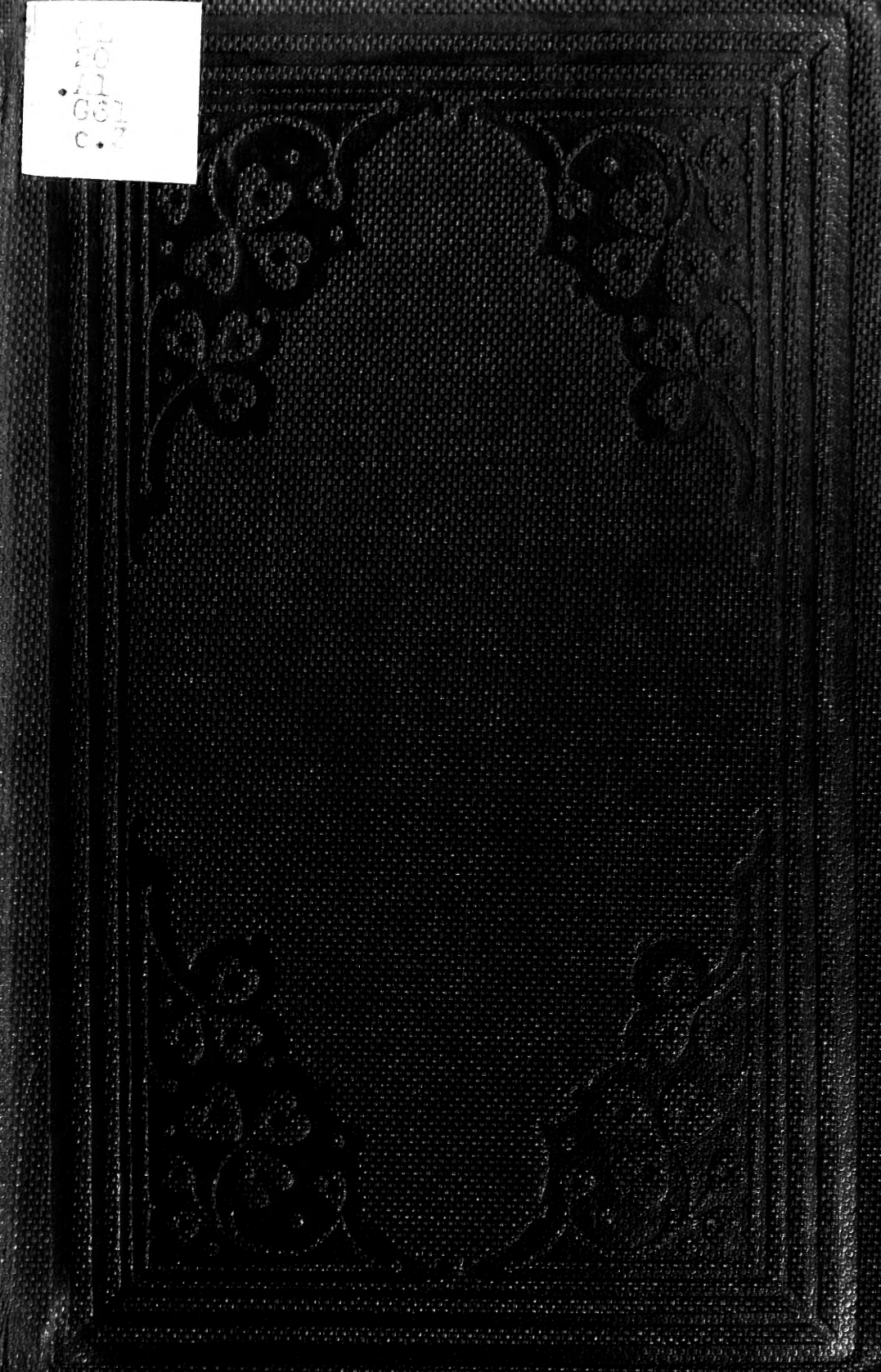
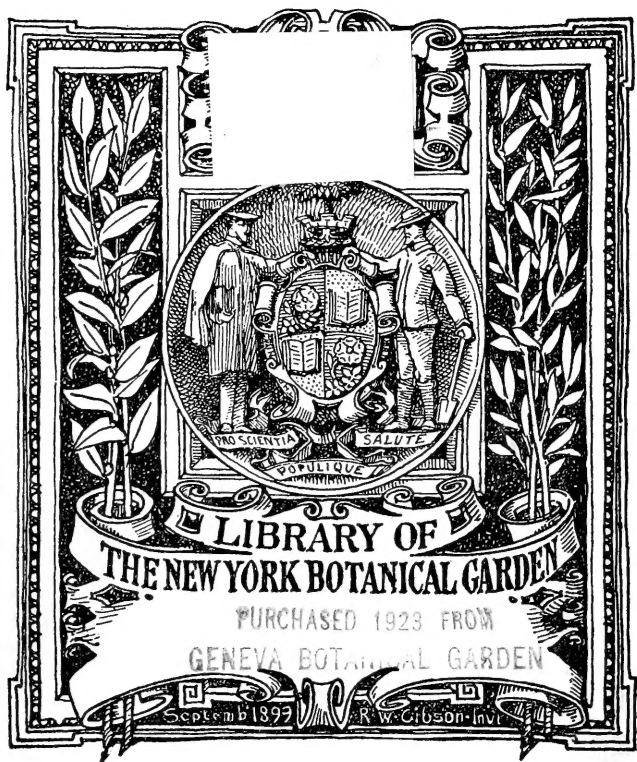


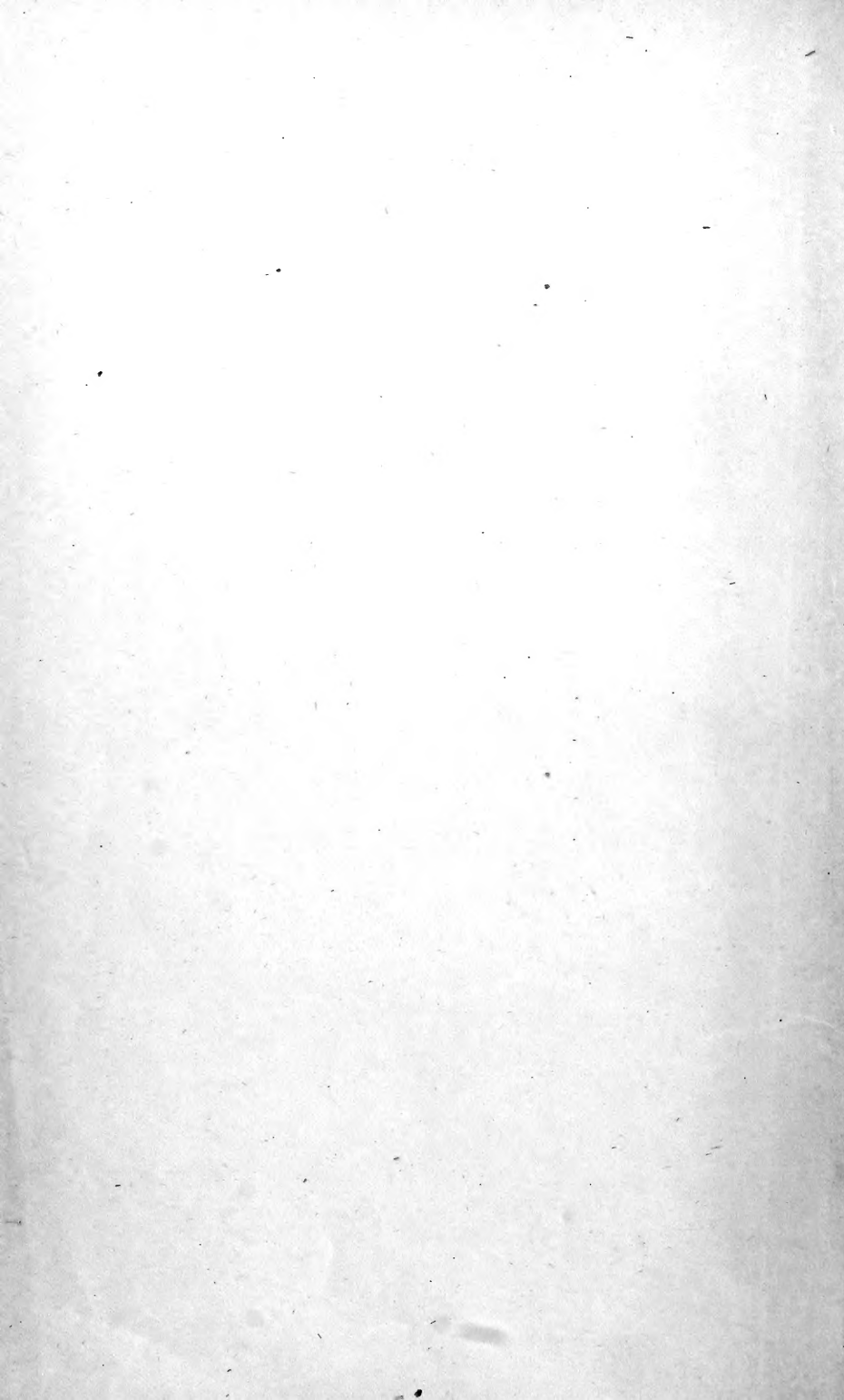
10
20
Al
662
C. 2



03.76



DUPLICATA DE LA BIBLIOTHÈQUE
DU CONSERVATOIRE BOTANIQUE DE GENEVE
VENDU EN 1922



A

SUPPLEMENT

TO

GORDON'S PINETUM:

CONTAINING

DESCRIPTIONS AND ADDITIONAL SYNONYMES OF ALL
THE CONIFEROUS PLANTS NOT BEFORE
ENUMERATED IN THAT WORK.

WITH CORRECTIONS UP TO THE PRESENT TIME,

BY

GEORGE GORDON, A. L. S.

LIBRARY
NEW YORK
BOTANICAL
GARDEN

"Heaven their various plants for use designs;
For houses cedars, and for shipping pines."

DRYDEN.

LONDON:
HENRY G. BOHN, YORK STREET, COVENT GARDEN.
1862.

.A1

G61

C.3

P R E F A C E.

IN producing a Supplement to the Pinetum at the present time, it is only necessary to refer to the frequent introduction of new Conifers, or what are said to be new ones, together with the mutability of names, and the Babylonian confusion which still exists in their nomenclature, from the misapplication of names, either through ignorance or design. The trade lists, too, with some praiseworthy exceptions, still abound with numerous *aliases*, as may be seen by a slight comparison of such lists with the ample indexes given at the end of the Pinetum, and the present Supplement, where all the synonymes are printed in Italics.

Amongst the additional species and varieties recorded in the present Supplement, will be found several which have not before been enumerated, together with other information of a recent date, particularly the identification and correction of M. Roetzl's Mexican Pines; and the notification of some errors of long standing in books of authority; the whole being completed with an Index, containing all the systematic names to be found in the present Supple-

ment, which amounts to upwards of 580, independent of a copious list of the Japanese and Chinese names for Conifers.

In conclusion, the Author desires to express his thanks to those Noblemen and Gentlemen who have so liberally furnished him with materials for examination, and, at the same time, informed him of the sources whence they received their plants, thus enabling him to direct his attention to such establishments as were most worthy of notice, not only for the great extent of their collections, but for general accuracy in nomenclature.

He also wishes to express his obligations to Mr. John Standish, of the Royal Nursery, Bagshot; to Messrs. Low, of Clapton; Messrs. Osborn, of Fulham; Mr. R. Glendinning, of Chiswick; Mr. William Paul, of Cheshunt; Mr. William Wood, of Maresfield; Mr. Alexander Dancer, of Fulham; Mr. Smith, of Worcester, and Messrs. Rolleston, of Tooting, for useful information and specimens sent for examination.

G. G.

London, February 13th, 1862.

LIBRARY
NEW YORK
BOTANICAL
GARDEN

INTRODUCTION.

THE natural Order CONIFERÆ or PINACEÆ is now generally divided into three great families:—*viz.* Abietinæ, Cupressinæ, and Juniperinæ; and although attaining, as many of them do, to huge dimensions and great utility as timber trees, they possess an organization inferior to that of other forest trees, and are classed by botanists under the term *Gymnospermæ* (naked seed), because the female flowers have no pericarpal covering, but consist of naked ovules, to which fertilization is communicated directly from the pollen, without the interposition of style or stigma, and which is analogous to the ova of reptiles in the animal kingdom. The male flowers consist of catkins, formed of a number of scales, in the body of which the pollen is contained, in two or more cells, while the female organs, or naked ovules, originate from the large scales of the cones, towards their base.

In the section ABIETINÆ are placed the *Genus* Pinus, Abies, Picea, Larix, Pseudolarix, Cedrus, Araucaria, Cunninghamia, and Dammara, with the doubtful one Sciadopitys, all of which are timber trees, distinguished by their slender, needle-like, or flat linear and lanceolate leaves, and branches in whorls, the lower ones always dying off as the trees grow old. The leaves

AUG 7 - 1923

and cones also differ essentially in the different Genera. In that of *PINUS* (the true Pines) the leaves are long, slender, and in bundles of twos, threes, or fives, each set being enclosed at the base in a scaly sheath, and with the fruit a cone, composed of persistent scales. In the *Genus ABIES* (the Spruces) the leaves are solitary, more or less scattered round the shoots, or somewhat two-ranked in their direction, as in the Hemlock Spruce, and with the cones in a drooping position, and composed of persistent scales. In the *Genus PICEA* (the Silver Firs) the leaves are flattened, linear, or lanceolate, white beneath, and mostly arranged on the upper side of the shoots, in a more or less pectinated manner; the cones are erect on the upper side of the top branches, and composed of deciduous scales, which fall off the axis when the seeds are ripe. In the *Genus LARIX* (the Larches) the leaves are linear, soft, rounded at the points, deciduous, and disposed in groups on the adult parts of the tree; the cones are small, erect on the upper side of the branchlets, and composed of loosely-placed persistent scales. In the *Genus PSEUDOLARIX* (the Chinese Larch) the leaves are long, linear, soft, deciduous, and disposed in tufts, or bundles, on the adult branchlets, and with the cones rather large, pendulous, and composed of very deciduous and divergent scales. In the *Genus CEDRUS* (the Cedars) the leaves are in tufts on the adult parts, persistent and evergreen; with the cones erect on the upper surface of the larger branches, and the scales more or less deciduous after the seeds are ripe. From the true *Abietinæ* Professor Link has, in a very able article on the *Genus Pinus*, separated the *Genera*, comprising *Dammara*, *Cunninghamia*, and

Araucaria, into a New family, under the name of DAMMARACEÆ, not only on account of the breadth and expansion of their leaves, but from their containing spiral vessels sufficiently large to be easily perceptible in the leaves, produced on the older wood,* and from the inverted position of the female blossoms.

In the CUPRESSINÆ all the branches are scattered along the main stem, the lateral ones being densely furnished with slender branchlets clothed with scale-like leaves, mostly imbricated in four rows on the adult plants.

In the JUNIPERINÆ the fruit is a kind of berry (Galbulus), composed of a fleshy or fibrous juicy substance, covered with a glossy skin, and furnished externally with minute scales.

The TAXACEÆ, or Yew family, although not properly coniferous plants, as they do not bear cones, and have continuous inarticulate branches, the wood of which have ligneous tissue, marked with circular disks, are still classed with coniferæ in all popular enumerations, being considered as of the same character and general habit of growth.

* The spiral vessels are very small, and only perceptible in the young shoots of Pinus and Abies.

SUPPLEMENT

TO

THE PINETUM.

. In the following enumeration all the leading names are placed alphabetically, and the figures at the head of each species refer to the pages of the *Pinetum*, wherein the kind is to be found already noticed,

Gen. ABIES.* *Don.* The Spruce Firs.

