A monotypic genus of the family, differing from the Coniferales by its wide flattened leaves and by fertilization being effected by motile male sperms.


A deciduous tree with trunk often pyramidal and sparsely branched when young, becoming spreading and dense head. Branches irregularly whorled or produced at indefinite intervals. Branchlets horizontal or drooping with spur-like shoots which may continue to produce clusters of leaves. Leaves on stalks upto 8 cm long, fan-shaped, usually 5-8 cm across, the upper margin divided into 2 large lobes, usually undulate or irregularly notched. Flowers dioecious. Male flowers in pendulous catkins, from the short shoots, in pairs or threes, bearing numerous loosely arranged stamens.

A single male tree in Lalmandi Garden. The plant was introduced by a french man, Mr. Pey Chaud, in 1930 (Javeid 1964).

Flowers: March.
Lalmandi Garden: planted.
Distribution: Probably a native of China.
107. PINACEAE

1. Leaves surrounded at base by a persistent or a deciduous sheath, in bundles of (2-) 3-5.  
   1. Pinus

1. Leaves not in sheaths, solitary, often appearing as 2-ranked.
   2. Cones pendulous, their scales persistent; leaves needle-like.  
   2. Picea

2. Cones erect, their scales deciduous; leaves flattened or triquetrous.
   3. Leaves flattened, more or less distichous, with 2 silvery streaks on the either side of the midrib beneath.
      3. Abies

3. Leaves triquetrous, fascicled on dwarf single and spirally arranged long shoots, without streaks.
   4. Cedrus

1. PINUS L., Sp. Pl. 1000 (1753).

Tall trees with bark furrowed. Leaves needle-like, in clusters of 3 or 5 (rarely 2 or 1). Male and female cones on the same tree. Male cones densely clustered round the branches of current year shoots; anther cells 2. Female cones usually at the end of the young shoots, solitary or clustered, erect. Scales of the mature cones more or less thickened towards the tip.

1. Pinus wallichiana Jackson in Kew Bull. 85 (1938).—
   Pinus griffithii M'Celland in Griffith, Notul. IV: 17 (1854) nomen. event., Icones Pl. As. IV: t. 365 (1854) excl. f.1-3.

A tall tree 15-50 m high with bark smooth on young and rough with shallow fissures on old trees. Leaves 10-20 cm long, in fives, bluish or greyish-green, slender, drooping; sheath of bud-scales deciduous. Male catkins 3 mm long, ovoid. Female cones at the ends of the shoots, usually 2-3 together, long when mature, cylindrical, erect before fertilization, afterwards pendulous. Scales broad near the end, spathulate, not much thickened at the ends, rhomboid at the back. Seeds 8 mm long, bluish, ovoid, acute at both ends, compressed, wing about 3 times the length of the seed.


Distribution: Afghanistan, Pakistan, Himalaya: from Kashmir to Nepal.

Several exotic pines have been tried on Shankracharya hill and elsewhere, mostly without success, but there are individual specimens of Pinus halupensis Mill., and Pinus roxburghii Sarg. a pine of Siwalik hills common in Jammu Province. P. halupensis Mill. is characterised by having needles in pairs, slender, curved, twisted above, the margins minutely toothed and cones pointing downwards, usually solitary, reddish, ovate-conic; scales shining. P. roxburghii Sarg. is 3-needled pine, light
green, with cones ovoid having scales much thickened at the apex.


Tall trees with tapering trunks, pyramidal crown, whorled branches and thin scaly bark. Leaves spirally arranged, linear, 4-sided. Flowers terminal or axillary; the staminate composed of numerous, spirally arranged anthers; the ovulate composed of numerous, round or pointed scales in the axils of accrescent bracts. Cones pendulous; scales thin, longer than the bracts.


