

A New Chinese Pseudotsuga.

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With Plates CLX-CLXI.

Pseudotsuga Forrestii, Craib, sp. nov., *P. sinensis*, Dode, similis sed foliis longioribus, strobilis maioribus, bracteis conspicue maioribus distinguenda.

Arbor 60–80-pedalis (ex Forrest) ; ramuli hornotini brunnei, pilis brevibus rigidis saepe reflexis conspersi puberulive tantum, annotini pallescentes, demum plus minusve grisei ; alabastra brunnea, perulis saltem interioribus ciliatis, paucis per annos 1–2 persistentibus. Folia spiralter inserta, pectinatim disposita, apice rotundata, bilobulata, lobulis saepissime inaequalibus, usque ad 4.5 cm. longa, circa 2 mm. lata, costa supra conspicue impressa subtus prominente, margine sicco plus minusve recurva, subtus stomatifera, fasciebus sicco griseis vix conspicuis. Strobili distincte pedunculati, circa 5.7 cm. longi et 3.7 cm. lati, haud rarius valde resinosi, squamis bracteisque iis *P. sinensis* subsimilibus nisi squamis brunneis haud pallide brunneis, bracteis maioribus longius exsertis. Semina cum alis 1.3–1.7 cm. longa, subtus pallida, pallide-brunneo-lineolato-maculata, ala ima basi cucullata, ala facie superiore prope seminis apicem paucipilosa.

Yunnan. Mekong Valley. Lat. 27° 40' N. Alt. 10,000 ft. Tree of 60–80 ft. Mixed forests. G. Forrest. No. 13,003. Fr. Aug. 1914 et No. 13,545. Fr. Oct. 1914.

Young plants raised from seed of Forrest, 13,003, are in cultivation at the Royal Botanic Garden, Edinburgh. Twigs of a plant of unknown origin sent for identification by Sir E. Loder apparently also belong to this species.

Probably referable to *P. Forrestii* is a herbarium sheet of Ward's N.W. Yunnan and E. Thibet plants: Ward, 461, "Very big tree up to 80 ft., on precipices and rocky places with *Pinus*, 10,000 ft. Also at Doker-la in mixed forest."

P. Forrestii can be distinguished from *P. sinensis* by trans-
[Notes, R.B.G., Edin., No. LV, November 1919.]

Wt. 11496/145–375–3/20–N. & Co., Ltd. Gp. 10.

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verse sections of the leaf. In the former hypodermis is developed only in the median plane of the leaf and very sparsely at the margins. Occasionally one or two solitary cells may be found along the upper surface between the margin and the midrib. In *P. sinensis*, on the other hand, there is a well-marked continuous or almost continuous hypodermis. And again, the epidermal cells of *P. Forrestii* tend to be decidedly deeper than broad, whereas those of *P. sinensis* are almost as broad as deep.

P. sinensis and *P. Forrestii* are two closely allied species which form a geographically and systematically distinct subgenus. A first examination of the cone of either species recalls from the consistency of the scales the genus *Keteleeria*, the bracts alone reminding one of *Pseudotsuga*. The leaves and buds agree well with *Pseudotsuga*. Leaf-anatomy also supports their subgeneric rank. In the leaves of both species we find rayed idioblasts and infoldings of the cell-wall of the spongy tissue. In both these characters they differ from the true *Pseudotsuga*. The presence of rayed idioblasts is admittedly not of generic importance, e.g. some species of *Abies* develop them but in many more they are absent. But the presence of the infoldings of the cell-wall has been regarded as of generic rank. The infoldings are not so uniform as in *Pinus*, and in the material examined I failed to detect them in the palisade tissue. But they do form quite a marked feature of the spongy tissue of the leaf of *P. sinensis* and of *P. Forrestii*.

Sections of the oldest available branches on the herbarium specimens of Forrest, 13,003, show the distinctive anatomical features associated with the wood of the genus *Pseudotsuga*.

Of the other two Asiatic species of the genus sufficient material is not yet available. Of *P. japonica* there are several young plants in cultivation here, and Sir E. Loder has also sent a fragment of a cultivated plant. Leaf-sections from both sources show the same anatomical structure as found in *P. Douglasii*, i.e. leaf-sections made from young plants show no rayed idioblasts and no infoldings of the cell-wall. Of *P. Wilsoniana** from Formosa I have seen no specimens.

LIST OF PLATES

Illustrating Mr. Craib's paper on *Pseudotsuga*.

PLATE CLX. *Pseudotsuga Forrestii*, Craib. Sp. nov.
CLXI. *Pseudotsuga sinensis*, Dode.

* Hayata in Icon. Plant. Formos., v (1915), 204, tab. xv.

YUNNAN WEST CHINA

WILLIAMS FORREST

Aug. 1914

10806 ft.
Locality, Hekong Valley, Lat. 27°
60' N.

Tree of 60-80 ft. in forest



PSEUDOTSUGA FORRESTII, CRAIB.



PSEUDOTSUGA SINENSIS, DODE.