The Ancients called the Silver Fir “*Abies*,” and the Spruce Fir “*Picea* ;” but by some inadvertence *Linnæus* reversed the names, and thus created great confusion in their nomenclature. The English and American writers still follow *Linnæus*, and apply the name *Abies* to the Spruces, and *Picea* to the Silver Firs: while nearly all the French, German, and other continental authors follow *Bauhin* and *Du Roi*, and reverse the terms; applying *Picea* to the Spruces, and *Abies* to the Silver Firs. *Pliny* called *Abies excelsa* “*Picea*,” and distinguished it from the Silver Fir, as the “*tonsili facilitata*,” on account of its fitness to be shorn, or clipped into hedges; and Professor *Link*

* The classic name “*Abies*” is said to be derived from *Abeo*, to rise or spring up; in allusion to its aspiring habit of growth; and which *Prior* so impressively describes in the following lines:

“There towering firs in conic forms arise,
And with a pointed spear divide the skies.”

observes that the true Spruces (*Abies*) approach nearest to that of *Pinus*; and that upon close inspection still more so, than at a first glance. He says, "For instance, if the leaves that stand singly are examined minutely, it will be seen that several of them have their surface grown together, and consequently they are in tufts, like the leaves of the true Pines; and as a proof that this is the case, it will be found that there is no upper surface on the leaves of the Spruces, but that the leaves present only the under-surface on both sides; as will be seen on comparing them with the leaves of the true pines. The seam where the leaves are joined may be distinctly seen, for it forms a line in relief on both sides of the leaves of the common Spruce; which is never the case when such line is formed by the mid-rib, because it is then either on the upper or under side. Some spruces have two leaves grown together, others four; the sheaths at the base of the leaves are not observable, but appear to have grown together in the footstalk." In addition, Professor Link points out the following differences between the leaves of the true Spruces (*Abies*) and Silver Firs (*Picea*). The leaves of the Silver Firs, he says, "do not grow together; but are single, and have the usual form of single leaves, the mid-rib being only visible on the under side; the upper one having a furrow down the centre of the leaf, is flat, divided at the point, and dark green, with two white stripes on the under side, one on each side of the mid-rib, and arranged in two or more rows along the shoots in a more or less lateral position."

Section I. VERA, OR THE TRUE SPRUCES; having needle-shaped leaves, placed all round the shoots, and pendulous cones; composed of numerous persistent thin scales, and seeds with a short stiff deciduous wing, and hard bony shell.

Page 2.

ABIES ALBA NANA, *Loudon*, the Dwarf White Spruce.

Syn. *Picea alba nana*, *Link*.

A dwarf bush, seldom growing more than 3 or 4 feet high, but very dense, and with a very neat appearance.

Page 3.

ABIES ALBA MINIMA, *Knight*, the Hedgehog-formed White Spruce.

Syn. *Abies alba echiniformis*, *Hort.*

„ *Picea alba echiniformis*, *Carriere.*

A very diminutive little bush, in general outline very much resembling a hedgehog: thickly clothed with spreading glaucous leaves.

It is the least of all the Spruces, and one of French origin.

Page 6.

ABIES EXCELSA DENUDATA, *Hort*, the Naked or Twig-branched Common Spruce.

Syn. *Abies excelsa virgata*, *Jacques.*

„ *Picea excelsa denudata*, *Carriere.*

This variety differs principally from the monstrous form of the Common Spruce, in the lesser branches being more twiggy, spreading, reflected, and a little more divided at irregular distances, and in the leaves being stouter, and laying more closely along the branchlets. It is of French origin.

Page 6.

ABIES EXCELSA EREMITA, *Knight*, the Solitary Red-branched Common Spruce.

Syn. *Abies miniata*, *Knight.*

„ *Picea excelsa eremita*, *Carriere.*

A variety with short stout branches, covered with a yellowish red bark, and mostly solitary, or free from laterals; the leaves are short, irregularly four-sided, somewhat two-rowed, from being reverted or bent backwards, and mostly blunt pointed.

It nearly approaches *Abies excelsa monstrosa*, but is much less branching, and with the bark generally of a much redder colour.

Page 6.

ABIES EXCELSA FINEDONENSIS, *Paul*, the Finedon Hall Spruce.

Syn. *Abies Finedonensis*, *Hort.*

A striking variety of the common Spruce, with all the younger leaves on the upper side of the shoots, at first of a pale yellow, or straw colour, as well as the young wood; but afterwards, as they get older, they change to a bronzy brown, and finally, when fully matured, become light green; while those leaves on the under side of the shoots and fully shaded branchlets are more or less green from the first.

This variety originated at Finedon Hall, in Northamptonshire, where it came up accidentally in a bed of seedling common Spruces.

Page 6.

ABIES EXCELSA GREGORYANA, *Paul*, Mr. Gregory's Dwarf Spruce.

Syn. *Abies Gregoryana*, *Low.*

„ “ *Gregoryi*, *Hort.*

A very dwarf variety, seldom growing more than one or two feet high, but with numerous small spreading and somewhat declining branchlets, thickly covered with short, stiff, needle-shaped leaves, placed obliquely all round the shoots, and of the same colour in all parts.

It was raised at the Cirencester Nursery, in Gloucestershire.

Page 6.

ABIES EXCELSA INVERTA, *Smith*, the Inverted-branched Common Spruce.

Syn. *Abies inverta*, *Smith.*

A pendulous variety of the common Spruce, in which the leading shoot straightens itself in the old wood, after the manner of the Deodar Cedar, but not so quickly; the lateral branches on old plants are as drooping as the weeping willow; and the leaves are longer, larger and of a brighter green than those of the common Spruce, of which it is only an accidental variety,

obtained by Mr. Richard Smith, of the St. John's Nursery, Worcester.

This kind appears, according to the drawing of the original tree, distributed by Mr. Smith, to be superior in its more drooping habit to all the other forms of the pendulous Spruce, of which there are several variations.

Page 6.

ABIES EXCELSA PYRAMIDALIS, *Hort*, the Pyramidal Common Spruce.

Syn. *Abies pyramidalis*, *Hort*.

„ *Picea excelsa pyramidalis*, *Carriere*.

This variety differs from the common Spruce, in having its branches ascending, and frequently as much collected together as those of the Lombardy Poplar.

A striking kind, on account of its compact pyramidal form ; of French origin.

Page 6.

ABIES EXCELSA STRICTA, *Loudon*, the Dwarf Conical Common Spruce.

Syn. *Abies excelsa conica*, *Keteleer*.

„ *Picea excelsa conica*, *Carriere*.

„ *Pinus Picea conica*, *Endlicher*.

A very neat dwarf variety, quite conical in shape, and not more than 3 or 4 feet in height, with the branches and branchlets erect and numerous. Leaves, slender, very closely compressed, bright green, marked along the sides with glaucous lines, and seldom more than half an inch in length, and terminating in a slender point. It is a very nice, compact variety.

Page 8.

ABIES OBOVATA, *Loudon*, the Siberian Spruce.

Syn. *Picea Sibirica*, *Fischer*.

The leaves of this kind are from three-fourths to an inch long ; and not three-tenths to half an inch in length, as misprinted in the Pinetum.

It is called "Kara-Schersae" by the Tartars, on account of its warted branches, and close appearance, and is a very different kind from the *Abies Orientalis*, which so frequently is substituted for it in the nurseries. It more resembles the common Spruce, but with very much smaller egg-shaped cones, which are quite obtuse at the ends, and seldom more than two and a half inches long, by one and a quarter wide.

Page 10.

ABIES PATTONI, *Jeffrey*, the Great Californian Spruce.

Syn. *Abies Williamsonii*, *Newberry*, not *Bridges*.

This fir grows under favourable circumstances to an immense size in the Oregon country, where not unfrequently trees are seen from 30 to 40 feet in circumference, four feet from the ground, and towering upwards some 250 feet, or more, with 100 feet of the trunk entirely free from branches. The timber is excellent, splits freely, and quite straight in the grain.

Dr. Newberry, in his Report on the Exploratory Expedition and Surveys from the Mississippi River to the Pacific Ocean, describes this Fir under the name of *Abies Williamsonii*; and more recently, Mr. Bridges, a collector in California, has been disposing of seeds of a very different kind under the same name; Dr. Newberry's sort being identical with *Abies Pattoni* (the Giant Fir of California), while that sold by Bridges under the name of *Abies Williamsonii* is the same as *Abies Mertensiana* (the Hemlock Spruce of California).

The *Abies Pattoni* occupies the most elevated parts of the Sierra Nevada, and seldom descends lower down than 100 yards from the line of perpetual snow, where in moist situations it forms a tree from 100 to 130 feet high, with a trunk sometimes 3 feet in diameter. Its branches spread out horizontally from the main stem, but become drooping towards the extremities, and with the branchlets thickly set round with solitary leaves about two-thirds of an inch long, grass green above, and pale green beneath, with those towards the points of the branchlets spreading, and silvery white below. The cones are about two inches long, and one in diameter, in the widest part; when

young, dark purple, but when old, pale brown. Male flowers, or catkins, two eighths of an inch long, and of a violet colour. The timber is of a reddish colour, close, and fine grained, and remarkable for its strength and durability, and as an ornamental tree for parks or pleasure grounds, or for general planting, no tree can be more recommendable; and, judging from the soil and situation in which it grows, it may be considered the hardiest of all the Californian kinds.

Mr. William Lobb found it in abundance, on the highest peaks of the Sierra Nevada, near the head waters of the north tributary of Feather River, and more to the south, towards Lake Bigler; forming immense trees, in habit of growth and general appearance much resembling the "Deodar," but being more thickly branched, and densely clothed with foliage; by far the handsomest tree.

Page 12.

ABIES SMITHIANA, *Loudon*, the Himalayan Spruce.

Syn. *Abies pendula*, *Griffith*.

„ „ *spinulosa*, *Griffith*.

„ „ *Thunbergii*, *Lambert*.

In the Himalayas this Fir is called "Morinda" (Nectar, or honey of flowers), on account of the resinous drops or tears found on the young cones and other parts of the tree, resembling honey. The mountaineers about Simla call it "Rai," "Re," "Rhai," and "Ray-ung;" and the people of Gurhwal, "Realla," "Rhei," and "Rayha," all variations in their dialects for *Fir tree*, *Prickly fir*, and *Wood pine*. It is also called by the same people "Roo," "Roo-ee," and "Row;" all signifying to weep or shed tears; either on account of its resinous drops, or the drooping appearance of the full-grown trees. Dr. Royle's barbarous local name, "Khutrow," should either be "Koodrow" (weeping fir), or "Koodrai" (prickly fir), its true vernacular names about Simla; and of which latter Dr. Griffith's temporary botanical one,* *spinulosa*, is a translation. In the Simla juris-

* The Babylonian confusion in the botanical nomenclature of Conifers may well reconcile mortals to the unity of names, however hard or pedan-

diction it is also styled "Row," and "Rai," and in the Kohistan of the Punjab, and in Kooloo, "Koodrow;" but in Kumaon and Gurhwal, "Morinda," and "Koodrai," are its more common appellations. The Chinese call it "Jo-bi-sjo" (common or native), and the Japanese "Torano-wo-momi" (Tiger's tail fir), on account of the long pendulous branchlets on old trees resembling the tail of a tiger; they also call it "Siro-momi" (white fir), in allusion to its timber being light coloured or almost white.

This Fir is very common above the Deodar forests, on the mountains of Cashmere, and stretches as far as Gilgit, its most northern habitat as yet ascertained; Dr. Griffith found it as far to the eastward as Bhotan, at elevations varying from 7,500 to 10,500 feet, a large and handsome tree. In the Himalayas it is the most graceful Fir met with, on account of its long drooping branchlets and great dimensions, which sometimes measure from 18 to 20 feet in girth, four feet from the earth's surface, and towers 150 feet or more into the heavens; but its wood is soft, open grained, and said, when converted into boats, not to last more than five or six years.

Section II. TSUGA—THE YEW-LEAVED SPRUCES; with flat leaves, glaucous below, and more or less two-ranked like those on the Hemlock Spruce.

ABIES ALCOQUEANA,* *Veitch*, the Alcock Spruce.

Leaves, solitary, six lines long, and half a line broad; linear, flat, narrow and obtuse, or emarginate at the points; deep green above, somewhat concave, and streaked with glaucous bands

tic, of the botanist; for the difficulty is older than the time of Pliny, who was as much puzzled to identify the Greek Pines as we are to make out some of the Conifers of learned professors, whose only resources in such matters are derived from mummy fragments and book lore.

* Botanical pedantry for Alcock, a man's name.

below; footstalks, twisted and placed on diamond-shaped cushions along the shoots. *Cones*, rather more than two inches long, and four in circumference; scales, cartilaginous, loose, obtuse-rhomboid and denticulate on the upper margins; bracteas, obsolete and linear; seeds, cinnamon-coloured, two lines long, with obovate wings four lines long.

A large tree, found on the sacred mountain, Fusi-Yama, in the province of Surunja, on the island of Nippon, in Japan, at an elevation of from 6,000 to 7,000 feet, where it forms a noble tree, with very small leaves, glaucous on the under side, and blunt or emarginate (*not mucronate*) at the points, and flat, not four-sided, like the true Spruces: wood used by the Japanese for light house-work.

It has been named in compliment to Rutherford Alcock, Esq., the British Minister at the Court of Yeddo, in Japan, and introduced in 1861, by Messrs. Veitch and Son, of Exeter.

Page 13.

ABIES BRUNONIANA, *Lindley*, the Indian Hemlock Spruce.
Syn. *Picea Brunoniana*, *Spach*.

The Gorkhalees, in Nepal, call this tree "Thingia" (Yew), or "Thingoori-Sulla" (fragrant Yew), and the Bhotiyas, "Semadoong," which has a similar meaning; but, according to Professor Don, it is better known under the name of "Silloo-Haterhee" (fragrant Fir), and found plentiful on the mountains of Gosainthan, in Nepal, where its bark is much used for the covering of sheds and out-houses.

It is quite hardy, and by far the handsomest of all the Indian Firs in a native state; but its timber is of a very inferior quality, and soon perishes if fully exposed to the weather.

Page 15.

ABIES CANADENSIS GRACILIS, *Waterer*, the Slender Hemlock Spruce.

This is a very singular-looking variety of the Hemlock Spruce, on account of its slender shoots, thin appearance, and small foliage. The leaves are linear, blunt-pointed, glossy

above and glaucous below; more or less obliquely placed all round the shoots, and seldom more than three lines long. Branches and branchlets very slender, little divided, more or less drooping at the ends, and rather thickly covered with the small, obliquely-placed leaves.

A very distinct and singular-looking variety, raised in the Nursery of Messrs. Waterer and Godfrey, at Knaphill, in Surrey.

Page 15.

ABIES DOUGLASII, *Lindley*, the Douglas Fir.

Syn. *Abies obliquata*, *Rafinesque*.

„ „ *obliqua*, *Bongard*.

The trunk of this Fir, for two-thirds of its diameter in the centre, presents a reddish colour, and yields but little resin or turpentine, but excellent timber; while the remainder or outer part is white, porous, tough, and not very durable.

It is called “Sas-coo-pas,” and “Paps,” by the Indians along the Columbia River, and on the N. W. coast of America, and which signifies, in their dialects, *Big tree*, and *Great fir*. Professor Rafinesque mentions a variety of the Douglas fir, under the name of *Abies mucronata*, *var. palustris*, as having been found by Lewis and Clarke, during their exploratory expedition in the Oregon country, growing in low or marshy grounds, only 30 feet high, but with spreading branches and a stem 2 feet in diameter.

ABIES DOUGLASII STANDISHIANA, *Gordon*. Mr. Standish's Douglas Fir.

Leaves, linear, flat, and rather distantly placed, more or less spirally all round the young shoots, but finally on the more adult ones somewhat irregularly arranged horizontally in two rows, pointing more or less obliquely outward, and from one to one and a half inch long, and about three-quarters of a line broad; they are nearly all of an equal length along the shoots, and blunt-pointed, except those nearest the ends of the principal shoots, which are somewhat acute; but all of them are of

a dark glossy green, and channelled along the mid rib on the upper surface, and with two sunken, silvery white, or glaucous bands below, between the thickened mid-rib and reflected margins, both of which are of a bright, glossy green, and tapering into a short, stout, more or less twisted footstalk inserted in a little shallow, but somewhat elevated circular socket at their base. *Buds*, few, scattered along the upper part of the shoots, and placed singly at the points; bluntly oval, and covered externally with broad, ciliated, or fringed scales of a dark brown colour, and free from resinous matter. *Branches*, rather numerous and irregularly placed along the main stem, spreading, and with the points somewhat elevated; leading shoots, long, rather stout and twig-like; branchlets few, rather long, straight, and more or less in two rows, placed somewhat obliquely along the principal branches, those of the weaker ones being a little declining, and jointed at the junction of each successive growth. *Bark*, on the younger parts smooth, ashy-gray, and furnished with numerous blisters filled with resinous matter, similar to that on the Douglas Fir. *Cones*, unknown.

This very remarkable kind was first observed by Mr. Standish in his Nursery at Bagshot, growing amongst some seedling *Abies Douglasii* raised from English saved seed, gathered from a Douglas Fir growing in close proximity to some large Silver Firs.

The original plant, which is now (1861) some 10 or 12 feet high, and about as many years old, has quite the habit and general outline of *Abies Douglasii*, and of which it appears to be, either an accidental seedling variety, or probably a hybrid between that kind and the Silver Fir (*Picea pectinata*), as its general appearance and history would seem to indicate.

It is a fine and distinct kind, on account of its large, dark, glossy green foliage, which is quite silvery below, and as large as those of the common Yew. The original tree is quite hardy, not being in the least injured by the late severe winter of 1860-1, although in an open and fully exposed situation in the Royal Nursery, at Bagshot.