A large evergreen tree with whorled branches and horizontal hanging branchlets. Leaves 25-35 mm long, spirally arranged around the branches, needle-like, 4-sided, stiff, pungent. Flowers monoecious. Male catkins 25 mm long, solitary, erect, nearly sessile in the axils of the upper leaves; stamens with 2 linear pollen-sacs, connective produced with a broad apex. Female flowers in cones, which are solitary terminal, scales double the carpellary scales (bracts), disappearing in fruit, the placental scale bearing near the base 2 reversed ovules.
Cones formed by the imbricating coriaceous placental scales, pendulous, dark-brown when ripe. Seeds dark grey, winged.


Dachigam Rakh; Shankracharya hill; University Campus: planted.

Local name: G-NJ 1154.

Distribution: Himalayas, West Pakistan, Afghanistan.

3. **ABIES** (Mill.) Link in **Linnaea XV**: 525 (1841).

Evergreen trees of pyramidal habit with spreading, whorled branches. Leaves often spreading, distichous, flattened and grooved above, usually with 2 white or grey stomatiferous bands below. Male flowers pendant; female consisting of numerous 2-ovuled scales. Cones ovoid to oblong-cylindric.


A tall evergreen tree with a narrow cylindrical crown of dark foliage. Leaves upto 6 cm long, distichous, flattened, tapering to the apex which ends in 2 horny points, uppersurface dark, shining, green, grooved, lower pale green, with 2 greyish bands of stomata on either side of the raised midrib. Flowers monoecious. Male catkins clustered, stamens with 2 linear pollen-
sacs, connectives produced in a thickish upturned obtuse appendage. Female flowers in cones 10-20 cm long, solitary or in distinct pairs, erect, dark-purple; scales 3 cm wide, 2 cm long; the bracts about one-third as long as the scales.

April - August.
Shankracharya hill: planted.
Distribution: North West Himalayas.


Evergreen trees with spreading, irregularly arranged branches. Leaves spirally arranged and scattered on the long shoots, densely fascicled on the spur, usually triangular. Flowers monoecious, in solitary terminal cones; staminate upright; female consisting of numerous suborbicular, 2-ovuled scales subtended by small included bracts.


A tall tree to 70 m high with greyish brown bark, divided into irregular oblong scales; leading shoots of young trees and branches pendulous. Leaves 25-35 mm long, dark-green, glaucous or silvery, sharply pointed. Male and female flowers often
on separate trees, but sometimes on the same tree, in this case they are on separate branches. Male cones many, erect, solitary at the end of leaf-bearing branchlets, cylindric when mature. Female cones few, solitary at the end of leaf-bearing branchlets. Scales numerous, fan-shaped; seeds triangular with a broad wing.

Flowers: August-september; Cones ripen: September-October of the following year.

University Campus; Shankracharya hill: planted. GNJ 1092. Local name: deodar.
Distribution: Afghanistan, West Pakistan, Himalayas: from Kashmir to Kumaon.

108. CUPRESSACEAE

1. Fruit a woody cone; leaves scale-like, decussate.
   2. Cones and their scales oblong; seeds 2 to each fertile scale. 1. Thuja
   2. Cones subglobose, scales peltate; seeds many to each scale. 2. Cupressus

1. Fruit berry-like, formed by the coalition of the scale; ovules 1 or 2; leaves jointed at base, subulate. 3. Juniperus

A bush or small tree of dense habit, often branching into several stems from near the base. Branches and branchlets spreading and ascending. Leaves distinctly grooved on the back, those on the main axis triangular obtuse not appressed close to the shoot, those on the lateral branches closely appressed green on both surfaces. Cones ovoid, 15-25 mm long, fleshy and bluish before ripening, with usually 6 scales, the lower ones fertile, each with 2 or 3 seeds; scales thick woody, with a strong hooked or rolled boss near the apex. Seeds ovoid, wingless.

May - August.

University Campus: planted in gardens.  

Local name: Sarow.
Distributions: A native of North and West China, now cultivated throughout the Asian Countries.


