowers glabrous
   18. sciaphila.
22. Flowers axillary; root fibrous
   Flowers racemose; root woody
   19. laxa.
23. Flowers blue
   Flowers yellow
   20. strigillosa.
24. Leaves viscid-hairy
   Leaves glabrous or subglabrous
   21. amoena.
   22. lixiangensis.
   23. viscidaula.
   24. macrantha.

1. Scutellaria scordifolia, Fisch.; DC. Prodr. xii, 425.
   Flowers light blue, June to July. Rocky places.
   Chili: Jehol, David; Hun-ho (River), Pekin (rare), Hancock, 82.
   Shantung: Chefoo, Hancock, 13, Dunn; Wei-hai-wei, Matthew, Dunn.
   Kansu: H. F. Ridley.

   * Nos. 4, 10, and 11 may prove to be the same species.
Flowers blue to brilliant purple, April to October. Ditches, paddy bunds, and wet banks.

Szechuen: Omi, Faber.
Hupeh: Ichang, Henry, 480, 273, 886, Wilson, 390, 1127, 1387.
Kiangsu: Chiukiang, Carles, 441.
Chekiang: Hickin; Ningpo, Cooper.
Kiangsi: Kewkiang, Bullock, 214, Reid, 8, Carles, 214.
 Fukien: Yenping, Dunn.
Kweichow: Gan-pin, Cavalerie, 2105.
Yunnan: Szemao, W. forests, Henry, 11,919, 11,919A (5000 ft.).
Kwangtung: Macao, Callery, 184; Sai-chu-shan (Sampson), Hance, 10,910; Lienchow River, Matthew; Wu-king-fu, Dalziel; Swatow, Dunn; Suikong, B. C. Henry.
Hainan: Kiu-chou, Ford, 461.

   Flowers red, April to June. Sides of rivulets.
Szechuen: Omi, Wilson, 5122; Tchen-kou at 3600 ft., Farges, 1133.
   Hupeh: Henry, 3559, 3559A; S. Patung, Henry, 6087; Nanto, Wilson, 1211.
Fukien: Foochow, Carles, 612; Buong-kang (Yenping), Dunn, Hongkong Herb., 3415.

4. Scutellaria, sp.*
   Flowers pale violet, July.

   Flowers white, June, July. Sides of streams.
Hupeh: Fang, Wilson, 2227, 2389.

   Flowers pale yellow, June to August. Woods.
Szechuen: Omi at 4000–9000 ft., Faber, 119, Wilson, 5129.
Yunnan: Tchen-fong-chan, Delavay, 5122.

* This species has been named by Léveillé in honour of Vaniot, but as no description has been so far seen the nomen nudum is withheld.
   Flowers blue, March.
   Yunnan: Ducloux, 429; Yunnan-sen, Maire, 1630, 2178, 2265, 2294, 2531.
   Kwangtung: Tai-mo-shan, Hongkong, Ford, 107; Lantao, Tutcher.

   Flowers blue, June.
   Szechuen: Omi, Faber, 746, 871 (types), 3500, Wilson, 5131; Min River, Wilson, 4356.
   Hupeh: Ichang, Henry, 4208 (type).

   S. formosana,* N. E. Br. in Gard. Chron. 1894, ii, 212.
   Flowers blue, July.
   Kwangtung: Lantao.
   Hainan: Tai-ün, Ford, 462.

   Flowers June.
   Kweichow: Tou-chan, Bodinier.

   Flowers July.
   Kwangtung: Lo-fou-shan, Ford.

   Flowers rosy, May. Shady places.
   Szechuen: Omi, Wilson, 209, 4355, 4360–61, 5714.
   Yunnan: Lou-ki, Delavay, 4983.

   Flowers purple. Ravines in forest.
   Yunnan: Mi-lè forests at 5000 ft., Henry, 10,458; Fengchen-lin, south of Red River at 7000 ft., Henry, 10,657; Szemao at 4000 ft., Henry, 12,368, 12,368A.

* N. E. Brown received the plant which he called S. formosana from Veitch in 1894, and supposed that it came from Formosa. But it is very probable that it originated in the Hongkong Botanic Garden, to which it was introduced from Hainan and where it flowered abundantly at about that time.
Flowers blue to purple, sometimes with a violet-like perfume. Common on grassy hillsides at low and moderate elevations in most provinces of China.

Flowers blue, August.

Flowers pink.
*Yunnan*: Mengtze at 8000 ft., *Henry*, 10,240.

Flowers deep purple. Limestone rocks.
*Yunnan*: eastern flank of Lichiang range at 11,000 ft., *Forrest*, 2281, 5705.

Flowers purple, May. Wheat-fields.

Flowers pale purple, February.
*Yunnan*: Feng-chen-lin at 8000 ft., *Henry*, 13,771.

Flowers light blue.
*Shantung*: Chefoo, *Perry*.

Flowers bright blue, purple, or rose-lavender, March to August. Dry, arid, and stony pastures.
   Flowers dull yellow, June. Dry open situations among scrub.
   YUNNAN: eastern flank of Lichiang range, Forrest, 2424, 6003.

23. Scutellaria viscidula, Bunge; DC. Prodr. xii, 424.
   CHILI: N. China, Bunge; Pekin to Jehol, Staunton; Pekin, SkatschkoFF.
   SHANTUNG: Chefoo, Stuhlmann.

24. Scutellaria macrantha, Fisch.; DC. Prodr. xii, 424.
   S. baicalensis, Georgi, It. 223.
   Flowers deep blue to purple, July to November. Grassy hills, sandy moors.
   CHILI: Great Wall, Bunge; N. China (Moellendorf), Hance, 11,426; Pekin, Williams, Hancock, 16, Satow, Bretschneider, 587–88, Bushell, Hemeling, Carles, 163.
   SHANTUNG: Maisngay, 112; Chefoo, Hancock, 33, Faber, 127, Fortune, 16.
   YUNNAN: Yunnan-sen, Maire, 86, 2183; Mengtze, 5000–6000 ft., Hancock, 69, Henry, 13,772.


   Flowers purple, June. Grassy banks.
   Frequent in the less elevated districts of China from Shantung to Yunnan.


1. Leaf-blade more than 4 cm. long, closely crenate-serrate.
   Leaf-blade under 3 cm., coarsely irregularly biserrate.
   2. Petiole less than ¼ of blade.
      Petiole ¼ of blade.
   3. Leaves sessile, narrow-lanceolate.
      Leaves petioled, ovate.
   4. moschata.

   Flowers August to October.
   SHENSI: Tai-pa-shan, Giraldi, 1233; Miao-wang-shan, Giraldi, 5585.
   Flowers yellow, October.
   YUNNAN: valley of Yangtze between Tse-kou and Shi-ku at 6000–7000 ft., Forrest, 22, 600.

   C. Benthamiana, Hemsl. in Journ. Linn. Soc. xxxvi, 298.
   HUPEH: Chien-shih, Henry, 7325 (type).
   FUKIEN: Amoy, Swinhoe (type).

   KIANGSI: Ningpo (Faber), Hongkong Herb. 73.


Marrubium incisum, Benth.; DC. Prodr. xii, 447.
   Flowers white, March to April. Weed in fields.
   CHILI: Pekin, Bretschneider, 594, Bushell, Bunge, Carles, Hemeling; Tchao-tchao, Chanet.
   HUPEH: W. Hupeh, Wilson, 1756; Ichang, Henry, 1233;
   Yangtze River, Faber, 704.
   KIANGSU: Chinkiang, Carles.
   KIANGSI: Ningpo, Everard.
   YUNNAN: Mengtze plain, Henry; Yunnan-sen, Maire, 1473, 1625, 2161; Yunnan-fu and Tali, 6000–7000 ft., Forrest, 594, 4957.


   Flowers pink. Mountain woods.
   YUNNAN: Mengtze on S.E. mts. at 7000 ft., Henry, 9162, 11,251; Yunnan-sen, Maire, 745, 1169, 1581.


Anisomeles ovata, Br.; Fl. Brit. Ind. iv, 672.
   Flowers pink, August. Grassy and waste places.
   HUPEH: Nanto, Henry, 4442.
   FUKIEN: Amoy, Dunn.
   YUNNAN: Mengtze, Hancock, 324, Henry, 10,149, 10,149A.
   KWANGTUNG: Ford, 143, Fortune, 140, Millett, Seeman, 2439; Swatow, Dalziel, Dunn; Hongkong, Little Hongkong, Wilford, 214, Wright, 389; Macao, Callery, 141, Meyen; Danes’
Island, W. Brown; Pakhoi, Playfair, 97; Hoi-fung, Lo Quai; Plover Cove, Hongkong, Mrs. Gibbs.

HAINAN: Sam-shan-sze, Dunn's Chinese collector.


Hairs on leaves and flowers stellate
Hairs simple


Flowers of a soft rose, July. Dry stony places and on cliffs.

YUNNAN: eastern flank of Tali range at 6500–7000 ft., Forrest, 620, 627, 4533, 6889, 7120.


Flowers red, pink, orange, or brown, March, December. Woods.

Key to Varieties of C. elegans.

Flowers in loose few-flowered axillary heads; corolla tube very short, throat wide
Flowers in loose many-flowered long axillary racemes; corolla tube very long, throat narrowed

var. pauciflora, Prain in Journ. As. Soc. Beng. lxii, 38.


HUPEH: Ichang, Henry, 3334, 3334A (types), 4089.
KWEICHOW: Ou-la-gay and Hoang-ko-chou, Bodinier, 2237.

YUNNAN: Ko-chin Range, 6000–7000 ft., Hancock, 452; Mengtze, Henry, 9089, 9089A and b; Shek-ping, Henry, 11,582; Yunnan-sen, Maire, 1221; hills west of Yunnan-fu, Forrest, 327A.

var. tenuiflora, Prain l.c.

YUNNAN: Szemao at 5000 ft., Henry, 12,607A and b.


1. Stem with plentiful deflexed needle-like hairs
   Stem glabrous or with spreading or soft hairs

2. Flowers less than twice the calyx; leaves linear, subsessile
   Flowers twice as long as the calyx; leaves shortly stalked

   1. chinensis.
   2. aspera.

* Diels writes (l.c.) that Henry's n. 3334, which is Prain's type of C. elegans var. pauciflora, is quite different from C. decora, Diels, having much smaller flowers. When Diels' and Prain's type specimens are compared, the flowers are, however, seen to be exactly the same size.
Calyx teeth acute or bristle-pointed 4.
4. Calyx teeth ovate 5.
Calyx teeth linear 4. leptodon.
5. Leaves cordate ovate stalked 5. kouyangensis.
Leaves oblong or linear-oblong 6.
6. Corolla scarcely longer than the calyx; 6. arvensis.
flowers axillary Corolla much exserted 7.
7. Leaves densely velvety beneath 7. oblongifolia.
Leaves glabrous or pubescent 8. palustris.

1. Stachys chinensis, Bunge; DC. Prodr. xii, 471.
Flowers purple, May. Ditches.
CHILI: N. China, Bunge; Peking, Bretschneider, 604; Ting-tcheou, Chanet, 407.

2. Stachys aspera, Michx.; DC. Prodr. xii, 471.
CHILI: Jehol, David; Pekin, Skatschkoff, David, 9418.
SHANSI: Pei-shan, David.

Flowers red, pink, or white, July.
SZECHUEN: S. Wu-shan, Wilson, 1380; Changyang, Wilson, 1541.
HUPEH: Henry, 2459, 6192; Patung, Henry, 4676 (types).

Flowers purple.

S. cordifolia, Prain in Journ. As. Soc. Beng. lix, ii, 310, not of C. Kock.
S. cardiaphylla, Prain ex Dunn.

* S. adulterina and oblongifolia may prove to be but marked forms of S. palustris.
† The type of Léveillé’s S. Franchetiana—one of Pratt’s Ta-chien-lu specimens—is not the same form as Prain’s S. Yunnan plant, which is the commonest one in S.W. China, and has more cordate and more deeply crenate leaves.
Hupeh: Nanto, Henry, 4615 (cult.); Chien-shih, Henry, 5913; S. Patung, Henry, 7316.
Kweichow, Bodinier, 1700 (type).
Yunnan: Momein, Anderson; Mengtze at 7000 ft., Henry, 10,074, 10,074A, 10,074B, Ducloux, 158, Maire, 781, 1614, 2370, 2485; eastern flank of Tali range at 10,000 ft., Forrest, 861, 2483, 4539, 6828, 6828A.

Flowers pale purple, May to July. Cultivated fields.
Fukien: Yuen-fu River shores, Dunn.
Kwangtung: Wu-king-fu, Dalziel; Han banks, Swatow, Dunn.

Flowers pink or purple, May to October. Fallow fields.
Szechuen: Parker.
Ganwhai: Wuhu, Carles, Bullock.
Kiangsi: Kewkiang, Shearer.
Kweichow: Tchen-lin-tcheou (Martin), Bodinier, 1945.

Flowers pale purple, April to July. Marshes and corn-fields.
Chili: N. China, Bunge; Pekin, Bretschneider, 595.
Hupeh: Wilson, 796 (Nanto); Fang, Wilson, 2367.
Ganwhai: Wuhu, Carles.
Kiangsu: Shanghai (Faber), Hongkong Herb. 37, Maingay, 343, 542, Forbes.
Chekiang: Hickin.
Fukien: Foochow, Carles, 748, 901.
Yunnan: Tali range, 7000–8000 ft., Forrest, 4523.
Kwangtung: W. River, Ford.

39. Galeopsis, Linn.; DC. Prodr. xii, 498.

Galeopsis Tetrahit, Linn.; DC. Prodr. xii, 497.
Flowers white, October. Open pastures.
Dunn—A Key to the Labiatae of China.


Yunnan: eastern flank of Lichiang range at 11,000 ft., *Forrest*, 6476.


Leaves much dissected . . . . 1. *sibiricus*.
Leaves few-lobed or entire . . . . 2. *macranthus*.


Flowers pink, May to August. Damp open places and waste ground. Widely distributed in China from Chili and Szechuen to Kwangtung, Hainan, and Yunnan.


Flowers white, August to September.


Kiangsu: Chinkiang, *Carles*, 508.


1. Floral leaves sessile . . . . 1. *amplexicaule*.
Floral leaves stalked . . . . 2.

2. Lowest whorl of flowers shorter than the petiole . . . . 2. *foliatum*.
Lowest whorl exceeding the petiole . . . . 3.

3. Lowest floral leaves oblong, cuneate.
Lowest floral leaves ovate, cordate . . . . 3. *chinense*.


Flowers pink, March to September. Fields and banks.

Hupeh: *Wilson*, 120.

Kiangsu: Shanghai, *Carles, Faber*.

Chekiang: Hoochow, *Carles*.


Flowers pale purple or white, May. Woods.

Fukien: Buong-kang, Yenping (Dunn), *Hongkong Herb.* 3427.

* L. *macranthus* is represented in China by a well-marked form with the deeply-lobed lower leaves velvety beneath and upper leaves entire.
Flowers pink, April.  
**Hupeh**: Ichang, *Henry*, 1182; Chang-yang, *Henry*, 5220,  
*Wilson*, 201, 211, 4350 (Yangtze River); *Silvestri*, 3369, 3369a.  
**Chekiang**: Pu-to Is., *Henry*, 31; Ningpo, *Everard*;  
**Fukien**: Foochow, *Carles*, 746, 904, *Dunn.*  
**Kiangsi**: Kewkiang, *Shearer*.  
**Kwangtung**: West River, *Ford*.  

Flowers white, April to May.  
**Kiangsu**: Shanghai, Quinsan, *Carles*; Mei-chi, *Carles*, 165.  
**Kiangsi**: Kewkiang, *Faber*, 695.  

*Paralamium gracile*, Dunn l.c.  
Flowers purple. Forests.  
**Yunnan**: S.E. of Mengtze at 6000 ft., *Henry*, 10,636.  

*Loxocalyx urticifolius*, Hemsl. l.c. 309.  
Flowers pink. Forests.  
**Szechuen**: S. Wu-shan, *Henry*, 7266.  
**Hupeh**: Hsingshan, *Henry*, 6482; Fang, 7000–9000 ft.,  
*Henry*, 6795.  

1. Leaves linear, entire; calyx very oblique  1. *lavandulaefolia*.  
Leaves lanceolate or ovate, crenate  2.  
2. Leaves densely woolly or silky  3.  
Leaves subglabrous  4.  
3. Calyx white, woolly  2. *mollissima*.  
Calyx pubescent  3. *lanata*.  
Stem densely hirsute  5. *ciliata*.  

* The species as found by me along the banks of the Yuen-fu River near  
Foochow was a weed in sandy vegetable fields.
1. **Leucas lavandulaefolia**, Sm.
   \[L.\ linifolia,\ Spreng.;\ Fl.\ Brit.\ Ind.\ iv, 690.\]
   Flowers white, July. Sea sands.
   **Kwangtung**: Hongkong, Saiwan Bay (Bodinier), *Hongkong Herb. 605*.

   Flowers white, December. Dry hills and banks.
   **Szechuen**: Chung-king, *Faber, 702*.
   **Hupeh**: Ichang, Nanto, *Henry, 2349, 2599; Wilson, 379*.
   **Yunnan**: Mengtze and Szemao, *Henry, 10,029, 10,029A*.
   **Kwangsi**: Lungchow, *Morse, 229*.
   **Fukien**: Amoy, *Dunn*.
   **Kwangtung**: Hongkong, *Wright, 391, Hinds, Champion, 458*; Swatow, *Dunn*.
   **Hainan**: *Henry, 8114; Tingan, Katsumata*.

   **Hainan**: West coast, Hoi-tow (Fagg), *Hance, 8782*.

   Flowers white, March to December. River banks.
   **Kwangtung**: Swatow, *Dalziel, Dunn*.
   **Hainan**: Carles, *Henry, 8509, U On; Hoi-tow, Hance, 12,816*.

   Flowers white or yellowish, July to October. Dry grassy mountains.

   1. Leaves rosulate; plant acaulescent
      Leaves on the stem
      1. **rotata**
      2
   2. Leaves all narrowed or rounded at the base
      Leaves (at least the lower ones) cordate
      3
      4
   3. Tube of the corolla nearly twice the calyx
      Tube of the corolla hardly exserted
      2. **albiflora**
      4
   4. Flowers in the axils of the upper leaves
      Flowers mostly below the leaves
      3. **gracilis**
      4. **rugosa**
   5. Bracts less than \(\frac{3}{4}\) of calyx
      Bracts as long as the calyx
      6
      11.
6. Calyx teeth gradually acuminate
   Calyx teeth subulate

7. Plant tall, branched
   Plant small, unbranched

8. Plant glabrous or nearly so
   Plant uniformly pubescent

9. Bracts ligulate, branched
   Bracts filiform, simple

10. Bracts very short; leaf-stalks shorter than their blades
    Bracts \( \frac{1}{2} \) the calyx; leaf-stalks longer than their blades

11. Calyx more than 1.8 cm. long
    Calyx less than 1.5 cm. long

12. Annual; whole plant softly tomentose
    Perennial; leaves very rarely tomentose

13. Leaves straight-sided from a broad base to a narrow apex
    Leaves ovate

14. Leaves mostly radical, glabrous, blunt
    Stem leafy

15. Flowers dark purple
    Flowers white or pale pink

   On scree.
   YUNNAN: N.W. Yunnan at 14,000–15,000 ft., Kingdon-Ward.

   Flowers white, May.
   HUPEH: Ichang, Nanto, Henry, 720, 1575, 1910, 3576 (types), Wilson, 83.

* The forms which have been referred to *P. bracteosa* and *P. umbrosa* constitute a nearly complete series between these two species, and it may be that they actually indicate the uni-specific nature of the group. Many forms have been described, and many more might be added, for the shape and pubescence of the leaves, the length and shape of the bracts, vary, giving characters which combine in an infinite number of permutations. *P. bracteosa*, Royle, may be described as (1) the Indian and S.W. Chinese member of the group; *P. melanantha*, Diels (differing from typical *P. bracteosa* in its narrower more pungent bracts, but here regarded as conspecific), as occupying (2) a rather more northerly area (N. Yunnan and E. Tibet); Hemsley’s var. *australis* of *P. umbrosa* as the (3) west-central Chinese representative; while typical *P. umbrosa*, Turcz., occupies (4) the northern provinces: the two latter differ from the former in their pale purple or white flowers, and *P. umbrosa* var. *australis* differs from them in its shorter, stiffer, and wider bracts.
   Flowers white.

   Flowers yellow, May to August. Woods.
   **Kweichow**: Gan-pin, *Martin et Bodinier*; Long-ly, *Cavalerie*.
   **Yunnan**: Mengtze at 6000 ft., *Henry*, 10,076, 10,076a (Feng-chen-lin), 11,445; Szemao at 4000 ft., *Henry*, 12,599.

5. **Phlomis umbrosa**, Turcz.; DC. Prodr. xii, 544.
   Flowers white or pale pink, July to September. Shady forests.
   **Chili**: Pekin, *Burchell*; Po-hua-shan, *Bullock*, *Bretscheider*.
   **Shantung**: Chefoo, *Faber*, 113.
   **Kiangsu**: Chinkiang, *Carles*, 512.
   **Yunnan**: valleys of Mekong-Salween, 6000–8000 ft., *Forrest*, 621; eastern flank of Lichiang range at 10,000–11,000 ft., *Forrest*, 2489, 6100.

   Flowers July.
   **Szechuen**: Tsa-ku-lao, *Rosthorn*, 2530.

   Flowers dull livid crimson, August. Among scrub and on margins of pine forests.
   **Yunnan**: eastern flank of Tali range at 9000–11,000 ft., *Forrest*, 4558a.

Flowers dull livid crimson, August. Among scrub in and on the margins of pine forests.

**Yunnan**: eastern flank of Tali range at 9000–11,000 ft., *Forrest*, 4558.


**Szechuan**: Ta-chien-lu, *Soulie*, 188, 867; W. China, *Bulley*.


Flowers yellow, July.

**Szechuan**: Ta-chien-lu, *Pratt*, 505.


Flowers, June.

**Chili**: Sarchy, *David*, 2731.

12. **Phlomis tuberosa**, Linn.; DC. Prodr. xii, 544.


Flowers purple-violet, June. Stony cultivated ground.

**Chili**: Siao-tai-shan, Pekin at 3600–5000 ft., *Moellendorf*;


**Yunnan**: northern end of Lichiang valley, 9000 ft., *Forrest*, 2307, 5974.


Flowers dull purplish maroon, August. Open pastures.

**Yunnan**: eastern flank of Lichiang range at 11,000–12,000 ft., *Forrest*, 6262.


*P. setifera*, Bur. et Franch. in Journ. de Bot. v, 149.


Flowers mauve to almost black, July. Open grassy places.

**Szechuan**: Ta-chien-lu, *Bonvalot et Pr. Henri*.

**Yunnan**: Mengtze, W. and N. mts. at 7000–8000 ft., *Henry*, 10,216, 10,216A; eastern flank of Lichiang range at 10,000–11,000 ft., *Forrest*, 2540.
46. Eriophyton, Benth. ; Fl. Brit. Ind. iv, 695.
Eriophyton Wallichianum, Benth. ; Fl. Brit. Ind. iv, 695.
Flowers pale rose, September. Limestone rocks.
Yunnan: eastern flank of Lichiang range at 13,000–14,000 ft., Forrest, 2909, 6248.


1. Calyx with acuminate subulate teeth
   Calyx with narrow-lanceolate or triangular teeth
   2. Bracts ovate; calyx teeth equal
      Bracts filiform; upper calyx tooth much longer than the others
      3. Upper calyx tooth twice the others, ligulate (not subulate)
         Upper calyx tooth about equal to the others
      4. Mid-lobe of the corolla lip ligulate; calyx teeth triangular
         Mid-lobe ovate
      5. Calyx teeth narrow-lanceolate
         Calyx teeth oblong

   Flowers yellow (?), September.
   Szechuen: Nan-chuan, Rosthorn, 788.

   Flowers yellow or white, July and August.
   Szechuen: W. China, Wilson, 4372; Paokang, Wilson, 2499.
   Hupeh: Patung, Henry, 2536, 7339.

   Flowers yellow, July to August. Dry shady places.
   Hupeh: Paokang, Wilson, 2502.
   Yunnan: Ducloux, 757; Teng-yueh, Howell, 136; eastern slope of Salween valley at 4000–5000 ft., Forrest, 1040.

4. Microtoena insuavis, Prain.
   Gomphostemma insuave, Hance.
Flowers yellow or reddish, March to October. Ravines and woods.

Kweichow: Lo-fou, Cavalerie, 3548; Kiao-tsoung, Esquirol, 155; Tchen-fong, Esquirol, 672.
Yunnan: Mengtze, Henry, 9850; Shih-ping, Henry, 11,583; Szemao, Henry, 12,588.
Kwangtung: Shiu-kwan River, Lo Quai.

Flowers purple. Pastures and wood borders.
Szechuen: Moupine, David.

Flowers pink. Woods.
Hupeh: Hsing-shan, Henry, 6482a; Fang, Henry, 7631.


1. Calyx hardly ribbed
   Calyx strongly ribbed
   2. Tube of corolla straight, lips small
      Tube incurved, lips large
      3. Flowers in bracteate racemes
         Flowers in cymes
         1. microdon
         2. parviflorum
      4. Corolla tube only slightly exceeding the calyx
         Corolla tube much longer than the calyx
         3. pedunculatum
         4. chinense
      5. Calyx teeth small subulate
         Calyx teeth lanceolate, longer than the tube
         5. lucidum
         6. leptodon

Yunnan: Szemao, W. forests at 4500 ft., Henry, 12,501.

Flowers yellow.
Yunnan: Szemao, E. mts., Henry, 12,253.

Flowers reddish, yellowish, or white.
Yunnan: Henry, 12,518, 12,518A (Szemao), 13,594 (Yuan-chang).
   Flowers white, June.
   Fukien: Amoy, Swinhoe.
   Kweichow: Cavalerie.
   Kwangtung: Lo-fou-shan, Ford; N.W. River, Ford.

   Flowers white to pale yellow, July.
   Yunnan: Mengtze and Szemao, Henry, 11,046, 12,011, 12,013, 12,307, 12,314, 12,609.
   Hainan: Hong-ta, Ford, 464.

   Flowers February. Among bushes.
   Kwangsi: Achin Mts., Lung-chow, Morse, 257.


Eurysolen gracilis, Prain l.c. 44.
   Flowers whitish. Forests.
   Yunnan: Szemao, Henry, 12,913.

50. Amethystea, Linn.

Amethystea coerulea, Linn.; DC. Prodr. xii, 372.
   Flowers deep blue, June to September. Dry waste ground, walls, pastures.
   Chili: Jehol, David, 2064; Tcheng-ling-fu, Chanet.
   Hupeh: Nanto, Henry, 4488.
   Yunnan: Mekong valley from 5600-7000 ft., Forrest, 93; eastern flank of Lichiang range at 8200 ft., Forrest, 2485, 6232.


1. Leaves usually trifid.
   Leaves only serrate
   1. palmatum.

2. Calyx about equally 5-toothed; flowers paniculate.
   Calyx bilabiate, upper lobe broad rounded
   3.

3. Whole plant densely yellowish-silky-hairy; leaves usually cordate, shortly stalked.
   Plant glabrous or pubescent; leaves usually acute at the very base with slender stalks
   2. quadrifarium.
   3. japonicum.
4. Raceme simple, terminal; side lobes of corolla coherent with the posterior one; lower lobes of calyx separate. 
Racemes mostly axillary. 

4. *simplex*.

5. Lobes of fully expanded corolla shorter than the exserted part of the corolla tube. 
Lobes of fully expanded corolla longer than the exserted part of the corolla tube. 

5. *ornatum*.

6. Lower teeth of the calyx coherent nearly to the top. 
Lower teeth free. 

6. *bidentatum*.

7. *Pernyi*.

**Hupeh**: Fang, 8000 ft., Henry, 6844. 
**Yunnan**: Forrest, 6591.

Flowers rose-lilac, July to November. Dry open grass land. 
**Hupeh**: Chien-shih, Henry, 7422; Patung, Wilson, 1412. 
**Hunan**: Shi-men, Henry, 7938. 
**Kiangsu**: Shanghai, Faber. 
**Kweichow**: Esquirol, 765; Kou-yang, Bodinier et Martin, 1735; Pin-fa, Cavalerie. 
**Yunnan**: Mengtze, Hancock, 103, Henry, 9845, 11,047; Tengyueh, Howell; La-fo-wa-di, Salwen at 3000 ft., Forrest, 1068. 
**Kwangtung**: Hongkong, Wilford, 215 (Peak), Champion, Wright, 392, Hance, 901.

Flowers pink, April to October. 
**Szechuen**: W. China, Wilson, 4353 (4000 ft.). 
**Hupeh**: Tung-hu, Henry, 6406; Patung, Henry, 5191, 7328; Ichang, Henry, 515, 941, 6672. 
**Kweichow**: Pin-fa, Cavalerie. 
**Chekiang**: Ningpo (Faber), Hongkong Herb. 66, 67, 335. 
**Kwangtung**: Chao-chau-fu, Dalziel; Lo-fou-shan, Millett, Ford, 147; Shingmun, Hongkong, Tutcher; Victoria Peak, Ford. 
**Hainan**: Henry, 8735, Carsles; Tingan, Katsumata.

Flowers white. Mountain pastures. 
**Yunnan**: Ducloux, 749; Mengtze at 5500 ft., Henry, 10,068.

[Notes, R.B.G., Edin., Nos. XXIX–XXX, Jan. 1917.]
   ix, 218.
   Flowers rose-pink, July to October. Woods.
   Szechuen: Rosthorn, 2188; W. China at 4000 ft., Wilson, 4354.
   Hupeh: in woods near Patung, Henry, 5141; Tung-hu, Henry, 6437; Hsing-shan, Henry, 6471; Fang, Henry, 6700; W. Hupeh, Wilson, 423A, 1451.
   Yunnan: Tseng-fong-chan, Delavay, 5051.

   Flowers white, August.
   Szechuen: Omi, Faber, 676, Wilson, 5128.
   Hupeh: Ichang, Antelope Glen, Henry, 3119, 4150.

   T. alborubrum, Hemsl. in Journ. Linn. Soc. xxvi, 311.
   T. Ningpoense, Hemsl. l.c. 313; Dunn in Notes Bot. Gard.
   Edin. xxxvii, 170.
   Flowers pale yellow or white, September. Woods.
   Szechuen: S. Wushan, Henry, 7227.
   Hupeh: Henry, 4257; Ichang, Henry, 2919; Nanto, Henry, 4600.
   Chekiang: Ningpo mountains (Faber), Hongkong Herb. 63, 336.
   Kiangsi: Kewkiang, Lushan (mountains), Bullock, 63, Carles.
   Yunnan: Menglze at 6000 ft., Henry, 10,986.