Page 18.

ABIES MERTENSIANA, *Lindley*, the Californian Hemlock Spruce.
Syn. *Abies Williamsonii*, *Bridges*, not *Newberry*.

A large tree, found abundantly in the Oregon country, with a thin, dark-coloured bark, much divided by small longitudinal fissures on the stems of old trees, but somewhat smooth on the younger ones.

It is quite hardy ; but the timber is soft, white, and difficult to rive or split.

Seeds of this Fir have been largely disposed of in London, by Mr. Bridges, under the erroneous name of *Abies Williamsonii*, and with an equally false statement that it was the same as that described under that name by Dr. Newberry, in the 6th vol. of the United States Reports of Explorations and Surveys from the Mississippi River to the Pacific Ocean ; but which latter Fir is a very different kind, and one identical with *Abies Pattonii*, the Giant Fir of California, while that sold by Bridges under the name of *Abies Williamsonii* is the same as *Abies Mertensiana*, the Californian Hemlock Spruce, and called "Lucatzin" by the Indians in Upper California and in the Oregon territory.

ABIES MICROSPERMA, *Lindley*, the Small-seeded Japan Spruce.

Leaves, solitary, about one inch long, and three-quarters of a line broad, more or less arranged on the upper side of the branchlets ; linear, narrow, flattened, and terminating in a small prickle, or somewhat blunt point ; bright green above, and glaucous below. *Cones*, cylindrical, two and a quarter inches long, and three-quarters of an inch in diameter, and as broad at one end as the other ; scales, loose, rectangular, with the apices toothed ; bracteas, very small, ovate, and terminating in a spine or mucro. *Seeds*, pale, cinnamon-coloured, one line long, with ovate wings two lines long, sometimes acutely notched on the margins.

A tree growing from 40 to 50 feet high, with the under side of the foliage very glaucous ; found at Hakodadi and Youku-

hama, near Kanagawa, and to the south of Yeddo, on the island of Nippon, in Japan; and, according to Dr. Lindley, a beautiful tree, quite distinct, and unlike any other spruce, with delicate toothed cylindrical cones, as broad at one end as the other, and having the smallest seed of all the spruces (as the specific name implies); a statement which requires some qualification, as the seeds of the *White*, *Black*, and *Red American Spruces* appear to be quite as small.

Page 19.

ABIES TSUGA, *Siebold*, the Yew-leaved Japan Spruce.

Syn. *Micropeuce Sieboldii*, *Spach*.

„ *Abies Araragi*, *Loudon*.

The Japanese names for this Fir are “*Tsuga*” (Yew-leaved), and “*Araragi*” (Yew-like). It is much used for planting round their sacred temples, on account of its graceful appearance, and a variety of it, called “*Hime*,” or “*Fime-Tsuga*” (dwarf Yew-leaved), is much cultivated in pots by the Japanese in their town gardens, the plants never growing more than a yard high under such circumstances, and with much smaller foliage.

It is said to be a large tree, attaining 100 feet in height, at an elevation of 6,000 feet, on the sacred mountain *Fusi-Yama*, near Yeddo. The “*Fusi-Yama*” is the highest mountain in Japan (14,000 feet), with dense pine forests, chiefly composed of this kind, covering its sides to 8,000 or 9,000 feet of elevation.

ABIES TSUGA NANA, *Siebold*, the Dwarf *Tsuga* Spruce.

A little bush, seldom growing more than a yard high, with much smaller and shorter leaves than the species. It is much cultivated in pots by the Japanese, who call it “*Hime*,” or “*Fime Tsuga*” (the dwarf Yew-leaved).

ARAUCARIÆ—HAVING THE MALE AND FEMALE FLOWERS
ON SEPARATE PLANTS, AND AMENTS SOLITARY.

Gen. ARAUCARIA, *Jussieu*, with the seeds more or less attached.

Gen. DAMMARA, *Rumphius*, with the seeds free or unattached.

The Araucarias differ from the true Pines and Firs in having the sexes on separate trees; in the scales on the cones being one-seeded, and in the seeds being more or less attached to the scales. They, however, approach nearest to the *Genus* Dammara, in being dioecious; but differ from them in the form of the leaves and scales on the cones; also in having bracteas to each female flower, and in the seeds being more or less attached to the scales, and not free, as in the *Genus* Dammara.

Page 24.

ARAUCARIA IMBRICATA, *Pavon*, the Chili Pine or Monkey
Puzzle.

Syn. Quadrifaria imbricata, *Manetti*.

Dr. Pœppig says, such is the extent of the Araucarian forest, on the Chilian Andes, and the amazing quantity of nutritious seeds that each full-grown tree produces, that the Indians are ever secure from want; it yielding to those nomade nations a vegetable substance, that is found in greatest plenty, the more they recede from the whites. The kernels are dried after being boiled, for winter use; their time of ripening being towards the end of March, at which time the cones break up and fall to pieces, shedding their seeds on the ground, and thus bestowing a great boon on the poor Indians, which nothing but a small parrot divides with them. The Araucanians eat the nuts either fresh, boiled, or roasted, and distil from them a kind of spirituous liquor, and prepare a kind of flour and pastry from them, or dry them for winter store, and for trading to Valparaiso or Lima, where large quantities are consumed annually by the people. And there is but little doubt when the numerous young Araucarias which are now planting, or have been planted in Europe, become large, and arrive at a fruit-bearing state,

but that as great a boon will be given to future generations as that conferred on the present one by the fruit of the Spanish chesnut, which is now so largely consumed in all the towns and cities of Europe.

The Chili Pine was first introduced into England by Mr. Menzies, in 1795, and presented to Sir Joseph Banks, who planted one of the first plants at his residence, Spring Grove, near Hounslow, and sent the others to the Royal Gardens at Kew; and from which circumstance it formerly was called Sir Joseph Banks's Pine.

ARAUCARIA RULEI, *Mueller*, Mr Rule's Araucaria.

Leaves, from one-half to two thirds of an inch long, lanceolate, closely imbricated, and of a deep glossy green, and although acute pointed, not pungent. *Branches*, numerous, rigid, much divided, and symmetrical. *Cones*, nearly globular, with the scales an inch or more broad, and furnished with projecting narrow, lance-shaped points an inch long.

A fine bushy-headed tree, growing about 50 feet high, with the branches extending 30 feet in diameter, very rigid, tabular-formed, and six times more numerous than those on the Chili Pine (*Araucaria imbricata*), the whole of the branches being covered with beautiful dark glossy green leaves, closely and multifariously imbricated. It is found on one of the islets near New Caledonia, covering the summit of an extinct lofty volcano, and growing in the debris, which is as hard as adamant in summer, and deluged with rain in winter. It attains a less gigantic size than any of its congeners, and in habit bears more resemblance to the Chilian *Araucaria imbricata* than the Australian one called *Bidwillii*, from which it especially differs in its foliage, which, although acute, is not pungent or striolated.

This kind belongs to the true *Araucarias*, and was named by Dr. Mueller, of Melbourne, in compliment to Mr. John Rule, a nurseryman at Victoria, in Southern Australia. It will be found quite tender for the open air during an English winter.

Gen. ARTHROTAXIS, *Don*, the Jointed Yews.

Flowers, monœcious, or male and female on the same plant, but solitary, terminal, and separate; although sometimes the different sexes are found entirely occupying distinct plants.

Page 30.

ARTHROTAXIS CUPRESSOIDES, *Don*, the Cypress-like Jointed Yew.

Syn. *Arthrotaxis imbricata*, *Maule*.

This kind is very frequently misnamed *A. selaginoides* in the nurseries.

Page 30.

ARTHROTAXIS LAXIFOLIA, *Hooker*, the Open-leaved Jointed Yew.

Syn. *Arthrotaxis Donniana*, *Parker*.

„ „ *Doniana*, *Maule*.

A small tree, found in Van Diemen's Land.

Gen. BIOTA, *Don*, the Chinese Arbor-Vitæ.

The systematic name *Biota* is derived from "bi," two, and "otis," an ear; the common English one, Arbor-Vitæ (tree of life), is deduced from its China and Japan appellations. In Japan it is called "Hiba" (tree of life), and in China, "Hak" (everlasting life), on account of the plants being evergreen and of a beautiful bright green at all seasons of the year.

All the plants belonging to this genus formerly were included in that of *Thuja*.

Page 32.

BIOTA ORIENTALIS,* *Don*, the Chinese Arbor-Vitæ.

The Japanese call it *Fi-no-ki Hiba* (the compact tree of life),

* The kind misnamed *Chamæcyparis thurifera* by one of our great Botanical advisers, and so extensively distributed by lottery or otherwise, is identical with the Chinese Arbor-Vitæ (*Biota Orientalis*).

and the Chinese “Pian-fa Hlak” (everlasting life), on account of its bright green appearance at all seasons.

Page 33.

BIOTA ORIENTALIS SIEBOLDII, *Endlicher*, Dr. Siebold's Japan Arbor-Vitæ.

Syn. Biota Coræana, *Siebold*.

„ „ Orientalis incurvata, *Knight*.

„ Thuja Japonica, *Hort*.

„ „ stricta, *Hort*.

The Japanese name for this variety is “Kus-jak” (peacock's tail), on account of its close fan-like branchlets and compact general outline, resembling the tail of a peacock.

BIOTA ORIENTALIS ELEGANTISSIMA, *Rollisson*, the very elegant Chinese Arbor-Vitæ.

Syn. Thuja elegantissima, *Hort*.

A very neat dwarf variety, obtained some three or four years ago from seed, by Messrs. Rollisson, of Tooting. It has a much neater appearance and more erect habit than the Biota Orientalis aurea, with all the tips or points of the young shoots of a golden yellow colour during the summer and autumnal months.

Page 34.

BIOTA ORIENTALIS VARIEGATA, *Endlicher*, the Variegated Chinese Arbor-Vitæ.

The Japanese call this kind “Furi-hiba” (two-coloured tree of life), and “Suri-hiba” (variegated tree of life), on account of its having yellow and green branchlets intermixed all over the plant.

Page 34.

BIOTA ORIENTALIS PYRAMIDALIS, *Endlicher*, the Tall Chinese Arbor-Vitæ.

Syn. Biota Orientalis excelsa, *Hort*.

„ „ excelsa, *Hort*.

A fine tall pyramidal variety.

Page 35.

BIOTA ORIENTALIS MONSTROSA, *Carriere*, the Monstrous Chinese Arbor-Vitæ.

Syn. *Thuja monstrosa*, *Hort.*

„ „ *Sibirica monstrosa*, *Knight.*

This variety is remarkable on account of its short gross branchlets, which are few in number, much contorted, and frequently four-sided, from the thickened obtuse-ovate (rarely acute) leaves.

Page 35.

BIOTA PENDULA, *Endlicher*, the Weeping Arbor-Vitæ.

Syn. *Thuja intermedia*, *French Gardens.*

„ *Biota pendula intermedia*, *Hort.*

„ „ „ *recurvata*, *Hort.*

The Japanese names for this kind are “*Ito-suga*” (the cord-branched evergreen), and “*Fi-moro Hiba*” (the slender or drooping tree of life). The Chinese call it “*Hi-no-ki*” (the cord-branched or slender-formed shrub).

Gen. CEDRUS, *Loudon*, the True Cedars.

The word *Cedar* (Kedros of the Greeks) was not restricted by the ancients to the Cedar of Lebanon, but probably derived from the Arabic “*Kedr*,” worth or value, or its derivative “*Kedrat*,” strength or power, in allusion to the value of the wood. The Hebrew and Arabic names for the Cedar being “*Araz*” or “*Arz*,” and that of the Romans “*Arar*,” all from the Arabic root “*Araza*,” “*He was firm and stable, with roots deeply fixed in the ground*” (*Golius*). Other writers derive the name from “*Kaio*,” to burn, and “*drio*,” to sweat or distil, a kind of incense being obtained from the split wood, and burnt as a substitute for it in the East; Pliny also describes the process of making “*Cedria*,” from the cedar-wood, by distillation, and affirms its great value as a remedy for tooth-ache, for which cure our modern creosote is therefore but an old remedy revived. Again, others derive the name from *Cedron*, a brook

in Judea, the Cedar of Lebanon being formerly found plentiful along its banks.

Page 40.

CEDRUS DEODORA, *Loudon*, the Indian or Deodar Cedar.

The Deodar Cedar is called "Kelon," "Kolan," and "Kolain," in Gurhwal, all Sanscrit variations for Cedar, and its resinous products. In Kunawur it is known as the "Kelmung" by the Arian population, and about Simla as that of "Keloo," "Kelou," and "Keoulee," all vernacular terms for resin or its extracts, which, after its timber, is the most valuable product of the tree. The Hindostanee names "Devadaru," "Deodara," and "Dewar," are all derived from "Deva" or "Derva" (deity), and "daru" (timber or tree), and rendered by Sanscrit writers as "Tree of God," "Spirit-Bearer," "Devine-tree," and "Lord of Cedars." In Kafiristan the tree is called "Nokhtur," on account of its prickly or pungent leaves; and the people of Nepal, Cashmere, and Persia apply the same names and terms as those used by the hill people in India, and hold it in equal veneration. It has not yet been found in a natural state either in Eastern Nepal or Sikkim, although these gigantic sons of snow fringe the bare rocks and fix their roots where there appears to be very little soil, on the lofty passes from Nepal to Cashmere; and, according to Captain Pemberton (in his report on the Eastern Frontier), the most southern point to which the Deodar has yet been traced is the summit of the lofty ranges immediately west of Munepoor, an interesting region, which, with the Singfo mountains, south-east of Assam, carry the zone of perpetual snow farthest south in India. The Deodar also grows to extraordinary dimensions on all the higher mountains throughout the western Himalayas, and occurs in vast forests in Kunawur, Kumaon, Kooloo, Mussoorie, and on the Chumbra range in Kangara, at elevations varying from 6,000 to 12,000 feet. At Rashulah, in Kooloo, a forest exists with trees from 18 to 24 feet in girth, at four feet from the ground; and according to Dr. Jameson, two trees measured by him near Mulari, in Gurhwal, at an elevation

of 11,000 feet, one girthed 26 feet at three feet from the ground, and the other 27 feet; but, as a general rule, the finest trees always are found growing on the north side of barren mountains, in thin, poor soil, formed from the decomposition of granite, gneiss, mica, or clay-slate. Captain Johnson, in his Excursion to the Sources of the Jumna, states that the peaks on the northern side of the Boorung Pass were completely hidden by forests of gigantic Deodars, some of which measured 33 feet in circumference, and were from 60 to 70 feet without a branch. Here, too, the character of the timber was different from that grown in southern aspects and rich soil, it being more compact, harder, and of a deeper red, owing to its slow growth. The boat-builders along the Jhelum River distinguish its timber under the appellation of "Peliptur," and consider it the most valuable of all for its durability, both for naval and architectural purposes, the wood being compact, rather close-grained, long-fibred, highly resinous, deliciously perfumed, and lasting for a great number of years, even though much exposed to the elements, being but little affected by water, as boats built of its timber will last for twenty or thirty years, while those built of the "Cheer" (*Pinus longifolia*) only last six or seven.

It was first introduced into England in the year 1822, by the Honourable W. Leslie Melville, and produced its cones for the first time in Europe in 1858, at Bicton, the residence of the Baroness Rolle, in Devonshire.

Page 42.

CEDRUS DEODARA VIRIDIS, *Hort*, the Green-leaved Deodar.

Syn. *Cedrus Deodara tenuifolia*, *Knight*.

A very distinct variety, on account of its bright grass green colour and slender habit.

CEDRUS DEODARA ROBUSTA, *Hort*, the Robust Deodar.

Syn. *Cedrus Deodara gigantea*, *Knight*.

A robust-growing variety, with a very glaucous appearance.

Gen. CEPHALOTAXUS, *Siebold*, the Cluster-Flowered
Japan Yews.

Page 45.

CEPHALOTAXUS DRUPACEA, *Siebold*, the Plum-fruited Japan
Yew.

Syn. *Cephalotaxus coriacea*, *Knight*.

„ *Taxus Japonica*, *Hooker*, not *Loddiges*.

The Japan plants are more glaucous on the under side of the leaves than those found in China, and form trees from twenty to thirty feet high on the Kanagawa Mountains, a short distance to the south of Yeddo; but, as Mr. Fortune observes, in other respects the China and Japan plants are as like as two peas.

Page 47.

CEPHALOTAXUS PEDUNCULATA, *Siebold*, the Long-stalked Japan
Yew.

Syn. *Taxus Sinensis*, *Knight*.

This kind is called “Inu-Kaja” (wild yew) by the Japanese.

