

THE GENUS *AESCULUS* LINN. IN INDIA

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ABSTRACT

The paper deals with two important forest elements of Indian flora having some interesting restrictions in habitat and some significance on the position in which they are grouped. Proposals for the valid name have been made and the total change of the family name has been given with bases not yet taken into account by modern workers.

INTRODUCTION

The Genus *Aesculus* Linn. has been placed in the family Sapindaceae by taxonomists, e.g. Hallier and Hutchinson. In Engler's classification *Aesculus* has been placed under a separate family, Hippocastanaceae, and Radlekofer in his treatment of the family Sapindaceae has not included the genus under this family. Torrey & Gray (1838) in *Fl. North Amer.* first established the family "Hippocastanaceae". Lindley, however, in 1836, had named the family "Aesculaceae",—after the main genus *Aesculus*. It is an independent family which may be distinguished from the Sapindaceae on the basis of the thyrsoid inflorescence, the leathery capsule with a large solitary seed, and the opposite palmately compound leaves.

Hippocastanaceae A. P. De Candolle, Prodr. 1: 1597, 1824. T.: *Aesculus* Linnaeus (Syn. *Hippocastanum* Gaertner: *A. hippocastanum* Linnaeus—vide Hitchcock, Prop. Brit. Bot. 149, 1929). B.H. 1: 398, 1862—Sapindaceae, tribus Sapindeae, p.p.; E.P. 3(5): 273, 1895 (Pax)—Hippocastanaceae. Hutch. (1): 365, 1959—Hippocastanaceae. Taxon (8): 5, 175, 1959. Renamed **Aesculaceae** (Lindl., 1836); Das et. Majum., 1961.

Leaves 5-9 fingered without stipules. Flowers fine looking in bunches of scorpioid cyme; bisexual and unisexual, obliquely zygomorphic. Sepals 5; petals 4-5; stamens 5-8; carpel 3, syncarpous, with 2 ovules in each cell. Capsule 3-1 celled generally with one seed without endosperm. Embryo with thick cotyledons.

The family includes two genera: *Aesculus* Linn. and *Billia* Peyr. with about 25 species distributed in the temperate as well as in the tropical zones of the world.

AESCULUS Linn. Gen. Pl. 161, 1754

Trees or shrubs, polygamous. Leaves opposite, exstipulate, digitately 3-9-foliolate; flowers irregular in terminal panicles; calyx tubular or campanulate, 4-5-lobed; petals 4-5, clawed, unequal; stamens 5-9, inserted on a disc, free with filiform filaments; ovary superior, sessile, 3-celled; ovules 2 in each cell; style

slender; fruit a leathery capsule, smooth or spiny, 3-celled or by abortion 1-celled; seeds large, shining. Only two species are found in India.

A. khassiana (Voigt) Das et Majum.

Syn. *A. punduana* Wall. Cat. No. 1189; *nomen nudum*, therefore name invalid.

Syn. *Pavia khassiana* Voigt, Hort. Sub. Calc. 97, 1845; FBI 1: 675.

Note: *Pavia* changed to *Aesculus*, therefore the valid name should be as proposed.

A small or medium-sized deciduous tree (Plate I) with spreading branches and scaly buds; bark greyish, warty outside, inside whitish, speckled with numerous brown dots, exuding watery sap when cut. Leaves opposite, exstipulate, digitate; common petiole 18-30 cm. long, terete, glabrescent; leaflets up to 7, gradually smaller from the terminal, 12-20 by 5-13 cm., oblanceolate, acuminate, finely serrulate, subcoriaceous, glabrous; main lateral nerves 20-25, pairs, almost transverse to the midrib at base, slightly arched at the outer extremity, tertiary nerves slender, transverse to the lateral nerves, subparallel; base acute; petiolules 0.5-1.6 cm. long, flattened above. Flowers irregular, white, small in large terminal thyrsoid panicles of peduncled cymes. Panicles up to 60 cm. long, sub-pubescent when young; pedicels gradually shorter upward. Calyx tubular; lobes 5, imbricate, rounded at the apex, dun-canescant outside. Petals 4, rarely 5, white, unequal, clawed, externally pubescent, often with a yellow spot at the base. Stamens slender, usually 7, free much exerted. Disc unilateral. Ovary 3-celled, cells with two superposed ovules; styles elongated, slender. Fruit a brown leathery rugose ovoid or obovoid, apiculate, loculicidal capsule 5-8 cm. long; valves 2-3. Seed 1 in each cell, brown, smooth with a large oval hilum; cotyledons thick, not separable.