52. Leucosceptrum, Sm.; Fl. Brit. Ind. iv, 699.

Leaves rounded at base
Leaves acute at base

1. Leucosceptrum sinense, Hemsl. in Journ. Linn. Soc. xxvi, 310.
   Elsholtzia Cavaleriei, Léveillé, l.c. viii, 424.
   Flowers rose, September. On cliffs.
   Hupeh: Chang-yang, Henry, 7765.
   Kweichow: Tsin-gay, Bodinier, 2709; Tou-chan, Cavalerie, 2710.
Flowers rose-crimson, September. Shady river banks and forests.

YUNNAN: Yang-pi valley at 7000 ft., Forrest, 923; Mengtze, 6000 ft., Henry, 9397 & a.


1. Corolla tube geniculate near the base
   Corolla tube straight
2. Calyx teeth short, obtuse
   Calyx teeth long, acute
3. Corolla tube 2–3 times longer than the limb
   Corolla tube less than half as long again as the limb
4. Corolla tube 4 times as long as the calyx
   Corolla tube less than twice as long as the calyx
5. Plant stoloniferous; stem densely pubescent
   Stolons 0; stem subglabrous
6. Spike compact
   Spike interrupted
7. Leaves oblong, sessile; bracts much exceeding the flowers
   Leaves ovate, stalked; bracts shorter than the flowers
8. Leaves linear
   Leaves spathulate
9. Leaves membranous, not in a rosette
   Lower leaves oblong spathulate in a rosette, subcoriaceous

Flowers blue, April. Mountain streams, wet places in woods.

YUNNAN: Mengtze, Hancock, 183 (5000–6000 ft.), Henry, 10,900; Man-pan, south of Red River at 4000 ft., Henry, 10,304; Szemao, Henry, 11,684, 11,684A, b, c.

2. **Ajuga decumbens**, Thunb.; DC. Prodr. xii, 598.
Flowers white with a blue calyx, April to June. Dry stony ground.

* Maximowicz distinguished *A. macrosperma* from *A. decumbens*, the only other curved-tubed species recorded from China, by its large branching habit. Some of the Indian and all the Chinese specimens seen by me which have the characteristic short blunt calyx teeth are slender, prostrate, or ascending plants.

† The leaves of the Chinese forms of *A. genevensis* vary as they do in Europe, being sessile and oblong on the upper part, stalked and spathulate on the lower part, of the stem.
HUPEH: Ichang, Henry, 770, 814, 1213; Nanto, Henry, 3837.
Kiangsu: Shanghai, Carles, 351.
Fukien: Amoy, Hance, 1430; Kuling, Dunn.
Yunnan: Tali valley and eastern flank of Tali range at 6700–9000 ft., Forrest, 4525.
Kwangtung: Canton, Hance, 1430.

3. Ajuga ovalifolia, Bur. et Franch. in Journ. de Bot. v, 150.
Flowers August. Mountain pastures.
Szechuen: Ta-chien-lu, Soulié, 819, Pratt, 249, 479, Wilson, 4321, 4321A.

Flowers white, veined with purplish black, August. Dry stony pastures.
Yunnan: northern end of Lichiang plain at 8500 ft., Forrest, 2700.

5. Ajuga lupulina, Maxim. in Mél. Biol. ix, 831, xi, 811.
Flowers a watery transparent blue, veined with darker blue, or sometimes yellow, June to September. Mountain pastures.
Chili: Shao-ho-ling Pass, Pekin, Moellendorf, 92; Pekin at 6500 ft., Hancock, 1.
Kansu: Alps south of Lake Kuku Nor, Przewalski.
Szechuen: Sung-pan, Wilson, 4332; Ta-chien-lu, Pratt, 565; Tongolo, Soulié, 944.
Yunnan: eastern flank of Lichiang range at 10,000–11,000 ft., Forrest, 2448, 6000.

Flowers pale blue, May to September. Dry stony fields.
Szechuen: W. China at 12,000 ft., Wilson, 4333; Ta-chien-lu, Pratt, 506.
Yunnan: Tse-kou, Montegi, 217; northern end of Lichiang valley at 8500–9000 ft., Forrest, 596, 2133.

7. Ajuga ciliata, Bunge; DC. Prodr. xii, 596.
Flowers white, July. Wet places.
Chili: Kiu-yang, Chanet, 311; Pekin, Bushell; N. China, Bunge (type).
Shansi: Lao-y-san, Giraldi.
Dunn—A Key to the Labiatae of China.

Szechuen: W. China at 11,000 ft., Wilson, 4325.
Hupeh: Fang, Wilson, 2338; Henry, 6038, 6038A (Chien-shih), 6285 (Chung-lo).

   Flowers March.

9. Ajuga genevensis, Linn.; DC. Prodr. xii, 596.
   A. Argyi, Léveillé.
   Flowers white or mauve, March to August. Stony places. Widely distributed from Hupeh and Szechuen to Kwangtung and Yunnan.

10. Ajuga remot.a, Benth.; DC. Prodr. xii, 598.
   Flowers lilac to white, March to July. Dry stony pastures.
   Yunnan: eastern flank of Tali range at 9000 ft., Forrest, 4524, 7280; Yunnan-sen, Maire, 783, 2422; Mengtze at 4500 ft., Henry, 10,861, Hancock, 163.

Collectors' Numbers.

<table>
<thead>
<tr>
<th>Bodinier</th>
<th>Bourne</th>
<th>Bretschneider</th>
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<tbody>
<tr>
<td>1504: S. yunnanensis.</td>
<td>2237: Colquhounia elegans.</td>
<td>593: Salvia umbratica.</td>
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<td>1533: S. yunnanensis.</td>
<td>2284: Dracocephalum urticifolium.</td>
<td>594: Marrubium incisum.</td>
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<td>1941: Calamintha Clinopodium.</td>
<td>2486: Lophanthus rugosus.</td>
<td>596: Leonurus sibiricus.</td>
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<td>1944: Elsholtzia polystachya.</td>
<td>2669: Mosla chinensis.</td>
<td>600: Plectranthus glaucoalyx.</td>
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<td>34: Elsholtzia rugulosa.</td>
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<td>578-9: Mentha arvensis.</td>
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<td>583: Lycopus europaeus.</td>
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<td>585: Calamintha Clinopodium.</td>
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<td>586: Salvia miltiorrhiza.</td>
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<td>587-8: Scutellaria macrantha.</td>
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<td>13. Prunella vulgaris.</td>
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<td>43. Salvia umbratica.</td>
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<td>63. Teucrium Pernyi.</td>
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<td>214. Scutellaria rivularis.</td>
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<td>131. Elsholtzia cristata.</td>
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<td>141. Anisomeles ovata.</td>
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<td>158. Perilla nankinensis.</td>
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<td>77. Dysophylla cruciata.</td>
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<td>114. Salvia plebeia.</td>
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<td>158. S. japonica.</td>
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<td>159-60. S. miltiorrhiza.</td>
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<td>161. Scutellaria indica.</td>
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<td>162. Nepeta Glechoma.</td>
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<td>164. Leonurus sibiricus.</td>
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<td>165. Lamium album.</td>
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<td>333. Thymus serpyllum.</td>
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<td>343. Elsholtzia cristata.</td>
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<td>347. Plectranthus nervosus.</td>
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<td>348. Perilla nankinensis.</td>
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<td>351. Ajuga decumbens.</td>
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<td>352. A. genevensis.</td>
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<td>354. Calamintha gracilis.</td>
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<td>355. C. Clinopodium.</td>
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<td>362. Plectranthus Prainianus.</td>
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<td>363. P. macranthus.</td>
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<td>488. Melissa parviflora.</td>
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<td>530. Mosla Cavaleriei.</td>
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<td>587. Plectranthus nervosus.</td>
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<td>824. Salvia japonica.</td>
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<td>826. 1034. Dracocephalum urticifo-</td>
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<td>1426. Elsholtzia communis.</td>
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<td>1821. Salvia japonica.</td>
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<td>1933. Mentha Malinvaldi.</td>
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<td>2105. Scutellaria rivularis.</td>
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<tr>
<td>2743. Salvia japonica.</td>
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<tr>
<td>2781. Dracocephalum urticifolium.</td>
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<tr>
<td>3778. Micromeria biflora.</td>
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<tr>
<th>Bullock</th>
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<tbody>
<tr>
<td>215. Scutellaria sciaphylla.</td>
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<tr>
<td>343. Elsholtzia cristata.</td>
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<tr>
<th>Callery</th>
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<tr>
<td>184. Scutellaria rivularis.</td>
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<th>Carles</th>
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<tr>
<td>406. Elsholtzia cristata.</td>
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<tr>
<td>441. Scutellaria rivularis.</td>
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<tr>
<td>442-3. Ajuga genevensis.</td>
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<tr>
<td>478. Origanum vulgare.</td>
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<td>508. Leonurus macranthus.</td>
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<td>512. Phomis umbrosa.</td>
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<td>611. Calamintha gracilis.</td>
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<td>612. Scutellaria Franchetiana.</td>
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<tr>
<td>670. Salvia japonica.</td>
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<td>679. Plectranthus amethystoides.</td>
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<td>690. Mentha arvensis.</td>
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<td>725. Mosla chinensis.</td>
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<td>733. Perilla avium.</td>
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<td>734. Plectranthus macrocalyx.</td>
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<td>736. Mosla dianthera.</td>
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<td>746. Lamium chinense.</td>
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<td>748. Stachys palustris.</td>
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<tr>
<td>772. Mosla lanceolata.</td>
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<tr>
<td>901. Stachys palustris.</td>
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<td>904. Lamium chinense.</td>
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<tr>
<td>1426. Elsholtzia communis.</td>
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<td>1821. Salvia japonica.</td>
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<td>1933. Mentha Malinvaldi.</td>
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<tr>
<td>2105. Scutellaria rivularis.</td>
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<td>2480. Lycopus europaeus.</td>
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<td>2743. Salvia japonica.</td>
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<td>2781. Dracocephalum urticifolium.</td>
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<td>3778. Micromeria biflora.</td>
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<tr>
<td>339. Pogostemon Championi.</td>
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<td>458. Leucas mollissima.</td>
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<tr>
<th>Chanet</th>
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<tr>
<td>546. Salvia miltiorrhiza.</td>
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<tr>
<th>Couling</th>
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<tbody>
<tr>
<td>22, 31. Salvia miltiorrhiza.</td>
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</table>
2064. Amethystea coerulet.
2122. Salvia umbraticola.
2770. Phlomis tuberosa.

5156. Salvia japonica.

8. Calamintha gracilis.
17. Orthosiphon rubicundus.
82. Prunella vulgaris.
105. Origanum vulgare.
116. Melissa parviflora.
141. Ajuga genevensis.
158. Stachys kouyangensis.
159. Salvia yunnanensis.
166. Leucas ciliata.
208. Mentha arvensis.
220. Plectranthus sculpnionatus.
266. P. striatus.
274. P. angustifolius.

57. Dracocephalum urticifolium.
155. Dysophylla verticillata.
214. Plectranthus striatus.
291. Scutellaria sp.

61, 81. Mosla lanceolata.
112. Leonurus macranthus.
113. Phlomis umbrosa.
116. Mosla dianthera.
119. Scutellaria sessilifolia.
127. S. macrantha.
299. Dracocephalum urticifolium.
302. Lamium chinense.
304. Calamintha gracilis.
334. Mosla lanceolata.
666. Hancea sinensis.
676. Teucrium bidentatum.
681. Hancea sinensis.
683. Salvia plebeia.
689. S. japonica.

31. Salvia Maximowicziana.
1033. Scutellaria angulosa.


3. Dysophylla auricularia.
24. Microtoena insuavis ?
25. Plectranthus nervosus.

David.

2731. Phlomis dentosa.
2918. Dracocephalum Moldavica.
9418. Stachys aspera.

Delavay.

Ducloux.

429. Scutellaria Tayloriana.
464. S. indica.
509. Elsholtzia communis.
510. E. kachinensis.
512. Ocimum basilicum.
520. Elsholtzia flav.
554. Plectranthus striatus.
565. Elsholtzia polystachya.
580. E. pilosa.
614. Dracocephalum urticifolium.
703. Salvia japonica.
749. Teucrium simplex.
757. Microtoena Delavayi.

Esquirol.

572. Salvia yunnanensis.
834. Plectranthus Cavalerieii.
1058. Coleus Esquirolii.

Faber.

691. Phlomis rugosa.
694. Ajuga genevensis.
695. Lamium album.
697. Salvia japonica.
700. Scutellaria indica.
702. Leucas mollissima.
704. Marrubium vulgare.
705. Ajuga genevensis.
707. Salvia plebeia.
746. Scutellaria obtusifolia.
799. Salvia japonica.
860–1. Dracocephalum urticifolium.
871. Scutellaria obtusifolia.
1710. Mosla lanceolata.

Farges.

1125. Dracocephalum urticifolium.

Forbes.

30. Mosla lanceolata.
40. M. dianthera.
47. Plectranthus striatus.
### Dunn—A Key to the Labiatae of China.

<table>
<thead>
<tr>
<th>Ford—continued.</th>
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<tbody>
<tr>
<td>147. Teucrium japonicum.</td>
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<td>325. Salvia japonica.</td>
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<tr>
<td>459. Plectranthus Stracheyi.</td>
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<td>460. Orthosiphon stamineus.</td>
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<tr>
<td>461. Scutellaria rivularis.</td>
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<tr>
<td>462. S. javanica.</td>
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<tr>
<td>464. Gomphostemma lucidum.</td>
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<tr>
<td>550. Orthosiphon stamineus.</td>
</tr>
</tbody>
</table>

### Forrest.

| 18. Plectranthus striatus. |
| 22. Cheloneopsis ondotrichila. |
| 65. Salvia trijuga. |
| 93. Amethystea coerulea. |
| 126. Orthosiphon rubicundus. |
| 327A. Colquhounia coccinea. |
| 523. Elsholtzia flava. |
| 582. Acrocephalus fruticosus. |
| 583. Elsholtzia pilosa. |
| 584. Calamintha Clinopodium. |
| 585. Elsholtzia kachinensis. |
| 586. E. Bodinieri. |
| 587. Plectranthus ericalyx. |
| 588. Elsholtzia pilosa. |
| 594. Marrubium incisum. |
| 595. Plectranthus phyllopodus. |
| 596. Ajuga Forrestii. |
| 597. Plectranthus sculptionatus. |
| 598. Dracocephalum Stewarti- num. |
| 600. Cheloneopsis ondotrichila. |
| 602. Salvia Bulleyana. |
| 604-5. Dracocephalum tanguti- cum. |
| 607. Scutellaria amoena. |
| 620. Colquhounia coccinea. |
| 621. Phlomis umbrosa. |
| 622. Elsholtzia cristata. |
| 624. Plectranthus phyllostachys. |
| 625. Elsholtzia luteola. |
| 627. Colquhounia coccinea. |
| 628. Elsholtzia communis. |
| 630. E. rugulosa. |
| 640. Dracocephalum tanguticum. |
| 830. Elsholtzia communis. |
| 831. E. communis. |
| 861. Stachys kouyangensis. |
| 871. Perilla avium. |
| 875. Pogostemon Dielsianus. |
| 878. Elsholtzia rugulosa. |
| 897. Plectranthus megathyrus. |
| 923. Leucosceptrum canum. |
| 934. Elsholtzia heterophylla. |
| 946. E. kachinensis. |
| 947. E. pilosa. |
| 961. Plectranthus macranthus. |
| 1007. P. ternifolius. |
| 1021. Leucas ciliata. |
| 1035. Elsholtzia rugulosa. |
| 1040. Microtoena Delavayi. |
| 1043. Plectranthus ternifolius. |
| 1068. Teucrium quadrifarium. |
| 2031. Salvia digitaloides. |
| 2046. Lamium amplexicaule. |
| 2047. Salvia yunnanensis. |
| 2083. Scutellaria amoena. |
| 2133. Ajuga Forrestii. |
| 2262. Salvia Bulleyana. |
| 2281. Scutellaria Forrestii. |
| 2285. Prunella vulgaris. |
| 2307. Phlomis tuberosa. |
| 2309 & A. Calamintha Clinopodi- um. |
| 2333. Plectranthus pleiophyllus. |
| 2394. Salvia campanulata. |
| 2424. Scutellaria likiangensis. |
| 2448. Ajuga lupulina. |
| 2476. Calamintha Clinopodium. |
| 2483. Stachys kouyangensis. |
| 2485. Amethystea coerulea. |
| 2489. Phlomis umbrosa. |
| 2507. Plectranthus irroratus. |
| 2524. Leonurus sibiricus. |
| 2528. Origanum vulgare. |
| 2540. Phlomis bracteosa. |
| 2548. Salvia Bulleyana. |
| 2559. Mentha arvensis. |
| 2560. M. arvensis. |
| 2564. Plectranthus ooreophilus. |
| 2601. Dracocephalum Wilsoni. |
| 2657. D. tenuiflorum. |
| 2666. Nepeta lamiopsis. |
| 2681. Elsholtzia polystachya. |
| 2700. Ajuga campylantha. |
| 2730. Dracocephalum speciosum. |
| 2813. Salvia trijuga. |
| 2851. Plectranthus Forrestii. |
| 2906. Eriophyton Wallichianum. |
| 2919. Salvia hians. |
| 2938. S. castanea. |
| 2960. Dracocephalum Stewarti- num. |
| 3033. D. tanguticum. |
| 4522. Calamintha Clinopodium. |
Forrest—continued.

Dunn—A Key to the Labiatae of China.

4526. Prunella vulgaris. 6262. Phlomis atropurpurea.
4534. Leonurus sibiricus. 6345. Plectranthus sculponiatus.
4537. Leucas ciliata. 6395. P. pleiophyllus.
4540. Lamium amplexicaule. 6476. Galeopsis Tetrahit.
4541. Scutellaria amoena. 6490. Dracocephalum tanguticum.
4543. S. yunnanensis. 6549. E. polystachya.
4544. S. japonica. 6562. Salvia trijuga.
4548. S. campanulata. 6591. Teucrium palatum.
4558. P. Franchetiana. 6699. E. cristata.
4558A. Phlomis Forrestii. 6718. E. polystachya.
4693. Elsholtzia flava. 6729. E. kachinensis.
4694. E. polystachya. 6820. Plectranthus striatus.
4759. E. polystachya. 6828 & A. Stachys kouyangensis.
4994. Lamium amplexicaule. 6869. Elsholtzia rugulosa.
5678. S. campanulata. 6953. Salvia Bulleyana.
5705. Scutellaria Forrestii. 6988. S. Bulleyana.
5728. S. amoena. 7037. Dracocephalum urticifolium.
5756. Prunella vulgaris. 7115. Dracocephalum urticifolium.
5811. Salvia hians. 7147. Scutellaria amoena.
5970. S. hians. 7195. Elsholtzia kachinensis.
5974. Phlomis tuberosa. 7209. E. heterophylla.
6000. Ajuga lupulina. 7220. E. Myosurus.
6003. Scutellaria likiangensis. 7248. Salvia yunnanensis.
6100. Phlomis umbrosa. 7283. Salvia plebeia.

Fortune.

113. Scutellaria rivularis. 193. Salvia japonica.
15. S. macrantha. 199. Stachys palustris.
A80. Ajuga genevensis. 140. Anisomeles ovata.
A82. Salvia japonica. 156. Ajuga genevensis.
### Dunn—A Key to the Labiatae of China

| 597. | Elsholtzia communis. |
| 616. | Leonurus sibiricus. |
| 745. | Plectranthus ternifolius. |
| 901. | Teucrium quadrifarium. |
| 1427. | Salvia japonica. |
| 1430. | Ajuga decumbens and A. genevensis. |
| 1431. | A. genevensis. |
| 1483. | Calamintha Clinopodium. |
| 1484. | Mosla lanceolata. |
| 1485. | Hyptis suaveolens. |
| 2982. | Mentha arvensis. |
| 6514. | Salvia miltiorrhiza. |
| 6546. | Perilla nankinensis. |
| 7103. | Thymus Serpyllum. |
| 7489. | Calamintha gracilis. |
| 7581. | C. Clinopodium. |

### Giraldi.

| 8782. | Leucas mollissima. |
| 10,190. | Scutellaria rivularis. |
| 10,531. | Plectranthus amethystoides. |
| 11,426. | Scutellaria macrantha. |
| 11,432. | Salvia miltiorrhiza. |
| 11,448. | Dysophylla verticillata. |
| 12,816. | Leucas zeylanica. |
| 13,045. | Calamintha gracilis. |
| 14,608. | Elsholtzia Stauntoni. |
| 14,881. | Dracocephalum grandiflorum. |
| 15,511. | Salvia japonica. |
| 22,288. | Mosla dianthera. |

### Hance.

| 2. | Scutellaria amoena. |
| 6. | Dracocephalum grandiflorum. |
| 16. | S. macrantha. |
| 23. | Prunella vulgaris. |
| 24. | Dracocephalum urchicofoliou. |
| 26. | Salvia plebeia. |
| 33. | Scutellaria macrantha. |
| 44. | Salvia miltiorrhiza. |
| 60. | Scutellaria indica. |
| 61. | Salvia yunnanensis. |
| 62. | Dracocephalum Moldavica. |
| 66. | Orthosiphon rubicundus. |
| 69. | Scutellaria macrantha. |
| 73. | Plectranthus eriocalyx. |

### Hancock.

| 75. | Plectranthus glaucocalyx. |
| 82. | Scutellaria scordifolia. |
| 103. | Teucrium quadrifarium. |
| 163. | Ajuga remota. |
| 183. | A. macroserma. |
| 207. | Lycopus lucidus. |
| 209. | Origanum vulgare. |
| 230. | Elsholtzia communis. |
| 235. | Coleus Esquirolii. |
| 248. | Colebrookia oppositifolia. |
| 307. | Prunella vulgaris. |
| 324. | Anisomeles ovata. |
| 410. | Elsholtzia rugulosa. |
| 430. | Plectranthus sculpionatus. |
| 452. | Colquhounia elegans. |
| 497. | Ajuga genevensis. |

### Harland.

| 468. | Dysophylla auricularia. |

### Henry.

| 31. | Lamium chinense. |
| 38. | Salvia japonica. |
| 61. | Mosla lanceolata. |
| 66. | Mentha arvensis. |
| 72. | M. arvensis. |
| 135. | Elsholtzia cristata. |
| 159. | E. cristata. |
| 198. | Prunella vulgaris. |
| 252. | Calamintha gracilis. |
| 273. | Scutellaria rivularis. |
| 340. | Salvia japonica. |
| 345. | S. plebeia. |
| 382. | S. japonica. |
| 417. | Plectranthus excisus. |
| 424. | Lophanthus rugosus. |

| 459. | Perilla nankinensis. |
| 480. | Scutellaria rivularis. |
| 488. | Salvia miltiorrhiza. |
| 515. | Teucrium janicum. |
| 556. | Salvia japonica. |
| 559. | S. plebeia. |
| 560. | Stachys oblongifolia. |
| 623. | Origanum vulgare. |
| 629. | Leonurus sibiricus. |
| 672. | Salvia Maximowicziana. |
| 602. | Perilla nankinensis. |
| 720. | Phlomis albiflora. |
| 756. | Salvia plebeia. |
| 757. | Calamintha Clinopodium. |
| 770. | Ajuga decumbens. |

| 541. | 675. | Mesona chinensis. |
Henry—continued.

274. Salvia japonica.
270. Ajuga decumbens.
275. Origanum vulgare.
276. Mosla dianthera.
277. Elsholtzia communis.
278. Calamintha Clinopodium.  
279. A. E. communis.
280. Calamintha Clinopodium.  
281. Elsholtzia communis.
282. Plectranthus Henryi.
283. Ajuga dianthera.
284. Plectranthus striatus.
285. P. coetsa.
286. Ajuga decumbens.
287. Plectranthus nervosus.
288. P. P. Henryi.
289. Teucrium bidentatum.
290. Elsholtzia communis.
291. Phlomis albiiflora.
292. H. divurtculatum.
293. Salvia japonica.
294. Phlomis albiiflora.
295. Stachys oblongifolia.
296. Stevia nervosa.
297. Teucrium Pernyi.
298. Mosla chinensis.
299. Phlomis albiiflora.
300. Plectranthus nervosus.
301. Stachys kouyangensis.
302. Salvia japonica.
303. A. sibiricus.
304. Stachys oblongifolia.
305. Calamintha gracilis.
306. Teucrium bidentatum.
308. Phlomis albiiflora.
309. Ajuga genevensis.
310. Phlomis albiiflora.
311. Ajuga decumbens.
312. Stachys oblongifolia.
313. Calamintha Clinopodium.  
314. Neleus sibiricus.
315. Calamintha Clinopodium.  
316. Phlomis albiiflora.
317. A. sibiricus.
318. Calamintha Clinopodium.  
319. Plectranthus nervosus.
320. Salvia japonica.
321. Stachys kouyangensis.
322. Pletanthus striatus.
323. Perilla nankinensis.
324. Stachys kouyangensis.
325. Perilla nankinensis.
326. P. P. Henryi.
327. Teucrium bidentatum.
328. Phlomis albiiflora.
329. Calamintha Clinopodium.  
330. Stachys oblongifolia.
331. Panula chinensis.
332. Ajuga decumbens.
333. Plectranthus nervosus.
334. Perilla nankinensis.
335. Plectranthus Henryi.
336. Perilla nankinensis.
337. Phlomis albiiflora.
338. Stachys oblongifolia.
339. A. sibiricus.
340. Calamintha gracilis.
341. Phlomis albiiflora.
342. Stachys kouyangensis.
343. Phlomis albiiflora.
344. Plectranthus nervosus.
345. Stachys oblongifolia.
346. Calamintha Clinopodium.  
347. Plectranthus nervosus.
348. Calamintha Clinopodium.  
349. Phlomis albiiflora.
350. Perilla nankinensis.
351. Stachys oblongifolia.
352. Perilla nankinensis.
353. A. sibiricus.
354. Calamintha Clinopodium.  
355. Stachys oblongifolia.
356. Plectranthus nervosus.
357. Calamintha Clinopodium.  
358. Salvia japonica.
359. Plectranthus nervosus.
360. Salvia japonica.
361. Phlomis albiiflora.
362. Stachys oblongifolia.
363. Calamintha Clinopodium.  
364. Plectranthus nervosus.
365. Salvia japonica.
366. Plectranthus nervosus.
367. Stachys oblongifolia.
368. Calamintha Clinopodium.  
369. Plectranthus nervosus.
370. Salvia japonica.
371. Stachys oblongifolia.
372. Calamintha Clinopodium.  
373. Plectranthus nervosus.
374. Salvia japonica.
375. Stachys oblongifolia.
376. Calamintha Clinopodium.  
377. Plectranthus nervosus.
378. Salvia japonica.
379. Stachys oblongifolia.
380. Calamintha Clinopodium.  
381. Plectranthus nervosus.
382. Salvia japonica.
383. Stachys oblongifolia.
384. Calamintha Clinopodium.  
385. Plectranthus nervosus.
386. Salvia japonica.
387. Stachys oblongifolia.
388. Calamintha Clinopodium.  
389. Plectranthus nervosus.
390. Salvia japonica.
Henry—continued.

6038 & A. Ajuga ciliata.
6050. Orthosiphon debilis.
6087. Scutellaria Franchetiana.
6109 & A. Dracoccephalum urticifolium.
6179. Phlomis umbrosa.
6192. Stachys adulterina.
6285. Ajuga ciliata.
6322. Dracoccephalum urticifolium.
6406. Teucrium japonicum.
6432. Phlomis umbrosa.
6437. Teucrium ornatum.
6471. T. ornatum.
6482. Loxocalyx urticifolius.
6482a. Microtoena robusta.
6621. Salvia japonica.
6672. Teucrium japonicum.
6700. T. ornatum.
6755. Elsholtzia polystachya.
6795. Loxocalyx urticifolius.
6822. Salvia Maximovicziana.
6844. Teucrium palmatum.
6864. Salvia Maximovicziana.
6906. Elsholtzia polystachya.
7037. Hancea nudipes.
7041. Dracoccephalum urticifolium.
7049. Plectranthus exicusus.
7088. Dracoccephalum urticifolium.
7210. Mentha arvensis.
7227. Teucrium Pernyi.
7233. Plectranthus exicusus.
7266. Loxocalyx urticifolius.
7316. Stachys kouyangensis.
7325. Chelonopsis deflexa.
7328. Teucrium japonicum.
7339. Microtoena urticifolia.
7360. Phlomis umbrosa.
7376. Mosla lanceolata.
7422. Teucrium quadrifarium.
7631. Microtoena robusta.
7689. Plectranthus striatus.
7765. Leucosceptrum sinense.
7938. Teucrium quadrifarium.
8114. Leucas mollissima.
8168. Dysophylla auricularia.
8181. Moschosma polystachyum.
8509. Leucas zeylanica.
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8709. Ocimum sanctum.
8735. Teucrium japonicum.
8736. Hypeis suaveolens.
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9043. P. striatus.
9073. P. striatus.
9082. Pogostemon nigrescens.
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9162. Craniotome versicolor.
9196. Hancea sinensis.
9222 & A. Coleus Esquirolii.
9231 & A. Calamintha Clinopodium.
9233. Elsholtzia pilosa.
9235. Plectranthus sculponiatus.
9256. Elsholtzia blanda.
9250A. E. blanda.
9368 & A & B. Elsholtzia Bodinieri.
9397 & A. Leucosceptrum canum.
9639. Scutellaria indica.
9711. Elsholtzia pilosa.
9726. E. communis.
9766. Calamintha Clinopodium.
9794. Scutellaria indica.
9796-7. Plectranthus striatus.
9800. Orthosiphon rubicundus.
9804. Prunella vulgaris.
9811. Plectranthus eriocalyx.
9840. P. striatus.
9845. Teucrium quadrifarium.
9849. Salvia japonica.
9850. Microtoena insuavis.
9892. Elsholtzia communis.
9912. E. rugulosa.
9950A. E. heterophylla.
10,029 & A. Leucas mollissima.
10,053. Salvia yunnanensis.
10,067 & A. Plectranthus adenanthus.
10,068. Teucrium simplex.
10,069 & A. Plectranthus angustifolius.
10,070. Elsholtzia blanda.
10,071-2. Plectranthus striatus.
10,073 & A. P. Coetsa.
10,074, A & B. Stachys kouyangensis.
10,075. Plectranthus Coetsa.
10,076 & A. Phlomis rugosa.
10,149 & A. Anisomeles ovata.
10,214 & A. Melissa parviflora.
10,216 & A. Phlomis bracteosa.
10,237. Loxocalyx urticifolius.
10,238. Plectranthus Coetsa.
10,239. Elsholtzia flava.
10,292 & A. Leucas ciliata.
10,305. Elsholtzia heterophylla.
10,364. Ajuga macroserma.
10,382. Leonurus sibiricus.
10,418. Pogostemon glaber.
10,458. Scutellaria discolor.
10,560. S. amoena.
10,581. Ajuga genevensis.
10,585. Lamium amplexicaule.
10,636. Paralamium gracile.
10,637. Salvia plebeia.
10,657. Scutellaria discolor.
10,861. Ajuga remot.a.
10,900. A. macroserma.
10,921. Colebrookia oppositifolia.
10,986. Teucrium Pernyi.
Henry—continued.