Gen. CRYPTOMERIA, *Don*, the Japan Cedar.

Page 52.

CRYPTOMERIA JAPONICA, *Don*, the Japan Cedar.

Syn. *Cryptomeria Japonica araucarioides*, } A slight variety,
 Hort } not worth distin-
„ *araucarioides*, *Hort*. } guishing.

The Chinese name for this tree is “San-Suga” (common evergreen), and the Japanese “Suga” (evergreen), or “Suga-Mats” (evergreen fir); a very slight variation is sometimes called “araucarioides” in the nurseries, on account of its supposed resemblance to *Araucaria Cunninghamii*

Page 54.

CRYPTOMERIA JAPONICA NANA, *Fortune*, the Dwarf Japan Cedar.Syn. *Cryptomeria Japonica pygmæa*, *Loudon*." " *nana*, *Lindley*.

A dense little bush, called "Fi-Suga" (dwarf evergreen) by the Chinese.

Gen. CUNNINGHAMIA, *R. Brown*, the Broad-leaved Chinese Fir.

Page 55.

CUNNINGHAMIA SINENSIS, *Brown*, the Chinese Fir.Syn. *Abies Major Sinensis*, *Plukenett*.

The Japanese name for this tree is "Lin-kiu-momi" (the wild or native fir of China), and the Chinese call it "San-Shu" (common evergreen), from its abundance all over China.

Gen. CUPRESSUS, *Tournefort*, the True Cypresses.

In the true *Cupressus* the leaves along the branchlets are mere scales, closely imbricated, or tiled over each other, and generally in four rows, with the branches always scattered along the stem, and the buds not scaly; *cones*, more or less rounded, and composed of from six to ten peltate woody scales, furnished with a projecting point or boss in the centre, and which scales, when the seeds are ripe, become dry and separate. All the species exude resin, but afford no turpentine.

The name *Cupressus*, according to some writers, is derived from the first species having been found plentiful on the Isle of Cyprus; but as the Cypress appears to have been known to the ancient Hebrews, Greeks, and Phœnicians, it is much more probable that the converse is the true statement, and that the island was named from the tree being found plentiful upon it.

Page 57.

CUPRESSUS ATTENUATA, *Gordon*, the Slender Branchleted Cypress.Syn. *Cupressus nivea*, *Hort*." " *Bregeoni*, *Hort*.

A fine glaucous bush, growing from six to ten feet high, with

numerous straight, small, slender spray, covered with obtuse pointed leaves, more or less spreading at their points, and rather distantly placed, especially towards the base of the branchlets.

This kind is found growing in moist situations, along the banks of mountain streams, in the Shasta country, in Northern California, and in the Oregon territory.

Page 58.

CUPRESSUS CORNEYANA, *Knight*, Mr. Corney's Chinese Cypress.

Syn. Cupressus gracilis, *Hort.*

„ „ cernua, *Hort.*

„ „ pendula, *Staunton.*

„ Juniperus Corneyana, *Hort.*

„ „ Chinensis Corneyana,* *Gordon.*

„ „ gracilis, *Hort.*

Leaves, scale-formed, in opposite pairs, very small, stem-clasping at the base, somewhat oval in shape, more or less pointed, rounded on the outside, with a slight depression in the centre, and closely imbricated in four rows; bright green on the adult branchlets, while those on the younger shoots are more acute, transparent on the margins, and with a slight glaucous appearance; branches, slender, alternate, and spreading, with the lower ones somewhat drooping, while those on the upper part of the plant are more or less ascending, and all of a reddish-brown colour; branchlets, long, slender, more or less pendent, cylindrical, quite straight, numerous, regularly two-rowed, and thickly covered with small, bright, glossy, green scale-like leaves, sometimes a little glaucous in appearance on the young shoots and shaded parts; *cones*, globular, mostly solitary, and terminal on the shorter branchlets, from

* I have to thank Mr. Robert Pince, of the great Exeter Nursery, for cone-bearing specimens of this Cypress, and for first drawing my attention to having placed it among the Cypress-like Junipers in the Pinetum; a circumstance which arose from the plant never having previously produced cones in England, and to the neglect of that infallible rule, "Wherefore by their fruits ye shall know them."

half to three-fourths of an inch in diameter, and generally composed of ten scales in opposite pairs; *scales*, irregularly shield-shaped, four or five-sided, and rising in the centre to a broad point, those nearest the apex of the cone being the smallest, most acute, and much more elevated than the rest; *seeds*, numerous under each scale, more or less angular, and furnished with a membranaceous wing on the margins; *seed-leaves* in twos.

A very elegant small tree, with slender drooping branches and branchlets, very similar in appearance to those of the female form of the Chinese Juniper (*Juniperus Chinensis*), especially when young and before fruiting.

It is found in Japan and the northern parts of China, where it is called "Fi-moro" (slender or pendulous), and no doubt the real weeping Cypress of China; Fortune's funebrial Cypress being so considered is an error.

Page 61.

CUPRESSUS KNIGHTIANA, *Perry*, Mr. Knight's Mexican Cypress.

Syn. *Cupressus elegans*, *Low*.

A fine, strong, growing kind, with the younger branches of a violet or glaucous colour, and the handsomest and hardiest of the Mexican kinds.

Page 62.

CUPRESSUS LAWSONIANA AUREA, *Waterer*, the Golden Variety of Lawson's Cypress.

A pretty variegated variety, with some of the lesser spray, and leaves of a golden yellow, scattered all over the plant.

It is a very desirable variety when well variegated, which originated in the nursery of Mr. John Waterer, at Bagshot.

CUPRESSUS LAWSONIANA ARGENTEA, *Lawson*, Lawson's Silver Variegated Cypress.

Another very desirable variety, with some of the lesser branchlets and leaves of a silvery white, intermixed all over the plant, so as to give it quite a variegated appearance.

It originated in the nursery of Messrs. Lawson, of Edinburgh.

Page 63.

CUPRESSUS LUSITANICA, *Miller*, the Cedar of Goa.

Syn. Cupressus Goensis, *Hort.*

“ „ Lusitanica elegans, *Rinz.*

” ” ” tristis, *Carriere.*

This species varies very much when raised from seed, producing plants quite dissimilar in appearance, some being quite twiggy and pendulous, while others are more branching and stiffer, and of all shades, from dull green to quite a glaucous white; hence the reason why so many different names are applied to this species and its variations when perpetuated by cuttings or other artificial means by unscrupulous dealers.

It is uncertain whether Goa or Cintra be its native spot, or whether both had it from China.

Page 65.

CUPRESSUS MACROCARPA, *Hartweg*, Mr. Lambert's Californian Cypress.

Syn. Cupressus Reinwardti, *Hort.*

” ” Lambertiana fastigiata, *Carriere.*

The finest of all the Cupresses, both for size and colour.

Page 66.

CUPRESSUS NUTKAENSIS, *Lambert*, the Nootka Sound Cypress.

Syn. Cupressus Tchugatskoyæ, *Hort.*

” Thuiopsis Tchugatskoyæ, *Carriere.*

A fine tree, growing in favourable situations from two and a half to four feet in diameter, and rising to a height of from 80 to 100 feet, with a straight stem, covered with rather a soft, smooth, dark-coloured bark, and well furnished with an ample branching and much-divided head; timber white and soft, but affording, in considerable quantities, a strong aromatic balsam, somewhat resembling the Canadian balsam in taste and appearance.

This kind is called "Tchugatskoy" (the Savin, or strong-scented Fir) by the Russian settlers on the Island of Sitcha, and about Nootka Sound, and was first introduced into England in 1851, through the Russian garden at St. Petersburg, under the improper name of *Thuopsis Borealis*, a name given to it by the late Dr. Fischer.

Page 69.

CUPRESSUS SEMPERVIRENS MONSTROSA, *Hort*, the Thuja-like
Common Cypress.

Syn. *Cupressus sempervirens thujæfolia*, *Carriere*.

„ „ *thujæformis*, *Parker*.

„ „ *thujæoides*, *Low*.

A fine tall variety of the common upright Cypress, with its branches strictly erect, and the branchlets flat, and regularly placed horizontally in two rows; *leaves*, scale-formed, regularly imbricated, and with the smaller spray very much resembling those of the common *Arbor-Vitæ*, but not near so dense.

CUPRESSUS TORULOSA, *Don*, the Twisted or Bhoton Cypress.

This tree is called "Gulla," "Gulrai," and "Kullain" by the mountaineers about Simla, all variations in their vernacular for Divine Tree, and according to Royle, it is called "Shujrut-ulhue-yut" (tree of life), and that its berries and branchlets are said to be a cure for all diseases, but that the profanation of its divine timber by any one to a useful purpose of economy would be sure to bring down upon the individual sudden death.* The Bhotiyas also hold it sacred, and call it "Surroo," or "Soorah-vyu" (name divine), while on the other hand the people of Kumaon, who seem to look more to temporal than

* Major Madden relates, while travelling in Kooloo and the Ladakh country, some of his people had begun to strip the cypress trees of their dry branches for fuel, when one of the conductors of his caravan came to him in great agitation, and implored him to command the men to desist, as the trees, he said, were sacred to the deities of the elements, who would be sure to revenge any injury done to them, by visiting them with heavy snows and bad weather on their journey.

spiritual things, do not appear to hold this Cypress in much religious veneration, but, on the contrary, use its timber freely in their house building, where it is considered very durable, but too flexible for any position where it has to sustain a heavy weight. The wood is yellowish red, very odoriferous, close-grained, tough, long-fibred, and very hard, the larger trees not unfrequently attaining an enormous size, some of them having a girth of twenty-seven feet, but at its greatest altitude it gets dwarfed down to a mere bush, and is nowhere to be found beyond from 7,000 to 8,000 feet of elevation, and like the Deodar, seems indifferent to geology, growing equally well on clay-slate, dolomatic limestone, gneiss, and mica-slate; but a dry and somewhat sunny site seems essential for its full development.

Page 71.

CUPRESSUS UHDEANA, *Gordon*, Mr. Uhde's Mexican Cypress.

Syn. Cupressus Schomburgkii, *Van Houtte*.

This kind has a number of small white specks irregularly scattered over the smaller spray, which forms scale-like glands on the backs of the minute leaves. It is one of the hardiest of Mexican kinds.

Page 72.

CUPRESSUS WHITLEYANA, *Hort*, the Upright Indian Cypress.

Syn. Cupressus Doniana, *Hort*.

A tall pyramidal tree, resembling the common upright Cypress, found plentiful in Nepal, and about as hardy as the Cupressus torulosa.

Gen. DAMMARA, *Rumphius*, the Amber Pines.

The Dammaras are distinguished from the true Pines and Firs by their broad, opposite, or alternate oblong-lanceolate, attenuated, leathery leaves, with parallel veins, and in the male and female flowers being solitary and on separate plants; they, however, approach nearest to the genus *Araucaria* in being dioecious, but from which they differ in the form of the scales,

in the absence of a bractea to each female flower, and in the seeds being winged only on one side, and free or unattached.

Page 77.

DAMMARA AUSTRALIS GLAUCA, *Low*, the Glauca Cowrie Pine.

A singularly glauca variety of the New Zealand Cowrie, introduced by Mr. Hugh Low, of the Clapton Nursery, in 1860.

Page 79.

DAMMARA OBTUSA, *Lindley*, the Obtuse-leaved Amber Pine.

Syn. *Dammara robusta*, *Moore*.

„ „ *Bidwillii*, *Hort*.

„ „ *Brownii*, *Hort*.

A large tree, with very variable leaves, found in New Caledonia and islands of the New Hebrides, growing frequently 200 feet high.

NEW OR DOUBTFUL KINDS OF DAMMARA,* OF WHICH LITTLE IS AT PRESENT KNOWN.

DAMMARA VITIENSIS, *Seemann*, a kind from the Viti or Feejee Islands.

DAMMARA OVATA, *Moore*, a kind with small roundish leaves, found in New Caledonia.

DAMMARA LONGIFOLIA, *Lindley*, a kind with long, broad leaves, found in the Feejee Islands, and probably not different from *D. macrophylla*.

* Dr. Seemann doubts whether the *Dammara Moorei* of Lindley is not a *Podocarpus*, owing to its "thin pendulous branches and opposite leaves," no real difference, he says, "having as yet been pointed out, if any such does exist, between a section of the *Podocarpus* with *Dammara*-like leaves and the *Dammaras*." He, however, seems unaware that one has its fruit a drupe, while the other is like a fir-cone, composed of scales.

Gen. GLYPTOSTROBUS, *Endlicher*, the Embossed Cypress.
Page 89.

GLYPTOSTROBUS HETEROPHYLLUS, *Endlicher*, Chinese Water
Pine.

Syn. *Taxodium mucronatum*, *Italian Gardens*.

„ *Cupressus disticha nucifera*, *Rinz*.

The Chinese name for this tree is “Then-tsong” (Water Pine), on account of its growing in places frequently inundated by water, and along the margins of rice fields.

Gen. JUNIPERUS,* *Linnæus*, the Junipers.

The trees and shrubs belonging to this genus generally produce the male and female flowers on separate plants, with the leaves mostly sharp-pointed, stiff, and usually in whorls of three; but sometimes they are mere scales, closely imbricated in four rows (as in the Cypress), or occasionally both kinds occur on the same plant at different stages of its growth. The male strobili are small, ovate bodies, and either placed at the ends of the branchlets or in the axil of the leaves, and with from four to eight one-celled anthers at the back of each scale. The fertile catkins consist of three fleshy scales, at first nearly concealed by imbricated bracts, from which they gradually rise, grow more succulent, and finally become consolidated into a small round, fibrous, spongy berry, enclosing from one to three bony seeds, but mostly three, which are convex on one side, and angular on the other. The berries (Galbules), when ripe, are for the most part either of a deep purple, black, or reddish brown, and when crushed, emit a strong resinous smell.

* Some writers derive the word *Juniperus* from “*Juniores pariens*,” the young and old leaves and berries being on the plant at the same time; but the plant having been used for purposes of abortion, obviously gives its true derivation from “*Juvenus*” and “*Pario*.”

Page 91.

Section I. OXYCEDRUS, OR THE TRUE JUNIPERS, with the leaves on the adult plants, spreading, jointed at the base, and glandless on the back.

Page 92.

JUNIPERUS CEDRO, *Broussonet*, the Azores Cedar, or Webb's Juniper.

Syn. Juniperus	Webbii,	<i>Carriere</i> .
„	„	Cedrus, <i>Carriere</i> .
„	„	Canariensis, <i>Knight</i> .
„	„	rufescens brevifolia, <i>Endlicher</i> .
„	„	Oxycedrus brevifolia, <i>Hochst</i> .

This kind forms a large bush or small tree in the Azores and adjoining islands ; but, according to Mr. Webb, it sometimes attains a much larger size in the warm valleys on the Island of Teneriffe and Canary Islands, where it becomes a middle-sized tree, with a stem 4 or 5 feet in girth ; it, however, is subject to great variation in size and appearance, being found at elevations varying from 1,000 to 5,000 feet on those islands ; at the latter of which elevations it becomes a bush, with its leaves very much reduced in size, and partially imbricated ; while in the lower and more sheltered situations it becomes a middle-sized tree, with long, slender, drooping branches and branchlets, little divided, but furnished with spreading distant leaves in threes ; the fruit-bearing ones being covered with small scale-like leaves only one line long. It is found plentiful on the Island of Teneriffe, the Canary Islands, and the Azores, where the inhabitants call it “ Cedro,” the French “ Cade,” and the Spanish “ Enebro.”

Page 94.

JUNIPERUS COMMUNIS SUECICA, *Loudon*, the Swedish Juniper.

Syn. Juniperus	fastigiata,	<i>Knight</i> .
„	„	communis fastigiata, <i>Loudon</i> .

In the forest of Fontainbleau, in France, this variety has attained the height of 50 feet, and produced most excellent timber.

Page 94.

JUNIPERUS COMMUNIS HIBERNICA, *Loudon*, the Irish Juniper.
Syn. Juniperus Suecica pyramidalis, *Manetti*.

A nice pyramidal variety, with short angular branchlets a little spreading.

Page 96.

JUNIPERUS MACROCARPA, *Sibthorp*, the Large Purple-fruited Juniper.

Syn. Juniperus communis macrocarpa, *Spach*.

This kind forms a large bush, or small tree, from 6 to 10 feet high, on the rocky coast of the Mediterranean, and is one of the handsomest of the tribe.

Page 98.

JUNIPERUS OBLONGA, *Bieberstein*, the Caucasian Juniper.
Syn. Juniperus communis pendula, *Paul*.

A large many-stemmed bush, found on the sub-Alpine mountains, in the Western Caucasus, and on the Taurian mountains in South-western Russia.

Page 99.