Evergreen, monoecious trees or shrubs. Leaves opposite, appressed. Male flower a subsessile terminal column of opposite, 2-6-celled, peltate anther, in spikes. Female flowers in a globose cone of 3-12, woody, peltate scales, with few or many ovules. Seeds small and winged or not.


A tree with reddish-brown bark, separating in flakes. Branches smooth, purplish-brown, glaucous; branchlets irregularly disposed, bipinnate, ultimate divisions quadriangular. Leaves grey or usually glaucous, in 4 ranks, closely appressed, ovate, subacute, with a conspicuous gland on the back. Cones globose, 20 mm diam.; scales 6-8, with prominent process at the back. Seeds 8-10 on each scale with a few inconspicuous resin tubercles. September - November.

Shankracharya hill: planted.  


Shrubs or trees with leaves more or less subulate and 3-nate whorled; scales of cones fleshy and coherent or connate
in fruit. Seeds with a thick hard testa.


A dense, more or less prostrate shrub. Leaves 4-10 mm long, in whorls of 3, linear to subulate, sharp pointed, spreading, convex on the back, and glaucous bluish-white on the upper surface, jointed at the base and continued down the stem with a large gland on the decurrent portion. Flowers dioecious, axillary. Fruit globose, 8-12 mm diam., bluish or black when ripe, covered with a waxy bloom, with 3 minute points at the top, the 3 scales of which the fruit is composed occasionally gaping and exposing the seeds. Seeds 2-3, elongated, ovoid, 3-cornered, with depressions between.

Flowers: March - April; Fruit ripens: October of second year.

Zabarwan: on open dry slopes.


109. TAXACEAE

TAXUS L., Sp. Pl. 1040 (1753).

Trees or shrubs with reddish or reddish-brown, scaley bark. Leaves spirally arranged, spreading, distichous, with 2 broad, yellowish or greyish-green bands below. Flowers axillary, dioecious, rarely monoecious, the staminate forming stalked
heads; the female consisting of several imbricate scales, the uppermost bearing an ovule with a disc at the base.


A small or medium-sized evergreen tree with thin flaking bark and horizontal wide spreading branches. Leaves 10-30 mm long, linear, flattened, distichous, acute, narrowed into a short petiole which is decurrent along the twig, dark-green and shining above, pale yellowish-brown or rusty-red beneath.

Flowers usually dioecious (rarely on the same plant). Male flowers in stalked, globose heads, arising from the axils of the leaves on the undersides of the branchlets of the previous year; stamens about 10. Female flowers solitary axillary, green, each consisting of a few imbricate scales round a single erect ovule, which is surrounded at the base by a membranous cup-shaped disc. In fruit the disc enlarges, becomes succulent and bright red, surrounding the olive-green seed of which only the tip is exposed; testa woody.

August - October.

Zabrawan: mixed with conifers. Rare. GNJ 1151,
Local name: Posthal.
Distribution: Afghanistan, West Pakistan, Himalayas, Burma, China, Indo-China, Sumatra, Philippines.

110. EPHEDRACEAE

EPHEDRA L., Sp. Pl. 1040 (1753).

Branched shrubs with leaves reduced to sheaths at the nodes of the branches. Flowers dioecious, rarely monoecious. Male flowers in short, bracteate spikes which are whorled or in pairs. Female flowers in pairs or sometimes 3 or solitary, with 2- to many bracts at the base, each flower consisting of a naked ovule enclosed by an urceolate integument (perianth) contracted at apex into a style.


A low, rigid, dense, tufted shrub 15-30 cm high, with branchlets green, erect or ascending and internodes striate, smooth. Leaf-sheaths 2 mm long, 2-toothed. Male spikes ovate, solitary or 2-3 together; flowers 4-8, bracts rotund, obtuse, connate, 1-2 mm long; staminal column exserted, anthers 5-8. Female spikes usually solitary, 1-2-flowered; tubillus exserted, straight. Fruit 8-10 mm long, ovoid, red.
April- July.
Shankracharya hill: among rocks, dry slopes.  
Distribution: Himalaya: from Kashmir to Kunwar.