11,007. Scutellaria indica.
11,046. Gomphostemma lucidum.
11,047. Teucrium quadrifarium.
11,137. Origanum vulgare.
11,166. Plectranthus striatus.
11,174. Pogostemon nigrescens.
11,251. Craniotome vesicolor.
11,266. Plectranthus striatus.
11,279. P. Coetsa.
11,286. P. striatus.
11,305. Elsholtzia polystachya.
11,375. Ocimum basilicum.
11,445. Philomis rugosa.
11,487. Pogostemon glaber.
11,576. Plectranthus striatus.
11,582. Colquhounia elegans.
11,583. Microtoena insuavis.
11,824. Calamintha Clinopodium.
11,609. Pogostemon fraternus.
11,919 & A. Scutellaria rivularis.
12,011 & A. Gomphostemma lucidum.
12,226 & A. Dysophylla linearis.
12,253. Gomphostemma parviflorum.
12,311. Dysophylla auriculata.
12,314. Gomphostemma lucidum.
12,339. Plectranthus calcaratus.

12,368. Scutellaria discolor.
12,368 & A. S. discolor.
12,475. Plectranthus striatus.
12,479. Dysophylla linearis.
12,501. Gomphostemma microdon.
12,518 & A. G. pedunculatum.
12,537. Coleus bracteatus.
12,503. Pogostemon nigrescens.
12,581. Plectranthus striatus.
12,588. Microtaena insuavis.
12,599. Philomis rugosa.
12,609. Gomphostemma lucidum.
12,610. Acrocephalus capitatus.
12,618. Lycopus lucidus.
12,628. Dysophylla linearis.
12,670. Elsholtzia kachinensis.
12,675. Anisochilus pallidus.
12,668. Plectranthus Coetsa.
12,721. P. Stracheyi.
12,740. Colebrookia oppositifolia.
12,832. Pogostemon glaber.
12,913. Eurysolex gracilis.
13,393. Geniosporum strobiliferum.
13,492. Plectranthus sculpioniatus.
13,498. Coleus bracteatus.
13,594. Gomphostemma pedunculatum.
13,695. Dracocephalum urticifolium.
13,771. Scutellaria laxa.
13,772. S. macrantha.
13,774. Plectranthus Coetsa.
13,792. P. adenanthes.

Hongkong Herbarium.

63. Teucrium Pernyi.
66, 67. T. japonicum.
70. Salvia plebeia.
73. Cheloneopsis moschata.
333. Plectranthus amethystoides.

77. Elsholtzia polystachya.
126. Plectranthus macranthus.

335. Teucrium japonicum.
336. T. Pernyi.
605. Leucas lavandulaefolia.
1333. Mosla chinensis.
3415. Scutellaria Franchetiana.
3427. Lamium foliatum.

Howell.

136. Microtaena Delavayi.

Lamont.

570. Dysophylla auriculata.

Maingay.

22. Leonurus macranthus.
45. Calamintha Clinopodium.
46. Thymus Serpyllum.
112. Scutellaria macrantha.
343. Stachys palustris.
534. Mosla dianthera.

539. Mentha arvensis.
541. Prunella vulgaris.
542. Stachys palustris.
544. Salvia plebeia.
703. Leonurus sibiricus.
736. Salvia plebeia.
25. Perilla avium.
86. Scutellaria macrantha.
88. Stachys leptodon.
127. Elsholtzia polystachya.
181. Lamium amplexicaule.
182. Stachys leptodon.
207. Salvia plebeia.
209. Ajuga genevensis.
213. Scutellaria amoena.
215. Salvia plebeia.
217. S. yunnanensis.
219. Orthosiphon rubicundus.
313. Plectranthus striatus.
314. Origanum vulgare.
425. Plectranthus striatus.
632. Elsholtzia communis.
633. E. rugulosa.
634. E. polystachya.
636. Lamium amplexicaule.
637. Nepeta Glechoma.
647. Plectranthus striatus.
657. Lycopus lucidus.
663. Salvia plebeia.
734. Perilla avium.
774. Prunella vulgaris.
775. P. vulgaris.
776. P. vulgaris.
777. Calamintha Clinopodium.
778. C. Clinopodium.
780. Melissa parviflora.
781. Stachys kouyangensis.
782. Salvia japonica.
783. Ajuga remota.
923. Mentha arvensis.
1169. Craniotome versicolor.
1189. Ajuga genevensis.
1202. Elsholtzia communis.
1203. E. heterophylla.
1204. E. pilosa.
1205. E. cristata.
1206. E. communis.
1220. Lycopus lucidus.
1221. Colquhounia elegans.
1235. Elsholtzia polystachya.
1292. Lamium amplexicaule.
1293. Plectranthus striatus.
1294. Salvia yunnanensis.
1299. Calamintha Clinopodium.
1300. Elsholtzia polystachya.
1389. Plectranthus eriocalyx.
1394. Elsholtzia rugulosa.
1467. Scutellaria amoena.
1470. Prunella vulgaris.
1471. Calamintha Clinopodium.
1472. Ajuga genevensis.
1473. Marrubium incisum.
1542. Elsholtzia Bodinieri.
1543. E. heterophylla.
1580. Leucas ciliata.
1581. Craniotome versicolor.
1582. Plectranthus striatus.
1583. P. eriocalyx.
1584. Leonurus sibiricus.
1590. Origanum vulgare.
1591. Stachys leptodon.
1599. Plectranthus eriocalyx.
1605. Leucas ciliata.
1614. Stachys kouyangensis.
1615. Plectranthus nervosus.
1623. Elsholtzia communis.
1624. E. kachinensis.
1625. Marrubium incisum.
1628. Elsholtzia rugulosa.
1630. Scutellaria Tayloriana.
1637. Elsholtzia polystachya.
1640. E. cristata.
1758. Orthosiphon rubicundus.
1759. Calamintha Clinopodium.
1760. Leonurus sibiricus.
1762. Elsholtzia cristata.
1778. E. flava.
1794. Scutellaria amoena.
1843. Micromeria biflora.
1877. Lycopus lucidus.
1879. Prunella vulgaris.
2024. Plectranthus eriocalyx.
2030. P. striatus.
2035. Elsholtzia pilosa.
2036. E. flava.
2037. E. heterophylla.
2040. Plectranthus eriocalyx.
2042. Calamintha Clinopodium.
2043. Lamium amplexicaule.
2158. Melissa parviflora.
2171. Elsholtzia flava.
2173. E. polystachya.
2174. E. flava.
2178. Scutellaria Tayloriana.
2181. Orthosiphon rubicundus.
2183. Scutellaria macrantha.
2185. Prunella vulgaris.
2187. Calamintha Clinopodium.
2220. Salvia yunnanensis.
2265. Scutellaria Tayloriana.
2266. Salvia yunnanensis.
2294. Scutellaria Tayloriana.
2301. S. amoena.
2303. Calamintha Clinopodium.
2309. Elsholtzia rugulosa.
2310. E. polystachya.
2317. Elsholtzia cristata.
2344. Plectranthus striatus.
2396. Elsholtzia Bodinieri.
2399. E. rugulosa.
2422. Ajuga remota.
Dunn—A Key to the Labiatae of China. 205

Maire—continued.

2483. Plectranthus nervosus. 2604. Elsholtzia polystachya.
2497. Plectranthus angustifolius. 2651. Melissa parviflora.
2527. Lycopus lucidus. 2661. Salvia yunnanensis.

Moellendorf.

Monbeig.

213. N. Cataria. 216. Scutellaria amoena.

Morse.

Playfair.

Pratt.

Przewalski.

Reid.

Rosthorn.

Sampson.

Schindler.

92. Ajuga lupulina.

212. Nepeta Glechoma.
213. N. Cataria.
214. Calamintha Clinopodium.

134. Plectranthus ternifolius.
229. Leucas mollissima.
257. Gomphostemma leptodon.
308. Scutellaria indica.
385. Leonurus sibiricus.

97. Anisomeles ovata.

71. Salvia cynica.
113. Galeopsis Tetrahit.
152. Hancea sinensis.
173. Phlomis umbrosa.
249. Ajuga ovalifolia.
350. Dracocephalum urticifolium.
472. Nepeta lamiospis.
473. Phlomis umbrosa.
479. Ajuga ovalifolia.
491. Salvia hians.
500. Stachys kouyangensis.
501. Dracocephalum sibiricum.

96, 387. Elsholtzia ianthina.

8. Scutellaria rivularis.

1122. Plectranthus Rosthornii.
2188. Teucrium ornatum.

390. Ajuga genevensis.

167. Leonurus sibiricus.

505. Phlomis megalantha.
506. Ajuga Forrestii.
529. Plectranthus rugosus.
546. Salvia hians.
565. Ajuga lupulina.
579. Dracocephalum tanguiticum.
580. Scutellaria amoena.
582. Dracocephalum Wilsoni.
604. Origanum vulgare.
614. Salvia brevilabra.
884. Elsholtzia eriostachya.

529. Plectranthus rugosus.
531. Orthosiphon marmoritis.

85. Leonurus sibiricus.

2530. Phlomis medicinalis.
2543. Elsholtzia calycocarpa.
### Seeman.

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<thead>
<tr>
<th>Page</th>
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<tbody>
<tr>
<td>2000</td>
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### Silvestri.

<table>
<thead>
<tr>
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<td>2080</td>
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<tr>
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### Soulié.

<table>
<thead>
<tr>
<th>Page</th>
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<tbody>
<tr>
<td>484</td>
<td>Dracocephalum sibiricum.</td>
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<td>Ajuga genevensis.</td>
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<td>526</td>
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### Wilford.

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<thead>
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<tr>
<td>214</td>
<td>Anisomeles ovata.</td>
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<td>Teucrium quadrifarium.</td>
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<tr>
<td>216</td>
<td>Mesona chinensis.</td>
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### Williamson.

### Wilson.

<table>
<thead>
<tr>
<th>Page</th>
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<tbody>
<tr>
<td>83</td>
<td>Phlomis albiflora.</td>
</tr>
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<td>120</td>
<td>Lamium amplexicaule.</td>
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<tr>
<td>201</td>
<td>L. chinense.</td>
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<td>203A</td>
<td>Salvia japonica.</td>
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<tr>
<td>209</td>
<td>Scutellaria yunnanensis.</td>
</tr>
<tr>
<td>211</td>
<td>Lamium chinense.</td>
</tr>
<tr>
<td>225A</td>
<td>Ajuga genevensis.</td>
</tr>
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<td>229</td>
<td>Salvia japonica.</td>
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<td>323</td>
<td>Dracocephalum urticifolium.</td>
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<td>379</td>
<td>Leucas mollissima.</td>
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<td>443A</td>
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<td>Plectranthus nervosus.</td>
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<td>Lamium album.</td>
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<td>Leonurus sibiricus.</td>
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<td>Phlomis umbrosa.</td>
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<td>Dracocephalum urticifolium.</td>
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<td>Scutellaria Franchetiana.</td>
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<td>Elsholtzia polystachya.</td>
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<td>Salvia japonica.</td>
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<td>Teucrium quadrifarium.</td>
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<td>Origanum vulgare.</td>
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<td>Plectranthus ricinispernum.</td>
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<td>P. excisus.</td>
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<td>Salvia Maximowicziana.</td>
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<td>Elsholtzia cristata.</td>
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<td>Dracocephalum urticifolium.</td>
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<td>1970</td>
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<td>2121</td>
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</table>
Wilson—continued.

2338. Ajuga ciliata.
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2367. Stachys palustris.
2382. Plectranthus excisus.
2389. Scutellaria angulosa.
2399. Salvia Maximowicziana.
2406. Phlomis megalantha.
2499. Microtoena urticifolia.
2502. M. Delavayi.
2508. Lophanthus rugosus.
2512. Calamintha Clinopodium.
2513. Plectranthus excisus.
2505 & a. Dracocephalum urticifolium.
2577. Plectranthus nervosus.
2582. P. excisus.
2612. Leonurus macranthus.
2651. Plectranthus striatus.
2652. P. ricinispermus.
2659. Perilla nankinensis.
2774 & a. Dracocephalum urticifolium.
2819. Plectranthus ricinispermus.
2828. Mentha arvensis.
4379. Plectranthus leucophyllus.
4321. P. discolor.
4322. P. discolor.
4325. Ajuga ciliata.
4327. Galeopsis Tetrahit.
4331 & a. Ajuga ovalifolia.
4332. A. lupulina.
4333. A. Forrestii.
4335 & a. Phlomis umbrosa.
4337. P. umbrosa.
4338. P. umbrosa.
4339. Elsholtzia flava.
4341A. Salvia japonica.
4342. S. cynica.
4343. S. Maximowicziana.
4344. S. glutinosa.
4345. S. brevilabra.
4346. S. tricuspis.
4347. S. tricuspis.
4348 & a. Orthosiphon debilis.
4349. O. rubicundus.

4350. Lamiun chinense.
4353. Teucrium japonicum.
4354. T. ornatum.
4355. Scutellaria yunnanensis.
4356. S. obtusifolia.
4358. S. amoena.
4359. S. amoena.
4358. S. yunnanensis.
4361. S. yunnanensis.
4364. Elsholtzia cristata.
4366. Dracocephalum urticifolium.
4370 & A. D. urticifolium.
4371. D. urticifolium.
4372. Microtoena urticifolia.
4373. Hankea sinensis.
4376. Plectranthus striatus.
4377. P. striatus.
4378. Mosla dianthera.
4379. Plectranthus striatus.
4380. P. Coetsa.
4382. P. adenanthus.
4384. P. Coetsa.
4385. P. excisus.
4387. P. sculponiatus.
4388. P. sculponiatus.
4574. P. adenanthus.
5112. Phlomis umbrosa.
5113. Prunella vulgaris.
5115. Salvia japonica.
5118A & B. Plectranthus macranthus.
5119. Phlomis rugosa.
5120. Plectranthus striatus.
5122. Scutellaria Franchetiana.
5124. Hankea sinensis.
5125. Plectranthus eriocalyx.
5126. Salvia Maximowicziana.
5128. Teucrium bidentatum.
5129. Scutellaria sessilifolia.
5130. Melissa parvi flora.
5131. Scutellaria obtusifolia.
5132. Hankea sinensis.
5133. Calamintha Clinopodium.
5714. Scutellaria yunnanensis.
5717. Elsholtzia cristata.

Wright.

384. Salvia plebeia.
388. Scutellaria indica.
389. Anisomeles ovata.
390. Leonurus sibiricus.

391. Leucas mollissima.
392. Teucrium quadrifarium.
492. Mosla lanceolata.
### INDEX TO GENERA.

<table>
<thead>
<tr>
<th>Genera</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acrocephalus</td>
<td>134</td>
</tr>
<tr>
<td>Ajuga</td>
<td>193</td>
</tr>
<tr>
<td>Amethystea</td>
<td>190</td>
</tr>
<tr>
<td>Anisochilus</td>
<td>145</td>
</tr>
<tr>
<td>Anisomeles</td>
<td>178</td>
</tr>
<tr>
<td>Calamintha</td>
<td>157</td>
</tr>
<tr>
<td>Chelonepsea</td>
<td>177</td>
</tr>
<tr>
<td>Colebrookia</td>
<td>147</td>
</tr>
<tr>
<td>Coleus</td>
<td>144</td>
</tr>
<tr>
<td>Colquhounia</td>
<td>179</td>
</tr>
<tr>
<td>Craniotome</td>
<td>178</td>
</tr>
<tr>
<td>Dracoccephalum</td>
<td>168</td>
</tr>
<tr>
<td>Dysophyilla</td>
<td>146</td>
</tr>
<tr>
<td>Elsholtzia</td>
<td>148</td>
</tr>
<tr>
<td>Eriophyton</td>
<td>188</td>
</tr>
<tr>
<td>Eurysoiien</td>
<td>190</td>
</tr>
<tr>
<td>Galeopsis</td>
<td>181</td>
</tr>
<tr>
<td>Geniosporum</td>
<td>134</td>
</tr>
<tr>
<td>Gomphostemma</td>
<td>189</td>
</tr>
<tr>
<td>Hancea</td>
<td>153</td>
</tr>
<tr>
<td>Hyptis</td>
<td>145</td>
</tr>
<tr>
<td>Keiska</td>
<td>153</td>
</tr>
<tr>
<td>Lamium</td>
<td>182</td>
</tr>
<tr>
<td>Leonurus</td>
<td>182</td>
</tr>
<tr>
<td>Leucas</td>
<td>183</td>
</tr>
<tr>
<td>Leucoscseptrum</td>
<td>192</td>
</tr>
<tr>
<td>Lophanthus</td>
<td>165</td>
</tr>
<tr>
<td>Loxocalyxx</td>
<td>183</td>
</tr>
<tr>
<td>Lycopus</td>
<td>156</td>
</tr>
<tr>
<td>Marrubium</td>
<td>178</td>
</tr>
<tr>
<td>Melissa</td>
<td>160</td>
</tr>
<tr>
<td>Mentha</td>
<td>156</td>
</tr>
<tr>
<td>Mesona</td>
<td>134</td>
</tr>
<tr>
<td>Micromeria</td>
<td>157</td>
</tr>
<tr>
<td>Microtoena</td>
<td>188</td>
</tr>
<tr>
<td>Moschosma</td>
<td>135</td>
</tr>
<tr>
<td>Mosla</td>
<td>154</td>
</tr>
<tr>
<td>Nepeta</td>
<td>166</td>
</tr>
<tr>
<td>Nosema</td>
<td>134</td>
</tr>
<tr>
<td>Ocimum</td>
<td>133</td>
</tr>
<tr>
<td>Origanum</td>
<td>157</td>
</tr>
<tr>
<td>Orthosiphon</td>
<td>135</td>
</tr>
<tr>
<td>Paralamium</td>
<td>183</td>
</tr>
<tr>
<td>Perilla</td>
<td>154</td>
</tr>
<tr>
<td>Phlomis</td>
<td>184</td>
</tr>
<tr>
<td>Plectranthus</td>
<td>136</td>
</tr>
<tr>
<td>Pogostemon</td>
<td>145</td>
</tr>
<tr>
<td>Prunella</td>
<td>177</td>
</tr>
<tr>
<td>Salvia</td>
<td>160</td>
</tr>
<tr>
<td>Scutellaria</td>
<td>172</td>
</tr>
<tr>
<td>Stachys</td>
<td>179</td>
</tr>
<tr>
<td>Teucrrium</td>
<td>190</td>
</tr>
<tr>
<td>Thymus</td>
<td>157</td>
</tr>
</tbody>
</table>
Contributions to the Knowledge of the Old World Species of the Genus Mahonia.

BY
H. TAKEDA, D.I.C.

With Plates I—XXXVII.

The genus *Mahonia* comprises numerous species which are distributed mainly over Asia and America. The genus was thoroughly examined by Fedde from systematic, anatomical, and morphological points of view.* This author maintains the opinion that the genus *Mahonia* should be treated as quite distinct from *Berberis.*† Recently Rehder has put back a few species to *Berberis*, but without giving any reasons.‡

Since the publication of Fedde’s monograph several new species have been described, chiefly from China. In Fedde’s work there are mentioned some seven species occurring in China. This number was increased by Hemsley and Wilson in describing a new species in 1906,§ and soon afterwards by Gagnepain with three new species in 1908.|| Meanwhile Léveillé added another species *M. ganpiensis*, which is however of a doubtful nature.|| Quite recently, in 1913, C. K. Schneider, who worked out Wilson’s Chinese *Berberideae*, has added seven new species.** He also gives in the same publication an enumeration of all the known Asiatic species, accompanied by an analytical key. According to this author, there are eighteen species known to occur in Asia, and all except two species are natives of China. Sprague has lately pointed out that *M. confusa*, Sprague, which was published in 1912, is not included in this enumeration, and that at least some of the specimens referred by Schneider to *M. Fortunei* represent the co-type specimens of

† Fedde, l.c. p. 66 et seq.
** C. K. Schneider, in Sargent, Pl. Wilsonianae, i, pt. 3, 1913.

[Notes, R.B.G., Edin., Nos. XXIX-XXX, Jan. 1917.]
This species—*M. confusa*—is moreover described by Schneider in his work as *M. Zemanii*, as the present writer has pointed out.† As a matter of fact, there are a few others to which no references at all are made in Schneider’s enumeration, some long known from India, and some from China.‡

Before we enter into the systematic account of the genus some remarks may perhaps be made upon morphological features.§

The leaf of *Mahonia* is always imparipinnate and is furnished with a pair of stipules at the base. The stipules are adnate to the petiole and only their upper free portions are noticeable. For the sake of simplicity, these free portions alone are taken into account in the descriptions given in the following pages. They may be long, short, deflexed, curved, straight, and so forth. When the stipules are completely united with the petiole, they are conveniently described as being “absent.”

The rhachis of the leaf extends, as a rule, beyond the uppermost pair of leaflets, so that the terminal leaflet appears as if “petiolulate.” The length of this terminal extension of rhachis varies to some extent, even within one species. In certain species the terminal extension is usually reduced to a minimum in length, resulting in the terminal leaflet becoming apparently “sessile,” e.g. in *M. Fortunei*. Sometimes a terminal leaflet is united at the base with one of the leaflets of the uppermost pair which often appears to consist of a single leaflet. In this case the terminal leaflet is broader than usual and is more or less deeply cleft on one side. In rarer instances such conspicuous lateral incisions, which indicate fusion of two or more organs, cannot be detected in the terminal leaflet, consequently the leaflet is only abnormally broader and apparently more lengthily “petiolulate” than usual. The presence or absence of the terminal extension of rhachis cannot therefore be regarded as a good distinguishing character of species in this genus. In the following descriptions no mention is made of the presence of this extension of rhachis unless it happens to be of diagnostic value. In this connexion it may perhaps be pointed out that the length of petiole, namely, the distance between the base of the petiole and the lowermost pair of leaflets, is an important diagnostic feature not to be overlooked.|| In many species the petiole is very short, measuring only a few centimeters, whilst in some it is comparatively long. While the presence or absence of the

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† Takeda, ibid., 1915, p. 128.
‡ For example, *M. acanthifolia, M. Leschenaultii, M. trifurca, M. ganpiensis*, etc.
§ In reference especially to the group “Longibracteatae,” for which see Fedde, l.c. p. 73, etc.
|| Cf. Fedde, l.c. p. 36.
terminal extension of rhachis cannot be taken as a criterion for distinguishing *M. Fortunei* and *M. confusa*, the above-mentioned character is always decisive.*

It hardly needs mentioning that the leaflets are sessile among the species belonging to the "**Longibracteatae**."†

The inflorescence is a raceme, usually simple, but occasionally branched near the base, thereby more or less assuming the nature of a panicle. The flowers are invariably stalked and are disposed on the rhachis either rather loosely or densely, according to the species. They are arranged in a spiral, or in some cases even in a subwhorl.‡

The bracts subtending each flower afford a good distinguishing character of species. They may be small, scaly, pointed or blunt, narrow or broad, and so forth. They are persistent, and increase in size at the time of fruit, but as a rule only very slightly.

The pedicels may be longer or shorter than the bracts which subtend them. They may in the fruit-bearing stage become thickened, recurved, spreading, or nodding only at the apex.

The prophylls are as a rule entirely suppressed in the group **Longibracteatae**.§ It is however of much interest to record here that conspicuous prophylls, similar to, or sometimes smaller and narrower than, the bracts are seen in our new species, *M. bracteolata* and *M. Mairei*. They are present in most of the flowers of these species situated below the middle of the inflorescence, occurring one or two on each pedicel.

The flowers are yellow in colour, and are, in some species, fragrant. Three whorls of sepals are invariably present, two whorls of petals, two whorls of stamens with three members in each, and a pistil in the centre.|| A few species have however been described as having only six sepals. Examination of specimens has convinced the present writer that those statements are erroneous. In most cases the sepals of the outermost whorl are minute and much smaller than the others. In some cases however they are almost or quite as large as those of the middle whorl or even of the innermost whorl. To regard the outermost sepals as bracts is absurd.¶

Shape, size, and nervation of sepals and of petals are liable to variation to a certain extent, yet they exhibit very distinctive

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* Cf. Fedde, l.c. p. 36; also Schneider, l.c. p. 379, under the remarks on *M. Zemanii*.
† Cf. Fedde, l.c. p. 37.
‡ Fedde, l.c. p. 41, states this phenomenon is brought about by the unequal growth of the rhachis.
§ Cf. Fedde, l.c. p. 42.
features in each species. In the accompanying plates the writer has endeavoured to show, for a few species, dissected floral organs from more than one specimen. It will be seen from those figures that the variation is only slight, and not so great as is often supposed. In the following descriptions, therefore, measurements of these organs are given as far as possible. It must be borne in mind that when dissecting for this purpose, a fully developed flower has to be chosen. Figs. 141-157 have been taken from three specimens of the same species in different stages of development.

The stamens are very characteristic in each species. The filament generally exceeds the anther or in certain species is nearly equal in length. It is generally more or less thickened just below the anther, and in some cases it is furnished with a tooth-like projection on each side. This feature is very stable throughout the genus. Only in one case has the writer come across a specimen of a usually edentate species possessing more or less rudimentary teeth (fig. 42). Whether this specimen ought to be regarded as a dentate variety has not been decided from lack of sufficient material. The connective is an extension of the filament. As has been pointed out by Gagnepain, this organ affords a good diagnostic character.* In the majority of species it is as broad as or slightly broader than the filament, but in a few cases it is much narrower. In many species it is more or less triangular and often apiculate, in others almost truncate. It should always be remembered that a mature stamen has to be examined. An undeveloped stamen possesses generally an almost truncate connective which may later become decidedly triangular. The figures above referred to clearly illustrate this fact. A herbarium specimen shows only a certain stage in the life-cycle of a plant, and no more. Herbarium botanists have to bear carefully this fact in mind. It has not seldom happened that different stages of one and the same species have been described as distinct species.

The ovaries are either furnished with or are almost devoid of a distinct style. Sometimes it is not at all easy to decide whether a very short style is present or whether the style is totally absent. The number of ovules contained in the ovary is not very constant. This character is not of much use in distinguishing closely allied species.

The fruit is a berry, generally bluish-black in colour and more or less covered with waxy powder. The berries are ovoid in the majority of species, but in some cases they are globose.

As regards the classification of the genus mention must first be made of the subdivisions proposed by Fedde. He divided the genus *Mahonia* into four groups, three of which occur in America, while the fourth, *Longibracteatae*, is represented mainly in the Old World, and with it only are we concerned at present. Fedde distinguishes the Asiatic species in the first place by the nature of the leaflets and particularly by the teeth—whether these occur along the whole length of the margin or are confined to the upper region of the leaflet.*

Gagnepain, who paid special attention to the Asiatic species, points out that the size, length, consistency, teeth, etc., of a leaflet are subject to variation and are not definite, so that these characters cannot be made use of in an analytical key of the species.† He further mentions the important features exhibited by the sepals, petals, stamens, and ovary. The same author gives a key to the Asiatic species based upon these characters combined with certain others. In the first place he distinguishes two subdivisions by means of the stamens.§

Schneider, on the other hand, distinguishes two primary groups by the ovary—whether the ovary is provided with a distinct style or not. Other organs made use of by this botanist are the leaves, pedicels, bracts, and occasionally the number of ovules contained in the ovary.

The writer is of opinion that most of the characters above mentioned, except perhaps the consistency of the leaflet and the number of ovules, are relatively reliable, and may be regarded as good diagnostic characters. It is however difficult to decide which of these organs should be reckoned of primary importance as showing actual relationship between each species. It appears that Schneider's arrangement based on the presence or absence of style is more natural than Gagnepain's system. It is, as is pointed out above, not always easy to make out whether a stigma is actually sessile or shortly stalked. For instance, Schneider himself places his *M. Zemanii* (= *M. confusa*, Sprague), which possesses a practically sessile stigma, in his first division, the members of which are characterised by having a distinct style. This method is therefore not very easy in practice especially when fruit is lacking. It must however be admitted that according to this classification closely related species, such as *M. Fortunei* and *M. confusa*, would fall into the same group, whereas they would be distantly separated if the stamens were made the primary principle for subdivision.

The writer regrets not being in a position to express more

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* Fedde, l.c. pp. 78, 79.  
† Gagnepain, l.c. p. 133.  
‡ Gagnepain, l.c. p. 134.  
§ Schneider, in Sargent, Pl. Wilsonianae, i, p. 380, 1913.
fully his opinion of the existing classifications or to put forward a new one, since his observations have been made only on a limited number of species most of which are represented by specimens of flower or of fruit alone. Certain species, the type specimens of which exist only in some continental herbaria, are known to the writer only from descriptions. In such cases it is not always possible to form an adequate idea of those species and to find out their exact relationship to other species. Under such circumstances no definite view as to the affinity is expressed in the following pages. The writer may however call attention to the fact that the relative length of sepals—whether the outermost ones are markedly shorter than, or nearly equal in length to, those of the other whorls—may possibly show natural relationship. Unfortunately the writer has been unable to examine this point in all the species, and must leave it undecided.

As a result of the present investigation, there are ten or possibly eleven species occurring in India, twenty-four or twenty-five species in China, three or possibly more species in Formosa, and one species in each of the following regions—Malacca, Annam, Siam, Java, Burma, and the Philippine Islands. In Japan we have *M. japonica*, DC. which is frequently cultivated in gardens. Strangely enough its native country is up to the present unknown. According to Chikinshô, a Japanese gardening manual, a *Mahonia* was imported into Japan in 1684. It is however not certain whether this was *M. japonica* or *M. Fortunei*,* nor in what country it originated.

The present study was commenced in 1912 and, though very much interrupted, has been carried out in the Kew Herbarium. During that time the writer had the privilege of examining all the specimens preserved in the Herbarium, Royal Botanic Garden, Edinburgh, and also the Indian specimens in the Herbarium, Royal Botanic Garden, Calcutta. In addition to those, most of the specimens kept in the British Museum have also been consulted. The writer expresses his sincere thanks to the authorities of the above-mentioned establishments for their courtesy in allowing him to study the valuable specimens. The writer is indebted to Dr. B. Hayata for giving him an opportunity of examining specimens from the remoter parts of Formosa when he visited Japan in 1913. The writer also takes this opportunity of thanking Mr. J. S. Gamble for the loan of the Indian specimens of his own herbarium.

* This species is also very frequently cultivated in Japan, having been originally imported from China.
I. THE INDIAN SPECIES.