JUNIPERUS RIGIDA, *Siebold*, the Stiff-leaved Japan Juniper.
Syn. Juniperus communis, *Thunberg*, not *Linnæus*.

This kind forms a small tree, from 12 to 15 feet in height, on the sea-coast near Atame, on the east side of the Island of Nippon; the Japanese call it "Moro," or Sonora (slender and pendulous), on account of its drooping appearance.

It is quite hardy, and very ornamental.

Page 101.

Section II. SABINA. The Savin Junipers.

JUNIPERUS Densa, *Gordon*, the Dense or Bushy Indian Juniper.Syn. *Juniperus recurva densa*, *Hort.*" " " *nana*, *Hort.*" " *communis Indica*, *Madden.*" " " " *Alpina*, *Winterbottom.*" " " " *nana*, *Madden.*

Leaves, in whorls of three, half spreading, linear-lanceolate, very acute, pungent, of a pale yellowish green, and about the third of an inch long. Berries solitary, the size and shape of a small pea, dark blue, covered with a glaucous bloom, extremely resinous, aromatic, and mostly three-seeded; with three divergent furrows on the apex, connected at the extremities by an elevated scale, and thus forming a kind of platform on the top, with three lateral scales lower down the sides of the berry. The whole plant emits an exceedingly strong turpentine, or resinous smell, when bruised, and the berries ripen from August to November.

This is the Indian *Juniperus communis* of Major Madden, in his observations on the Himalayan Coniferæ, and the "Better," "Betr," "Bytr," and "Beetur," of the Bhotiyas; all vernacular variations in their dialect for yeast, or yielding yeast. In Kumaon it is called "Pumaroa," and, according to Dr. Jameson and Capt. Strachey, it is found near Bumpa and on the high mountains behind Mularee, at from 9,500 to 10,500 feet of elevation, but penetrating into the heart of the snowy mountains to 14,000 feet. It is also found plentiful on the Bhotan Alps, near the Netee Pass, forming a dense diffuse bush, from 3 to 6 feet high. Major Madden found it in abundance on the Glacier Moraines, west of Mana, at from 12,000 to 13,000 feet of elevation, where it is known to the Bhotiyas as "Churpinja." It was also found on the south face of the Wyrung Pass in Kuna-wur by Dr. Hoffmeister, at an elevation of from 11,000 to 12,000 feet, and Capt. Hutton found it on the Roo-Nung Pass; while its easternmost known position is at 10,000 feet on the Cheto

Binaik, at the south entrance to the Alpine valley of Byans, where the Bhotiyas call it "Lhala." In Joohar it occurs on the higher mountains, at elevations of from 11,000 to 13,000 feet, where it is designated "Checchia" by the hill people. It is much used in temples as incense, where among the apparatus used are censers, filled with the burning embers of this Juniper, which are muffled about and put through many evolutions amidst the ceremonial mummeries, by the priests; while on the other hand, the Bhotiyas, who are somewhat careless in such matters, and look sharply to this world, and things substantial rather than spiritual, pay little attention to this Juniper, except for the useful purpose of making yeast, and for which purpose the fruit is sold in the Indian Bazaars under the name of "Ubhul" and "Hoobair." It appears to be unknown on the Indian declivity of the Himalayas, and is a very distinct species, growing from 3 to 6 feet high, somewhat resembling *Juniperus squamata*, but not so wide spreading, and much taller in habit, and readily distinguished from that kind, and *Juniperus recurva*, by the pale yellowish-green tint of its foliage, and small three-seeded berries.

It is quite hardy, and frequently to be found in the nurseries misnamed *Juniperus recurva densa*, a name previously applied to the male form of the *Juniperus recurva*, but from which our present plant is easily distinguished by its dwarf, dense habit, and small, three-seeded fruit, while that of *Juniperus recurva* has but a single seed in each berry.

Page 102.

JUNIPERUS EXCELSA, *Bieberstein*, the Tall Crimean Juniper.

Syn. *Juniperus Sabina Taurica*, *Pallas*.

„ „ *excelsa glauca*, *Hort*.

This kind is not found indigenous, either in India or North America, as stated by Mr. Loudon, in the *Arboretum Britannicum*; the American *Juniperus excelsa* of Lewis and Pursh being the *Juniperus Occidentalis* of *Hooker*, while the *Juniperus excelsa* of Indian writers is the *Juniperus religiosa* of *Royle*, and both very distinct from the Crimean kind.

Page 107.

JUNIPERUS RELIGIOSA, *Royle*, the Incense or Sacred Indian Juniper.

Syn. *Juniperus excelsa*, *Madden*.

This Juniper is called "Shirkoo," or "Shirgoo," in Kumaon, and "Shoor," "Shoorpa," "Shookpa," and "Chokpa," all vernacular variations in the Bhotan dialects for *Incense*, or used for that purpose. It is also the Juniper Cedar of Indian travellers, who describe it as a large, dark, dense branched, stiff tree, growing in Eastern Nepal, from 60 to 80 feet high, while in Sikkim it only attains a height of from 15 to 20 feet, and at all very high and extreme elevations it becomes a creeping shrub or sprawling bush.

The Himalayan Cedar wood, so called, or miscalled, by Dr. Royle, is the timber of *Juniperus religiosa* (the *J. excelsa* of India), and not that of Sanscrit record, which latter is that of the Deodar Cedar. He also confounds *Juniperus religiosa* with *Cupressus torulosa*, and states that he found *Cupressus torulosa* growing at an elevation of 11,500 feet in Kunawur, on the borders of Chinese Tartary: a statement totally fallacious; for *Cupressus torulosa* has never been found in any part of India above 7,000 or 8,000 feet of elevation, and generally very much dwarfed or stunted in such situations; while on the other hand, *Juniperus religiosa* (*excelsa* of Indian writers) is seldom or ever found below 9,000 or 10,000 feet, in a native state, but up to 14,000 or 15,000 feet on the rearward ranges, where it becomes a creeping Alpine shrub, although at an elevation of 9,000 or 10,000 feet it is a large tree from 70 to 80 feet high.

Page 109.

JUNIPERUS SABINA, *Linnæus*, the Common Savin.

Syn. *Juniperus Sabina cupressifolia*, *Aiton*.

„ „ *cupressifolia*, *Hort*.

„ „ *Sabina horizontalis*, *Hort*.

These names are mostly applied to the female form of the

common Savin, which in general grows much taller and more robust than the male form of the species.

Page 110.

JUNIPERUS SQUAMATA, *Don*, the Scaly-leaved Himalayan Juniper.

The Bhotiyas call this species "Parpinja" (creeping Juniper); and, according to Dr. Hoffmeister, an intoxicating drink is prepared from the berries of the ground Juniper, which is known all over the Busehur part of the Himalayas by the name of "Theloo" (spirituous liquor). Its Khasiya names are "Bledara" and "Bindhara," and signify yeast, or yielding yeast; for which purpose the sprigs are used in Upper Kumaon in the preparation of yeast, as the aromatic crushed berries of the common Juniper is in Europe to flavour gin. The yeast is made by moistening coarse barley flour, which is made into a ball, and covered all round with the leaves and sprigs of this Juniper; the whole is then closely wrapped up in a blanket, and kept warm, where in three or four days it ferments, and becomes fit for use. It is also used in the distilling arrack from rice, the berries having but little bitter in them.

Dr. Royle, in his usual abandoned style, affirms that the *Juniperus squamata* reaches almost to the line of perpetual congelation; whereas in the Thibetian climate it falls short of that line by about 4,500 feet; and on the southern face of the Himalayas, by more than 2,000 feet of the snow line.

Page 112.

JUNIPERUS THURIFERA, *Linnaeus*, the Spanish Juniper.

Syn. *Cedrus Hispanica*, *Tournefort*.

„ *Juniperus oophora*, *Kunze*.

A dense, conical-growing tree, which attains a height of from 30 to 40 feet on the mountains of Seville, in Spain.

Page 114.

JUNIPERUS VIRGINIANA CAROLINIANA, *Loddiges*, the Carolina Red Cedar.

Syn. Juniperus Caroliniana, *Du Roi*.

„ „ Virginiana sparsifolia, *Hort*.

„ „ „ stricta, *Hort*.

A fine, upright variety, with a compact habit, and leaves more or less spreading, acerose or lanceolate, decurrent, scattered, and glaucous on the upper surface. Berries very small, oval, and of a violet colour when ripe.

A desirable variety, on account of its upright habit.

Page 114.

JUNIPERUS VIRGINIANA DUMOSA, *Carriere*, the Bushy Red Cedar.

Syn. Juniperus dumosa, *Hort*.

„ „ Scholli, *Hort*.

„ „ Schotti, *Hort*.

A bushy variety of the Red Cedar, with a roundish spreading, but compact head, largest at the top, and with the leaves either very acute-pointed, spreading and straight or scale-formed, and closely imbricated in four rows.

Page 113.

JUNIPERUS VIRGINIANA PENDULA, *Hort*, the Weeping Red Cedar.

There are three forms of the pendulous Red Cedar to be found in collections; one the *male* form, another the *female* one, and the third a *bright-green* one. The male kind has shorter and much more numerous branchlets, while the female one has longer, slenderer, and much fewer branchlets; the third variety is of a beautiful light glossy green, and the handsomest of the three. The female form is generally known in collections as Chamberlain's Weeping Red Cedar, while the green one is called Juniperus Virginia pendula viridis.

Section III. CUPRESSOIDES. THE CYPRESS-LIKE
JUNIPERS.

Page 116.

JUNIPERUS CHINENSIS FÆMINA, *Linnæus*, the Female Chinese
Juniper.

Syn. *Juniperus struthiacea*, *Knight*.

” ” ” *fæmina*, *Hort*.

” ” *cernua*, *Roxburgh*.

This kind is called “*Fi-noki-suga*” (slender evergreen) by the Japanese, and “*Inuki*” (wild or native shrub) by the Chinese.

Page 121.

JUNIPERUS CÆSIA, *Carriere*, the Glaucous-blue Juniper.

Syn. *Juniperus fragrans*, *Paul*.

” ” *fœtidissima*, *Hort*.

” ” *Occidentalis*, *Hort*, not *Hooker*.

” ” *alba*, *Knight*.

” ” *dealbata*, *Loudon*, not *Douglas*.

Leaves, opposite with the primordial ones, and those on the lower parts of young plants, and frequently some of those on the points of the outer shoots, more or less spreading, lanceolate, and very glaucous on the upper surface; while those on the upper and more exposed parts, as well as those on the adult plants, are much shorter, broader, very closely imbricated, in four rows, of a glaucous grey, and terminating in a more or less blunt point. Branches and branchlets alternate, more or less ascending, numerous, very compact, and forming a pyramidal or somewhat cylindrical head, a little spreading at the top.

A fine compact shrub, or small tree, growing from 10 to 15 feet high, somewhat cylindrical in outline, with numerous more or less ascending branches, thickly furnished with small glaucous spray; all parts of which emit a strong and rather disagreeable odour when bruised.

It is quite hardy, and said to be found in the north of Europe, according to *Carriere*.

Page 117.

JUNIPERUS OCCIDENTALIS, *Hooker*, the Great Western Juniper.

Syn. *Juniperus pyriformis*, *Lindley*.

„ „ *Californica*, *Carriere*.

„ *Cupressus bacciformis*, *Knight*.

A tree 40 feet high, with a stem 3 feet in diameter; found very abundant in California.

It is quite hardy, but emits a strong disagreeable odour when bruised.

Page 118.

JUNIPERUS PHŒNICEA FŒMINA, *Linnæus*, the Female Phœnician Juniper.

Syn. *Juniperus Langoldiana*, *Hort*.

„ *Cupressus Devoniana*, *Hort*.

A small tree or large bush, found growing amongst the rocks along the shores of the Mediterranean.

Page 119.

JUNIPERUS PHŒNICEA LYCIA, *Loudon*, the Lycian Juniper.

This is the Cypress-leaved Cedar of the Greeks, which produces the "Olibanum," used as incense in religious ceremonies on the continent.

Page 122.

JUNIPERUS SPHÆRICA GLAUCA, *Fortune*, the Glaucous Chinese Juniper.

Syn. *Juniperus sp., nova*, *Fortune*.

Mr. Fortune states that this kind is found in the North of China, growing from 15 to 20 feet high, with quite a white or glaucous appearance, even at a great distance; but his having neglected to bring home dried specimens in fruit, leaves its identity still in a doubtful state, as the young plants are yet too small for that purpose.

Gen. LARIX, *Link*, the Larches.

The word Larch, according to some authors, is derived from the Celtic word "Lar" (fat), on account of the tree producing an abundance of resinous matter, which flows externally down its stem, and which Ovid describes in the following lines—

"The new-made trees in tears of amber run,
Which harden into value by the sun."

But, according to other writers, the name is derived from the Welsh "Llar" (wide spreading), on account of its horizontally extended branches. Its Spanish name, "Alerce," and its Italian one, "L'Arice," are derived from the Arabic "Al-araz," a kind of cedar, or coniferous tree.

Page 126.

LARIX GRIFFITHII, *Hooker*, Dr. Griffith's Sikkim Larch.

This species occurs very common in Bhotan, Sikkim, and in the valleys of Eastern Nepal, close up to the snow-line, at from 9,000 to 12,000 feet of elevation, but is never found in the sub-Himalayas. The leaves, which redden and fall in November, are in more scattered fascicles than those of the common Larch, and brighter green when young; cones large, reddish-purple; when young, erect, and abounding in tears of white resin.

It forms an inelegant thinly-branched tree, growing only 30 or 40 feet high, and called "Sah" by the Bhotiyas.

LARIX KAMTSCHATICA, *Carriere*, the Kamtschatka Larch.

Syn. *Pinus Kamtschatica*, *Endlicher*.

„ *Abies Kamtschatica*, *Rupprecht*.

„ „ *Sibirica*, *Fischer*, not *Ledebour*.

„ „ *Fischerii*, *Ledebour*.

This kind resembles *Larix Dahurica*, but has much larger cones, with the scales very differently shaped. It has been much confounded by Russian writers with *Larix Dahurica*, but may at once be distinguished from that kind by its much larger cones.

It is found in Kamtschatka, at St. Paul's and St. Peter's, varying very much in stature and appearance, according to soil and elevation, but mostly a tolerable-sized tree.

Page 127.

LARIX LEDEBOURII, *Rupprecht*, Dr. Ledebour's Larch.

Syn. Pinus Larix, *Pallas*.

The Russian name for this tree is "Listvennetsa" (crown of leaves).

A large tree, growing from 80 to 100 feet high, on the Atai Mountains.

Page 128.

LARIX LEPTOLEPIS, *Siebold*, the Japan Larch.

The Japanese call this tree "Fus-ji" (buds crowned with leaves) and "Fusi Matsu" (pine full of buds), also "Rax-jo-sjo" (common deciduous fir), and the Chinese call it "Karamats," which also means a pine full of buds, or one with knotty branchlets.

It is found at as high an elevation as 9,000 feet, on the sacred mount, Fusi-Yama, in Japan, where it becomes a mere shrub 2 feet high.

Gen. LÆCHHARDTIA, *Archer?*, the New South Wales
Læchhardtia.

This new genus is separated from *Frenela*, principally on account of its having *eight* valvate scales on the cone, instead of *six*, as in that Genus.

LÆCHHARDTIA MACLEAYANA, *Archer?*, Mr. Macleay's New
South Wales Læchhardtia.

Syn. *Frenela variabilis*, *Carriere*.

„ *Araucaria* sp. (New South Wales), *Shepherd*.

The primordial leaves on young plants are spreading, linear or lanceolate, rather thickly placed, and sometimes reflected; but soon afterwards are succeeded by acicular or scale-formed ones, regularly placed in threes or fours, and finally, when the

plants become fully matured, they are entirely scale-formed, ternate, very small, and closely placed; branches scattered along the main stem, horizontal, short, and not very dense; the lateral ones and smaller spray are more or less angular or triangular, jointed, glaucous, and with the joints tolerably distant; *cones*, oval or somewhat conical, and composed of 8 valvate scales; scales or valves thick, rounded and convex on the outside, glossy-brown, pointless, smooth, and swelling at the apex, which is slightly reflected.

A handsome erect pyramidal-shaped tree, approaching in appearance when old to some of the Australian Araucarias, but with much shorter and slenderer branches.

It is found but sparingly in New South Wales, where it attains a height of from 60 to 70 feet.

Gen. LIBOCEDRUS, Endlicher, the Incense Cedars.

This Genus principally differs from Thuja, in having the scales on the cones placed face to face, and not overlapping each other; and in the seeds being unequally two-winged.

Page 131.

LIBOCEDRUS CHILENSIS, *Endlicher, the Chili Arbor-Vitæ.*

Syn. Thuja cuneata, *Dombey.*

„ Cupressus thyoides, *Pavon, not Linnæus.*

A fine tree, growing from 60 to 80 feet high, found on the Andes of Chili.

