

tips, slender, nearly straight on sterile branchlets, incurved and stouter on fertile ones, 1-1½ inch long, dark blue-green at maturity: staminate flowers oblong cylindrical, about 7 lines long, 4 lines thick, the stipe about 4 lines long; anthers dark purple: cones oblong-cylindrical to ovate, 1-8 inches long, gradually narrowed to each end; scales thin, straight, usually cross-dentate: seed black, about half as long as the broad very oblique wing. In wet places on the high mountains, Oregon to Brit. Columbia and the Rocky Mountains.

P. Sitchensis Carr. Conf. 267. A very large tree, 200-300 feet high and 4-12 feet in diameter with thin scaly red-brown bark: branchlets thick, rough with the prominent persistent leaf bases, glabrous: leaves 5-8 lines long, about 1 line wide, flattened, short-pointed or obtuse to acute, stomatose and when young white on the upper surface: cones cylindrical-oval, 1½-3 inches long, an inch thick or less: bracts lanceolate, rigid ½-¾ as long as the scales: seed yellowish, oblong soft, rounded and denticulate at the apex, 9-12 lines long: seeds slender 1¼-1½ lines long, the wing 4-5 lines long by 1-1½ lines wide, narrowly oblong or slightly oblique. Along the coast California to Alaska.

11. PINUS L. Sp. 1000.

Evergreen trees of various sizes and aspect, with flaky bark and monoecious flowers. Primary leaves only on young plants and shoots, flat, subulate and serrulate: the secondary in bundles of 1-5, from the axils of bud-scales and surrounded at base by a more or less persistent sheath of membranous scales, needle-shaped, terete, semiterete or triangular according as bundles are of 1 or more, mostly delicately serrulate, with stomata on all sides: resin-ducts various in situation and number. Staminate aments an oblong or cylindrical often much elongated staminal column surrounded by a somewhat definite number of calyx-like bud-scales, the outer ones lateral and strongly keeled, from the axils of scales and crowded into a capitate or spicate inflorescence around the base of the same springs growth: anther-cells opening longi-udinally, the connective terminating in a knob or semi-circular erect crest. Pollen-grains rather small, 2-lobed, with 2 air sacs. Pistillate aments axillary or subterminal, solitary or several together, the scales much larger than the bracts. Cones maturing the second year, scales more or less thickened and corky, the free exposed portion bearing a terminal or dorsal unarmed or prickly protuberance (umbo). Seeds without resin-vesicles, usually surrounded by the rim-like base of the wing which often spreads partly over the outer side of the seeds. Cotyledons 5-15.

§ 1 Leaves in fives with peripheral resin-ducts: their sheaths loose and deciduous. Cones subterminal. Scales comparatively thin at the free exposed apex, with a terminal unarmed umbo. Anthers terminating in a knob or a few teeth, or in a short incomplete crest.

P. Lambertiana Dougl. Linn. Trans. xv, 500. A large tree 100-300 feet high and 5-20 feet in diameter, with light brown smoothish bark and spreading branches: leaves 3-4 inches long, rigid, with 5 or 6 lines of stomata