Since 1855 when Sir J. D. Hooker and Dr. Thomson unhesitatingly united * all the Indian species published up to that date together with M. japonica into a single species, Berberis nepalensis,† almost all the later workers have indiscriminately followed this opinion, especially with regard to the Indian species. Seventeen years afterwards Hooker and Thomson themselves recognised a variety Leschenaultii, which had been described before as a distinct species.‡ This variety was again differentiated from the type by Fedde,§ but has been entirely ignored by all others, including the more recent observers such as Gagnepain and Schneider.¶ Thus there is only one species known as a native of India, and this species is distributed over the whole of the Himalayas, Nepal and Assam, and if the var. Leschenaultii is treated as the same species, it also occurs in the Nilghiri. Moreover, some authors have recorded its occurrence even outside India, namely, Malacca, Burma,** Java,†† China,‡‡ Formosa,§§ Philippine Islands,||| etc. It is also often stated in literature that certain other species are related to or are comparable with M. napaulensis. It is therefore necessary to ascertain the real M. napaulensis, DC. and this has been one of the writer's chief objects in this paper.

It has been found that the statements above referred to are erroneous and that the true M. napaulensis has never been found outside Nepal. It may also be noted here that the only specimens of this species existing in herbaria are those collected by Buchanan in 1802 and by Wallich in 1821; it has never been gathered since except the fragments of a leaf which are reproduced in our plate. De Candolle distinguishes a var. Roxburghii ‖‖ which, as a result of a careful examination of the co-type specimens, has

† The oldest specific name given by De Candolle in 1821 is "napaulensis."
‡ Later it is often spelled "nepalensis."
¶ Schneider, in Sargent, Pl. Wilsonianae, i, 1913.
** Kurz, Forest Fl. of Burma, i, p. 58, 1877; Hemsley, in Journ. Linn. Soc. Bot. xxviii, p. 17, 1890.
‖‖ DC. Prodr. i, p. 109, 1824.
been found to be quite a distinct species and has consequently been raised to that rank.

Hooker and Thomson’s var. Leschenaultii,* or Berberis Leschenaultii, Wall. is an absolutely different species, and can by no means be confused with or united to M. napaulensis, DC.

Fedde has described two new varieties of this species, one of which, var. macrophylla,† is very doubtful, since the original specimen was derived from a plant cultivated in the Botanic Garden in Petrograd which was apparently sterile.

The other var. pycnophylla,‡ seems to be closely related to M. napaulensis, but is a distinct species, being distinguished above all by the nature of the leaf and of the bracts in the inflorescence. The fruit is unknown in both M. napaulensis and in M. pycnophylla, so that it is impossible to say whether any further difference is exhibited by the fruit apart from the number of ovules, a character not always very reliable.

Since Hooker and Thomson’s reduction of Berberis acanthifolia, Wall. to B. nepalensis (= M. napaulensis) no one has attempted to confirm or disprove this view. The writer has examined Wallich’s type specimens and has been led to the conclusion that M. acanthifolia should be treated as a distinct species.

Further remarks are to be found under each species.

1. M. napaulensis, DC. (Plates I–II, and Plate XXXIII, figs. i–5.)

M. napaulensis, DC., Syst. ii, p. 21, 1821, excl. β; Ej. Prodr. i, p. 109, 1824, excl. β Roxburghii.

B. pinnata, Ham. ex DC., Syst. ii, p. 21, 1821.


Folia 3–7-juga, jugo inﬁmo a stipulis 1–2 cm. distante, ejus foliolis quam alia multo minoribus, late oblongis vel ovatis. Petiolus basi dilatatus ibique vaginiformis, stipulis duabus linearibus ad 8 mm. longis praeditus. Foliola coriacea, supra nitidissima subtus subnitida, oblonga vel late oblonga vel ovata, basi rotundata vel subtruncata, raro subcordato-truncata, rarius cuneato-rotundata, obliqua, 5–11 cm. longa, 3–4 cm. lata, e basi 5-nervia, venis parum elevatis subtus prominentibus, margine spinoso-dentata, spinis in latere inferiore 5–10, in superiore 4–7; foliolum terminale majus, basi rotundatum vel subcordatum. Racemi 5–7 fasciculati, 12–20 cm. longi, e basi densiﬂorae, subrhachi subcrassae. Bracteae ﬂorum oblongo-lanceolatae, tenues, 4–6 mm. longae. Pedicelli filiformes, erecto-patentes, 5–7–10 mm. longi. Sepala externa minima, oblonga vel ovato-oblonga,

† Fedde, l.c. p. 125.
‡ Fedde, l.c. p. 124, ﬁg. 4, A.
obtusa, 3–4 mm. longa, ad 2 mm. lata, 5-nervia, nervis lateralibus brevioribus, mediana oblongo-elliptica, obtusa, 5–6 mm. longa, circiter 3 mm. lata, 5-nervia, nervis lateralibus brevioribus, interna mediiis consimilia. Petala sepalis internis paulo breviora, apice biloba, 3-nervia, basi nectaris binis distinctis praedita. Stamina edentata, connectivo triangulare, antheris filamentum fere aequantibus. Ovarium circa 5 mm. longum, stylo brevi, ovulis 4–5. Bacca desideratur.

Hab.—Narainhetty, Nepal (Hamilton! 15. xi. 1802, 23. xii. 1802); Nepal (Wallich! 1. 1821, No. 1480, partim). Residency Garden, Nepal. "It grows freely in the hills round Kabani" (Manners-Smith! leaf).

Obs.—There are only a few specimens in herbaria; one in the Kew Herbarium, one in the Wallichian Herbarium, and two in the British Museum. De Candolle’s specimens are preserved in Delessert’s Herbarium in Geneva. Dr. Briquet kindly consented to their being sent to the writer for examination, but owing to the war the specimens have not arrived.

2. M. Griffithii, Takeda, sp. nov. (Plate III.)

Folia ad 13-juga, jugo infimo a stipulis 2 mm. tantum distante, ejus folioliis quam alia multo minoribus ovatis vel subrotundatis. Petiolus stipulis duabus filiformibus ad 7 mm. longis praeditus. Foliola coriacea, supra nitidissima, subtus nitida, oblonga vel ovata 5–7 cm. longa, 2–3 cm. lata, basi cuneata vel rotundata, subobliqua, e basi 5-nervia, nervis primariis immersis, venis subinconspicuis, spinis in latere inferiore 4–5, in superiore 3–4; foliolum terminale paulo majus, basi rotundatum vel rotundatocuneatum. Racemi plures quam 10, fasciculati, rhachi crassa, e basi densiflori. Flores desunt. Bracteae fructiferae minutas, longe triangulares, acutae, ad 2 mm. longae. Pedicelli crassiusculi, breves, 2–4 mm. longi, apice nutantes. Bacca ovoidea vel obovoidea, ad 10 mm. longa, stylo prominente (1.5 mm. longo) praedita, atro-coerulea, pruinosa, stigmate punctiformi 1 mm. diametro coronata.

Hab.—Bhutan (Griffith! No. 1739, Hb. Kew, Brit. Mus.).

Obs.—The present species is very similar in appearance to the preceding one, differing however in the more numerous leaflets, the base of which is more cuneate, in the smaller triangular bracts of the inflorescence and in the shorter and stouter pedicels. There are very few specimens of this species in herbaria, and all belong to the same collection of Griffith No. 1739. Unfortunately no flower-bearing specimen has come under observation, so that it is impossible to make any conclusive comparison with M. napaulensis.
3. **M. pycnophylla**, (Fedde), Takeda, sp. nov. (Plate IV and Plate XXXIII, figs. 6–13.)


Folia 5–6-juga, jugo infimo stipulis magnopere approximante, ejus foliolis quam alia minoribus ovalibus vel quadrato-ovatis. Petiolus basi dilatatus, stipulis filiformibus circa 10 mm. longis praeditus. Foliola valde coriacea, rigida, crassa, supra plus minusve nitida, subtus pallidiora, nervis prominentibus, oblonga vel ovato-oblonga, basi rotundato-cuneata vel subtruncata, obliqua, 6–10 cm. longa, 4–5 cm. lata, e basi 5-nervia, margine pauci-dentata, dentibus in latere inferiore 4–6, in superiore 2–4; foliolum terminale alia subaequans, basi rotundatum. Racemi plures fasciculati, saepe basi subramosi, densiflori. Bracteae florum ovatae vel ovato-lanceolatae, acutae, 2–4 mm. longae. Pedicelli filiformes, erecto-patentes, 5–7 mm. longi. Sepala externa ovata, obtusa, 1.5–2.5 mm. longa, ad 2 mm. lata, mediana ovalia 5–6 mm. longa, 3 mm. lata, interna elliptica, ad 7 mm. longa, 3.5 mm. lata, omnia 5-nervia. Petala elliptico-oblongolata, 5–5.5 mm. longa, apice bifida, trinervia, basi nectarifera, nectaris binis distinctis. Stamina edentata, filamento antheris paulo longiore, apice subdilatato, connectivo triangulari. Ovarium ad 4 mm. longum, 2-ovulatum. Bacca ignota.


Obs.—As has been mentioned above, this species differs from *M. napaulensis* in the much thicker leaf, less shining and provided with fewer spines, and in the much smaller bracts.

4. **M. Roxburghii**, (DC.) Takeda, sp. nov. (Plate V and Plate XXXIII, figs. 52–57.)

*M. napaulensis* var. *Roxburghii*, DC., Prodr. i, p. 109, 1824.  

Folia 4–5-juga, jugo infimo stipulis approximante vel ad 2 cm. distante, ejus folioliis quam alia multo minoribus ovatis. Petiolus basi dilatatus, stipulis filiformibus 4–7 mm. longis praeditus. Foliola coriacea oblonga, 6–8 cm. longa, 3–4 cm. lata, supra subnitida, subtus pallidiora, basi rotundato-cuneata vel subtruncata, obliqua, e basi 5-nervia, nervis venisque prominentibus, margine sinuato-dentata, dentibus in latere inferiore 3–6, in superiore 2–5; foliolum terminale paulo majus, basi rotundatum vel rotundato-cuneatum. Racemi 4, fasciculati, ad
12 cm. longi, densiflori, rhachi tenui. Bracteae florum minutae, triangulares acutae, ca. 2 mm. longae. Pedicelli filiformes, apice plus minusve nutantes, circiter 5 mm. longi. Sepala externa ovalia, circa 4 mm. longa, 3 mm. lata, mediana oblongo-ovalia, 7 mm. longa, 4 mm. lata, interna elliptica, 8 mm. longa, ad 3 mm. lata, omnia 5-nervia vel sub 6-nervia. Petala oblonga, 7 mm. longa, apice bifida, basi nectaris binis distinctis praedita, 3-nervia. Stamina edentata, connectivo truncato, filamento antheras subaequante. Ovarium 4 mm. longum, stylo brevi, ovulis duobus. Baccam non vidi.


Obs.—Among the known Indian species this is very distinct in having the stamens with a truncate connective. The leaf and flower are very different from those of M. napaulensis.

5. M. acanthifolia, G. Don. (Plate VI and Plate XXXIII, figs. 14–23.)


Folia ad 11-juga, jugo infimo stipulis filiformibus 5–7 mm. longis magnopere approximante, ejus foliolis quam alia multo minoribus semi-orbiculatis. Foliola coriacea, supra nitida, subtus subnitida, longa vel oblongo-ovata, 4–7 cm. longa, 2.5–4 cm. lata, basi truncata vel subcordata, e basi 5-nervia, nervis venisque subtus prominentibus, margine pauci- et sinuato-dentata, dentibus in latere inferiore 3–5, in superiore 2–4; foliolum terminale ceteris majus, basi rotundatum. Racemi 7–12, fasciculati, densi et multiflori, rhachi crassa. Bracteae florum lanceolato-triangulares, acutae, 3–5 mm. longae. Pedicelli filiformes, apice plus minusve nutantes, 5–6 mm. longi. Sepala externa minima, late ovata, acutata, ca. 2 mm. longa et lata, 5–7-nervia, mediana ovata, obtusa, 4–5 mm. longa, ad 3 mm. lata, 5-nervia, interna oblongo-elliptica, 7–8 mm. longa, ca. 3 mm. lata, 5-nervia. Petala oblonga 6–7 mm. longa, ca. 3 mm. lata, apice bifida, basi nectaris binis distinctis majusculis praedita, trinervia, nervis lateralibus saepius subramosis. Stamina petalis breviora, filamentis apice dilatatis sed edentatis quam antherae longioribus, connectivo apiculato-triangulari. Ovarium 2–4-ovulatum, stylo fere 1 mm. longo. Bacca ovoidea, 8–10 mm. longa, stylo conspicuo coronata, nigro-coerulea, pruinosa; pedicelli subcrassati, apice nutantes.

Hab.—Nepal (Wallich ! v. 1821, No. 1480A, quoad spec. fructif.) ; Kumaon (R. Blinkworth !) ; Pundoah, Assam (Wallich ! 1820, No. 1480c) ; Darjiling (Hook. fl., No. 41 ;
Takeda—Old World Species of the Genus Mahonia.


Obs.—Among the Indian species *M. acanthifolia* can easily be distinguished by having very small outermost sepals, apiculate-triangular connective, and large luxuriant leaf with numerous leaflets which are furnished with a few large teeth. It is also more or less related to *M. Leschenaultii* (No. 8), differing however in the nature of the leaf, in the stamens, and in the fruit.


A planta typica foliolis tenuioribus multo dentatis, sepalis medianis minoribus orbiculato-ovatis ca. 3 mm. longis, ovario 3–4-ovulato differt. Baccam non vidi.

Hab.—“Himalaya orientali ca. 6000' s.m. prope Darjeeling” (J. R. Drummond ! x. 1904, No. 14, 814, Hb. Kew).

Obs.—Only a single specimen has been examined, and it may have been collected in a shady place.

6. *M. sikkimensis*, Takeda, sp. nov. (Plate VII and Plate XXXVII, figs. 1–8.)

Folia magis quam 9-juga, jugo secundo ab infimo distante, jugo infimo stipulis subulatis ad 10 mm. longis valde approximante, ejus foliolis quam alia multo minoribus. Foliola conferta, ovata, vel oblongo-ovata, basi truncata vel subtruncata, 2.5–6.5 cm. longa (forsan nonnunquam majora), 2–3.5 cm. lata, coriacea, nervis subtus prominentibus, pauci- et grossi-dentata, dentibus in latere inferiore 3–6, in superiore 2–5; foliolum terminale mihi ignotum. Racemi 5 fasciculati, breves, simplices, densiflori. Bracteae ovato-oblongae, obtusae, 3–4 mm. longae, 2 mm. latae. Pedicelli cum bracteaae equilongi vel paululum longiores. Sepala externa ovato-triangulare, acuta, 3.5–4 mm. longa, 1.5–2 mm. lata, trinervia, nervis lateralibus multo brevieribus, mediana oblongo-ovalia, acuta, 5-nervia, 6 mm. longa, 3 mm. lata, interna medianis similia, acuta, longitudine 7 mm. superantia, 3.5 mm. lata, ad 7-nervia, nervis lateralibus brevieribus. Petala oblongo-elliptica, apice leviter bifida, 3-nervia nervis lateralibus a basi subramosis, basi nectarifera nectaris binis oblongis conspicuis. Stamina petalis breviora, filamentis quam antherae longioribus dentibus minutis bidenticulatis, connectivo mucronato-triangulare. Ovarium angustissime ovoideum stylo brevi ovulis 4. Baccam non vidi.

Hab.—Sikkim: Latong, 7000 ft. (King's collector, May 1885, Hb. Calcutta).

Obs.—The present species comes between *M. acanthifolia* and *M. borealis*; from the former it differs in the shape and size of the sepals and petals, from the latter it is distinguished by the characters of the stamens and leaves. It seems to be related
also to *M. manipurensis* (v. infra), from which it differs by the characteristic stamens.

7. *M. borealis*, Takeda, sp. nov. (Plate VIII and Plate XXXIII, figs. 30-46.)

Planta valde variabilis. Folia 5–9-juga, jugo infimo stipulis filiformibus usque ad 10 mm. longis valde approximante, ejus foliolis quam alia multo minoribus. Foliola chartacea vel subcoriacea, supra nitida, subitus subnimita, oblonga vel oblongolanceolata, 5–10 cm. longa, 1.5–3 raro 4 cm. lata, basi truncata vel rotundato-cuneata interdum subcuneata, obliqua, e basi 5-vel sub-5-nervia, venis utrinque elevatis conspicuis, margine spinoso-dentata, dentibus in latere inferiore 5–10, in superiore 5–8; foliolum terminale alis simile, basi rotundatum vel rotundato-subtruncatum. Racemi 5–8 fasciculati, densi et multiflori, rhachis crassa 5–10 cm. longa. Bracteae florum ovatae vel ovato-lanceolatae, acutiusculae vel obtusae, 3–5 mm. longae. Pedicelli bracteis breviores vel demum subaequilongi, subcrassi, erecto-patentes. Sepala externa ovata vel ovato-lanceolata, acutiuscula vel obtusa, ca. 5 mm. longa, mediana oblongo-ovata, acuta vel obtusa, ca. 7 mm. longa, interna oblongo-obovata vel oblonga, obtusa, 8.5 mm. longa, omnia trinervia vel subquinquenervia. Petala oblonga, apice bifida, basi nectaris binis distinctis praedita, 5-6 mm. longa, trinervia. Stamina petalis breviora, filamento antheris longiore apice dilatato edentato (vel subdentato?), connectivo triangulare plus minusve apiculato. Ovarium 2–4-ovulatum. Bacca subglobosa, coeruleo-nigra, pruinosa, ad 8 mm. longa, 6 mm. lata, stylo 1 mm. longo ornata.


Obs.—The present species is characterised by the oblong leaflets of rather thin texture with prominent veinlets, large bracts, short pedicels, and subglobose fruits. Its distribution is confined to the north-western parts of India.

The writer has seen a plant of a similar appearance to this

* The stamen of this specimen is subdentate, and the innermost sepal is not much larger than the middle one. Figs. 41-46.
† According to the collector the vernacular name of this plant is “Khoru.”
species but differing in the possession of larger leaflets and longer pedicels (5–8 mm. in length). The racemes are also longer (over 20 cm.) and more numerous in the fascicle. As neither flowers nor ripe fruits are present in the specimens, a closer examination has been impossible.

Hab.—Massouree (without collector’s name, iii. 1895 ? Hb. Kew); Saharampore garden (Jameson ! No. 421, Hb. Edin.).

8. M. manipurensis, Takeda, sp. nov. (Plate IX and Plate XXXIII, figs. 47–51.)

Folia 5–9-juga, jugo infimo stipulis filiformibus ad 7 mm. longis valde approximante, ejus foliolis minoribus quadrato-oblongis. Foliola coriacea, supra nitida, subtus subnita, ovata vel late ovata, 3–6 cm. longa, 2–3 cm. lata, basi subtruncata vel truncata vel plus minusve cordata, e basi 5- vel sub-6-nervia, nervis plus minusve prominentibus, margine pauci-sinuato-dentata, dentibus in latere inferiore 3–5, in superiore 2–4; foliolum terminale paulo majus, basi rotundatum. Racemi 5–8 fasciculati, ad 10 cm. longi, densiflori, rhachi subcrassa. Bracteae florum ovatae, acutiusculae, conspicuae, ad 5 mm. longae. Pedicelli filiformes, sub anthesin erecto-patentes, 5 mm. haud excedentes. Sepala externa ovata, acutiuscula, 4 mm. superantia, 2 mm. lata, mediana oblongo-ovalia, obtusa, ca. 7 mm. longa, 4 mm. lata, interna elliptica vel oblongo-obovalia, 8–9 mm. longa, 4 mm. lata, omnia 3–5-nervia. Petala oblongo-ovalia, apice bifi, basi nectariis binis distinctis praedita, 7 mm. longa, 3.5 mm. lata, trinervia. Stama edentata, connectivo depressotriangulari, antheris filamento paulo brevioribus. Ovarium 4 mm. longum, stylo brevissimo praeditum, 1–2-ovulatum. Bacca ignota.

Hab.—Manipur: Kassonie range on the frontier of Burma, 6000 ft. (Watt ! No. 5956); Sirohifurad, N.E. ranges, 8000 ft. (Watt ! No. 6472). Typus in Hb. Kew et Edinb.

Obs.—In general appearance the present species seems to possess the leaf of M. acanthifolia and the flower of M. borealis.

9. M. Simonsii, Takeda, sp. nov. (Plate X and Plate XXXVII, figs. 9–15.)

Folia 6–9-juga, jugo infimo stipulis valde approximante, ejus folioliis quam cetera multo minoribus, jugo secundo ab infimo distante. Petiolus brevissimus, basi dilatatus, stipulis binis filiformibus ad 5 mm. longis praeditus. Foliola subcoriacea, utraque pagina flavido-subnita, venis venulisque conspicuis, lanceolata, longe acuminata, basi rotundato-subcuneata, 7–11 cm. longa, 2–3 cm. lata, marginie serrato-dentata, dentibus in latere
inferiore 6–10, in superiore 5–8; foliolum terminale aliis aequale vel longius, basi cuneato-rotundatum. Racemi 8 fasciculati, rhachi subcressa, adbasim pauci-ramosi, sub laxiflori. Bracteae minutae, 1.5–2.5 mm. longae, triangulares, acutae. Sepala externa minima, elliptico-ovata, obtusiuscula, trinervia, nervis lateralis mediano brevioribus, 2 mm. longa, 1.5 mm. lata, mediana elliptico-oblonga, obtusa, trinervia, nervis lateralis brevioribus, ca. 5 mm. longa, 2 mm. lata, interna oblongo-obovata, trinervia, ad 7 mm. longa, 2.5 mm. lata. Petala oblonga, cum sepalis medianis aequilonga, apice bifida, basi nectarifera nectaris binis minutis, trinervia, nervis lateralis subramosis. Stamina petalis paulo breviore, filamentis edentatis quam antherae paulo longioribus, connectivo anguste quadrato apice emarginato-truncato. Ovarium anguste ellipsoidale, 3-ovulatum, stylo brevi. Bacca ignota.

Hab.—Khasya Hills (Simons! Nov. 1850, Hb. Calcutt.).

Obs.—A very distinct species amongst the Indian Mahonias. The leaf somewhat resembles that of M. borealis, but the structure of the flower, particularly of the stamens, is very different.

10. M. Leschenaultii, (Wall.) Takeda, comb. nov. (Plate XI and Plate XXXIV, figs. 58–82.)


Planta robusta. Folia 7–10-juga, jugo infimo stipulis filiformibus ca. 10 mm. longis approximante, ejus foliolis minoribus. Foliola coriacea vel chartaceo-coriacea, supra nitidissima, sub tus subnittida, oblonga vel late oblonga, 3–9 cm. longa, 2–5 cm. lata, basi rotundato-subtruncata vel truncata, venulis prominentibus, margine spinoso-dentata, spinis in latere inferiore 4–8, in superiore 3–6; foliolum terminale vix vel non majus, basi rotundatum. Racemi plures fasciculati, saepe robusti et 30 cm. superantes, simplices vel raro subramosi, rhachi crassa, e basi ad apicem multifiore. Flores laxiusculi, longe pedicellati, pedicellis gracilibus erecto-patentibus ca. 10 mm. longis, bracteis late ovatis obtusis 3–4 mm. longis 2–3 mm. latis. Sepala externa late ovata, obtusa, ad 3 mm. longa et lata, mediana oblongo-ovata vel ovalia, obtusa, 4–5 mm. longa, 3–4 mm. lata, interna oblongo-ovalia, obtusa, 6–7 mm. longa, ca. 4 mm. lata, omnia 5–7-nervia, nervis plerumque subramosis. Petala oblongoovalia, 5–6 mm. longa, 3 mm. lata, plerumque 5-nervia, nervis subramosis, apice biloba, basi nectaris distinctis parvis praedita.
Stamina brevia, filamentis crassis apice bidentatis cum antheris subaequilongis, connectivo crasso depresso-triangulare. Ovarium 3–4 mm. longum, stylo 1 mm. longo coronatum, 5–6-ovulatum. Bacca globosa, subnutans, 7–10 mm. diametro, stylo crasso distincto 1 mm. superante coronata.

Hab.—Nilghiri (Wallich! No. 1479; Gardener! 1847; Hohenacker! No. 1125; Wight! Nos. 49, 50; ex Hb. Ball Comm. G. S. Gough! ; W. A. ! No. 53; Carcorr Ghat (G. King! No. 1279B, fr.); Anamallaya hills (Beddome! No. 177); Tinnevelly hills (Beddome! No. 178); Ootacamund, 7500 ft. (Gamble! No. 12,443, fl. Sept. 1883); Sholas on Kundahs, 7000 ft. (C. E. C. Fischer! No. 2546, Feb. 1911); Minchiguli, 4800 ft. (C. E. C. Fischer! No. 976, fl.).

Obs.—A very distinct species amongst the Indian Mahonias in the globose berry which is furnished with a long style and borne on a slender pedicel, in the short thick stamen with a dentate filament, and in the short but broad sepals and petals which are thick in consistency and are strongly veined.

The present species occurs in the Nilghiri hills where it is found in abundance.

The writer has also examined in the Kew Herbarium a sterile specimen from Bhutan which possesses leaflets elliptical-oval, cuspidate-acuminate, margins incrassate and furnished with 8–12 shallow teeth on both sides. This is possibly a good distinct species, but owing to the lack of material it is left unnamed for the present. As far as the character of leaf goes it comes near M. Veitchiorum, a Chinese species, but differs from the latter in several respects.

II. THE CHINESE SPECIES.

The first record of Chinese species of this genus was made by R. Fortune who paid repeated visits to China during eighteen years from 1843. The first species discovered by this diligent collector was M. Fortunei,* and soon afterwards M. Bealei † and the so-called M. trifurca ‡ were found. In 1882 Hance recorded the occurrence of M. napaulensis in Szechwan, where Mesny collected a specimen in 1880.§ M. Bealei was subsequently reduced by Hemsley to M. napaulensis, and since M. trifurca is entirely ignored by this author, there are only

† Berberis Bealei, Fort. in Gard. Chron. 1850, p. 212.
‡ B. trifurca, Fort. in Lindl. et Paxton, Flower Gard. iii, p. 57, fig. 258, 1852–53.
two species of this genus enumerated in Index Flora Sinensis.* An examination of the specimen referred to by Hance shows that the record is an erroneous one, since the specimen consists of a rather abnormal leaf of *M. Fortunei*. Another specimen referred to *M. napaulensis* by Hemsley (l.c.) is also *M. Fortunei*. A third specimen similarly referred by the same botanist on the authority of Maximowicz is very unlikely to be the true *M. napaulensis*, DC. The third record of *M. napaulensis* occurring in China is that of Franchet.† The writer has had no opportunity of examining Delavay’s specimen, but suspects that the identification was incorrect.

*M. Bealei* is fairly well characterised by Sir W. J. Hooker in the Botanical Magazine,‡ and is a good distinct species. This is however another plant which has been much confused with allied species.

Very little is known about *M. trifurca*. The writer is of opinion that this is an extreme form of *M. Fortunei*, since the latter species sometimes has broad leaflets with few teeth. For further discussion see under *M. Fortunei*.

In 1887 Oliver published a description with figures of a very distinct species under the name of *Berberis gracilipes*,§ which has again been described by Franchet as *B. subtrinervis*.||

Later, Fedde,¶ Hemsley and Wilson,** Léveillé,†† Sprague,‡‡ and Schneider §§ have added more new species. The present writer recognises twenty-five species including his eight new species. In the following pages full descriptions of all the new species and of some inadequately described species will be given. There are six species, the specimens of which have not been at the writer’s disposal, and on these no discussion has been attempted.

1. *M. Bealei*, Carr. (Plates XII—XIII and Plate XXXIV, figs. 83—103.)

*M. Bealei*, Carr. in Fl. des Serres, x, p. 166, 1854—55.


*B. Bealei* var. *plantifolia*, Hook. ibid. sub tab. 4846, 1855.

*B. japonica*, Lindl. in Lindl. et Paxt. Fl. Gard. i, p. 11, fig. 2, 1850—51, non R. Br.

*M. japonica*, Fedde, l.c. p. 118, partim, excl. syn.

*M. japonica* var. *Bealei*, Fedde, l.c. p. 119, fig. 3, B.

* Forbes et Hemsl. Index Fl. Sin. i, p. 31, 1886.
† Franch. Pl. Delav. i, p. 35, 1889.
‡ Bot. Mag. sub tabb. 4846, 4852, 1855.
¶ L.c.
** Kew Bull. 1906, p. 152.
§§ Pl. Wilsonianae, 1913.
Planta robusta variabilis. Folia 5-9-juga, jugo infimo a stipulis paulo distante, ejus foliolis minoribus. Stipulae defici- entes vel obsolete vel raro bene evolutae ad 10 mm. longae. Foliola coriacea, crassa, inter se distantia vel valde approxi- mata, quadrato-vel oblongo-ovata, raro ovato-deltoidae, basi aut truncata aut rotundato-cuneata, apice cuspidata, margine saepius revoluta, plerumque pauci-dentata, dentibus in latere inferiore 3-5-8, in superiore 2-4-6, supra nitida, flavido-viridia, nervis venisque vix vel paulo conspicuis, subtus opaca, nervis venisque elevatis; foliolum terminal ne alis simile vel paulo majus. Racemi 6-15 fasciculati, simplices, densi- et multi-florii, rhachi crassa 8-15 cm. longa. Bracteae normarum ovatae, acutatae, squamiformes, 2-3 mm. longae, ad 2 mm. latae. Flores flavie vel initio rubicundi, pedicellati, pedicellis filiformibus usque ad 6 mm. longis fructiferis nutantibus. Sepala externa ovata, acutata vel obtusa, 2-2.5 mm. longa, 1.5-2.5 mm. lata, 5-nervia, mediana ovalia, 4-6 mm. longa, 5-nervia, interna ovalia vel oblongo-ovalia, 5-8 mm. longa, 3-4 mm. lata, 5-nervia. Petala cum sepalis internis subaequilonga, apice bifida, basi nectaris binis distinctis praedita, 3-nervia. Stamina petalis breviora, filamento apice dilatato sed edentato antheris subduplo longiore, connectivo depresso-triangulare. Ovarium oblongo-ovoideum, 2-vel 3-4-ovulatum, stylo brevissimo, stigmatae punctiformi. Bacca ovoidea, coeruleo-nigra, pruinosa, ca. 10 mm. longa, 6 mm. lata.


Obs.—Hooker distinguishes var. planifolia as having sub- deltoid leaflets which are subimbricate and have a truncate base, and smaller flowers. In the course of the present study it was often found that the small-flowered form possesses two ovules whereas the "typical" form has 3-4 ovules. This character was not found to be constant. There is no difference whatever in the nature of the leaflets, although this was re- garded by Hooker as the main point of distinction. All the specimens from China have been found to belong to the so-called var. planifolia, as they have small flowers and usually 2 ovules. So far no specimens of the large-flowered form collected in China have come under observation. Hooker's original specimens of these two forms sent from Messrs. Standish and Noble consist of leaf only, so that it is impossible to investigate these further. The leaf of the "type" form is however a rather abnormal one, having leaflets with cuneate base, whereas that of the var. planifolia represents a normal leaf of M. Bealei. It appears
therefore that var. *planifolia* really represents the typical form of this species, whereas the so-called type has been derived from a garden form. As there exists no definite difference between the two, there is no necessity to keep up the varietal name. For a comparison see the flowers delineated in our Plate XXXIV, figs. 83-103.