Gen. NAGEIA, Gærtner, the Rib-leaved or Fascicled Catkin Yews.

Page 137.

NAGEIA JAPONICA, *Gærtner, the Japan Laurel, or Nagi.*

The leaves of this kind very much resemble those of the Alexandrian Laurel (*Ruscus racemosus*) in general appearance, being oblong-lanceolate, and from 2 to 3 inches long, and from one half to an inch broad in the widest part; male flowers in fascicled aments on a common footstalk. It is found both in

China and Japan, forming a tree from 30 to 60 feet high, and is called by the Chinese "Tceu-pe" (Bamboo-like), on account of its many-ribbed leaves, resembling those of the Chinese bamboo.

NAGEIA JAPONICA VARIEGATA, *Gordon*, the Variegated Japan Laurel.

This fine variety has its variegated leaves variously marked, with pale yellow stripes running their whole length like a ribbon.

It is a handsomely marked variety; first sent by Mr. Fortune, from Yeddo, in Japan, to the Royal Nursery at Bagshot, in 1861.

Page 138.

NAGEIA LATIFOLIA, *Gordon*, the Broad-leaved Nagi.

Syn. *Dammara pinnata*, *Parmentier*.

A nice small evergreen tree, growing from 20 to 30 feet high, found on the lofty mountains in Eastern Bengal.

NAGEIA OVATA, *Gordon*, the Ovate-leaved Japan Nagi.

Leaves, mostly in opposite pairs, but sometimes alternate, broadly egg-shaped, or rounded towards the base, and with a short, blunt, brown, marcescent point; they, however, vary very much, both in size and shape, some being oblong-lanceolate, others elliptic, while the greater part of them are more or less orbicular or broadly ovate, and from $1\frac{1}{2}$ to $2\frac{1}{2}$ inches long, and from 1 to $1\frac{1}{5}$ inch broad at the widest part; of a deep glossy green above, and light green below; quite entire, flat, leathery, and marked on the under side with numerous longitudinal nerves, very slightly elevated, except towards the base of the leaf, where they are more developed, and unite in the short, but broad footstalk of the leaf. Branches, alternate or opposite, spreading, rather slender, and more or less declining; lateral ones, not numerous, but spreading; male catkins in fascicles on a common footstalk. Fruit unknown.

A fine evergreen bush or small tree, found in the neighbourhood of Yeddo, by Mr. Fortune, who first sent plants of it to Mr. Standish, of the Royal Nursery at Bagshot, in 1861.

NAGEIA OVATA VARIEGATA, *Gordon*, the Variegated Ovate-leaved Nagi.

A handsome variety, with leaves variously marked, some being striped with broad, others with narrow bands, of a creamy-white colour, running the whole length of the leaves like a ribbon; while other leaves are half white and half green, some again are broadly striped with green down the middle, and margined with creamy-white; but all of them differ more or less in the manner and form of variegation, all over the plant.

It was sent to the Royal Nursery at Bagshot by Mr. Fortune, from Japan, in 1861.

Gen. PHYLLOCLADUS, *Richard*, the Celery-leaved Pines.

Page 141.

PHYLLOCLADUS RHOMBOIDALIS, *Richard*, the Celery-topped Pine.

Syn. *Phyllocladus serratifolia*, *Noisette*.

„ *Taxus serratifolia*, *Noisette*.

A beautiful tree, found on the humid mountains of Tasmania, particularly at Cape Van Diemen.

Page 142.

PHYLLOCLADUS TRICHOMANOIDES, *R. Brown*, the Maidenhair-like *Phyllocladus*.

A graceful tree, growing from 60 to 80 feet high, with a trunk sometimes from 14 to 16 feet in circumference, near the ground. The timber is hard and heavy, and the bark is used by the natives of New Zealand for dyeing their mats of a red or black colour.

Gen. PICEA, *Don*, the Silver Firs.

Pliny and the ancient writers originally called the Silver Fir "Abies" (which name may have been a corruption of *Albus*, the leaves of the Silver Fir being white when seen from below), but which name Linnæus afterwards changed to that of *Picea*, on account of the abundance of resinous matter produced by the tree. Again, more recently Professor Link proposed the restoration of its older name, under that of *Abies vera*; a suggestion which has been followed by nearly all the continental writers, but rejected by those in England and America; hence the reverse of names applied to the Silver Firs and Spruces, on the continent, to those used in this country and America.

Section I. BRACTEATA—or those kinds with the bractæas extended beyond the scales on the cones.

Page 146.

PICEA APOLLINIS, *Rauch*, the Apollo Silver Fir.

Syn. *Picea Cephalonica Apollinis*, *Gordon*.

„ *Abies Apollinis*, *Link*.

„ „ *pectinata Apollinis*, *Endlicher*.

„ „ *Reginæ Amaliæ*, *Heldreich*.

„ „ *Peloponnesiaca*, *German Gardens*.

„ *Pinus Apollinis*, *Antoine*.

„ „ *Orientalis*, *Friwaldsky*, not *Linnæus*.

„ „ *Peloponnesiaca*, *Haage*.

This kind agrees in several respects both with the common Silver Fir (*Picea pectinata*), with which Professor Endlicher associated it in his "Synopsis Coniferarum," and the Cephalonian Fir (*Picea Cephalonica*) with which I myself identified it in the "Pinetum," and with which kind it entirely agrees both in its cones and habit of growth, but differs more or less in the shape and size of its leaves, which appear to be nearly intermediate between those of the two species, some of the leaves being long, linear; flat, and more or less rounded at the ends, and of a glossy deep green above, with a slight furrow

along the upper surface, and furnished with two faint hollow glaucous bands on the under side, separated by the keeled mid-rib, which, with the thickened but seldom reflected margins, are pale green; the larger leaves are frequently more than an inch long and one line broad, with the ends always more or less bifid or rounded, slightly glaucous beneath, and very thickly arranged on the upper side of the branchlets, on dilated foot-stalks, more or less twisted, while the lesser foliage, which are always on the more slender and twiggy branchlets, are lance-shaped, very acute pointed, less densely placed along the spray, more scattered round the shoots, much narrower, quite glaucous below, and seldom more than half an inch in length on the adult trees, and very similar to those of *Picea Cephalonica*, but both forms and all modifications from the one to the other are generally produced on the same branch; much, however, depending on the vigour or position of the branches and the age of the trees, as to the shape and size of the foliage. The male catkins are in groups, surrounding the summit of the adult shoots, and sessile, while the cones are axillary, solitary, and always erect on the upper side of the top branches, very resinous externally, and quite similar to those of *Picea Cephalonica* in size and shape, with the scales an inch or more wide, incurved and rounded on the upper margin, bractees projecting beyond the scales, ear-shaped, flat, reflected, mucronate, and lacerated laterally on the edges, and with a long central reflected point.

A handsome tree, rarely exceeding 60 or 70 feet in height, and 2 or 3 feet in diameter, with an ample spreading head and smooth stem, covered with a pale yellowish brown bark, scarcely or ever having on its surface any of those blisters containing resinous matter, so commonly to be found on all the Silver Firs. It is found plentiful in many parts of Greece, forming extensive forests, at elevations varying from 1,500 to 4,000 feet, but more particularly in the southern parts, such as on the sacred Apollo and on the celebrated and mighty mounts called Parnassus and Olympus, where in olden times mankind went in crowds to be deluded, and giants piled up in hopes to scale

heaven. It is also found in the Morea, near Tripolizza, once the Turkish capital, in central Arcadia, particularly on the eastern part of the plain, at the foot of Mount Mænalus, a region which even the ancients characterized as the "abode of winter." It is quite hardy, but, like the Mount Enos Silver Fir, suffers greatly (especially when young) from the late spring frosts, which so frequently destroy the young growth on many of our Silver Firs.

Much difference of opinion still exists among writers with respect to whether the Apollo Fir should be considered a distinct species, or only as a variety of the common Silver Fir, or Mount Enos Silver Fir. Professor Endlicher considered it as only a variety of the *Picea pectinata*, while Professor Link made it a distinct species, and in which opinion he has been followed by M. Carriere and some others, while I myself at first referred it to *Picea Cephalonica*, a kind to which it certainly is very nearly related, and frequently confounded with; but after a careful examination of ample and excellent original specimens presented to me by Professor Link, I have come to the conclusion that he is right in considering it a distinct species, especially as it is always reproduced true from seed, and retains its great diversity of foliage, the larger portion of which is generally more or less linear, dense, and blunt-pointed, while the remainder is more or less dagger-shaped, very acute pointed, thickly placed all round the shoots, and like those of *Picea Cephalonica*.

The Apollo Fir has recently been brought into notice by M. Heldreich, of Athens, under the new name of *Abies Reginæ Amaliæ*, or the New Arcadian Fir, and with a statement that it was first obtained in 1856 by M. Schmidt, the Curator of the Royal Gardens at Athens, who at the time considered it new, and distinct from the Grecian, or Apollo Fir, and gave to it the name of *Pinus Peloponnesiaca*, but which name M. Heldreich afterwards changed to that of *Abies Reginæ Amaliæ*, in compliment to the Queen of Greece, a great patron of gardening. M. Schmidt, however, had never seen the tree, nor was any one aware of its peculiarities until Messrs. Balsamaki and

Origoni, two inspectors of the royal forests, reached Khryso-vitsi, a village in central Arcadia, near Tripolizza, in the Morea, where, at an elevation of about 1,500 feet above the sea, they discovered a whole forest of this fir, stretching in a north-westerly direction towards Alonistena, and covering Mount Rhoudia and the adjacent valleys, thus having an extent of above three leagues in length and one and a half broad. It is called by the country people "Hemeron Elaton" (tame fir), on account of the lower situations of its forests on the mountains, and the ready means for obtaining its timber for domestic purposes, while on the other hand they apply the term "Agrion Elaton" (wild fir) to the *Picea Cephalonica*, because of the inaccessible and lofty places where it in general grows. The inhabitants living near the large fir forests are in the habit of ringing the stems, or cutting off the heads of the more vigorous trees at about two or three feet from the ground, for the purpose of obtaining the resin which flows from the wounds and upper part of the stumps, and which stumps afterwards throw out a number of symmetrically-formed shoots, the principal ones of which eventually, if undisturbed, become leaders, and form stems frequently twenty feet high and one foot in diameter.

Page 143.

PICEA BALSAMEA, *Loudon*, the Balm of Gilead Fir.

Syn. *Peuce balsamea*, *Richard*.

A small pyramidal tree, found in Canada and the more northern states of America, which produces the Balm of Gilead, or Canadian Balsam.

Page 149.

PICEA GLAUDESCENS, *Gordon*, the Glaucous Mexican Silver Fir.

Syn. *Abies Tlapalcatuda*, *Roezl*.

„ „ *hirtella*, *Roezl*.

This kind has a very glaucous appearance, with cones of a bright green, when young and unripe.

Page 149.

PICEA NOBILIS, *Loudon*, the Noble Silver Fir.

Syn. *Pinus nobilis*, *Douglas*.

This majestic tree, according to *Douglas*, forms vast forests upon the mountains of Northern California, and produces excellent timber. He says, "I spent three weeks in a forest composed of this tree, and day by day could not cease to admire it." The Indians along the Columbia River and on the north-west coast call it Tuc Tuc (Big Tree).

Page 150.

PICEA NORDMANNIANA, *Loudon*, Professor Nordmann's Silver Fir.

Syn. *Abies candicans*, *Fischer*.

„ „ *pectinata leioclada*, *Link*.

„ „ *Picea leioclada*, *Lindley*.

„ „ *leioclada*,* *Steven*.

„ *Picea pectinata leioclada*, *Hort*.

„ *Pinus Picea*, *Tournefort*, not *Willdenow*.

„ „ *Nordmanniana*, *Steven*.

The young shoots of this Fir are quite smooth and glossy (hence the name *leioclada*), and its timber is said to be much harder than that of the common Silver Fir. A truly beautiful tree, from its leaves being very silvery beneath, and the great abundance of its large, purplish strobiles, which are produced on the upper side of the branches.

* Much confusion has arisen with regard to the names applied to the different Pines and Firs found in the Russian empire, from the want of harmony among the botanists and travellers in that country, the consequence of which has been either the misapplication of old names, or the giving of new ones to well-known kinds, as is clearly indicated with respect to the present kind, and some others from that country.

Page 152.

PICEA PECTINATA PYRAMIDALIS, *Hort*, the Pyramidal Common Silver Fir.

Syn. *Abies pectinata pyramidalis*, *Carriere*.

„ *Picea pyramidalis*, *Hort*.

„ „ *taxifolia pyramidalis*, *Makoy*.

The branches of this variety of the common Silver Fir are turned upwards on the main stem, but with their ends and branchlets curved and more or less drooping.

It has a narrow, conical head resembling that of the Lombardy Poplar in outline, but with a drooping appearance when closely inspected. A very striking variety, of German origin.

Page 152.

PICEA PECTINATA FASTIGIATA, *Booth*, the Upright Common Silver Fir.

Syn. *Abies pectinata fastigiata*, *Carriere*.

„ „ *Metensis*, *Hort—Paris*.

„ „ *pyramidalis*, *Metensis*, *Carriere*.

„ *Picea pectinata Metensis*, *Hort*.

„ „ *Metensis*, *Hort*.

Leaves short, slender, frequently curved upwards, and much smaller than those of the species.

This singular variety originated at Metz, in France, and differs from the preceding German one in having its branches and branchlets more erect, slenderer, thinner, and much compressed, and in the full-grown trees having an erect pyramidal shape like the Lombardy Poplar.

Section II. BREVIBRACTEATA, or those kinds with the bracteas shorter than the scales, and hidden in the cones.

PICEA CILICICA, *Rauch*, the Cilician Silver Fir.

Syn. *Abies Cilicica*, *Carriere*.

„ „ *Tchugatskoi*, *Lawson*.

„ „ *Sibirica alba*, *Fischer*.

„ „ *Pichta alba*, *Carriere*.

„ „ „ *Fischeri*, *Loudon*.

„ „ *Rinzi*, *Hort—Paris*.

„ *Picea Sibirica alba*, *Hort*.

„ „ *Pichta alba*, *Hort*.

„ „ „ *longifolia*, *Hort*.

„ „ *Rinzi*, *Hort*.

„ *Pinus Cilicica*, *Kotschy*.

„ „ *Tchugatskoi*, *Fischer*.

„ „ *Sibirica alba*, *Fischer*.

„ „ *Pichta longifolia*, *Hort*.

Leaves, densely and irregularly arranged in two rows, and more or less horizontally placed along the branchlets, but somewhat scattered all round the leading shoots; and from one to one inch and three quarters long, and rather more than one line broad, quite straight, linear, flat, long and narrow, with the ends bidented, and the base twisted; of a dark shining green on the upper side, and quite glaucous below, except on the mid-rib and margins, which are of a deep green colour. Branches mostly in whorls, thickly set on the stem, from the base upwards, the lower ones being horizontal, but as they ascend the stem, they get gradually shorter and more elevated at their points; branchlets and smaller spray, slender, rather short, flat, much divided, spreading, and thickly set in two horizontal rows along the branches. Male catkins on footstalks, cylindrical, and rounded at the ends; cones erect, from 7 to 8 inches long, and nearly 2 inches in diameter, of a cylindrical

shape, rounded at the base, and obtuse at the apex, with a concave depression in the centre, and so numerous on the upper side of the top branches, as to give that part of the tree quite the appearance of a large candelabrum full of wax-lights; scales concave, closely imbricated, and of a leathery texture, from three quarters to an inch broad, and one inch deep on the exposed part, with the upper margin transversely elliptic, quite entire on the edges, and very thin; bractees small, strap-shaped, a little contracted at the top, crenated along the edges, and furnished with a central point, and entirely hidden by the scales; seeds soft, full of turpentine, somewhat three-cornered, and furnished with an oblique wedge-shaped wing.

A handsome tree, of a pyramidal shape, thickly furnished with vertical branches to the ground, and growing fifty feet high, and three feet in diameter, with the stem covered with a thick ashy-grey coloured bark, full of deep fissures when old.

It is found on the Taurian and Caramanian mountains in Asia Minor; M. Kotschy discovered it in one of the valleys of the Taurus, to the north-west of the great Cilician defile, called Gullah Boghos, and on the southern slope of the great mountain chain called Bulgardah, in Cilicia, at an elevation of from 3,000 to 7,000 feet above the sea, mostly in immense forests, or intermixed with the Cedar of Lebanon. The Mongolians call it "Chadsura" (green and white), and the late Dr. Fischer considered it only a variety of the Siberian Pitch Fir (*Picea Pichta*), a kind which it certainly very much resembles, but differs from in having very much longer cones, and leaves more silvery beneath.