Common along streams and ravines in the hills and their vicinity throughout Assam ascending to 1400 m.

Kurseong, May 1915, *E.A.C. Modder* 22; Western Dooars, Rajbatkowa, *Gamble*; Sikkim 300 m., *J. D. Hooker*; Teopara, Assam, 31 March 1895, *Reporter Econ. Products, Govt. of India*; Mungpo, 450 m. Khasia. 21 Feb. 1885, *C. B. Clarke* 37324; Bhutan, Relu-Sunir

300-600 m., 29 Nov. 1876 Burman ; Garo Hills, 1881, *R. Pantling* ; Baligan Jabocka near Naga Hill, Feb. 1899, *A. Hock* 758 ; Sibsagor, Assam, 1890, *S. E. Peal* 298 ; Khasi Hills and Brahmaputra plains ; Khasia, 1890, *Govt. of Assam* ; Khasia 300-1200 m., *J. D. Hooker & T. Thomson* ; Naga Hills, Masters ; Wall. Cat. 1189 ; Mendabari, Feb. 1937 *P. Mitra* 5 ; Rajabhatknawa (North Bengal—plains) April, 1959, *C. R. Das* 68 ; April, 1960, *C. R. Das*.

Aesculus indica Colebr. ex Camb. in Jacq. Voy. Bot. 31, t. 35, 1844 ; Bot. Mag. t. 5117 ; Royle, Ill. 135, 1839 ; FBI 1: 675.

A very handsome tree (Plate II) reaching 30 m. or more in height in suitable places and about 7 m. in girth. Deciduous, with scaly, sticky buds. Bark grey when old, exfoliating upwards in long thin bands or flakes which remain attached to the upper ends and hang down outwards, having a straight appearance. Wood white with a pinkish tinge, soft and close grained. Leaves opposite digitate, exstipulate ; common petiole 10-15 cm. long ; leaflets 5-9, each 15-25 by 5-9 cm. the central ones the largest, oblanceolate or oblong, acuminate, sharply serrate ; lateral nerves 15-22 pairs, arcuate base acute ; petiolules 0.5-2.5 cm. long. Bud scales membranous, caducous. Flowers white, horizontal, in large thyrsoid, cyme-bearing terminal panicles. Calyx tubular with 5 short, rounded lobes, often split longitudinally in open flowers. Petals 4, the place of the 5th usually vacant, white and yellow, clawed, unequal in breadth. Stamens 7, filiform, curved upward, longer than the petals ; anthers variable. Disk one-sided. Ovary

sessile 3-celled. Style simple, sessile, slender. Fruit a 3-celled capsule, 5 cm. long, ovoid, rough outside. Seeds exalbuminous, about 3.5 cm. diameter, dark brown, smooth, shining.

Western Himalaya, altitude 1200-3000 m. N.W. Frontier of India to Nepal.

Mussourie, April 1898, *P. W. Machinnon* ; Kaltuar, Jaunsar 1800 m., May, 1894, *T. W. Forester* 9 ; Chakrata & Mussoorie, Fl. 15 April, 1922, Fr. 23 July, 1922, *S. N. Kaul* 41 ; Dogah, Saran valley (Hazara) 7.6.99, *Inayat* ; Naini Tal 20 June 1914, *N. Gill* ; Jeolikote, Kumaon 1200 m., 5.9.1912, *N. Gill* 413 ; Chamba State, Khangu forest 2000-2700 m., 19 May 1896, *J. H. Lace* 1376 ; Jakhu, Simla, 17 July 1911, *Kalkaprosad* 35514 ; Simla 2400 m., 19 June 1877, *N. Gamble* 4390 c ; Mirga (Chitral expedition) 2300 m. 12.6.96, *S. A. Harris* 16011 ; Garhwal, *Herb. Falconer* 350 ; Kotegarh, N.W. Himalaya, *Dr. Stoliczka* ; Pangee, *Dr. Stoliczka* ; Chamba, Aug. 1880, *R. Ellis* 203 ; Gulmarg, 23 Aug. 1893, *Dr. Aitchison* 79 ; Gulmarg, Kashmir, 20 June 1893, *Dr. Aitchison*, Darjeeling Bot. Garden, May 1926, *B. C. Kundoo* ; Mussouree 1800 m., *P. C. Pal* ; Wall. Cat. 1188A ; Wall. Cat. 1188B.

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PLATE I



PLATE II