The only fruit-bearing specimen of this species from China, which is reproduced in our Plate XIII, appears at the first glance to be rather different from the ordinary form of *M. Bealei*. The writer is however of opinion that this is a form of our species bearing young berries. The nature of the inflorescence agrees very well with that of the typical form of *M. Bealei*.

The present species is frequently cultivated in this country and usually called *M. japonica* by florists. Although Fedde has united *M. Bealei* with *M. japonica*, these two species are very distinct, and there is no reason for confusing them.\(^*\) The points of distinction will be mentioned under *M. japonica*.\(^†\)

2. *M. flavida*, Schn. (Plate XIV and Plate XXXIV, figs. 104-109.)


Adde notas sequentes:—Folia 60 cm. longa, 8-juga, foliolo terminali aliis subduplo longiore basi cuneato. Racemi usque ad 22 cm. longi, basi ramosi, rhachi sub-crassa, bracteis florum ovato-lanceolatis acutis acuminatisve rubro-brunneis 5-6 mm. longis. Sepala subcoriacea, externa ovato-deltoida, acutiuscula, crassa, marginie hyalina, nervis inconspicuis, fere 2 mm. longa et lata, mediana oblongo-ovalia, marginie plus minusve hyalina, 3-nervia, 3 mm. longa, 2 mm. lata, interna obovato-oblonga, apice rotundata, 5-nervia, 6 mm. longa, 3 mm. lata. Ovarium 5-ovulatum.

Hab.—Yunnan: "Mengtz, mts. to S.E. 5000 ft., shrub 8 ft., yellow flowers" (Henry! No. 10,180, Hb. Kew).

3. *M. Fordii*, Schn. (Plate XV and Plate XXXIV, figs. 110-115.)


Adde notas sequentes:—Racemi 5-8 fasciculati, usque ad 15 cm. longi, rhachi gracili, bracteis florum minutis ovatis acutiusculis 2 mm. longis pedicellis gracilibus ad 5 mm. longis sub anthesin apice saepe nutantibus. Sepala 9, in cyclos tres disposita, externa ovalia, acuta, 3-nervia, 2 mm. longa, mediana late ovalia, obtusa, 5-nervia, 3.5 mm. longa, interna elliptica, 5-

\(^*\) Hooker (Bot. Mag. sub tab. 4846) was the first to suggest the possible identity of these two species, but he left the matter undecided.

† See p. 241 of the present paper.
nervia, 4-4.5 mm. longa. Stamina filamento apice edentato nec dilatato sed leviter constricto antheris paulo longiore, connectivo truncato. Bacca obovoidea, 6-7 mm. longa, nigro-coerulea, pruinosa, stylo brevissimo coronata.

Hab.—Kwangtung: North River (native collector! xi. or xii. 1888, ex Hb. Hongkong, No. 17 addition to the No. 17 sent to Kew in Feb. 1889.)*

4. **M. Mairei**, Takeda, sp. nov.  (Plate XVI and Plate XXXV, figs. 116–120.)

Folia 6-juga, jugo infimo stipulis filiformibus ca. 10 mm. longis magnopere approximato, ejus foliolis aliiis triplo vel quadruplo minoribus, jugo secundo ab infimo valde distante. Foliola oblonga, 7-10 cm. longa, 2.5–4 cm. lata, basi obliqua, apice plus minusve cuspidata, margine spinoso-dentata, dentibus in latere inferiore 7–12, in superiore 5–9, a basi 5-nervia, supra nitidissima, nervis depressis, venis reticulatis elevatis conspicuis, subtus nitida, nervis elevatis; foliolum terminale paulo majus, basi rotundato-cuneatum. Racem 6–7 fasciculati, basi subrahmosi, rhachi crassa ad 20 cm. longa. Bracteae flororum oblongo-ovatae, acutae, 3–4 mm. longae, patentes vel reflexae. Pedicelli filiformes, erecto-patentes, 5 mm. longi, basi saepe prophyllis filiformibus ornati. Sepala externa ovato-deltoidea, obtusa, crassiuscula, 5-nervia, nervis inconspicuis, 2 mm. longa et lata, mediana ovato-orbicularia, apice subrotundata, 4 mm. longa, 3.5 mm. lata, interna oblongo-ovalia, obtusa, 3–5-nervia, nervis subramosis, 7 mm. longa, 4 mm. lata. Petala oblongo-elliptica, apice bifida, basi nectaris binis distinctis instructa, trinervia, nervis subramosis. Stamina (juvenilia) edentata, connectivo conico apice subtruncato, antheris cum filamento subaequilongis vel paulo brevioribus. Ovarium cum stylo brevi 3.5 mm. longum, 4–5 ovulatum, stigmat 1 mm. diametro.

Hab.—Yunnan: vicinii of Yunnan-sen (Maire! No. 101, Hb. Edinb.).

Obs.—This species is closely related to **M. flavida**, Schn. but differs in the looser and paler inflorescence, smaller less pointed and often reflexed bracts, conical but truncate connective, and in the occasional presence of prophylls on the pedicel.

5. **M. bracteolata**, Takeda, sp. nov.  (Plate XVII and Plate XXXV, figs. 121–125.)

Folia 3–7-juga, jugo infimo a stipulis filiformibus ca. 10 mm. longis 5–12 mm. distante, ejus foliolis multo minoribus ovatis

* Cf. under **M. Bealei**.
vel subrotundatis. Foliola oblonga vel oblongo-lanceolata, crassa, firmissima, 3-7 cm. longa, 1.5-2 cm. lata, basi truncata vel rotundato-truncata, utrinque dentibus 5-12 spinoso-dentata, supra pallide viridia, venis elevatis, subtus pallidior, sub-glaucan, nervis inconspicuis; foliolum terminale paulo majus, basi rotundatum vel subtruncatum. Racemi plures, ad 10 cm. longi, densiflori, basi ramosi ibique non floriferi, rhachi gracili sed firma plus minusve pruinosa. Bracteae flororum ovatae vel ovato-lanceolatae, acuminatae, 3-4 mm. longae, saepe rubellae. Flores juveniles erubescentes, longe pedicellati, pedicellis erectis 5-10 mm. longis in fl. basilaribus medianisque bracteolatis, bracteolis 1-2 bracteae similibus sed minoribus. Sepala externa ovato-deltoidea, acuta, 3 mm. longa, 2.5 mm. lata, mediana ovata, obtusa, 5 mm. longa, 3.5 mm. lata, interna oblongo-ovalia, 8 mm. longa, 4 mm. lata, omnia 5-nervia, nervis sub-ramosis. Petala oblongo-elliptica, apice leviter retusa, 3-nervia, nervis lateralis basi subramosis, nectaris binis distinctis ornata. Stamina filamento crasso edentato antheras subaequante, connectivo depresso-deltideo. Ovarium cum stylo (1 mm. superante) 5 mm. longum, 6-8-ovulatum. Bacca desideratur.

Hab.—Yunnan: "dry open situations on the margins of pine forests on the divide between the Hoching and Lichiang valleys, 7000-9000 ft. Lat. 26°45' N. Spinous-leaved shrub of 3-7 ft. Flowers bright yellow tinged purplish-rose in bud, fragrant" (Forrest ! No. 7364, Hb. Edinb.).

Obs.—A very distinct species well characterised by the conspicuous prophylls and thick tough leaflets.

6. M. dolichostylis, Takeda, sp. nov. (Plate XVIII and Plate XXXV, figs. 126-130.)

Folia ad 8-juga, jugo infimo stipulis subulatis usque ad 15 mm. longis maxime approximato, ejus foliolis valde minoribus. Foliola firmissime coriacea, oblonga vel oblongo-ovata, 6-8 cm. longa, 3-5 cm. lata, basi obliqua, margine plus minusve revoluta, spinoso-dentata, dentibus in latere inferiore 4-7, in superiore 3-4, raro numerosioribus, flavido-viridia, supra subnita, nervis impressis venis reticulatis, subtus pallidior, nervis elevatis, venis inconspicuis; foliolum terminale aliis paulo majus vel subaequale, basi cuneatum. Racemi plures, multi- et densiflori, 20 cm. longi vel ultra, rhachi crassa. Bracteae flororum oblongae vel oblongo-ellipticae, obtuseae, deflexae, sub anthesin 3 mm. longae, deinde valde accrescentes et usque ad 9 mm. longae, 3 mm. latae. Pedicelli 5 mm. longi, crassiusculi, erecti vel erecto-patentes. Sepala externa ovata, acuminata, 4 mm. longa, 3 mm. lata, subquinquernervia, mediana late ovalia,
TAKEDA—OLD WORLD SPECIES OF THE GENUS MAHONIA.

obtusa, 5 mm. longa, 3 mm. lata, 5-nervia, interna oblonga, obtusa, ad 9 mm. longa, 4 mm. lata, 5-nervia, nervis saepe subramosis. Petala anguste oblonga, apice leviter bifida, lobis in specimine nostro convergentibus, basi nectariis binis distinctis ornata, 3-nervia, 9 mm. longa, 3 mm. lata. Stamina filamento apice incassato edentato antheris longiore, connectivo triangulari apice subemarginato-truncate. Ovarium ellipsisideum, stylo 3 mm. longo vel paulo ultra coronatum, 4-ovulatum. Bacca juvenilis globosa, matura ignota.

Obs.—A species well marked by the robust foliage and long styles.

7. M. conferta, Takeda, sp. nov. (Plate XIX and Plate XXXV, figs. 131–135.)

Folia 7–20-juga, jugo infimo stipulis subulatis patentibus vel deflexis ca. 10 mm. longis magnopere approximato, ejus folioliis quam alia valde minoribus. Foliola coriacea, rigida, valde conferta, oblonga vel ovato-oblonga, plus minusve falcata, 3–6 cm. longa, 2–3 cm. lata, basi truncata vel rotundato-truncata, utraque pagina nitidissima, supra flavido-viridia, nervis plus minusve impressis, subtus pallidiora nervis venisque elevatis, margine pauci-sinuato-dentata, dentibus in latere inferiore 3–4, in superiore 2–4; foliolum terminale alis majus, basi rotundatum vel cordato-rotundatum. Racemi, ut videntur, pluri-fasciculati, ad 18 cm. longi, rhachi crassa, multi- et densi-flori. Flores pro genere magni, aurei. Bracteae florum ovatae, acutae, ca. 5 mm. longae, leviter carinatae, subcoriaceae. Pedicelli bracteis longiores, erecto-patentes, demum recurvo-patentes, subcrassi. Sepala externa ovata vel oblongo-ovata, obtusa, ca. 3 mm. longa, subquadrinervia, mediana late elliptica, 5 mm. longa, 3 mm. lata, subquinquenervia, interna oblongo-ovalia, 9 mm. longa, 4 mm. lata, 5-nervia. Petala sepalis internis paulo breviora, oblongo-spathulata, 3-nervia, apice bifida, basi nectariis binis ellipticiis conspicuis ornata. Stamina 5 mm. longa, filamento apice subdilatato edentato cum antheris subaequilongo, connectivo late triangulati obtuso-apiculato. Ovarium anguste ovoideum, cum stylo conspicuo 5 mm. longum, stigmatate 1 mm. diametro, 3-ovulatum. Baccam non vidi.

Hab.—Yunnan: vicinity of Yunnan-sen (Maire! No. 2003, Hb. Edinb.).

Obs.—A very handsome plant, worth cultivating. It is easily distinguished from any other species of this genus by its beautiful foliage and large flowers which are densely crowded in the raceme.
8. **M. Hancockiana**, Takeda, sp. nov. (Plate XX and Plate XXXV, figs. 136–140.)

Folia 4–6-juga, infimo junto a stipulis filiformibus ad 15 mm. longis distante, ejus foliolis quam alia dimidio minoribus ovatis. Foliola subcoriacea, elliptica, 5–6 cm. longa, 2–3 cm. lata, inter se distantia, basi rotundato-cuneata, margine spinoso-serrata, dentibus in latere inferiore 7–12, in superiore 4–6, supra atroviridis, opaca, nervis depressis, subtus pallida, nervis venisque elevatis; foliolum terminalae alii majus, basi cuneatum vel rotundato-cuneatum. Racemi 15 cm. superantes, simplices, sublaixiflori. Bracteae flororum membranaceae, ovatae, subcuspido-acuteae, 3 mm. longae. Pedicelli filiformes, erecto-patentes, 5 mm. longi, graciles. Sepala externa ovata, obtusa, 3–4-nervia, 2.5 mm. longa, mediana ovato-elliptica, 5-nervia, 5 mm. excedentia, interna late-oblongo-elliptica, 7 mm. superantia, 7-nervia. Petala elliptica, retusa, 6 mm. longa, basi nectaris binis conspicuis ornata, 3-nervia, nervis lateralibus subramosis. Stamina 4.5 mm. longa, filamento edentato antheris longiore, connectivo quadrato-triangulari crasso. Ovarium cum stylo crasso 5 mm. longum, 3–5-pulvatum. Bacca ignota.

Hab.—Yunnan: Mengtsz, in forest 9000–9500 ft., shrub, flowers rich yellow (Hancock ii. 1894, No. 151, Hb. Kew).

Obs.—A distinct species having comparatively small leaves with elliptical leaflets which are distantly disposed.

9. **M. lomariifolia**, Takeda, sp. nov. (Plates XXI–XXII and Plate XXXV, figs. 141–151.)

Folia multijuga, jugis 10–20, jugo infimo stipulis subulatis patentibus valde approximato, ejus foliolis quam alia multo minoribus ovatis vel subrotundatis basi saepe subcuneatis. Foliola inter se subdistantia, basilaria oblongo-ovata, mediana et superiors lanceolata vel late lanceolata, longe cuspido-acuminata, patentia vel erecto-patentia, saepe falcata, 4–7 cm. longa, 1–2 cm. lata, basi truncata vel rotundato-truncata, plus minusve obliqua, coriacea vel subcoriacea, saepe nitida nervis vix prominentibus (in specie in locis umbrosis nascentibus venis subelevatis), subtus pallidiora, nervis conspicuis, venis subobscuris, margine incrassata, leviter revoluta, distanter spinoso-dentata, dentibus in latere inferiore 3–6, in superiore 2–4; foliolum terminalis aliis longius, basi rotundatum vel rotundato-cuneatum. Racemi 8–17 fasciculati, simplices, basi saepe bracteis sterilibus vestiti, densi et multi-flori, rhachi crassa substricta. Bracteae florae ovato-lanceolatae, acutae. Pedicelli filiformes, bracteas superantes, nutritae, saepe pruinosi. Sepala externa ovata vel oblongo-ovata, obtusa, ca. 2 mm. longa, mediana ovato-elliptica,
Takeda—Old World Species of the Genus Mahonia.

obtusa, 6 mm. longa, interna elliptica vel ovato-elliptica, ad 8 mm. longa, omnia 3-5-nervia. Petala oblongo-elliptica, sepalis internis paulo breviora, trinervia, apice leviter bifida, basi nectaris binis oblongis ornata. Stamina filamento antheris duplo longiore apice subdilatato edentato, connectivo triangulare apiculato. Ovarium elongatum, ca. 5 mm. longum, stylo brevi, ovulis 2-3-4-5. Bacca ovoidea, 6-7 mm. longa, pruinosa.

Hab.—Yunnan: “hills to the east and north of Tengyueh, 7000-8000 ft. Spinous-leaved shrub of 4-8 ft. Flowers bright yellow, non-fragrant. Shady moist gullies” (Forrest! xi. 1912, No. 9244, fl., v. 1912, No. 7724, fr.; Hb. Edinb.); “Mekong and side valleys at an elevation of from 8000 to 12,000 ft. Shrub of from 4 to 12 ft. Fl. bright yellow” (Forrest! ix. 1904, No. 141, alabastr., Hb. Edinb.); “Mile district, in mountain wood. Shrub 6 ft., yellow flowers” (Henry! No. 10,309).

Obs.—A very distinct species easily recognised by its multi-jugous leaves which resemble some species of Lomaria. The above description of the flower has been taken mainly from the specimen collected by Forrest (No. 9244), which possesses fully developed flowers. The other specimens examined have either young flowers or flower buds.

The same species has been collected in Formosa. Remarks upon the Formosan specimens will be found on p. 238.

10. M. Veitchiorum, (Hemsl. et Wils.) Schn. (Plate XXIII and Plate XXXV, figs. 158-162.)


Adde descr. Folia ad 7-juga, foliolis in infimo jugo multo minoribus stipulis brevissimis magnopere approximatis. Racemi 6-8 fasciculati, ad 10 cm. longi vel ultra, rhachi crassa. Bracteae florum majusculae, lanceolatae, longe acuminatae, 10 mm. superantes, pedicellis triplo majores. Sepala 9 in cyclos tres disposita, externa oblongo-lanceolata, acuta, 5-nervia, 5.5 mm. longa, mediana oblongo-elliptica, 6 mm. superantia, 5-nervia, interna oblongo-ovata, obtusa, 5-7-nervia, 7 mm. longa. Petala late oblanceolata, leviter bifida, basi nectaris binis magnis ornata, 5-nervia. Stamina petalis breviora, filamento ad apicem versus subdilatato edentato antheris subduplo longiore, connectivio subtruncato.

Hab.—Szechwan: loco non indicato (Henry! No. 8993, fr.); Mt. Omei (Wilson! Nos. 3142, fl., 4725, fl.). Yunnan: “Hills to the east of Tengyueh, 6000-7000 ft. Spinous-leaved shrub of 3-5 ft. Flowers golden-yellow? In fruit. Amongst scrub in open situations in side valleys” (Forrest! No. 7890); “Ma-

Obs.—A well characterised species, having thick elliptical leaflets with small spinous serration on the margin, very long bracts, and large outer sepals. This species may have some relationship with *M. polyodonta*, as Schneider considers, but is a stouter plant in every respect.

**II. M. Fortunei**,(Lindl.) Fedde. (Plate XXIV and Plate XXXVI, figs. 163–167.)


*M. trifurca*, Hort. ex Loudon, Encycl. Pl. Suppl. ii, p. 1346, 1855; Fedde, l.c. p. 125, fig. 4, B.

*B. trifurca*, Fort. in Paxt. and Lind. Fl. Gard. iii, p. 57, fig. 258, 1852–53.


Hab.—China: (Fortune! Nos. 32 (1846), 42 (1852), 43 (no date). Szechwan: Chung-king (Mesny! 1880, in Hb. Hance, No. 2287) ; Mt. Omei and Min River (Faber! No. 469) ; Mt. Omei (Hugh! 1899) ; Yachou Fu, woodlands, 500–800 met. (Wilson! No. 2882).

Obs.—This species is variable as regards the shape and size of leaflets. In the more normal specimens the leaflets are narrow, gradually tapering towards the base. Sometimes the leaflets are much broader (over 2 cm.) and are furnished with a few coarse teeth (Faber, No. 469).* The terminal leaflet is usually longly cuneate at the base, but occasionally a leaflet with roundish base is met with (Fortune, No. 42). Where very few teeth are present in a broad leaflet, we get the so-called “*trifurca*,” which is only an extreme form (e.g. the terminal leaflet in Fortune, No. 42). There seems however to be no necessity to keep up this name, since there are all gradations. The terminal leaflet is as a rule “sessile,” but in one case the writer has seen a terminal leaflet stalked (Mesny in Hance, No. 2287). This is probably due to the fact that the terminal one is fused

* Fortune, No. 42 possesses leaflets up to 5 cm. broad with round or almost truncate base; the teeth on the margin are very coarse.
with those of the uppermost pair; in this case the terminal leaflet possesses a round base.

12. **M. confusa**, Sprague. (Plate XXV and Plate XXXVI, figs. 168-172.)


*M. Fortunei*, Fedde, l.c. p. 130, pro parte; Schn. l.c. p. 380, pro parte.


Hab.—Chung Ching (Chüng tsing in Shensi?) (Bourne!) fr.). Hupeh: Ichang and immediate neighbourhood (Henry! Nos. 3117, 3351, 3351a); Nant'o and mountains to northward (Henry! No. 2689, fl.); Western Hupeh (Wilson! No. 2680, fl.). Szechwan: Mt. Omei (Wilson! No. 3143; Hugh! 1899).

Obs.—This species obviously comes near the preceding, differing however in many respects, as pointed out by the writer.* The petal is bifid in this species, while in *M. Fortunei* it is entire. The stamen also differs from that of the other species in having a truncate connective. Sprague lays great stress on the "stalked" character of the terminal leaflet. This character is however subject to variation and cannot always be relied upon. A good distinguishing character in a sterile specimen is the length of the petiole, as first noticed by Schneider.† While *M. confusa* has a very short petiole, *M. Fortunei* possesses a comparatively long one (about 5 cm.). It may also be mentioned that the leaflets of *M. confusa* are narrower and thinner than those of *M. Fortunei* and have shallower teeth on the whole.

It may be pointed out that some specimens above referred to (including those which form the type specimens of *M. confusa*) have the terminal leaflet "stalked" while others have the terminal leaflet "sessile." Moreover, those specimens with the "stalked" terminal leaflet often have broader lateral leaflets than the others. These facts might induce some botanists, especially those who consider the "stalked" or "sessile" features as very important, to attempt to separate the material into two species or at least varieties. There are however no other dividing characters. Certain specimens bearing the broader leaflets have a "sessile" terminal leaflet together with those of the more usual type (e.g. Henry, No. 3351), while another specimen collected by Henry (No. 2689) which bears

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† Schneider, l.c. p. 379.
narrow leaflets possesses in one of the leaves a "stalked" terminal leaflet. Further, the specimen collected by Hugh on Mt. Omei and above referred to has narrow leaflets (about half an inch broad or less, and never reaching three-quarters of an inch), yet all the terminal leaflets in this specimen are "stalked." It is evident therefore that separation of forms or species by means of "stalked" or "sessile" terminal leaflets alone is not defensible. Not only in this species, but also in many others the terminal leaflet is either "stalked" or "sessile" in the same species, and often in the same specimen, as has already been pointed out in the introduction.

In the case of M. confusa it might be possible to distinguish two forms by the width of the leaflets, but how far such a distinction may be practicable in nature is a question to which the writer is not prepared to give an answer.

13. M. Fargesii, Takeda, sp. nov. (Plate XXVI and Plate XXXVI, figs. 173–178.)

Folia 7-juga, jugo infimo stipulis filiformibus ca. 10 mm. longis patentibus vel deflexis magnopere approximato, ejus foliolis minoribus. Foliola coriacea, marginata, oblonga vel ovato-oblonga, cuspidata, basi rotundato-truncata vel subtruncata, 3.5–5.5 cm. longa, 2.5–4 cm. lata, margine pauci-et grossi-dentata, dentibus in latere inferiore 3–5, in superiore 2, utraque pagina subnuita, nervis venisque elevatis; foliolum terminale majus, basi cuneatum. Racemi plures quam 10 fasciculati, erecti, stricti, rhachi virgata simplici. Bracteae florum ovatae vel ovato-lanceolatae, acutae, 4–6 mm. longae. Pedicelli capillaris, erecto-patentes, apice submutantes, cum bracteis aequilongi. Sepala externa oblongo-deltoidea, acuta, 2.5 mm. longa, 1.5 mm. lata, trinervia, mediana ovato-oblonga, obtusa, cymbiformia, carinata, 5 mm. longa, 2.5 mm. lata, quinquennervia, interna oblongo-elliptica, obtusa, 5.5 mm. longa, 2.5 mm. lata. Petala elliptico-oblanceolata, apice bifida, 5 mm. longa, 2 mm. lata, trinervia, basi nectaris binis distinctis ornata. Stamina cum sepalis externis aequilonga, filamento ad apicem subdilatato edentato antheris paulo longiore, connectivo lato truncato. Ovarium parvum, oblongo-ovoideum, 2.5 mm. longum, stigmatico minuto, ovulis 5–7.

Hab.—Szechwan: Chenkow (Farges! in Hb. Kew, sine dato).

Obs.—The leaf bears a similar appearance to that of M. japonica, but the inflorescence is quite different, being straight, and having smaller denser bracts. There is also a great difference in the flowers of these two species.
Takeda—Old World Species of the Genus Mahonia.

14. *M. longibracteata*, Takeda, sp. nov. (Plate XXVII and Plate XXXVI, figs. 179–183.)

Folia 5-juga, jugo infimo stipulis filiformibus ut videntur brevissimis magnopere approximante, ejus foliolis quam alia dimidio minoribus. Foliola crassa, coriacea, supra flavido-viridia, nervis immersis, infra pallidiora, nervis inconspicuis, oblonga, 4–7 cm. longa, 2–3.5 cm. lata, mucronato-apiculata, basi cuneato-rotundata vel subrotundata, obliqua, margine spinoso-dentata, dentibus in latere inferiore 4–5, in superiore 3–4; foliolum terminale majus, basi longe cuneatum, apice mucronato-apiculatum, utrinque dentibus 6 spinoso-dentatum. Racemi 7–8 fasciculati, usque ad 10 cm. longi, simplices, a basi densiflori. Flores ut videntur pallide flaví. Bracteae florum lanceolatae, longe acuminatae, ca. 10 mm. longae. Pedicelli ad 5 mm. longi, erecto-patentes, ebracteolati. Sepala externa lanceolata, cymbiformia, acuminata, 4–6 mm. longa, 1.5–2 mm. lata, mediana late lanceolata vel oblongo-lanceolata, obtusa, saepe apice leviter retusa, 5–6 mm. longa, ad 3 mm. lata, interna medianis consimilia sed tenuiora, omnia trinervia, nervis lateralis subramosis. Petala oblongo-elliptica, 4–5 mm. longa, 3 mm. lata, trinervia, apice bifida, basi nectariis binis vix distinctis ornata. Stamina filamento lato edentato antheris longiore, connectivo angustissimo truncato. Ovarium ad 3 mm. longum, 2-ovulatum stigmati sessili. Bacca ignota.

Hab.—Yunnan: “In open situations amongst scrub in side valleys on the eastern flank of the Tali Range, lat. 25° 40' N., 8000–10,000 ft.” (Forrest ! No. 4345, Hb. Edinb.).

Obs.—This species is more or less closely related to *M. Veitchiorum*, from which it differs in the shape of the leaflets, the inconspicuous nectaries, and in the very narrow truncate connective.

15. *M. polyodonta*, Fedde. (Plate XXXVI, figs. 184–189.)


Adde notas sequentès: Racemi ad 8 fasciculati, breves, ad 5 cm. longi, simplices, densiflori, rhachi gracili. Bracteae florum lanceolatae, acuminatae, 5 mm. longae. Pedicelli bracteis breviores. Sepala externa anguste ovata, acuminata, 3–3.5 mm. longa, carinata, mediana late lanceolata, acutiuscula, 5–5.5 mm. longa, interna oblongo-elliptica, 6 mm. longa, omnia 3-nervia. Petala oblanceolata, leviter bifida, 4 mm. longa, 3-nervia, basi nectariis binis minutis ornata. Stamina petalis breviore, filamento edentato antheris subduplo longiore, connectivo angustissimo truncato. Ovarium stylo brevi praeditum, 2-ovulatum.

Hab.—Szechwan: Chenkow (Farges ! No. 759).
16. **M. Sheridaniana**, Schn. (Plate XXVIII and Plate XXXVI, figs. 190–194.)

Adde notas sequentes: Racemi ad 5 fasciculati, fructiferi ad 7 cm. longi, pedicellis ad 4 mm. longis apice nutantisbus. Sepala externa ovata, obtusa, 1.5 mm. longa, 5-6-nervia, mediana late ovalia, 5-nervia, 3.5 mm. longa, interna late obovata, utrinque 1-dentata (an semper ?), 5-nervia, 6 mm. longa, 4 mm. lata. Petala obovata, basi nectaris binis subtundatis ornata, trinervia. Bacca majusca, ovoidea, nigro-coerulea, 15 mm. longa, 10 mm. lata, estylosa, stigmate punctiformi coronata.

Hab.—Hupeh: "Changyang, woods, 8000 ft. Bush 4 ft., flower yellow" (Wilson! No. 426).
Obs.—So far as is known the fruit of the present species is the largest in this genus.

17. **M. gracilipes**, (Oliver) Fedde. (Plate XXXVI, figs. 195–199.)

*M. subtrinervis*, Fedde, l.c. p. 129.
Hab.—Szechwan: Mt. Omei (Faber! No. 85, fl.; Wilson! Nos. 3144, fr., 4727, fl.).


Hab.—Szechwan: "Hungya Hsien, red sandstone cliffs, alt. 1100 m." (sec. Schn. l.c.) (Wilson! No. 2881).
Obs.—A very distinct species having leaflets markedly cuneate at the base, and with both sides symmetrical.


*M. decipiens*, Schn. l.c. p. 379.
Hab.—Hupeh: Changyang Hsien (Wilson! No. 2884).
Obs.—A very well-marked species with a leaf consisting of only a few (1–2) pairs of leaflets, the lowermost of which is situated at a distance of 4.5–8 cm. from the base of petiole,* while the terminal leaflet is broadly ovate with a cordate-rotundate base. Schneider’s suggestion as to its affinity with *M. napaulensis* does not commend itself to me.

* In the original description the length is given as 2–4 cm.
238 TAKEDA—OLD WORLD SPECIES OF THE GENUS MAHONIA.

20. M. hypoleuca, Takeda, sp. nov. (Plate XXIX.)

Folia 8-9-juga, jugo infimo stipulis filiformibus ca. 10 mm. longis maxime approximante, ejus foliolis multo minoribus, orbiculatis vel ovatis. Foliola inter se distantia, ovata, 5-6 cm. longa, 3-4 cm. lata, basi truncata vel rotundato-truncata, subobliqua, subabrupte acuminata, margine leviter spinoso-serrata, dentibus in latere inferiori 5-8, in superiore 3-5, chartacea, supra virens, subtus glauca; foliolum terminale aliis simile, ovatum, basi rotundatum. Flores et fructus desiderantur.

Hab.—Yunnan: Mengtsz, S.W. mts., 6000 ft., shrub 3 ft. (Henry! No. 9863, in Hb. Kew).

Obs.—A very distinct species, easily distinguished from other species by the foliage alone. Unfortunately neither flower nor fruit has been collected. This species is possibly related to the preceding species.