It is quite hardy, and called "Tchugatskoy" (strong-scented Fir) by the Russians.

Page 155.

PICEA GRANDIS, *Loudon*, the Great Californian Silver Fir.

Syn. *Pinus grandis*, *Douglas*.

„ *Abies grandis*, *Lindley*.

„ *Picea Parsonsii*, *Hort. America*.

„ „ sp. (Vancouver's Island), *Bridges*.

Leaves, linear, flat, channelled above, emarginate, or with a small notch at the point, and all irregularly arranged horizontally in double rows on each side of the branchlets, in a more or less pectinate manner, on short twisted footstalks; those forming the upper tiers on each side of the shoots are much the shortest, and little more than three quarters of an inch in length, while the majority of those comprising the under series are of various lengths, and nearly double that of the upper ones, but not broader, and all of a deep glossy green above, and with two silvery white bands below, between the mid-rib and thickened margins, both of which are of a bright green colour. Branches mostly in horizontal whorls, flat, and spreading; branchlets glossy, smooth, rather short, compact, and placed laterally in two horizontal rows, and when young, with quite a varnished appearance. Cones erect, cylindrical, and from $3\frac{1}{2}$ to 4 inches long, and $1\frac{1}{2}$ inch broad; scales broad transversely, crescent shaped, rounded on the exposed part, incurved at the edges, closely placed, tolerably equal in size, downy externally, deciduous when fully matured, and with the small fringed dorsal bractees entirely hidden by the overlapping scales; seeds small, angular, soft, and with persistent wings, three quarters of an inch long.

A noble tree, always found in moist valleys, growing from 150 to 200 feet high, and very much resembling the common Silver Fir when old, but differing in the young shoots having a glossy or polished appearance, and in its much smaller cones, with hidden dorsal bractees.

It was first discovered by Douglas in Northern California, but more recently Mr. Bridges and others found it in British Co-

lumbia and Vancouver's Island. Douglas originally sent its seeds to England in 1831, and from which but very few plants were raised, and of which plants the only one that seems to have survived was one originally in the fine collection of conifers belonging to the Rev. Theodore Williams, of Hendon, and which, after passing through different hands, was at last purchased by the late Earl of Harrington, and planted at Elvaston Castle, in Derbyshire, and from which plant all the earlier ones to be found in collections were derived. No collector seems again to have fallen in with or found the true *Picea grandis* of Douglas until very recently; when Mr. Bridges collected a quantity of its seeds on Vancouver's Island, and in British Columbia, and sent them to London for sale, in the months of March and December, 1859, first under the name of *Picea* sp. Vancouver's Island, and lastly as that of *Picea grandis*. This kind must not be confounded with a new and very distinct species sent to Messrs. Low and Co., of the Clapton Nursery, by their collector, Mr. William Lobb, from California, under the misapplied name of *Picea grandis*, and which kind I propose calling *Picea Lowiana*, in order to distinguish it from the true *Picea grandis* of Douglas, as much confusion has arisen both in the Nurseries and in private collections from the misapplication of the name (*grandis*) by Mr. Lobb. The original plant of *Picea grandis*, raised from Douglas's seed in 1831, and now growing at Elvaston Castle, places the identity of the true *grandis* beyond any doubt.

It is quite hardy, not having been in the least injured by the winter of 1860-1; but the plants suffer more or less from the late Spring frosts, as they commence growing early in the season, which is not the case with either *Picea Lowiana* or *amabilis*.

PICEA LOWIANA, *Gordon*, Messrs Low's Californian Silver Fir.

Syn. *Picea grandis*, *Lobb*, not *Douglas*.

„ „ *lasiocarpa*, *Hort*.

Leaves long, linear, flat, and quite straight, channelled above,

more or less twisted at the base, rather distant and strictly arranged in two horizontal rows along the shoots, and from $1\frac{1}{2}$ to $2\frac{1}{2}$ inches long, and one line broad, blunt pointed, or with a slight notch in the centre, particularly those on the adult trees, and all of a dull glaucous green above, but much paler, and with two faint glaucous bands below, between the elevated mid-rib and thickened margins. Branches in distant whorls, horizontally placed, and rather slender; branchlets more or less opposite, quite smooth, slender, laterally placed in two horizontal rows, and of a pale yellowish colour. Cones from $3\frac{1}{2}$ to 5 inches long, and $1\frac{1}{2}$ inch broad; erect, cylindrical, obtuse at the point, rounded at the base, of a pale brown colour, and emitting numerous transparent resinous tears externally, and very similar in shape and general appearance, but somewhat larger than those of *Picea grandis*; scales broad, more or less crescent-shaped, rounded on the outer side, incurved round the margins, woolly on the exposed parts, tolerably equal in size, and deciduous when fully matured; bractees very minute, dorsally placed at the base of the scales; broader than long, somewhat rounded, wedge-shaped on the upper part, toothed or fringed round the edges, and with a prolonged sharp point in the centre; seeds angular, soft, and with a broad hatchet-shaped persistent wing.

A noble tree, frequently upwards of 250 feet in height, and 5 or 6 feet in diameter, found in British Columbia and Northern California, but always in valleys or along the alluvial banks of rivers.

This new and very distinct species appears to have been first discovered by Mr. William Lobb, who mistook it for the *Picea grandis* of Douglas;* an error easily accounted for, on account of the great similarity of the cones and usual habitat of the tree, both kinds being always found in damp valleys, or along the alluvial banks of rivers, and never as mountain trees. It is to be found in nearly all the Nurseries, and in many private

The original plant of *Picea grandis*, at Elvaston, raised in 1831, from Douglas's seeds, proves the identity of the true kind.

collections, under the misapplied name, *grandis*, owing to Mr. Lobb having transmitted a large quantity of its seeds to Messrs. Low and Co., of the Clapton Nursery, under the wrong name, from Upper California. It, however, is easily distinguished, even when in a young state, from the true *Picea grandis*, by its very much longer leaves, which are of a dull or pale green on the upper side, and with the two glaucous bands beneath, not very distinctly marked; the branches are also more regularly placed in distant whorls round the stem, and the branchlets more spreading, slender, regular, and much lighter coloured, and not glossy like those of the true *grandis* when young. This kind is sometimes misnamed *Picea lasiocarpa*, either through ignorance or intention, and is quite hardy, never getting in the least injured, even by the late Spring frosts.

It has been named in compliment to Messrs. Low, of the Clapton Nursery, who introduced it so abundantly from California.

Page 157.

PICEA PINDROW, *Loudon*, the Upright Indian Silver Fir.

Syn. *Abies densa*, *Griffith*, in part.

„ *Picea Herbertiana*, *Madden*.

The specific name, Pindrow, given to this Fir by Dr. Royle, is derived from one of its native names, but which Major Madden calls a “local and barbarous term,” and proposes to alter to that of *Herbertiana*, in compliment to the late Captain Herbert, who had done so much for the natural history of the Himalayas; the rejection of which proposition, and the continuance of Royle’s crude name, can only be justified on account of the Babylonian confusion that already exists among the names given to Indian conifers, and which alone should reconcile one to the name, however hard or barbarous. The Indian term, “Pindrow,” according to Major Madden, refers to its very peculiar mode of growth, the tree being tall and cylindrical, or slightly tapering, like the Lombardy Poplar; but, according to Dr. Wilson, it is derived from the Sanscrit words, “Pind,” incense, and “Roo” or “Row,” to weep, from the

numerous resinous tears found on the cones and other parts of the tree. It is also called "Kala-rai" (Black Fir) by the people along the snowy mountains, who also apply the term "Kala-bun" (Black Forest) to the woods where it alone grows; from the dark green of the leaves on the upper surface giving the trees a sombre yew-like appearance at a distance, and which causes the mountaineers constantly to confound it with the "Thooner" (Yew), and which no doubt led Dr. Wallich (who trusted too much to local names) to give to this Fir the name of *Taxus Lambertiana*, he not having at the time seen its cones, or even probably the living tree. Its Khasiya name is Ragha, and the Bhotiyas call it "Woomun" (purple cone).

This tree forms dense forests on all the great spurs of the Kumaon Alps, from 7,500 to 9,000 feet of elevation, but under proper conditions it will ascend and descend above and below these elevations, always, however, exhibiting its preference for northern and western aspects. Mr. Winterbottom found it plentiful on the Peer Punjal in Cashmere, flowering in April and May, and ripening its cones, which are of the same rich purple colour as those of *Picea Webbiana*, in October and November of the same year.

PICEA VEITCHII, *Hort*, Veitch's Silver Fir.

Syn. *Abies Veitchii*, *Lindley*.

Leaves, linear, flat, and all thickly arranged in an incurved manner on the upper side of the branchlets; obtuse or emarginate at the points, keeled, glaucous, concave, and streaked with white on the under side, and varying from 6 to 12 lines long, and three quarters of a line broad. Branches rather stout, with the cones from $2\frac{1}{4}$ to $2\frac{1}{2}$ inches long, and $2\frac{3}{4}$ inches in circumference: somewhat cylindrical, blunt pointed, and erect on the upper side of the branches; scales rounded on the upper part, flattened and half-moon shaped, with a foot-stalk below; bracteas hidden, but even in length with the scales, wedge-shaped, and terminating in a little point or prickle; seeds testaceous, 2 lines long, angular, crested, and

with a short acinaciform wing, having a very narrow curved crest at the base.

A fine tree, growing from 120 to 140 feet high, found on the sacred Mountain Fusi-Yama, in the province of Surunga, on the Island of Nippon, in Japan.

It looks like a small-coned Silver Fir, but is essentially different from that or any other Silver Fir, and has been named after Mr. J. G. Veitch, a plant collector in Japan, who sent seeds of it to England in 1861.

Page 160.

PICEA WEBBIANA, *Loudon*, Captain Webb's Indian Silver Fir.

This is the Black Fir, found so abundantly by Dr. Griffith on the Bhotan Mountains, at an elevation of from 11,000 to 12,500 feet, where it forms a lofty tabular or flat-headed tree, with the foliage of the deepest green on the upper surface, but quite silvery beneath. It is called "Rai-Sulla" (fragrant Fir), and "Gobrea-Sulla" (fragrant or Indigo Fir), by the Gorkhalees, on account of an indigo or purple pigment being extracted from the young cones. On the Choor Mountains the inhabitants call it "Kilounta," which is a Sanscrit compound for end of the Pine tree, and denotes the fir-cone, so conspicuous in this species, on account of its beautiful purple or violet colour. In Kooloo, and on the Chumbra range, it is styled "Tos," and forms extensive forests, where, notwithstanding the whiteness of the under surface of its leaves, the general effect of the Himalayan Silver Fir is exceeding dark and gloomy—more even than the Indian Cypress (*Cupressus torulosa*), which from a distance it a good deal resembles; but still the thorough-going black Pindrow Fir, with its tall columnar outline and boughs, much less bushy or pendulous, and its longer leaves, must be pronounced the handsomest tree of the two.

The Indian Silver Fir is the most abundant one in Sikkim, and forms vast forests in Bhotan, at elevations from 11,000 to 12,000 feet. In Japan it is called "Uro-Siro" (leaves white beneath), and "Sjura-momi" (white, or Silver Fir).

Gen. PINUS. *Linnaeus.* The True Pines.

The name *Pinus* is by some writers derived from the Greek word "pion" (fat), in allusion to its resin or tar; the Sanscrit word "Peena" having exactly the same meaning; while others derive its origin from our own *fine*, or the Latin *finis*, as well as *pin*, in allusion to the slender leaves, which are aptly designated "needle leaves" (Nadelholz) by the Germans, and "acerosa" by botanists. Others, again, derive *Pinus* from the Celtic word "pen," a mountain, in allusion to the site where these trees grow, and state that it is wholesome to walk in such groves, where the air is impregnated with the balsamic properties of "the Pine that breathes forth fragrance from every wound;" but the dry air and soil selected by Pines are more probably at the root of the salubrity. The term Fir most probably was derived from *fire*, the wood being very combustible, Pine forests, in ancient times, being particularly subject to be destroyed by that element, generally through the carelessness of man, but not unfrequently either by lightning or the action of the sun's rays upon the dry, decayed wood of fallen trees.

Section I. BINÆ, or those kinds having only two leaves in each sheath.

Page 162.

PINUS AUSTRIACA VARIEGATA, *Lawson*, the Variegated Austrian Pine.

A variety having some of its leaves straw-coloured, and intermixed with the ordinary green ones on the same branchlets.

PINUS DENSIFLORA, *Siebold*, the Dense Flowered Japan Pine.

Syn. *Pinus rubra*, *Siebold*, in part.

„ „ *Japonica*, *Antoine*.

Leaves, in twos, needle-shaped, slender, straight, acute-pointed, and rough at the edges; convex on the outer part, concave on the inner one, and somewhat glaucous on both faces, and from

3 to 5 inches long. *Sheaths*, rather short, and formed of several broad scales, fringed or jagged at the ends. *Buds*, covered with imbricated, non-resinous scales. *Branches*, rather long, spreading, and of an ashy-gray colour; branchlets slender and rather smooth. *Cones*, terminal, very numerous, and either solitary or in sub-vertical clusters, on short, stout foot-stalks, more or less pendent, and about one and a half inch long, rounded at the base, and with the upper part regularly tapering into a conical point. *Scales*, of a linear-oblong shape, slightly thickened along the upper part, rhomboid on the exposed part, closely imbricated, small, and nearly all of an equal size; with a slender, elevated line across the middle of the lozenge-shaped termination, and a little prickle in the centre, which soon disappears. *Seeds*, very small, with a membranous wing of a rusty-brown colour, regularly striated with reddish-brown, and three times the length of the seed; seed-leaves short and mostly in sixes. It forms a tree 40 feet high, with a cylindrical stem covered with a smooth bark, of an ashy-gray colour, and, according to Professor Zuccarini, it is found all over Japan, but is most rare in the southern provinces, where it is generally cultivated. In the middle part of the empire it is planted in masses, and forms vast woods, along with *Pinus Massoniana*, which it very much resembles. In the south, near Nagasaki, only a few solitary specimens are seen, generally 40 feet or more high, while in the more northern parts it is very abundant, especially on the mountain slopes, to a height of from 1,000 to 2,000 feet of elevation. It also occurs at the bottom of valleys, and on the road from Ohosaka to Yeddo, where there are large thickets of it, and *Pinus Massoniana*, standing above the marshy rice-fields; the latter species is, however, more especially a valley plant, becoming a mere bush at a height of 3,500 feet above the sea. The timber is of great excellence, and its resin is largely in request for the plasters and salves used by the Japanese in healing wounds and sores. In pulmonary complaints they also hold it to be a specific, and make India and China ink from the soot of both *Pinus densiflora* and *P. Massoniana*.

The Japanese call this Fir "Mc-Matsu" (female Pine), on

account of its producing such an abundance of its little cones on the adult trees, and which are smaller than those of *Pinus sylvestris*. They also name it "Aka-Matsu" (red Pine), on account of its timber being of that colour, and very similar to that of *Pinus Sinensis*, with which it is frequently confounded.*

Page 165.

PINUS HALEPENSIS, *Aiton*, the Aleppo Pine.

Syn. *Pinus Alepensis*, *Hort.*

This Pine is called "Peukas" by the Greeks throughout Attica, who use its resin to preserve their wine from becoming sour, and put the cones into the wine-barrels for a similar purpose.

Page 168.

PINUS LARICIO PENDULA, *Carriere*, the Pendulous Corsican Pine.

This variety has its branches and branchlets more or less pendulous.

PINUS MASSONIANA,† *Siebold*, not *Lambert*, Mr. Masson's Japan Pine.

Syn. *Pinus sylvestris*, *Thunberg*, not *Linnaeus*.

„ „ *rubra*, *Siebold*, in part.

Leaves, in twos, needle-shaped, stiff, straight, acute-pointed,

* With respect to the error in the "Pinetum" of having made *Pinus densiflora* synonymous with the Stone Pine (*Pinus Pinea*), I may state that both kinds are found in China and Japan, and that a quantity of the seed of the latter kind was some years ago sent to Europe from Japan, and widely distributed, under the name of *Pinus densiflora*; but of course by mistake, and out of which circumstance arose the oversight of making the names synonymous, the gravity of which has so offended a not over-amiable editor, who is himself equally answerable for the very same mistake, but anterior to that in the "Pinetum;" for it will be found so recorded, as far back as the year 1850, in vol. v. p. 219, of the *Journal of the Horticultural Society*.