The writer greatly regrets that no specimens of the following species have been at his disposal. They are:

M. Ducloixiana, Gagn. l.c. p. 87.
M. setosa, Gagn. l.c. p. 86.

From the descriptions most of them appear to be good distinct species. M. eurybracteata appears to be a form of M. Fortunei, but it is impossible to settle the question from the original description alone. M. ganpiensis does not seem to be a Mahonia at all, since the author says: "folia paripinnata" . . . "stigmatic . . . villoso." As far as the writer's knowledge goes, there is no Mahonia with a paripinnate leaf, or a villous stigma. It may, however, be possible that the terminal leaflet was missing from the type specimen, and some fluff of blotting paper might have remained on the stigma when pressed. Apart from these bétises, the whole description is so vague, lacking in all the important points but characters common to the genus, that no one can picture this species at all. It would therefore be wise to disregard it altogether.

III. THE FORMOSAN SPECIES.

The first record of Mahonia in Formosa is that of Professor Matsumura,* and afterwards there is that of Dr. Hayata,† who mentions the occurrence of a single species, Berberis nepalensis,

* Matsum. in Tökyö Bot. Mag. xii, p. 54, 1898.
† Hayata, Fl. Mont. Form. p. 47, 1908.
in a few places in the mountainous districts. Through the kindness of Dr. Hayata the writer has had an opportunity of examining some of the specimens referred to. Unfortunately the specimens are very imperfect, some consisting of leaves alone, others are accompanied with young flowers only.

It has been found, however, that there are at least three species indigenous to Formosa, and no doubt more will be discovered.

1. *M. lomariifolia*, Takeda, sp. nov. vide supra, p. 231. (Plate XXXV, figs. 152–157.)


Obs.—The specimen from Arisan is very young and possesses small immature flowers about 3 mm. in length, while the ovary has 2–3 ovules. The figures given in our plate of this specimen appear at first glance quite different from those of typical *M. lomariifolia*, being smaller in every respect. In particular the organs situated near the centre of the flower are very immature. The other specimen is also imperfect. It possesses leaves more than 8-jugate, leaflets coriaceous, longly cuspidate-acuminate, distantly spinose-dentate, nerves and veins more or less visible on the under surface. The inflorescence is very young with flowers hardly developed.

2. *M. morrisonensis*, Takeda, sp. nov. (Plate XXXVI, figs. 200–206.)

*B. nepalensis*, Hayata, l.c. pro parte.

Folia magis quam 7-juga, foliolis chartaceo-coriaceis inter se plus minusue distantibus, (inferioribus quam alia multo minoribus,) medianis lanceolatis, longe acuminatis plus minusve falcatis basi rotundato-truncatis obliquis 7–10 cm. longis 2–2.5 cm. latis margine spinoso-serratis, (dentibus in latere inferiore 10–12, in superiore 5–8,) supra nitidis, nervis venisque elevatis, subtus pallidoribus, nervis venisque prominentibus. Racemi densiflori. Flores tantum juveniles visi pedicello brevi 2–3 mm. longo suffulti, bracteis lanceolatis ca. 3 mm. longis praeediti. Sepala externa lanceolata, acuminata, 2.5 mm. longa, 1 mm. lata, cymbiformia, obscure trinervia, mediana late lanceolata, acuta, cymbiformia, 3.5 mm. longa, ad 1.5 mm. lata, trinervia, interna oblongo-lanceolata, acuta, 5 mm. longa, ad 2 mm. lata, 5-nervia. Petala oblanceolata apice leviter bifida, basi nectaris binis distinctis ornata, trinervia, 4 mm. longa. Stamina petalis breviora,
TAKEDA—OLD WORLD SPECIES OF THE GENUS MAHONIA.

filamento edentato antheris subduplo longiore, connectivo truncato. Ovarium oblongum, 3 mm. longum, 3-ovulatum stylo brevi coronatum. Bacca ovoidea, 6 mm. longa, 4 mm. lata, atro-coerulea, pruinosa, stylo brevi (ad 1 mm. longo), pedicello 3-4 mm. longo, bracteis 5-6 mm. longis coriaceis viridescentibus praedita.

Hab.—Mt. Morrison, 7500 ped. (T. Kawakami et U. Mori! 16. xi. 1906, fl. juv. et fr.).

Obs.—Amongst the Formosan species known at present this is distinguished by having chartaceous leaflets and truncate connective.

There is another specimen from Mt. Morrison (U. Mori! 17. x. 1906) consisting of a single leaf. The leaf is about 45 cm. in length with about 12 pairs of leaflets which are similar to those of the preceding species, but thicker in texture, hardly falcate, and provided with less numerous teeth (5-8 on the lower and 4-6 on the upper margin). It is possible that this specimen belongs to a distinct (and probably new) species, but at present it is left undescribed.

IV. THE JAPANESE SPECIES.

There is only one species known from Japan, and this has not been found wild, so far as the writer's experience goes. It may have been introduced from a neighbouring country as a cultivated plant, but the writer has seen no typical specimen of *M. japonica* collected outside Japan.

This is the oldest species of this genus, having been first described * and figured † as *Ilex japonica*, then transferred to *Berberis,*‡ and finally to *Mahonia.*§ Many years afterwards this species was confused with *M. Bealei,*|| and this mistake has often been repeated. These two species may show some resemblance in foliage under abnormal circumstances, yet an absolute distinction can always be seen in the inflorescences. While *M. Bealei* has racemes rather straight, stout, and densely beset with small bracts, those of *M. japonica* are rather slender, straggling, and loosely furnished with large ovate bracts. The flowers of these species are totally different (compare figs. 83-103 and 207-211). As *M. japonica* is not sufficiently understood, a full description of it is given below.

§ DC. Syst. ii, p. 22, 1821.
M. japonica, (Thunb.) DC. (Plate XXX and Plate XXXVI, figs. 207-211.)

M. japonica, DC. Syst. ii, p. 22, 1821.


M. japonica, pro parte et var. gracillima, Fedde, l.c. pp. 118, 120.


Hab.—Japan (ex Hb. Lugdno. Batav. steril.); Garden at Nagasaki (Oldham! No. 686), Tōkyō (Terasaki! v. 1906), etc.

Obs.—From the above description and the figures referred to, it will easily be seen that the present species differs from M. Bealei in many respects. Fedde's var. gracillima is nothing but the typical M. japonica, while his M. japonica is a mixture of M. japonica and M. Bealei.

The writer has received from Mr. G. Reuthe, Keston, Kent, specimens of Mahonia labelled as M. intermedia and M. Bealei. As these specimens are represented by leaves alone it is difficult to determine them with certainty, but the former appears to be the typical M. japonica and the latter a large form of the same species. If these specimens actually represent the so-called M.
intermedia and M. Bealei known among the florists, and if the identification be correct, we may regard these two names as synonyms of M. japonica.* It is strange that M. Bealei is known amongst florists as M. japonica.

**V. THE SIAMESE SPECIES.**

The occurrence of this genus in Siam was made known first in the year 1911 † by Craib. Specimens were identified as M. nepalensis, but this identification was subsequently considered doubtful by the same botanist and the record cancelled.‡ The writer is deeply indebted to Mr. Craib for kindly handing over his specimens together with newly acquired material for investigation. This species has proved to be new to science, and has been named M. siamensis.

*M. siamensis*, Takeda. (Plate XXXI and Plate XXXVI, figs. 212–217.)

*M. nepalensis*, Craib, in Kew Bull. 1911, p. 11, non DC.

Folia ad 45 cm. longa, 7–8-juga, jugo infimo stipulis subulatis ad 10 mm. longis subdeflexis valde approximante, ejus folioli quam alia 2–3-plo minoribus. Foliola inter se plus minusve approximata, lanceolata vel ovato-lanceolata, basi cuneata vel subtruncata, obliqua, apicem versus sensim attenuata nec cuspidato-acuminata, firmissime coriacea, supra nitida, nervis immersis, subitus pallidiora, nervis venisque elevatis, 5–10 cm. longa, 2–4 cm. lata, spinoso-denticulata, dentibus in lateri inferiore 5–9, in superiore 4–8; foliolum terminale alis simile, basi subtruncatum. Racemi 6–10 fasciculati, densiflori, rhachi crassa basi saepe subramosa sub anthesi 5–15 cm. longa 2 mm. diametro demum elongata et incrassata, fructifera robusta ad 30 cm. longa vel ultra ad 5 mm. diametro subteretis. Bracteae florum ovatae, acutae, scariosae, 3–6 mm. longae, 2–4 mm. latae. Pedicelli 5–10 mm. longi, demum ad 7–12 mm. elongati, stricti, patentes. Sepala externa ovato-deltoida, minuta, 2 mm. longa et lata, 5-nervia, mediana rotundato-ovata, ad 4 mm. longa, 3 mm. lata, 7-nervia, interna oblongo-elliptica, 8 mm. longa vel paulo ultra, 4.5 mm. lata, apice integra vel interdum leviter bifida, 7-nervia. Petala elliptica, apice biloba, basi nectarii binis distinctis ornata, 7.5 mm. longa, 4 mm. lata, 5-nervia. Stamina petalis brevioria, filamento apice leviter incrassato

*Fedde (l.c. p. 120) regards M. intermedia as being conspecific with M. napaulensis.
† Craib in Kew Bull. 1911, p. 11.
‡ Craib, Contr. to the Fl. of Siam, in Aberdeen Univ. Studies, No. 57, p. 10, 1912.
edentato antheris longiore, connectivo depresso-triangulare apiculato. Ovarium globoso-ovoideum, stylo 2 mm. longo, stigmatic capitato 1.5 mm. diametro, ovulis 4-6. Bacca globosa, ad 5 mm. diametro, stylo ca. 2 mm. longo coronata, atro-coerulea, pruinosa.

Hab.—Chiengmai, Doi Sutep: "5000–7500 ft. Shrub to 10 ft. high; berries blue; evergreen jungle" (Kerr ! iv. 1910, No. 1107, fr.); ibid. "1670 m. Shrub about 4 m. high, evergreen jungle" (Kerr ! ii. iv. 1914, No. 1107A).

Obs.—This plant appears to be of uncommon occurrence. It may be remotely related to M. longibracteata, but differs in many points. It also resembles M. flavida, but the flower of the Siamese species is much larger and the whole plant is not reddish-brown as in the other.

VI. THE MALACCAN SPECIES.

From this district M. napaulensis has been recorded,* the specimen having been collected by Griffith in Mergui. Griffith's specimen (No. 120) is, unfortunately, deflorate, so that no decided opinion can be formed thereupon. It has a similar appearance to M. siamensis, and may possibly be the same or a closely related species.

VII. THE BURMESE SPECIES.

From Burma also M. napaulensis has been recorded.† The writer has had no opportunity of examining any specimens supporting that record. The only specimen of Mahonia from Burma, which the writer has seen, is M. siamensis (v. supra), collected in the Southern Shan States: Keng Tung, about 4000 ft., by R. W. MacGregor in October 1909, No. 1236 fl. (Hb. Calcutt.).

It may perhaps be presumed that the specimen recorded by Hemsley from "Shan Hills" belonged to the same species.

VIII. THE ANNAM SPECIES.

M. annamica, Gagnep. is the only species hitherto found in Annam.‡ From the original description it seems to be quite a distinct species. The specimen however has not been seen by the writer.

‡ Gagnepain, in Bull. Soc. Bot. Fr. iv, p. 84, 1908.
IX. THE JAVANESE SPECIES.

In the year 1859 Miquel recorded the occurrence of *Berberis napaulensis* in Java. The writer has had no opportunity of examining Miquel’s specimen nor any other collected in Java. It is probably an erroneous record. Miquel’s brief description of his specimen does not go beyond the generic characters.

X. THE PHILIPPINE SPECIES.

The Philippine species furnishes us with another instance of a wrong record of *M. napaulensis*. The writer has fortunately been enabled to examine several excellent specimens with both flower and fruit, and found that he was dealing with another new species, a description of which follows.

*M. philippinensis*, Takeda, sp. nov. (Plate XXXII and Plate XXXVI, figs. 218–222.)


Folia 15–30 cm. longa, 5–10-juga, infimo jugo stipulis subulatis vel filiformibus ad 13 mm. longis magnopere approximante, ejus foliolis quam alia 2–3-plo minoribus oblongo-ovatis. Foliola inter se plus minusve distantia, papyraceo-chartacea vel chartaceo-coriacea, 3–6 cm. longa, 2–3 cm. lata, ovato-lanceolata, basi truncata vel rotundato-truncata, obliqua, apicem versus sensim acuminata, spinoso-dentata, spinis in latere inferiore 4–6, in superiore 3–4, supra nitida, venis inconspicuis, infra subnita, nervis venisque elevatis; foliolum terminale alius paulo majus, basi truncatum vel rotundato-truncatum. Racemi 5–6 fasciculati, graciles, sub anthesin 10–20 cm. longi, fructiferi ad 20 cm. longi vel ultra. Bracteae florum ovato-lanceolatae, acutae vel acutiusculae, 2–3 mm. longae, 2 mm. latae. Pedicelli erecto-patentes, graciles, 8–13 mm. longi. Sepala externa ovata, obtusa, 2 mm. longa, 1–1.5 mm. lata, ad 5-nervia, mediana ovato-orbiculata, 5-nervia, 3–3.5 mm. longa, 3 mm. lata, interna elliptica, 6 mm. longa, 3 mm. lata, 5–7-nervia. Petala cum sepalis internis aequilonga, late elliptica, apice leviter bifida, basi nectaris binis distinctis ornata, 3–5-nervia. Stamina edentata, antheris filamento subduplo brevioribus, connectivo lato truncato. Ovarium ovoideum, 3 mm. longum, stylo brevisimo 0.5 mm. longo, ovulis 2. Bacca globosa, ad 8 mm. diametro, nigro-coerulea, pruinosa, stigmate punctiformi coronata.

Hab.—Benguet, Luzon (Loher ! No. 60, fl., fr.; Elmer ! No. 5929, fr.; Williams ! No. 1460, fl., defl.).
The present investigation clearly shows that our knowledge of the genus *Mahonia* has been and still is very imperfect. It is remarkable how numerous are the species which have erroneously been recorded as *M. napaulensis*, without their real nature being satisfactorily understood. No doubt many more new species are still to be found, while many more specimens of the known species must be collected and carefully examined before they can be adequately defined.
### INDEX TO THE SPECIES.

<table>
<thead>
<tr>
<th>Species</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>M. acanthifolia, G. Don.</td>
<td>219</td>
</tr>
<tr>
<td>M. acanthifolia var. Drummondii, Takeda</td>
<td>220</td>
</tr>
<tr>
<td>M. annamica, Gagn.</td>
<td>243</td>
</tr>
<tr>
<td>M. Bealei, Carr.</td>
<td>225</td>
</tr>
<tr>
<td>M. Bodinieri, Gagn.</td>
<td>238</td>
</tr>
<tr>
<td>M. borealis, Takeda</td>
<td>221</td>
</tr>
<tr>
<td>M. bracteolata, Takeda</td>
<td>228</td>
</tr>
<tr>
<td>M. conferta, Takeda</td>
<td>230</td>
</tr>
<tr>
<td>M. confusa, Sprague</td>
<td>234</td>
</tr>
<tr>
<td>M. decipiens, Schn.</td>
<td>237</td>
</tr>
<tr>
<td>M. dolichostylis, Takeda</td>
<td>229</td>
</tr>
<tr>
<td>M. Duclouxiana, Gagn.</td>
<td>238</td>
</tr>
<tr>
<td>M. eurybracteata, Fedde</td>
<td>238</td>
</tr>
<tr>
<td>M. Fargesii, Takeda</td>
<td>235</td>
</tr>
<tr>
<td>M. flavida, Schn.</td>
<td>227</td>
</tr>
<tr>
<td>M. Fordii, Schn.</td>
<td>227</td>
</tr>
<tr>
<td>M. Fortunei, Fedde</td>
<td>233</td>
</tr>
<tr>
<td>M. ganpiensis, Leveillé</td>
<td>209</td>
</tr>
<tr>
<td>M. gracilipes, Fedde</td>
<td>237</td>
</tr>
<tr>
<td>M. Griffithii, Takeda</td>
<td>217</td>
</tr>
<tr>
<td>M. Hancockiana, Takeda</td>
<td>231</td>
</tr>
<tr>
<td>M. hypoleuca, Takeda</td>
<td>238</td>
</tr>
<tr>
<td>M. napaulensis, DC</td>
<td>241</td>
</tr>
<tr>
<td>M. japonica, var. gracillima, Fedde=M. japonica, DC.</td>
<td>241</td>
</tr>
<tr>
<td>M. Leschenaultii, Takeda</td>
<td>223</td>
</tr>
<tr>
<td>M. Leveileana, Schn.</td>
<td>238</td>
</tr>
<tr>
<td>M. lomarifolia, Takeda</td>
<td>231, 239</td>
</tr>
<tr>
<td>M. longibracteata, Takeda</td>
<td>236</td>
</tr>
<tr>
<td>M. Mairei, Takeda</td>
<td>228</td>
</tr>
<tr>
<td>M. manipurensis, Takeda</td>
<td>222</td>
</tr>
<tr>
<td>M. morrisonensis, Takeda</td>
<td>239</td>
</tr>
<tr>
<td>M. napaulensis, DC</td>
<td>216</td>
</tr>
<tr>
<td>M. nitens, Schn.</td>
<td>237</td>
</tr>
<tr>
<td>M. philippinensis, Takeda</td>
<td>244</td>
</tr>
<tr>
<td>M. polyodonta, Fedde</td>
<td>236</td>
</tr>
<tr>
<td>M. pycnophylla, Takeda</td>
<td>218</td>
</tr>
<tr>
<td>M. Roxburghii, Takeda</td>
<td>218</td>
</tr>
<tr>
<td>M. setosa, Gagn.</td>
<td>238</td>
</tr>
<tr>
<td>M. Sheridianiana, Schn.</td>
<td>237</td>
</tr>
<tr>
<td>M. siamensis, Takeda</td>
<td>242</td>
</tr>
<tr>
<td>M. sikkimensis, Takeda</td>
<td>220</td>
</tr>
<tr>
<td>M. subtrinervis, Fedde=M. gracilipes, Fedde</td>
<td>237</td>
</tr>
<tr>
<td>M. trifurca, Hort.=M. Fortunei, Fedde</td>
<td>225, 233</td>
</tr>
<tr>
<td>M. Veitchiorum, Schn.</td>
<td>232</td>
</tr>
<tr>
<td>M. Zemanii, Schn.=M. confusa, Sprague</td>
<td>213, 234</td>
</tr>
</tbody>
</table>

### EXPLANATION OF PLATES I–XXXVII.

Illustrating H. Takeda’s Paper on the Old World Species of Mahonia.

<table>
<thead>
<tr>
<th>Plate</th>
<th>Illustration</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.</td>
<td>M. napaulensis, DC. × ( \frac{1}{4} )</td>
</tr>
<tr>
<td>II.</td>
<td>M. napaulensis, DC. × ( \frac{1}{4} )</td>
</tr>
<tr>
<td>III.</td>
<td>M. Griffithii, Takeda. × ( \frac{1}{4} )</td>
</tr>
<tr>
<td>IV.</td>
<td>M. pycnophylla, Takeda. × ( \frac{1}{4} )</td>
</tr>
<tr>
<td>V.</td>
<td>M. Roxburghii, Takeda. × ( \frac{1}{4} )</td>
</tr>
<tr>
<td>VI.</td>
<td>M. acanthifolia, G. Don. × ( \frac{3}{4} )</td>
</tr>
<tr>
<td>VII.</td>
<td>M. sikkimensis, Takeda. × ( \frac{3}{4} )</td>
</tr>
<tr>
<td>VIII.</td>
<td>M. borealis, Takeda. × ( \frac{1}{4} )</td>
</tr>
<tr>
<td>IX.</td>
<td>M. manipurensis, Takeda. × ( \frac{1}{4} )</td>
</tr>
<tr>
<td>X.</td>
<td>M. Simonsii, Takeda. × ( \frac{3}{4} )</td>
</tr>
<tr>
<td>XI.</td>
<td>M. Leschenaultii, Takeda. × ( \frac{1}{4} )</td>
</tr>
<tr>
<td>XII-XIII.</td>
<td>M. Bealei, Carr. × ( \frac{1}{4} )</td>
</tr>
<tr>
<td>XIV.</td>
<td>M. flavida, Schn. × ( \frac{1}{4} )</td>
</tr>
<tr>
<td>XV.</td>
<td>M. Fordii, Schn. × ( \frac{1}{4} )</td>
</tr>
<tr>
<td>XVI.</td>
<td>M. Mairei, Takeda. × ( \frac{1}{4} )</td>
</tr>
<tr>
<td>XVII.</td>
<td>M. bracteolata, Takeda. × ( \frac{1}{4} )</td>
</tr>
<tr>
<td>XVIII.</td>
<td>M. dolichostylis, Takeda. × ( \frac{1}{4} )</td>
</tr>
<tr>
<td>XIX.</td>
<td>M. conferta, Takeda. × ( \frac{1}{4} )</td>
</tr>
</tbody>
</table>
**Takeda—Old World Species of the Genus Mahonia.** 247

<table>
<thead>
<tr>
<th>Plate</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>XX.</td>
<td>M. Hancockiana, Takeda. (\times \frac{1}{6})</td>
</tr>
<tr>
<td>XXI-XXII</td>
<td>M. lomariifolia, Takeda. (\times \frac{1}{6})</td>
</tr>
<tr>
<td>XXIII</td>
<td>M. Veitchiorum, Schn. (\times \frac{1}{6})</td>
</tr>
<tr>
<td>XXIV</td>
<td>M. Fortunei, Fedde. (\times \frac{1}{6})</td>
</tr>
<tr>
<td>XXV</td>
<td>M. confusa, Sprague. (\times \frac{1}{6})</td>
</tr>
<tr>
<td>XXVI</td>
<td>M. Fargesii, Takeda. (\times \frac{1}{6})</td>
</tr>
<tr>
<td>XXVII</td>
<td>M. longibracteata, Takeda. (\times \frac{1}{6})</td>
</tr>
<tr>
<td>XXVIII</td>
<td>M. Sheridaniensis, Schn. (\times \frac{1}{6})</td>
</tr>
<tr>
<td>XXIX</td>
<td>M. hypoleuca, Takeda. (\times \frac{1}{6})</td>
</tr>
<tr>
<td>XXX</td>
<td>M. pycnophylla, Takeda (Hooker et Thomom, Khasya).</td>
</tr>
<tr>
<td>XXXI</td>
<td>M. napaulensis, DC. (Buchanan, Nepal), fig. 2 = middle sepal.</td>
</tr>
<tr>
<td>XXXII</td>
<td>M. acanthifolia, G. Don (Wall., type).</td>
</tr>
<tr>
<td>XXXIII</td>
<td>M. borealis, Takeda (Keshava Nand, Jodi Forest).</td>
</tr>
<tr>
<td>XXXIV</td>
<td>M. Leschenaultii, Takeda (Ball, Nilgherry).</td>
</tr>
<tr>
<td>XXXV</td>
<td>M. bracteolata, Takeda (Forrest, No. 7364).</td>
</tr>
</tbody>
</table>

In the following Plates all the figures are magnified six times, except fig. 206, which is of natural size. In each species the outermost, middle, and innermost sepals, petal, stamen and often pistil are shown in the order mentioned. Where the middle and innermost sepals are very similar, only one of them is delineated.

**Plate XXXIII.** Figs. 1-5. M. napaulensis, DC. (Buchanan, Nepal), fig. 2 = middle sepal.

<table>
<thead>
<tr>
<th>Fig.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-5</td>
<td>M. napaulensis, DC. (Buchanan, Nepal), fig. 2 = middle sepal.</td>
</tr>
<tr>
<td>6-9</td>
<td>M. pycnophylla, Takeda (Hooker et Thomom, Khasya).</td>
</tr>
<tr>
<td>10-13</td>
<td>The same (Griffith, Khasya).</td>
</tr>
<tr>
<td>14-18</td>
<td>M. acanthifolia, G. Don (Wall., type).</td>
</tr>
<tr>
<td>19-23</td>
<td>The same (Hook., Darjiling).</td>
</tr>
<tr>
<td>24-29</td>
<td>M. a. var. Drummondii, Takeda (Drummond, Darjiling).</td>
</tr>
<tr>
<td>30-34</td>
<td>M. borealis, Takeda (Keshava Nand, Jodi Forest).</td>
</tr>
<tr>
<td>35-40</td>
<td>The same (Lace, Chil to Dalhousie).</td>
</tr>
<tr>
<td>41-46</td>
<td>The same (Strachey and Winterbottom, Binsao).</td>
</tr>
<tr>
<td>47-51</td>
<td>M. manipurensis, Takeda (Watt, Manipur).</td>
</tr>
<tr>
<td>52-57</td>
<td>M. Roxburghii, Takeda (Buchanan, hort. Calcutta).</td>
</tr>
</tbody>
</table>

**Plate XXXIV.** Figs. 58-62. M. Leschenaultii, Takeda (Ball, Nilgherry).

<table>
<thead>
<tr>
<th>Fig.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>58-62</td>
<td>M. Leschenaultii, Takeda (Ball, Nilgherry).</td>
</tr>
<tr>
<td>63-67</td>
<td>The same (Wight, No. 59).</td>
</tr>
<tr>
<td>68-72</td>
<td>M. Leschenaultii, Takeda (Gardener, 1848).</td>
</tr>
<tr>
<td>73-77</td>
<td>The same (Hohenacker, No. 1125).</td>
</tr>
<tr>
<td>78-82</td>
<td>The same (Wight, No. 49).</td>
</tr>
<tr>
<td>83-88</td>
<td>M. Bealei, Carr. (Henry, No. 3283).</td>
</tr>
<tr>
<td>89-93</td>
<td>The same (Henry, No. 1450).</td>
</tr>
<tr>
<td>94-98</td>
<td>The same (hort. Kew, &quot;type&quot; form).</td>
</tr>
<tr>
<td>99-103</td>
<td>The same (hort. Kew, var. &quot;planifolia&quot;).</td>
</tr>
<tr>
<td>104-109</td>
<td>M. flava, Schn. (Henry, No. 10,180).</td>
</tr>
</tbody>
</table>

**Plate XXXV.** Figs. 116-120. M. Mairei, Takeda (Maire, No. 101).

<table>
<thead>
<tr>
<th>Fig.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>116-120</td>
<td>M. Mairei, Takeda (Maire, No. 101).</td>
</tr>
<tr>
<td>121-125</td>
<td>M. bracteolata, Takeda (Forrest, No. 7364).</td>
</tr>
<tr>
<td>126-130</td>
<td>M. dolichostylis, Takeda (Maire, No. 2003).</td>
</tr>
<tr>
<td>131-135</td>
<td>M. conferta, Takeda (Henry, No. 10,180a).</td>
</tr>
<tr>
<td>136-140</td>
<td>M. Hancockiana, Takeda (Hancock, No. 151).</td>
</tr>
<tr>
<td>141-146</td>
<td>M. lomariifolia, Takeda (Forrest, No. 9244).</td>
</tr>
<tr>
<td>147-151</td>
<td>The same (Henry, No. 10,309, not fully developed).</td>
</tr>
<tr>
<td>152-157</td>
<td>The same (Formosan spec.; from a very young flower).</td>
</tr>
<tr>
<td>158-162</td>
<td>M. Veitchiorum, Schn.</td>
</tr>
</tbody>
</table>
TAKEDA—OLD WORLD SPECIES OF THE GENUS MAHONIA.

PLATE XXXVI. Figs. 163-167.—M. Fortunei, Fedde (Fortune).

168-172.—M. confusa, Sprague.

173-178.—M. Fargesii, Takeda (Farges, Chenkow).

179-183.—M. longibracteata, Takeda (Forrest, No. 4345).

184-189.—M. polyodontta, Fedde (Farges, No. 759).

190-194.—M. Sheridaniana, Schn. (Wilson, No. 426).

195-199.—M. gracilipes, Fedde.

200-206.—M. morisonensis, Takeda (Kawakami and Mori, 16. xi, 1906; young flower).

207-211.—M. japonica, DC.

212-217.—M. siamensis, Takeda (Kerr, No. 1107A).

218-222.—M. philippinensis, Takeda.

PLATE XXXVII. Figs. 1-8.—M. sikkimensis, Takeda.

9-15.—M. Simonsii, Takeda.
New Species of Primula
belonging to the Petiolaris-Sonchifolia Section.

BY
W. G. CRAIB, M.A.

The eleven species described here are:
- P. Boothii, Craib.
- P. bracteosa, Craib.
- P. Cunninghamii, King Mss.
- P. deuteronana, Craib.
- P. gracilipes, Craib.
- P. hupehensis, Craib.
- P. irregularis, Craib.
- P. saxicola, Craib.
- P. Scullyi, Craib.
- P. sessilis, Royle Mss.

Primula Boothii, Craib.

Rhizoma rectum, circa 1 cm. crassum, radices numerosas elongatas gerens. Folia exteriora magis minusve elliptica, petiolo angustius alato ad 6 cm. longo suffulta, mediana saepissime late spatulata vel elliptico-spatulata, exterioribus parum minora, usque ad 6 cm. longa et 4.5 cm. lata, petiolo distincte alato 4–5 cm. longo suffulta, interiora gradatim decrescentia, spatulata vel oblonga, petiolo late alato vix distincto suffulta vel subsessilia, omnia apice rotundata, membranacea vel chartaceo-membranacea, margine irregulariter plus minusve argutius denticulata, pagina utraque glabra, nervis lateralibus utrinque 5–7 pagina utraque conspicuis inferioribus satis obliquis omnibus rectis vel subrectis bene intra marginem ramosis. Scapus brevissimus vel fere 2 cm. altus, flores usque ad 25 gerens; bracteae e basi 3 mm. lata longe acuminate, acutiusculae, 5–6 mm. longae, glandulis capitatis ciliolatae; pedicelli 1.5–5 cm. longi, primo glandulis capitatis densius puberuli, demum glabrescentes. Calyx 6–9 mm. longus, dorso glandulis capitatis puberulus, intra glaber; lobi oblongi vel oblongo-lanceolati, apice breviter acuminati, acutiusculi, interdum tridentati vel latere uno tantum dentati, 3.5–4 mm. longi, circiter 1.75 mm. lati, glandulis capitatis densius ciliolati. Corolla extra saltem
juventute glandulis capitatis puberula; tubus floris brevistyli 13 mm. longus, longistyli 9 mm. longus, intra glaber; lobi obovato-cuneati, 12 mm. longi, 10 mm. lati, apice sinuato-lobulati vel trilobulati et lobulis iterum lobulatis. Antherae 2.25 mm. longae. Ovarium 1.5 mm. altum, stylo stigmatae
incluso 6.5 mm. vel 12.75–14 mm. longo.

Bhutan, Chardwar, Booth (?) in Herb. Watt, 2179. Meru
mountains, covering the hills and Tengepane, Booth (?). No
collector is indicated for these specimens either in Herb. Watt
or in Herb. Calcutta, but probably they were collected by Booth.

**Primula bracteosa**, Craib.

Rhizoma tenue vel saepius crassum, radices elongatas
emittens. Folia sub anthēsin spatulata vel obovato-spatulata,
apice rotundata, basi in petiolum late alatum angustata, usque
ad 8 cm. longa (petiolo inclusō), 2.5 cm. lata, posteriora (ex
alabastro axillari evoluta) ovata vel oblongo-ovata, apice rotun-
data, basi truncata vel cordata, usque ad 6.5 cm. longa et 5 cm.
lata, petiolo angustius sed distincte alato suffulta, omnia
chartacea, pagina superiore et etiam inferiore ad costam sparse
glanduloso-puberula, nervis lateribus utrinque 6–7 bene intra
marginem furcatis, pagina superiore saepissime subconspicuis
inferiore prominulis, nervis transversis fere semper obscuris,
margine denticulata, dentibus nervis excurrentibus breviter
acuminatis. Scapus fructescens folia posteriora subaequans vel
eae duplex superans; bractae exteriores normales virides, e
basi satis lata fere semper longe acuminatae, acutae vel sub-
obtusae, 3–10 mm. longae, glanduloso-puberulae et ciliatae,
interiores omnes vel saltem nonnullae in folia late ovata vel sub-
orbicularia ad 2.5 cm. diametro petiolo ad 4.5 cm. longo suffulta
expansa; pedicellis usque ad 4.5 cm. longi, glanduloso-puberuli.
Calyx extra glanduloso-puberulus, 6.5–7 mm. longus, lobis
ovatis vel oblongo-ovatis breviter acuminatis interdum apicem
versus denticulatis vel sublobatis 3.5–4 mm. longis basi circa
2.5 mm. latis glanduloso-ciliatis. Stylus stigmatae incluso in
flore longistylo 9 mm. longus. Capsula depresso-globosa, in
calyces tubo inclusa.

Bhutan, Tongsa, Yato-la, in moss by tree bases in shady
forest, 10,000 ft., Cooper, 3981; Timpu, Duké-la, sandy soil
in shade of light wet forest, 9000 ft., Cooper, 3917; ascent to
Woolooka, 8000–9500 ft., Griffith, K. D., 3514, pro parte;
Griffith, K. D., 2314.

**Primula Cunninghamii**, King Mss.

Herba nana. Folia spatulata, oblongo-spatulata vel oblongo-
oboavata, apice rotundata, basi in petiolum alatum vix dis-
tinctum attenuata, usque ad 11 cm. longa et 2.8 cm. vel etiam 4 cm. lata sed saepissime multo breviora et angustiora, submembranacea vel chartaceo-membranacea, nervis lateraliibus utrinque 8–12 rectis vel subrectis bene intra marginem ramosis, nervis eorumque ramulis in dentes excurrentibus, margine argute eroso-denticulata, matura pagina utraque glabra, efarinosae, margine minute glanduloso-ciliata. Scapus haud evolutus; flores numerosi, pedicellis corollae subaequilongis vel ea brevioribus puberulis primo parce farinoso mox efarinosis suffulti; bracteae lanceolatae vel lineari-lanceolatae, circa 3 mm. longae. Calyx 5.5 mm. longus, utrinque puberulus, primo extra farinosus, lobis 4.5 mm. longis oblanceolatis acuminatis acutis ciliolatis. Corollae tubus 7.5–10 mm. longus, extra parce puberulus, haud annulatus; limbus 15.5–16.5 mm. diametro, lobis obcordatis 6 mm. longis 5.5 mm. latis, lobulis apice rotundatis. Antherae 1.25–1.5 mm. longae, in flore longistylo in calyce omnino inclusae, in flore brevistylo circa 5 mm. a tubi basi insertae. Ovarium depresso-globosum, 1 mm. altum, stylo stigmate magno globoso incluso in flore brevistylo vix 1 mm. longo et in flore longistylo 4 mm. longo.

E. Sikkim. Jaffrey’s collector (type of King’s species); Cunningham ann. 1874 et 1889; Cave, 7287; Gammie, 36; Sheraothang, 13,000 ft., Cooper, 969; Chumbi Thang, Ribu, 9; Changu, Cave; below Changu, 11,500 ft., Ribu et Rhomoo, 4601; Lingtoo and Gnatung, 11,000–13,000 ft., Pantling. S. Tibet. Younghusband, 21; Gyantse to Phari, Walton.

According to the dates on the labels this species flowers from the end of September to November. One collection in flower was made also in January (Cave). In only one case (Cooper) is the colour of the flower—purple—and the habitat—gravel and turf—noted.

**Primula deuteronana**, Craib.

Folia oblongo-ovata vel oblongo-ovata, apice rotundata basi in petiolum alatum distinctum vel vix distinctum angustata, ad 2.7 cm. longa et 1.7 cm. lata, coriacea, sicco subviridia, glabra, juventute farinosa, mox efarinosae, costa satis crassa supra conspicua subtus prominenta, nervis lateraliibus utrinque 8–9 pagina superiore conspicuis vel subconspicuis inferiore prominentibus intra marginem furtatis, nervulis subtus interdum elevatis interdum subobscuris, margine argute denticulata, interdum sublobata. Scapus haud evolutus; pedicelli ad 2 cm. longi; bracteae lineari-subulatae, circiter 5 mm. longae. Calyx 7.5 mm. longus, extra sparse glandulosus-puberulus, lobis oblongo-lanceolatis subacuminatis acutiusculis 4.5 mm. longis 1.5 mm. latis glandulis capitatis vel clavatis breviter ciliatis. Corolla
Craib—New Species of Primula.

Primula gracilipes, Craib.

Rhizoma rectum, 2–8 mm. diametro, radices numerosas elongatas emittens. Folia saepissime oblongo-spatulata, apice rotundata obtusave, basi in petiolum plus minusve alatum angustata, rarissime subtruncata, 2–4.5 cm. longa, 1–2 cm. lata, membranacea vel chartaceo-membranacea, mox efarinoso nervis lateralisbus utrinque 6–8 intra marginem ramosis pagina superiore conspicuis vel subconspicuis inferiore cum costa satis lata prominentibus, nervulis plerumque obscuris vel subobscursis, margine argute eroso-denticulata, exteriora petiolo plus minusve alato 2–3 cm. longo suffulta, interiora petiolo late alato vix distincto suffulta vel fere sessilia. Scapus haud evolutus; flores pedicellis gracilibus folia subaequantibus vel isi paulo brevioribus suffulti; bracteae quoad formam variabiles, anguste deltoideae vel lineari-lanceolatae sed saepissime apice longius attenuatiae, circiter 5 mm. longae. Calyx viridis, sub anthesin extra farinosus, 6.5–7 mm. longus; lobi oblongi, breviter vel longiusculae acuminati, acuti, 3–4 mm. longi, 1.25–2 mm. lati, glanduloso-ciliolati. Corollae tubus (floris brevistyli) 13 mm. longus; lobi late obovati vel late obovato-cuneati, apice acute tridentati, 9 mm. longi, 8.5 mm. lati. Antherae 2 mm. longae, filamentis 0.5 mm. longis. Ovarium 1.75 mm. altum, stylo stigmati grandi capitato incluso 6 mm. longo.

E. Sikkim. Yeumthang, 11,000 ft., Cave; Begger, 12,500 ft., Cave; Changu, 12,000 ft., Smith, 3287; Dickchoo, 11,000 ft., C. B. Clarke, 27797B.

Primula hupehensis, Craib.

Folia late ob lanceolata vel obovato-ob lanceolata, apice rotundata, basi in petiolum latius alatum attenuata, usque ad 5.5 cm. longa (petiolo 5–12 mm. longo inclusu) et 2.5 cm. lata, membranacea vel chartaceo-membranacea, pagina utraque

purpurea, luteo-oculata; tubus (fl. brevistyli) 15 mm. longus, extra parce puberulus, intra infra stamina minute puberulus, superne dense pilosus; lobi oblongo-ovovati, apice saepius trilobati, 7 mm. longi, 4 mm. lati. Antherae breviter acuminatae, 1.75 mm. longae, filaments paulo ultra 0.5 mm. longis suffultae. Ovarium subglobosum, circiter 1 mm. altum, placenta globosa breviter sed distincte stipitata; stylus 2.5 mm. longus stigmate 0.6 mm. alto 0.5 mm. diametro.

Sikkim. Below Jongri, Pey-kiong-la, King's collector (fl. June 1887); Nye-gu-la, 13,000 ft., King's collector (fl. July 1888); Singaleelah, Sirkia-la, 14,000 ft., Watt, 5425. Sikkim, J. D. Hooker.

Primula gracilipes, Craib.

Rhizoma rectum, 2-8 mm. diametro, radices numerosas elongatas emittens. Folia saepissime oblongo-spatulata, apice rotundata obtusave, basi in petiolum plus minusve alatum angustata, rarissime subtruncata, 2-4.5 cm. longa, 1-2 cm. lata, membranacea vel chartaceo-membranacea, mox efarinoso nervis lateralisbus utrinque 6-8 intra marginem ramosis pagina superiore conspicuis vel subconspicuis inferiore cum costa satis lata prominentibus, nervulis plerumque obscuris vel subobscursis, margine argute erosodeenticulata, exteriora petiolo plus minusve alato 2-3 cm. longo suffulta, interiora petiolo late alato vix distincto suffulta vel fere sessilia. Scapus haud evolutus; flores pedicellis gracilibus folia subaequantibus vel isi paulo brevioribus suffulti; bracteae quoad formam variabiles, anguste deltoideae vel lineari-lanceolatae sed saepissime apice longius attenuatiae, circiter 5 mm. longae. Calyx viridis, sub anthesin extra farinosus, 6.5-7 mm. longus; lobi oblongi, breviter vel longiusculae acuminati, acuti, 3-4 mm. longi, 1.25-2 mm. lati, glanduloso-ciliolati. Corollae tubus (floris brevistyli) 13 mm. longus; lobi late obovati vel late obovato-cuneati, apice acute tridentati, 9 mm. longi, 8.5 mm. lati. Antherae 2 mm. longae, filamentis 0.5 mm. longis. Ovarium 1.75 mm. altum, stylo stigmati grandi capitato incluso 6 mm. longo.

E. Sikkim. Yeumthang, 11,000 ft., Cave; Begger, 12,500 ft., Cave; Changu, 12,000 ft., Smith, 3287; Dickchoo, 11,000 ft., C. B. Clarke, 27797B.

Primula hupehensis, Craib.

Folia late ob lanceolata vel obovato-ob lanceolata, apice rotundata, basi in petiolum latius alatum attenuata, usque ad 5.5 cm. longa (petiolo 5-12 mm. longo inclusu) et 2.5 cm. lata, membranacea vel chartaceo-membranacea, pagina utraque
parce minutissime glanduloso-puberula vel subglabra, nervis lateralibus utrinsecus circa 6 rectis erecto-patentibus intra marginem furcatis pagina utraque conspicuis vel subconspicuis, margine argutius eroso-denticulata. Scapus 3-4 cm. longus, flores 4-8 gerens; bracteae lineari-lanceolatae, 4-4.5 mm. longae, glanduloso-puberulae; pedicelli 1.8-2.5 cm. longi, glanduloso-puberuli. Calyx extra densiuscule glanduloso-puberulus, intra glaber, 7.5-8 mm. longus, lobis 3-3.75 mm. longis 1.5-1.75 mm. latis glanduloso-ciliolatis. Floris brevistyli corollae tubus 11-12 mm. longus, lobi anguste obcordati, apice usque ad 2-2.5 mm. emarginati, 8.5 mm. longi, 5.5 mm. lati; tubus apice distincte annulatus. Antherae 2.75 mm. longae, annulum paululo superantes, filamentis brevibus suffultae. Ovarium globosum, 1.5 mm. diametro, stylo cum stigmate capitato calyce paulo breviore.

Hupeh, Fang, Henry.

Primula irregularis, Craib.

Rhizoma rectum, simplex, crassum, radices satis longas emittens. Folia viva probabiliter patula vel subpatula, exteriora subelliptica, oblongo-elliptica vel elliptico-obovata, rarius ovata vel ovato-lanceolata, 4-9.5 cm. longa, 2.5-5.5 cm. lata, basi interdum subtruncata, saepius late cuneata, cuneata vel in petiolum angustata, petiolo alato usque ad 6 cm. longo suffulta, mediana spatulata, minora, petiolo multo breviore suffulta, interiora spatulato-oblonga vel oblonga, sessilia vel subsessilia, circa 2.5 cm. longa et 1.5 cm. lata, omnia apice rotundata, chartacea vel membranacea-chartacea, pagina utraque parce glanduloso-puberula, mox subglabra, nervis lateralibus utrinque 6-7 supra conspicuis subitus prominulis rectis vel fere rectis intra marginem ramosis, nervulis pagina utraque conspicuis vel subconspicuis rarius fere obscuris, margine argute erosodenticulata, rarius lobulata, lobulis denticulatis. Inflorescentia saltam juventute dense pallide luteo- vel sulphureo-farinosa; flores expansi folia interiora subaequantes vel iis paulo breviores, pedicellis dense glanduloso-puberulis suffultis; bracteae deltoideae, acuminatae, acutae, usque ad 11 mm. longae, indumento ut pedicelli instructae. Calyx 11.5 mm. longus, extra ut pedicelli glandulis capitatis vel clavatis dense tectus, intra parcius puberulus; lobi late oblongi, apice irregulares, rotundati, acuminati et obtusiusculi vel saepissime 3-lobulati, circa 4 mm. longi et 3 mm. lati, densius glanduloso-ciliolati. Corolla extra glanduloso-puberula; tubus 14 mm. longus, lobis late oblongo-obovatis apice sinuato-lobulatis 8 mm. longis 6.5 mm. latis. Antherae 2.5 mm. longae, filamentis brevibus suffultae.
Ovarium globosum, 1.75 mm. altum, stylo 4.75 mm. (floris brevistyli) longo, stigmate 1 mm. longo.

W. Sikkim. Chowbhangin, Cave; Singaleelah, J. D. Hooker, 11,000 ft., Elwes in Herb. Clarke, 27,481.

Primula saxicola, Craib.

Folia exteriora ovata, basi cordata vel truncata, usque ad 7.5 cm. longa et 6 cm. lata, petiolo basi vaginante 5–8 cm. longo suffulta, interiora spatulata vel elliptico-spatulata, basi cuneata vel attenuato-cuneata, 3–5 cm. longa, 1.5–3 cm. lata, petiolo plus minusve alato 3–4 cm. longo suffulta, omnia membranacea, sicca viridia, pagina utraque glabra, nervis lateralibus utrinque 6–7 plerumque rectis vel fere rectis et satis patulis intra marginem ramosis pagina utraque conspicuis, margine lobulata lobulis saepissimis acute dentatis. Scapus haud evolutus; pedicelli petiolo longiores subaequantes vel saepius iis fere dimidio breviores, tenuiter glanduloso-puberuli; bracteae angustae, apice longe attenuatae, 5–6 mm. longae, margine glanduloso-ciliolatae. Calyx 8 mm. longus, utrinque sed intra parcissime glanduloso-puberulus, lobis ovato-oblongis vel oblongis acuminatis acutis subacutis 4.75 mm. longis 3 mm. latis 3-nervis parce glanduloso-ciliolatis. Corollae tubus 14 mm. longus, lobi obovati vel oblongo-cuneati, trilobati, 7 mm. longi 5 mm. lati. Antherae vix 2.5 mm. longae, a corollae tubi basi 5.25 mm. insertae. Stylus floris longistyli stigmate inclusu fere 9 mm. longus. Fructus depresso-globosus, e calycis tubo parum exsertus, calycis lobis persistentibus plus minusve deltoideis erectis vel suberectis.

N.W. Himalaya. Kulu, 5000 ft., Drummond, 8925; Cháchpur Valley, Duthie, 21,067.

Primula scapigera, Craib.

Rhizoma breve, satis crassum, radices elongatas emittens. Folia exteriora oblongo-spatulata vel oblonga, sessilia vel petiolo brevi late alato suffulta, plerumque 4–9 cm. longa et 1.5–3 cm. lata, interiora ovata, oblongo-elliptica vel elliptica, basi late cuneata, truncata vel cordata, usque ad 10 cm. longa et 6 cm. lata sed saepissime circiter 4.5 cm. longa et 3.5 cm. lata, petiolo angustius alato 5.5–8 cm. longo suffulta, omnia apice rotundata, chartacea vel membranacea-chartacea, nervis lateralibus utrinque 6–8 intra marginem ramosis rectis patulis vel subpatulis pagina superiore conspicuis vel subconspicuis inferiorie prominulis vel fere prominentibus, margine subcrasse irregulariter dentata, dentibus nervulis excurrentibus acuminatis. Scapus nunc brevis-simus et in foliorum rosoa immersus, nunc folia aequans et
infructescens folia interdum longe superans, interdum pauci-florus, interdum multiflorus; bracteeae 0.5–1 cm. longae, e basi lata plus minusve longe attenuato-acuminatae, saepissime pauci-denticulatae. Calyx 1 cm. longus, lobis deltoideis vel anguste deltoideis longe attenuato-acuminatis 5.5 mm. longis 2.5 mm. latis interdum apicem versus denticulatis glanduloso-ciliolatis. Corollae tubus (floris brevistyli) 16 mm. longus, lobi 9 mm. longi et 8 mm. lati, apice nunc altius bi- vel tri-lobulati, lobulis irregu-lariter dentatis vel sinuatis, nunc regulariter vel plus minusve irregulariter dentati vel sinuato-dentati. Antherae 2 mm. longae, filamentos 1 mm. longis suffultae. Ovarium 1.5 mm. altum stylo stigmate grandi ambitu plus minusve oblongo inclusu 4.75 mm. longo. Capsula depresso-globosa, calyce inclusa, calycis lobis persistentibus coriaceis divergentibus.— P. petiolaris, Wall., var. scapigera, Hook. f., Fl. Brit. Ind., iii, p. 494, plantis foliaceo-bracteatis exclusi.

W. Sikkim. Common all over Tonglu, 7000–10,000 ft., Watt, 7013, 5331.

**Primula Scullyi**, Craib.

*Herba nana, escapos, efarinosa; rhizoma robustum, radices numerosas satis longas parce ramosas emiss. Folia exteriora squamiformia, cito decidua, mediana anguste ovata, oblonga vel oblongo-obovata, usque ad 4.5 cm. longa et 2.5 cm. lata, petiolo alato usque ad 3 cm. longo suffulta, interiora sessilia vel petiolo brevi vix distincto suffulta, medianis parum minora, omnia chartacea, glabra, nervis lateralibus utrinque 6–7 rectis vel fere rectis intra marginem ramosis supra conspicuis subitus prominentibus, margine argute eroso-denticulata. Flores numerosi, folia subaequantes vel iis paulo breviores, pedicellis gracilibus usque ad 3 cm. longis primo glandulis brevibus densius instructis mox puberulis suffultis; bracteeae parvae. Calyx extra sparse glanduloso-puberulus, 4.5 mm. longus; lobi lanceolati, acuminati vel subacuminati, subacuti, 2.5–2.75 mm. longi, unineriati, nervo dorso prominenti, margine breviter glanduloso-ciliati. Corollae tubus 10–14 mm. longus; lobi obovato-elliptici vel obovato-oblongi, 5–6 mm. longi, 3.5–5.5 mm. lati, apice rotundati, saepissime trilobulati, lobulis acutiusculis vel obtusis, interdum irregulariter sinuato-lobulati. Antherae 1.6 mm. longae, filamentis brevibus suffultae. Ovarium 1 mm. altum, globosum, stylo (stigmate incluso) 3.5 vel 8.5 mm. longo. Fructus pedicellis magis minusve reflexis gesti, globosi, circa 3 mm. diametro, calyce persistente vix accrescente.

Nepaul. Scully.

W. Sikkim. Near Tonglu, 9000 ft., Lace, 2265; Singaleelah, 12,000–13,000 ft., Watt, 5263, 5369, Cave.
var. *Searightii*, Craib, a typo calyce extra glabro vel sub-glabro ejusque lobis longioribus et angustioribus.

Chumbi, 8000–9000 ft., Searight, 44; Pey-goong-la, King’s collector, 433.

**Primula sessilis**, Royle Mss.

Rhizoma fere semper rectum, satis robustum, radices longas parcius ramosas emittens. Folia exteriora squamiformia cito decidua, mediana max decidua, oblongo-elliptica ad obovato-ob lanceolata, rarius obovato-lanceolata, usque ad 8 cm. longa et 3 cm. lata sed saepissime minora, petiolo late alato vel vix alato usque ad 6 cm. longo interdum inferne parce puberulo suffulta, interiora obovato-lanceolata, obovato-oblan cefolata, apice rotundata vel acuta, basi in petiolum vix distinctum alatum attenuata, saepissime circiter 2.5–4 cm. longa et 1–2 cm. lata, cum medianis chartacea-membranacea vel chartacea, nervis lateralis utrinque 6–7 rectis vel subrectis saepe fere patulis bene intra marginem ramosis supra cum costa conspicuus subtus prominentibus, pagina utraque glabra, margine argutius eroso-denticulata. Flores numerosi, folia saepius subaequantes vel ea paulo superantes, pedicellis gracilibus vel subgracilibus saepissime 4–6 cm. longis glabris vel praeer tim superne parce glandulosopuberulis suffulti; bracteae e basi lanceolata vel deltoidea longe subulato-acuminatae, 4–6 mm. longae. Calyx 7 mm. longus, extra parce glandulosopuberulus vel fere glaber, lobis lineari-lanceolatis apice sub-aristato-acuminatis acutis acumine saepe reflexo 3–3.5 mm. longis uninnervatis dorso cum tubo subcarinatis vel distincte carinatis margine pauperius glandulosi-ciliatis. Corollae tubus 12.5–15 mm. longus; lobi obovati vel oblongo-obo vati, saepissime caudato-acuminati, 10 mm. longi, 7.5 mm. lati, margine apicum versus interdum sinuato-dentati. Antherae 2 mm. longae, filamentis brevibus suffultae. Ovarium globosum, 1.25 mm. altum, stylo stigmate incluso 4.75 vel 9.5 mm. longo.

Primulas of the Petiolaris-Sonchifolia Section.

BY

W. G. CRAIB, M.A.

At the Primula conference * in 1913 I expressed the opinion that our knowledge of the species allied to *P. petiolaris* was far from satisfactory, and that for a clearer elucidation of the status of the so-called varieties it would be necessary to study the growing plants. Recently, however, an opportunity for further research has been afforded by the bringing together of all the necessary specimens from the herbaria of the Royal Botanic Garden, Calcutta, the Royal Gardens, Kew, and the Royal Botanic Garden, Edinburgh. The examination of this abundant material has served to confirm many of the opinions formed previously which, however, could not be put forward at the Primula conference owing to the inadequate material then at my disposal. The new species which have had to be described quite eclipsed previously formed expectations, and it is largely on account of this great multiplication of species that it was deemed advisable to bring together in definite form the conclusions arrived at.

HISTORICAL.

The first two species to be published were *P. petiolaris* and *P. nana*, both described by Wallich in 1824 from his Nepaul collections.† In 1882 the dwarf alpine Sikkim *P. Hookeri* was described and figured by Watt. In the end of the same year that part of the Flora of British India dealing with the Primulaceae was published. How the present-day views of species correspond with those of Hooker is well illustrated by noting that the seven varieties of *P. petiolaris* enumerated in the Flora of British India are in the present paper regarded as constituting sixteen distinct species. In 1885 the first Chinese species—*P. sonchifolia*—was described by Franchet from Delavay's Yunnan collection, and in the following year Franchet described *P. moupinensis* from David's Moupine collection.

† References to the original publication for species mentioned will be found in the chronologically arranged list.

[Notes, R.B.G., Edin., Nos. XXIX–XXX, Jan. 1917.]
In 1904* we have the first natural classification of all the known Indian Primulas put forward. Sir George Watt remarks in the course of his paper that he did not advance his classification as final, and that he regarded the establishing of new sections as probably essential. With regard to the section at present under discussion I quite concur in the necessity of limiting the scope of Watt’s sections. Of the seventeen species enumerated by Watt as belonging to his section Petiolaris, only three are retained in that section in the present paper. The discrepancy between this small number retained in the section and the much larger number enumerated now from the same area is explained by the fact that Watt’s three species are regarded as really composed of sixteen species, which simply means that the present writer cannot agree with Watt that this section is a very “sportive assemblage” of species. The remaining fourteen species included by Watt must be distributed amongst various other sections. Taking some of those which are well known in cultivation, one cannot say that *P. Forbesii* or *P. mollis* should be included in the same section as *P. Winteri*. It is matter for great regret that Sir George Watt, with his wide knowledge of the Indian Primulas in the field, did not see his way clear to multiply his sections instead of confining himself to an expression of belief that such a course might eventually be necessary.

In the following year (1905) there was published in Engler’s Pflanzenreich Pax’s monograph of Primula. The general classification of the genus follows very closely that proposed by the same author seventeen years previously.† His treatment of the section Petiolares as to the species included in it corresponds much more closely to that adopted in the present contribution than to that proposed by Watt which has been referred to above. In his later monograph Pax includes in his section Petiolares an Indian and a Chinese species which have since been excluded, viz. *P. Tanneri* and *P. pellucida*. The former, along with *P. Roylei*, *P. Griffithii*, *P. Gammieana*, etc., forms a very natural group, approaching in fruit character *P. sonchifolia*, *P. Whitei*, and *P. scapigera*, but in habit recalling more the *P. Moorcroftiana* alliance. *P. pellucida*,‡ on the other hand, belongs to the Malacoïdes section, and is closely allied to *P. Forbesii*. With these two exceptions the writer accepts the section Petiolares of Pax, but as the title of this paper shows he has linked with it the Sonchifolia section, which includes three species—*P. sonchifolia*, *P. taraxacoides*, and *P. Whitei*. Arguments, with a certain amount of justification, might be adduced against linking the *sonchifolia*

with the petiolaris type, but certainly no arguments would convince me that Pax was justified in placing P. sonchifolia in the same section as P. japonica, P. Cockburniana, P. Poissonii, etc. In favour of the petiolaris-sonchifolia link now adopted, one has the fact that the development form of P. sonchifolia as also the fruit is that of P. Hookeri and P. vernicosa, and to a slightly less degree of P. Winteri and P. Edgeworthii.

Reference to fruit character in this section would be incomplete without an admission that of many, or rather of the majority, the mature fruit is unknown. In P. vernicosa the capsule cracks irregularly round the top and crumbles away. This would appear to be the method of dehiscence also of P. sonchifolia, P. scapigera, P. Whitei, and probably of P. bracteosa. From the immature material of several of the other species, however, the writer concludes that there is evidence, but not wholly convincing evidence, of the presence of longitudinally dehiscing capsules.

As a preliminary to the examination of Pax's treatment of the individual species it should be noted that of the seven species enumerated, Pax indicates that he saw specimens of only three, and that of the six varieties of P. petiolaris he saw specimens of only three. In his treatment of P. petiolaris Pax follows the Flora of British India, with the single exception that he rightly raises the variety Edgeworthii to specific rank. The fact that so few specimens were seen by Pax may account for such unequal treatment of two closely allied plants, viz. var. pulverulenta, Hook. f. and var. Edgeworthii, Hook. f. The former Pax retains as a variety of P. petiolaris and the latter he raises to a species.

Pax also raises to specific rank P. petiolaris var. odontocalyx, Franchet, but again evidently without having seen any authentic specimens.

Three years later G. Forrest added another species from his Yunnan collections, viz. P. taliensis. In the same paper Forrest describes and illustrates another new species—P. gratissima—which was, however, recognised later to be Franchet's P. sonchifolia. Anyone working from Pax's monograph would be justified in redescribing Franchet's species when one considers with what species Pax placed the plant.

The introduction of P. petiolaris var. pulverulenta, Hook. f. to cultivation led W. Watson to recognise the plant as a distinct species under the name P. Winteri. Whether this plant is really distinct from the true P. nana of Nepaul or not will only be solved by the receipt of additional material from Nepaul.

In P. Whitei W. W. Smith described the Bhutan representative of the Yunnan and Upper Burma P. sonchifolia.

At the Primula conference it was deemed prudent to raise to
specific rank only two more of the varieties of *P. petiolaris*, viz. var. sulphurea and var. Stracheyi, both from Kumaon. Up to the end of 1913 we find that four of Hooker’s seven varieties of *P. petiolaris* had been raised to specific rank. The varieties still remaining at this time and up to the present year are var. 1 petiolaris proper, var. 2 nana, and var. 7 scapigera. In var. 1 Hooker included probably only one species, viz. the true *P. petiolaris* from Nepaul. In var. 2 he included, according to the writer’s views, six or seven species, and in var 7, two species.

Last year Professor Balfour described from Yunnan *P. taraxacoides*, a plant closely allied to *P. sonchifolia*.

In course of publication there is also *P. vernicosa* from Yunnan and Upper Burma, which may be regarded as the Eastern representative of the Sikkim *P. Hookeri*.

The material consulted in the elaboration of the present paper consisted of the specimens preserved in the herbaria of the Royal Botanic Gardens at Calcutta and Edinburgh, and the Royal Gardens, Kew, and to the responsible heads of these departments I beg to record sincere thanks for kindly placing the specimens at my disposal. To Professor I. B. Balfour, F.R.S., I am also much indebted for useful constructive criticism during the progress of the work. M. F. Gagnepain of the Paris herbarium has also kindly supplied very useful critical notes on several of Franchet’s species, the types of which were not examined by me. To Mr. S. A. Skan, Royal Gardens, Kew, I am also indebted for references to and quotations from literature not otherwise available.

**LIST OF SPECIES CHRONOLOGICALLY ARRANGED.**

With type locality, and within brackets any further recorded distribution of the species.


ALPHABETICAL LIST OF THE SPECIES.

P. Boothii, Craib
P. bracteosa, Craib
P. Cunninghamii, King ex Craib
P. deuteronana, Craib
P. Drummondiana, Craib
P. Edgeworthii, Pax
P. gracilipes, Craib
P. Hookeri, Watt
P. hupehensis, Craib
P. irregularis, Craib
P. moupinensis, Franchet
P. nana, Wall.
P. odontocalyx, Pax
P. petiolaris, Wall.    P. sulphurea, Craib
P. saxicola, Craib    P. taliensis, G. Forrest
P. scapigera, Craib    P. taraxacoides, Balf. f.
P. Sculleyi, Craib    P. vernicosa, F. K. Ward
P. sessilis, Royle ex Craib    P. Whitei, W. W. Smith
P. sonchifolia, Franchet    P. Winteri, W. Watson.

GROUPING OF THE SPECIES.

Among the species enumerated there can be recognised seven quite natural groups as follows:—

1. Including *P. Hookeri* from Sikkim and *P. vernicosa* from Yunnan and Upper Burma, dwarf alpines with very compact foliage, coriaceous imbricate bud scales persistent at flowering time and closely investing the foliage, of which the outer members are very much broadened and sheathing at their bases. The small white flowers are borne on minute, nearly always 2-flowered scapes, but appear as if quite sessile, immersed in the compact foliage or just overtopping the leaves; flowers and leaves coetaneous or nearly so. By this one character of the immersed, apparently sessile flowers, these two species can be immediately distinguished from all the other species of the section. *P. taliensis* is occasionally very small, with the flowers scarcely as long as the leaves, but a distinct pedicel and a more or less distinct scape is always found. Plants of *P. vernicosa* fruiting here last year, one in the open, the other under glass, had the scape fully 2.5 inches long. For some time after the fruit had set there was very little sign of elongation of the scape, which, however, lengthened very rapidly as the fruit approached maturity.

2. Represented by one species—*P. taliensis* from Yunnan. Small, stalked capitate or club-shaped glands are to be found in practically every member of the section, yet in only two species, viz. *P. taliensis* and *P. Drummondiana*, are there distinct gland-tipped hairs. In the latter these hairs are confined to the upper surface of the leaf, and are there found only towards the margin, whereas in *P. taliensis* they occur practically all over the plant, and are very dense on the scape and pedicels. *P. taliensis* is a small plant, with usually spathulate or obovate, more or less distinctly petioled, toothed leaves. The flowers are borne on 2-7-flowered short scapes, and are subequal to the leaves or more often just overtop the leaves. The corolla lobes are toothed or sometimes almost fringed, and the tube is exannulate. The calyx lobes, which are shorter than the tube, are sometimes acutely acuminate, sometimes more or less distinctly toothed on one side, and very often 3-toothed at the
apex. In this toothing of the calyx lobes *P. taliensis* resembles very much *P. odontocalyx*. The capsule, judging by the immature fruiting specimens, is included in the calyx tube.

3. Including *P. sonchifolia* from Yunnan and Upper Burma, *P. taraxacoides* from Yunnan, and *P. Whitei* from Bhutan. Here we find the same type of development as in the first group, but the plants themselves are much larger and more robust. At flowering time there are many stiff large bud scales persistent. Flowers and leaves develop practically simultaneously. In *P. sonchifolia* and *P. taraxacoides* the scape is quite evident at flowering time, but in *P. Whitei*—at least as far as the flowering material to hand shows—the scape is not visible, being much shorter than the leaves. In fruit, however, the scape elongates rapidly, and is ultimately subequal to or longer than the leaves. The scape is nearly always many-flowered, the bracts at the base of the pedicels being elongate and narrow in *P. Whitei*, but short and rather broad at the base in the other two species. The calyx lobes are somewhat variable at the apex—in *P. Whitei* they are longer than the tube, and are somewhat deeply 3- to 5-lobed at the apex, with rather narrow finger-like lobes, whereas in the other two species the lobes are shorter than the tube, and are entire or more or less denticulate or sublobulate. The large corollas have their lobes varying from denticulate in *P. Whitei* to almost fringed, as often occurs in *P. sonchifolia*. The depressed globose capsule is subequal to the calyx tube.

4. Agreeing with the last group in that the flower and leaf development are simultaneous, or practically so, are four species which occur in the Himalayas from Nepal westwards, viz. *P. nana*, *P. Edgeworthii*, *P. Winteri*, and *P. saxicola*. The bud scales again are persistent at flowering time, but they are fewer in number and are more or less recurved, and not rigidly erect and so giving a more or less cylindrical shape to the base of the plant. This character, in conjunction with the leaf dimorphism, gives us the distinguishing marks of the group. The leaves which are present at flowering time, and which are still expanding, are mostly spathulate or obovate, and are narrowed into a broadly winged, scarcely differentiated petiole. After flowering these leaves disappear, and their place is taken by long petiolated leaves, more or less ovate in shape, and truncate or cordate at the base, which are developed from a lateral bud or from lateral buds. In the centre of each lateral bud is developed the large, usually farinose, winter bud. The scape is not appreciable, or may attain a slight elongation. The calyx is green, and again we have variation in the amount of toothing of the lobes. For the most part the lobes are entire, but solitary teeth or almost lobules on one or both sides are not infrequent. The corolla
is large, with its lobes regularly or irregularly denticulate. The depressed globose capsule is included in the calyx tube or slightly exserted from it.

It is necessary now to say something of the plant named P. nana, by Wallich, as distinct from what is meant by P. nana of later authors. In the Calcutta herbarium there are two sheets of Wallich’s type, consisting of very incomplete material. There is no corolla, no fruit, and none of the later developed leaves, but from the general habit of the plant there can, I think, be little doubt as to its inclusion in this group. In fact the only character by which I could distinguish this incomplete material from the well-known P. Winteri was in the calyx lobes having a more decidedly pinnate nervation.

Again, as regards P. saxicola, it would be well to note that while good flowering specimens have not been seen, its affinity with P. Edgeworthii can scarcely be doubted. In fact so similar are the two that one of the specimens on which P. saxicola was founded was quoted by Pax * under his P. Edgeworthii.

5. In this group, which occurs in the Himalayas from Tibet and Bhutan westwards, as also in the remaining two groups, we depart from the coetaneous flower and leaf development, and likewise—unless occasionally in P. petiolaris—from the persistent bud scales. Here we have plants with a dense rosette of leaves, of which at least the outer are fully formed at flowering time. Flowers in the majority are numerous, and are borne on a scape which is so reduced that it may be said to be wholly wanting. The seven representatives of the group may be conveniently divided into two lots, depending on the lobing or toothing of the corolla:—

(a) Corolla lobes rather deeply divided into two, or more rarely three, lobules, which are oblong with a rounded apex—P. sulphurea and P. Drummondiana from N.W. Himalayas, and P. Cunninghamii from East Sikkim and Tibet. P. Drummondiana can readily be distinguished from its allies by the multicellular glandular hairs on the upper surface towards the margin, and P. sulphurea by the character which suggested the name—the abundant sulphur farina which persists on the lower surface of the leaf.

(b) Corolla lobes acuminate or 3-toothed, sometimes irregularly toothed, the teeth more or less deltoid and acute—P. sessilis from N.W. Himalayas, P. petiolaris from Nepal, P. Scullyi from Nepal and Sikkim, and P. deuteronana and P. gracilipes from Sikkim. Of these probably the most easily recognised is P. petiolaris with its outer, elliptic, long petioled leaves, and its rather long and finely attenuate calyx lobes.

* Engler Pflanzenr. Primulaceae, p. 41.
In the others these petioled leaves are wanting at flowering time or only casually present. *P. deuteronana*, the only species of the section with the corolla tube villous inside, is easily recognised by that character, as also by its rather thick, more or less bullate leaves which dry a pale green. *P. sessilis* has long, often aristate-acuminate, calyx lobes, and the corolla lobes are nearly always caudate-acuminate. *P. gracilipes* can be distinguished from *P. Scullynii* by its green, not brown, calyx, its narrower leaves and longer pedicels.

6. In *P. irregularis* and *P. scapigera* from West Sikkim, *P. Boothii* from Bhutan, *P. bracteosa* from Bhutan and East Sikkim, and *P. moupinensis* from China, we have a set of plants closely allied to the last, but usually much larger, and with a scape more or less conspicuous at flowering time, and quite elongate in fruit. The leaves in fruit are characterised by some being long petioled and often cordate or truncate at the base. The depressed globose capsule is included in the calyx, and is shorter than the calyx tube or subequal to it. Of these *P. irregularis* with its oblong calyx lobes, variable at the apex, and its dense coating of stalked capitate glands on the pedicels and on the outside of the calyx is very distinct. *P. Boothii*, of which Griffith * gives an excellent figure, has the scape rather short or scarcely developed, and is distinguished from *P. scapigera* by the regular toothing of the corolla lobes and by the corolla in bud being farinose. *P. bracteosa*, at least in fruit, has some of the inner bracts expanded into well-developed petioled leaves.

7. The last group includes only Chinese representatives—*P. odontocalyx* and *P. hupehensis*. So far as habit is concerned, they might be reckoned intermediate between the last two groups. In size they belong to the *sessilis* alliance, but here a distinct scape is found. Again, in the lobing of the corolla lobes they resemble *P. sulphurea* and its allies. A distinct annulus is developed at the top of the tube. No fruiting specimens have been seen of either species. From the photographs examined, and also from the available specimens, the writer is strongly of opinion that Farges’ collection, which is the type of *P. odontocalyx*, consists of two species. In the key and enumeration the species is limited to the specimens collected by Faber, which agree with Wilson, 1831, in the shallowly denticulate leaves and obconical calyx, whose lobes show almost constantly the character on which Franchet founded his specific name. The other specimens collected by Farges, probably identical with the plant collected by Henry and named *P. hupehensis*, can be easily distinguished by the erose-denticulate leaves and nearly cylindrical calyx.

* Griffith, Ic. Pl. As., vol. iv, t. 485, fig. 2.
KEY TO THE SPECIES.

In the following key it must be noted that the true *P. nana* is omitted. This omission has been necessitated by the scanty material available of this species. As explained above, Wallich's *P. nana* is very closely allied to the well-known *P. Winteri*.

Leaves not fully developed when flowers open, i.e. flowers and leaves coetaneous or approximately so.

Leaves glandular pubescent on both surfaces, margin usually rather deeply toothed, sometimes lobulate; scape developed though sometimes very short, pedicels and calyx glandular-pilose; calyx lobes subequal to or shorter than the tube, usually 3-toothed, sometimes irregularly toothed; corolla lobes usually sharply 3-lobed; efarinose plant, 2.5–6 cm. high.

3. taliensis.

Leaves glabrous or with short glandular papillae; farinose or not.

Flowers white, comparatively small, quite immersed in the rosette of leaves or just overtopping the leaves, appearing as if quite sessile; base of plant closely invested by imbricate scales and sheathing leaf-bases.

Calyx not markedley veined, its lobes more or less deltoid, not or scarcely imbricate; whole plant at flowering time 1–2 cm. high and 1–3 cm. diameter.

1. Hookeri.

Calyx markedly veined, its lobes rounded, strongly imbricate; whole plant at flowering time 2.5–7 cm. diameter.

2. vernicosa.

Flowers not immersed in the leaves but with distinct pedicels; scape present or not.

Calyx lobes shorter than the tube, corolla tube annulate.

Leaves oblanceolate, deeply lobulate, the lobules incised-dentate, scape shorter than the leaves; otherwise very similar to *P. sonchifolia*.

4. taraxacoides.

Leaves broadly oblanceolate or more often oblong to elliptic, shallowly lobulate, the lobules dentate; scape at flowering time subequal to or longer than the expanding leaves, usually many-flowered; pedicels 6–20 mm. long; outer bracts 3–5 mm. long, broad at base; corolla blue or white, the leaves usually more or less fringed; closely imbricating, rigid bud scales persistent at flowering; sulphur farina nearly always present.

5. sonchifolia.

Calyx lobes subequal to or longer than the tube.

Calyx lobes oblong, trilobed or rarely 4–5 lobed at the apex; scape at flowering time much shorter than the leaves, many-flowered; bracts narrow, about 1.5 cm. long; pedicels about 3–3.5 cm. long; corolla annulate, the lobes more or less dentate; scales at base as in *P. sonchifolia*; farina present.


Calyx lobes acute or acuminate, only casually few-lobed or toothed.

Corolla lobes regularly toothed or sinuate-toothed along the margin; bud scales persisting at flowering time; leaves glaucous like pedicels and calyx with pale farina, during flowering spathulate or obovate-spathulate narrowed into a winged petiole, succeeded by larger leaves long petioloed and truncate or cordate at the base, in the centre of which
is developed the winter bud; scape 0 or if present shorter than the leaves; bracts broad only at the very base, the outer ones 5–8 mm. long; pedicels 4–7 cm. long, the flowers equalling or overtopping the leaves. 7. Winteri.

Corolla lobes 3-toothed or irregularly toothed or lobulate.

Calyx brown or pale brown, its lobes narrow and long attenuate with one prominent median nerve, only occasionally denticulate near the apex; bud scales very rarely persisting at flowering time; outer long petiolated leaves elliptic or ovate-elliptic nearly always present, inner leaves more or less spatulate, narrowed into broadly winged petiole; scape not developed; efarinoso. 18. petiolaris.

Calyx green, its lobes rather broad and not long attenuate.

Calyx lobes, especially in fruit, markedly 3-nerved (1 median, 2 intramarginal); fruit slightly exserted from calyx tube; leaves membranous, green, those surrounding the escapose inflorescence spatulate or elliptic-spatulate, narrowed into distinct petiole, succeeded in fruit by larger ovate leaves, long petiolated and cordate at the base, in the centre of which is developed the winter bud. 10. saxicola.

Calyx lobes without the conspicuous intramarginal nerves; fruit included in calyx tube; some of the bud scales persisting at flowering time; flowers subequal to or slightly overtopping the expanding efarinoso leaves; succession of leaves as in P. Winteri. 9. Edgeworthii.

Leaves fully developed at the time the flowers open; bud scales deciduous before flowering.

Leaves distinctly glandular pubescent on the upper surface, either all over or towards the margin only.

Leaves pubescent all over the upper surface, and also on the lower, especially on midrib and nerves, margin usually rather deeply toothed, sometimes lobulate; scape developed though sometimes very short; pedicels and calyx glandular-pilose; calyx lobes mostly 3- or irregularly toothed, subequal to or shorter than the tube; corolla lobes mostly sharply 3-lobed; efarinoso. 3. taliensis.

Leaves pubescent on upper surface only towards the repand-denticulate margin; scape not developed; pedicels and calyx glabrous or with minute glandular papillae only; calyx lobes entire, decidedly longer than tube; corolla lobes bilobed; sparsely efarinoso. 12. Drummondiana.

Leaves glabrous or with minute glandular papillae only.

Scape wanting, or if present very short and quite concealed by the dense foliage.

Corolla lobes emarginate or rather deeply 2- or 3-lobed, the lobules oblong and rounded at the apex; leaves in a dense rosette, all uniform and sessile or with a broadly winged scarcely differentiated petiole.

Corolla lobes emarginate, the tube 15 mm. long; scape usually present. 20. moupinensis.
Corolla lobes rather deeply 2- or 3-lobed, the tube 7.5-10 mm. long; scape not developed.
Leaves with a dense coating of sulphur farina on the under surface; pedicels 1.5-2 cm. long. 11. _sulphurea_.
Leaves efarinose or with sparse whitish or pale yellow farina; pedicels not exceeding about 1 cm. in length. 13. _Cunninghamii_.
Corolla lobes acuminate or shallowly 3-lobed or irregularly lobed or dentate, the lobules or teeth triangular, acute or acuminate, sometimes obtuse but not rounded at the apex.
Corolla tube villous inside towards the apex; leaves in a dense rosette, sessile or the outer with broadly winged short petioles, coriaceous, drying pale dull green, the broad midrib and the lateral nerves prominent below; calyx lobes entire or casually tridentate at the apex; almost efarinose at flowering time, densely sulphur-farinose before flowering.
Corolla tube glabrous inside or with minute hairs only.
Corolla lobes distinctly acuminate or if tridentate then the central tooth acuminate; leaves sessile or with a short or occasionally fairly long winged petiole, rather thin, efarinose; calyx lobes entire, aristate or almost aristate-acuminate. 16. _sessilis_.
Corolla lobes or their teeth not acuminate (most often acute, very rarely subacuminate, but never distinctly long-acuminate).
Outside of calyx and the pedicels very densely covered with glandular papillae; leaves in a dense rosette, the inner oblong, sessile, the outer more or less elliptic, long petioled; buds with dense pale yellow farina; calyx lobes nearly always trilobulate. 19. _irregularis_.
Outside of calyx and the pedicels minutely and sparsely puberulous or farinose, calyx lobes exceptionally tridentate.
Calyx brown or reddish-brown.
Corolla in bud farinose, its lobes regularly and subequally 3-toothed; leaves in a dense rosette, as in _P. irregularis_, but outer petioled leaves sometimes wanting; short scape sometimes present; calyx lobes entire or casually tridentate. 21. _Boothii_.
Corolla in bud efarinose, its lobes usually unequally 3-toothed, but often irregularly toothed.
Scape present, though sometimes quite short, and included in the dense rosette of leaves which are all sessile, or with a short and broadly winged petiole, with occasionally the outer long petioled leaves still present; calyx lobes entire, acuminate, acute. 23. _scapigera_.
Scape wanting.
Leaf margin erose-denticulate, leaves all sessile, or a few outer ones with winged petioles about as long as the lamina, calyx lobes entire, acute or acuminate. 15. _Scullyi_.
Leaf margin repand-denticulate, outer leaves with distinct petiole longer than the lamina, calyx lobes narrow, long attenuate at apex .................................................. 18. petiolaris.

Calyx green, scape not developed.
Leaves membranous, irregularly coarsely toothed or lobulate with the lobules toothed, later ones differing from earlier ones in being larger, cordate at base and long petioled, corolla lobes longer than broad .................................................. 10. saxicola
Leaves chartaceous, sharply erose-denticulate, all similar in shape, but the outer with longer and more distinct petioles, none cordate at base, corolla lobes nearly as broad as long .............................. 14. gracilipes.

Scape present equal to or longer than the leaves or, if shorter than the leaves, still quite conspicuous owing to the lax foliage.
Corolla lobes 3-toothed or more or less irregularly toothed.
Calyx lobes spreading or subspreading, long and finely attenuate-acuminate or almost aristate-acuminate, the acumen often spirally twisted; leaves during flowering all uniform, spathulate or oblong-spathulate, sessile, or with short, broadly winged petiole, or a few with distinct long petioles, during fruiting ovate or occasionally elliptic leaves usually truncate at the base, with petiole much longer than lamina, developed from lateral buds; corolla lobes irregularly toothed, usually rather deeply 2–3-lobed, with the lobules many-toothed; fruit included in calyx tube, the markedly stiff calyx lobes persistent .................................................. 23. scapigera.

Calyx lobes acute or variously toothed or lobulate; leaves at flowering time dimorphous—some sessile or with a very broadly winged scarcely distinct petiole, others with a distinct long petiole subequal to or longer than the lamina.

Outer petioled leaves cuneate or acuminate, rarely subtruncate at base, margin sharply denticulate; none of the bracts expanded into petioled leaves; pedicels and calyx during flowering very densely covered with stalked capitate glands; calyx lobes not spreading and not very rigid, oblong, irregular at apex, rounded, shortly obtusely acuminate or more often 3-lobulate; corolla lobes sinuate-dentate; capsule included in calyx tube 19. irregularis.

Outer petioled leaves truncate or cordate at the base, rarely cuneate, margin duplo-dentate; some of the inner bracts nearly always expanded into petioled leaves; pedicels and calyx during flowering puberulous with stalked capitate glands; calyx lobes not very rigid, variable in shape, mostly narrowly deltoid or oblong-deltoid, acute or shortly acuminate at apex; corolla lobes 3-toothed; capsule subequal to calyx tube 22. bracteosa.

Corolla lobes emarginate or rather deeply bilobed, the lobules entire, rounded at apex.

Leaves rather shallowly repand-denticulate or denticulate, few in number and rather lax, usually elliptic or oblong-elliptic; scape 2-flowered; whole calyx obconic; corolla tube annulate .................................................. 25. odontocalyx.
Leaves sharply erose-denticulate, dense or subdense, oblanceolate to obovate; scape 2-6-flowered, but rarely 2-flowered; calyx cylindrical to campanulate; corolla tube annulate or not.
Corolla tube annulate; leaves not very dense, petioled at flowering time, the petiole usually rather broadly winged.
Corolla tube exannulate; leaves at flowering time dense, sessile or with a scarcely distinct broadly winged petiole, occasionally a few outer long petioled leaves still persisting.

**ENUMERATION OF THE SPECIES, WITH SYNONYMY AND DISTRIBUTION.**


Sikkim, 12,000 ft., Hook. f., Primula No. 25 (Herb. Kew et Calc.—type); Eumtso-la, 14,500 ft., open ground among scant herbage, Cave, 184 (Herb. Calc.); ibid., 15,000 ft., Smith et Cave, 1528 (Herb. Calc.); Tholoong, 14,000 ft., King’s collector (Herb. Calc.).


Yunnan, Mekong-Salween divide, W. slope, 12,000 ft., Ward, 94 (Herb. Edin.—type).
Upper Burma, Doker-la, Ka-gwr-pw, 14,000 ft., Ward, 974 (Herb. Edin.—type).


Yunnan, eastern flank of the Tali range, 10,000–11,000 ft., open stony pasture land, Forrest, 1805 (Herb. Edin.—type); Shweli-Salween divide, open stony moist pasture, Forrest, 11,942 (Herb. Edin.); hills beyond Teng-yueh, Howell, 144 (Herb. Edin.).


Yunnan, rocks of Ma-long, 9000 ft., E. E. Maire (Herb. Bonati—type).


Yunnan, Tali range, 11,000—13,000 ft., Forrest, 1808, 1812, 11,618 (Herb. Edin.); Lichiang range, 9000—14,000 ft., Forrest, 2167, 6521, 6723, 10,089 (Herb. Edin.); Mountains of Chienstien plateau, 12,000—14,000 ft., Forrest, 12,403 (Herb. Edin.); Tsangchan, Delavay, sine num., Delavay, 750 (Herb. Edin.); Mo-so-yn, Delavay (Herb. Edin.); N.W. Yunnan, Monbeig, 175 (Herb. Edin.); Yunnan, Maire (Herb. Edin.); N.W. Yunnan and E. Tibet, Ward (Herb. Edin.).

Upper Burma, Irrawaddy-Salween divide, Hpinmaw Pass, Ward, 1572 (Herb. Edin.).


Bhutan, Pile-la, 10,100 ft., White, 122 (Herb. Calc.—type); ibid. by stream under Rhododendron scrub, 10,500 ft., Cooper, 3970 (Herb. Edin.); Tongsa, Yato-la, 11,000 ft., Cooper, 4213 (Herb. Edin.); Yato-la ridge, 10,000—11,000 ft., Cooper, 4134 (Herb. Edin.); Pumthang, 12,000 ft., Cooper, 4122 (Herb. Edin.).


Kumaon, Pindree, 12,000 ft., Strachey and Winterbottom, Primula No. 9, pro parte (Herb. Kew), Madden, 350 (Herb. Edin.), Madden, sine num. (Herb. Kew); Namik, 12,000 ft., Madden, 563 (Herb. Kew); Champwa, 12,000 ft., Strachey and Winterbottom, Primula No. 9 (Herb. Calc.); Dhakouree and valley of Soonderdunga glacier, 13,000 ft., T. Anderson (Herb. Calc.); Wall. Cat., 603, pro parte (Herb. Calc.).


Nepaul, Wall. Cat. 612 et sine num. (Herb. Calc.).


   *P. petiolaris*, Collett, Fl. Simlensis, p. 298, non Wall.

   Simla, T. Thomson (Herb. Kew et Calc.) ; Hattu-killa, 10,400 ft., Dubuc (Herb. Edin.) ; Hattugarh, 10,500 ft., Gamble, 6116C, 6116D (Herb. Calc.) ; Hattu, 10,000 ft., Watt, 8362A (Herb. Edin.) ; Mathiana to Bagi, 8000–9000 ft., Watt, 8362 (Herb. Edin.).


   Kumaon, Madhari Pass, 8000 ft., Strachey and Winterbottom, Primula No. 8 (Herb. Kew) ; Pindree, 11,500–12,000 ft., Strachey and Winterbottom, Primula No. 9, pro parte, No. 11, pro parte (Herb. Kew).


   Kulu, 5000 m., Drummond, 8925 (Herb. Edin.—type) ; Chachpur valley, 6000 ft., Duthie, 27,067 (Herb. Kew et Calc.).


   Kumaon, above Namik, 8000 ft., Strachey and Winterbottom, 1803 (Primula No. 12, Herb. Calc. et Kew—type) ; pass above Namik, 8500 ft., Madden, 353 (Herb. Edin.).


   Sikkim, Jaffrey’s collector (King’s type—Herb. Calc.), 10,000 ft., Cunningham (Herb. Calc.), 13,000 ft., Gammie (Herb. Calc.), Cave, 7287 (Herb. Edin.) ; Lingtu and Natung, 11,000–13,000 ft., Pantling (Herb. Calc.) ; Natung, King’s collector (Herb. Calc.); Sheroathang, among gravel and turf, 13,000 ft., Cooper, 969 (Herb. Edin.) ; Changu, Cave (Herb. Edin.) ; below Changu, Ribu et Rhamoo, 4601 (Herb. Calc.) ; Chumbi Thang, Ribu, 9 (Herb Calc.).

   Tibet, Younghusband, 21 (Herb. Calc.) ; Gyantse to Phari, Walton (Herb. Calc.).


   Sikkim, Yeumthang, 11,000 ft., Cave (Herb. Edin.—type) ; Begger, 12,500 ft., Cave (Herb. Edin.) ; Changu, 12,000 ft., Smith, 3287 (Herb. Calc.) ; Dickchoo, 11,000 ft., C. B. Clarke, 27,797B (Herb. Kew) ; ? Yatung, Hobson (Herb. Kew) ; ? Jang kar chha and up to Jang kar la, Walsh, 118 (Herb. Kew).


   Nepaul, Scully (Herb. Calc.).

   Sikkim, 13,000 ft., Watt, 5269 (Herb. Calc. et Edin.), Hook. f. (Herb. Calc. et Kew) ; Singaleelah range, 12,000 ft., Watt, 5263 (Herb. Edin. et Kew), 12,500 ft., Cave (Herb. Edin.) ; near Phallut, 11,500 ft., Lace, 2265 (Herb. Calc. et Kew) ; Tonglu, Elwes in Herb. C. B. Clarke, 27,482 (Herb. Kew) ? ; Yalloong valley wood, 10,000–12,000 ft., Hook. f. (Herb. Kew) ; Wallanchoon, 10,000–12,000 ft., Hook. f. (Herb. Kew) ; below Jongri, Pey kiong la, King’s collector, pro parte (Herb. Calc.) ; above Lachen on moist exposed places, 11,000 ft., Pantling (Herb. Calc.).

Chumbi, 8000–9000 ft., Searight, 44 (Herb. Calc.); Pey goonga, King’s collector, 433 (Herb. Calc.).


Sikkim, Nye gu la, 13,000 ft., King’s collector (Herb. Calc.); Pey kiong la, below Jongri, King’s collector, pro parte (Herb. Calc.); Singaleelah, Sirkia la, 14,000 ft., Watt, 5425 (Herb. Edin., Calc. et Kew); Singaleelah, Hook. f. (Herb. Kew).


Nepaul, Wall. Cat., 603, pro parte (Herb. Calc., Edin. et Kew), Scully (Herb. Calc.).

The Singaleelah plant collected by Schlagintweit and referred by Pax to this species has not been seen by the writer. It is more likely to belong to the next species.


Sikkim, Chowbhangin, Cave (Herb. Edin.); Singaleelah, Hook. f. (Herb. Kew); ibid., 11,000 ft., Elwes in Herb. C. B. Clarke, 27,481 (Herb. Kew); Tonglu, 10,000 ft., Rhomoo, 811 (Herb. Edin.)


Yunnan, ascent of Niu Chang Pass, 14,000 ft., Forrest, 304 (Herb. Edin.).

This Yunnan plant is in habit very similar to *P. irregularis*, but differs in the leaf margin. Unfortunately there is but the one collection in very young bud.


Moupin, David.

Of this species only a photograph of the type has been seen.


*Primulae sp.*, Griff. Itin. Notes, p. 135; Griff. Ic., t. 485, f. 2.


Bhutan, Tongsa, Yato la, 10,000 ft., in moss by tree bases in shady forest, Cooper, 3981 (Herb. Edin.); Timpu, Duké la, 9000 ft., sandy soil in shade of light wet forest, Cooper, 3917 (Herb. Edin.); ascent to Woolooka, 8000–9500 ft., Griffith, K. D. 3514, pro parte (Herb. Kew); Griffith, K. D. 2314 (Herb. Kew).

Sikkim, Lachoong, 9000 ft., Pantling (Herb. Calc.); by road below Changu, 11,000 ft., Smith, 3183 (Herb. Calc.).


Included in the above are several rather well-marked varieties
or microforms, but the material to hand is not sufficient to justify their segregation. On the descent from Jongri Watt collected in the pine forest at 10,000 ft. (Watt, 5615, in Herb. Edin. et Kew) a scapigerois plant very different from the type in being much weaker and in having thinner, more deeply cut leaves and much smaller fruit.

Hupeh, Fang, Henry (Herb. Kew—type).


*P. tenuissima*, Pax in Engler Pflanzenr. Primulac., p. 42 (nomen tantum), pro parte.
Szechuan, near Chenkow-tin, Farges (Herb. Edin.).
Hupeh, Fang, 7400 ft., wet rocks, Wilson, 1831 (Herb. Edin.).
NOTES
FROM THE
ROYAL BOTANIC GARDEN,
EDINBURGH.

Addition to Numbers XXIX-XXX (January 1917).
Issued June 1921.

CONTENTS.

Plates I-XXXVII illustrating
Mr Takeda's paper on the Genus Mahonia.
Mahonia napaulensis, DC.
Mahonia napaulensis, DC.
Mahonia Griffithii, Takeda.
Mahonia pycnophylla, Takeda.
Mahonia Roxburghii, (DC.) Takeda.
Mahonía acanthifolia, G. Don.
Mahonia sikkimensis, Takeda.
Mahonía borealis, Takeda,
Mahonia manipurensis, Takeda.
Mahonía Simonsii, Takeda.
Mahonia Leschenaultii, (Wall.) Takeda.
Mahonia Bealei, Carr.
Mahonia flavida, Schn.
Mahonia Fordii, Schinz.
Mahonia Mairei, Takeda.
Mahonia bracteolata, Takeda.
Mahonia dolichostylis, Takeda.
Mahonia conferta, Takeda.
Mahonia Hancockiana, Takeča.
Mahonia lomariifolia, Takeda.
Mahonia lomariifolia, Takeda.
Mahonía Veitchiorum, (Heinl. & Wils.) Schne.
Mahonia Fortunci, (Lindl.) Fedde.
Mahonia Fargesii, Takeda,
Mahonia longibracteata, Takeda.
Plate XXVIII.

Mahonia Sheridaniana, Schn.
Mahonía hypoleuca, Takeda.
Mahonia japonica, (Thunb.) DC,
Mahania siamensis, Takeda.
Mahonia philippinensis, Takeda.
Figs. 1-8.—Mahonia sikkimensis, Tak., × 6. Figs. 1–3, outermost sepals. Fig. 4, middle sepal. Fig. 5, innermost sepal. Fig. 6, petal. Figs. 7-8, stamens.

Figs. 9-15.—Mahonia Simonsii, Tak., × 6. Figs. 9–10, outermost sepals. Fig. 11, middle sepal. Fig. 12, innermost sepal. Fig. 13, petal. Fig. 14, stamen. Fig. 15, pistil.