† The *Pinus Massoniana* of Mr. Lambert is, as stated by Professor Don (who examined the original specimens in Mr. Lambert's Herbarium,

and rough at the edges; from 4 to 6 inches long, convex on the outer side, concave on the inner one, and somewhat glaucous on both faces; sheaths rather short, and formed of several broad scales, fringed or jagged at the ends. *Buds*, covered with imbricated, non-resinous scales. *Branches*, rather long, spreading, and covered with an ashy-gray bark; branchlets, rather smooth and slender. *Cones*, solitary or sub-vertical, very numerous on old trees; from two to two and a half inches long, of a conical shape, rounded at the base, regularly tapering to the point, and on short, but somewhat reflected footstalks; scales small, woody, linear-oblong, slightly thickened on the upper, or exposed part, obliquely diamond-shaped, closely imbricated, nearly all of a size, and with a slender, elevated line across the middle, having in its centre a little prickle, which soon falls off. *Seeds*, very small, with a membranous wing of a rusty-brown colour, and three times the length of the seeds; seed-leaves rather short and in sixes.

According to Professor Zuccarini and Dr. Siebold, this tree is easily distinguished, at first sight, from *Pinus densiflora*, with which it is frequently found intermixed, and forming vast woods in the middle part of the island of Nippon, especially about Yeddo, but it is more or less common all over Japan and China. It, however, is more a valley plant than *Pinus densiflora*, and is frequently to be found standing about the marshy rice-fields, attaining a height of 40 or 50 feet, but becoming a mere shrub at an elevation of 3,500 feet, on the more exposed sides of the mountains.

The Japanese call it "Aka-matsu" (red Pine), on account of its red-coloured timber; "Kuro-matsu" (black Pine), from its

brought home from the Cape of Good Hope by Mr. F. Masson), identical with the *Pinus Pinaster*; as also were the plants afterwards raised from seeds, obtained from the Cape of Good Hope by Mr. Lambert, and where, according to Mr. Francis Masson, it was originally introduced from China by the Dutch. The Cluster Pine is also frequently brought home from China and Japan, under the name of *Pinus Massoniana*, as is also *Pinus Sinensis*, but which latter is easily distinguished from the former by its slender grass-green foliage.

sombre appearance when old; and "Wo-matsu" (male Pine), on account of the numerous clusters of male aments produced on the adult trees.

The Chinese apply the term "Kok-sung" (black Pine), on account of its dark-green appearance; and "Sjo-mats" (common Pine), from its abundance. Siebold also mentions two varieties of it as being cultivated in the gardens of Japan, one called "Siruga-matsu" (the variegated Pine), which is much cultivated on account of its singular appearance; the other the "Fitots-matsu" (single-leaved Pine), a very singular-looking variety, only found in cultivation, with the leaves in each sheath so united all their length as to appear but one leaf. Timber excellent, and of a deep-red colour.

Page 173.

PINUS MUGHO ROTUNDATA, *Link*, the Round-coned Mountain Pine.

Syn. *Pinus sylvestris brevifolia*, *Link*.

„ „ „ *humilis*, *Link*.

A small upright tree, found on the Tyrol mountains.

Page 176.

PINUS PINASTER, *Aiton*, the Star, or Cluster Pine.

Syn. *Pinus maritima*, *Knight*.

„ „ *Massoniana*, *Lambert*, not *Siebold*.

The Japanese call this Pine "Wo," or "O-Matsu" (male Pine), and "Kuro-Matsu" (black Pine), and the Chinese, "Kok-sung-mats" (common black Pine), on account of its dark appearance. The Pin d'Edough of the French is also *Pinus Pinaster* (or a slight modification of it, probably owing to climate), with the cones more or less exuding resinous tears externally, and found abundantly in the great forest of Edough, near Bona, in Algeria.

Page 178.

PINUS PINASTER MINOR, *Loudon*, the Lesser-coned Cluster Pine.

Syn. *Pinus maritima trocata*, *Knight*.

This variety is distinguished by its smaller cones and taller habit of growth. It is the "Pin de Mars," "Pin Pinsot," and "Pin à Trochet" of the French, and sometimes produces its cones in large clusters of more than one hundred in number.

Page 180.

PINUS PINEA FRAGILIS, *Du Hamel*, the Thin-shelled Stone Pine.

Syn. *Pinus fragilis*, *Hort*.

This variety is much cultivated in Italy on account of its thin-shelled seeds, and known as the "Tarentina Pine."

Page 184.

PINUS SYLVESTRIS* *Linnaeus*, the Scotch, or Wood Pine.

Syn. *Pinus sylvestris*, *Escarena*, *Pinetum Woburnense*.

„ „ „ *Caramanica*, *Pinetum Woburnense*.

Section II. TERNATÆ, or those kinds having three leaves in each sheath.

Page 187.

PINUS AUSTRALIS *Michaux*, the Southern, or Swamp Pine.

Syn. *Pinus Palmiensis*, *French Gardens*.

„ „ *Palmieri*, *Manetti*.

This Pine is called by the American settlers in the Southern States "the Broom Pine," and by those in the Northern States "Red Pine," "Pitch Pine," and "Yellow Pine;" while the French and Italians call it the "Palm Pine."

* The *Pinus sylvestris* of the ancient Roman naturalists is our *Pinaster*, our *Pinus sylvestris* being their *Pityida*. By simply *Pinus* they always intended *Pinus Pinca*, or the Stone Pine.

Page 190.

PINUS BUNGEANA, *Zuccarini*, the Chinese Lace-bark Pine.

The Chinese call this Pine "Kieu-lung mu" (the skin, or bark-shedding Pine), on account of its shedding its outer bark every season. Why it is called the Lace-bark Pine is not very evident.

Page 193.

PINUS CANARIENSIS, *Smith*, the Canary Island Pine.

The leaves of this Pine are sometimes in twos, but more frequently in threes; and the trees ascend on the slope of the Peak of Teneriffe to 7,200 feet of elevation; but the zone above 2,400 feet is wholly occupied by vast forests, mingled with the Juniperus Cedro of *Webb*. The inhabitants call it Teâ, and consider its timber excellent.

Page 195.

PINUS GERARDIANA, *Wallich*, Capt. Gerard's Indian Pine.

The Shipkees in Thibet call this Pine "Kuminche" and "Sunoubur-Sughar" (lesser sweet-nut Pine), an apt name enough, for the tree seldom grows more than 50 feet high. Mr. Winterbottom found it as far north as Gilgit; but neither Drs. Hooker nor Griffith ever seem to have discovered it in a native state either in Eastern Nepal or Sikkim; and Capt. Gerard states its highest altitude on the southern exposures of the inner Himalayas to be from 10,850 to 12,300 feet, generally associated with *Cedrus Deodora*. Dr. Griffith found it in Affghanistan occurring on the outer ranges, indicating exemption from the periodical rains. It is styled by Europeans "the edible pine-nut;" the seeds being nearly an inch long, very sweet, and said to possess many good qualities, amongst which that of easy digestion is certainly not to be reckoned one.

PINUS LAWSONI, *Roehl*, Lawson's Mexican Pine.

A distinct kind, having the leaves mostly in threes, but sometimes in fours, six inches long, rather slender, sharp-pointed,

angular on the inner face, rounded on the outer one, and quite entire on the margins. *Sheaths* on the young leaves nearly an inch long, and composed of distant, sharp-pointed, loosely imbricated scales, silky at the edges, while those on the adult leaves are much wrinkled, half an inch long, more or less furnished with distant scales, and jagged at the ends. *Branchlets*, rather slender, very leafy, and furnished with a broad, acute-pointed scale at the base of each sheath of leaves, when young. *Buds* covered with imbricated, resinous scales. *Cones*, from two to two and a half inches long and one and a half inch broad near the base, conical in shape, ashy-gray in colour, and very much resembling those of *Pinus sylvestris* in size, shape, and general appearance; scales very small, mostly equal in size, except those at the base of the cone, which are smallest, while those on the outer or exposed part are much the largest, more elevated or thickened at the points, and sometimes slightly recurved; protuberances rounded on the lower scales, keeled on the upper ones, and all of them terminated by a large, dark, blunt point.

A middle-sized tree, from the higher mountains of Mexico.

Page 200.

PINUS LONGIFOLIA, *Roxburgh*, the Long-leaved Indian Pine.

This species attains to a height of from 60 to 100 feet, and is confined in a great measure to the outer or lower ranges of the mountains, commencing as low as 1,000 feet above the level of the sea, and rarely, if ever, attains a greater elevation than 7,000 feet, but appears to have a very great power of enduring variations of climate; for it seems equally at home in the hot, damp valleys of Sikkim as on the dry, stony hills of the Punjab, where rain hardly ever falls, and it is at all seasons exposed to a powerful and scorching sun. It is very common throughout the whole region of the Punjab, and as far to the east as Bhotan, occurring in all intermediate altitudes, and where, from the diversity of climate and different aspects in which it grows, it is known under various names. On the upper banks of the Jhelum river it is styled by the people "Anunder;" and

throughout "Kangara" and the eastern hills it is named "Cheel," "Gulla," "Sulla," and "Thansa," or "Thanshing." There are two varieties: one, which has its woody fibre twisted, but open in the grain, and of a white colour, and called "Kutchá" by the natives; the other, in which the fibres are straight, has reddish and compact wood, and is called "Pucka;" but this character is not permanent, as sometimes the wood, though white, is compact and straight-fibred. The reddish wood, however, is preferred by the natives, and sold under the name of "Dadar." The twisted kind, being subject to warp and split, is rejected, and never used for architectural purposes; but the Cheel timber, found growing in all places at an elevation of 5,000 feet and upwards, with a northern aspect and on poor soil, is invariably the straight-fibred kind, and the timber is good. Again, in southern localities and lower down, it is twisted in the fibre, and but of little use for house-building and similar purposes. The better variety, however, is extensively used for boat-building in India; but boats built of its wood do not last more than six or seven years, the timber being liable to rot, if exposed to the weather; while, on the other hand, if protected, it is well adapted for house-building purposes, although for ship-building and spars it is almost useless, as it resists so badly the effects of the weather, and is so soft; but the quality of its timber differs more, perhaps, than that of any other Pine, consequent on its growing in high or low situations. The forests near Almorah, at an elevation of 4,500 feet, produce excellent timber for domestic purposes, under the name of "Surul" (straight), either from the tall, straight, branchless stems of old trees, or from the woody fibre rending freely and quite straight in the grain. In the Sanscrit dialect it is called "Tanshing," or "Tansa" (Needle Tree), on account of its long, needle-like leaves.

Page 201.

PINUS MACROCARPA, *Lindley*, the Large-coned Pine.

Syn. *Pinus Sabiniana major*, *Manetti*.

This Pine has the largest cones of any Pine yet known, frequently weighing 4 lbs.

Page 201.

PINUS PONDEROSA, *Douglas*, the Heavy-wooded Pine.

Syn. *Pinus Nootkatensis*, *Manetti*.

This Pine is called "Tappa" (white wood) by the Indians, and the "Bull Pine" by the settlers on the N.W. coast of America and along the Columbia River, on account of its coarse-grained timber.

The heart wood of old trees scarcely floats in water.

Page 210.

PINUS TÆDA, *Linnæus*, the Torch or Loblolly Pine.

The word "tæda," properly speaking, signifies *torches* in general, for which the timber of this species is well suited and much used in the Southern States of the Union, where it is called the "Frankincense Pine" and "Oldfield Pine" by the inhabitants; for when any piece of clear land is neglected for any length of time, it is speedily covered with this kind. Hence the name of "Oldfield Pine."

Section III. QUINÆ, or those kinds having five leaves in each sheath.

Page 219.

PINUS CEMBRA, *Linnæus*, the Swiss Stone Pine.

Syn. *Pinus Apherousli*, *Loudon*.

This is the "Apherousli" Pine of the Tyrolese, the "Aralla" of Savoy, and the "Arth" of Northern Italy and the Bernese Oberland mountaineers. The Russian "Kedrovoi" has probably been misapplied to this tree; as the Cedar is nowhere indigenous to Russia, and, consequently, could not have an original Sclavonic designation.

Page 219.

PINUS CEMBRA MONOPHYLLA, *Carriere*, the One-leaved Cembra Pine.

This very singular variety of the Siberian Stone Pine has much slenderer branchlets, and the leaves so compressed, or adhering together along their whole length, in each sheath or set, as to appear but one leaf.

It is of French origin, and very curious.

Page 220.

PINUS CEMBRA PYGMÆA, *Fischer*, the Pigmy Siberian Stone Pine.

Syn. *Pinus Cembra monstrosa*, *Hort. Belgic.*

The slowest-growing and smallest of the Pine tribe.

Page 222.

PINUS EXCELSA, *Wallich*, the Bhotan Pine.

Syn. *Pinus Indica*, *Manetti*.

„ „ *pendulifolia*, *Griffith*.

This is one of the most common Pines of the central zone throughout the whole Himalayas. Dr. Griffith states its most eastern limits to be Bhotan, where it is called “Lumshing,” and its most western locality to be on the mountains of Kafiristan, near Jalalabad, where it is called “Piunee.” It has not hitherto been met with in Sikkim, and appears to be wholly wanting in Central and N.W. Kumaoon, but is the uppermost and only Pine met with in the ascent to the Neetee Pass in Gurhwall, at an elevation of 11,000 feet, and on both the north and south faces of the Lamakaga Passes; while, according to Capt. Gerard, its superior limit on the snowy range of Leem is at an elevation of 12,000 feet, and its lowest one, near Deorah, in Joobul, only 5,000 feet, thus fixing the extreme limits of *Pinus excelsa* at from 5,000 to 12,000 feet of elevation. Again, Mr. Winterbottom traced it to the mountains of Gilgit, beyond Cashmere, its most northern habitat hitherto ascer-

tained, as Bhotan is its most southern, and Jalalabad its most western limits.

This tree flowers about the end of May, and the cones require eighteen months to mature.

PINUS LOPHOSPERMA, *Lindley*, the Crest-seeded Pine.

Leaves, in fives, from 8 to 10 inches long, stout, stiff, and pungent at the points, with the sides rough, three-edged, and not unlike those of *Pinus macrocarpa*. *Sheaths* on the young leaves upwards of an inch long, and smooth; while those on the old ones are little more than half that length, are torn at the ends, and much wrinkled along the surface. *Shoots*, very stout, and covered, when young, with a white powder or glaucous bloom. *Cones*, from $4\frac{1}{2}$ to $5\frac{1}{2}$ inches long, and rather more than 3 inches in diameter, somewhat globular or obtusely egg-shaped, tapering most towards the apex, and flattened at the base, with a hard, glossy surface, and very much resembling those of the Stone Pine (*Pinus Pinea*), but somewhat larger. *Scales*, very thick at the points, rather large, elevated, glossy, hard, and distinctly two-edged, or irregularly four-sided; those nearest the base of the cone being very much the smallest, more recurved, and furnished with a short, stout point, which on the larger scales is obsolete. *Seeds*, very large, and, like those of *Pinus Sabiniana*, furnished with a thick crest, of a dark colour, from which proceeds a very narrow, short, oblique, membranaceous wing, which, along with the crest, separates from the seed in the form of a horse's collar.

A magnificent tree, somewhat resembling *Pinus Sabiniana*, with very glaucous, stout shoots, found in Lower California by Mr. William Lobb, who transmitted seeds of it to Mr. Hugh Low, of the Clapton Nursery, in the early part of the year 1860.

It is more or less tender in England.

PINUS MANCHURICA, *Hort*, the Manchurian Pine.

This is a kind about which little is at present known, except that it has five leaves in a sheath, and large edible seeds, and is

found in the province of Manchuria, on the Amoor River, in Eastern Siberia.

Probably not different from the Siberian variety of *Pinus Cembra*, which is found abundantly in Eastern Siberia, attaining to the size of a large tree.

Page 240.

PINUS STROBUS ALBA, *Loudon*, the White Weymouth, or Snow Pine.

In some collections a very slight and more slender variety of the Weymouth Pine is to be found under this name, but one unworthy of distinction, and very different from the true snow Pine, which somewhat resembles *Pinus monticola*.

Page 259.

PINUS PROTUBERANS, *Roetzl*, the Protuberant-scaled Pine.

Syn. *Pinus rudis*, *Roetzl*, not *Endlicher*.

„ „ *angulata*, *Roetzl*.

„ „ *Occidentalis*, *Hort*, not *Humboldt*, or *Swartz*.

A fine hardy kind, somewhat resembling *Pinus Montezumæ* in foliage and general appearance, but with very much smaller cones, having very angular, glossy scales, much elevated towards their points, and quite hard.

A large tree, growing upwards of 100 feet high, on the mountains of Mexico, at an elevation of from 9,000 to 10,000 feet.

Section IV. ROEZL'S MEXICAN PINES.

These kinds were previously placed under the head of "New or doubtful kinds," in the *Pinetum*, pp. 213 and 242; but now, from the examination of M. Roezl's original specimens from Mexico,* are identified, correctly named, and placed in this section, for more ready reference.

Page 213.

PINUS ACULCENSIS, *Roezl*, the Aculco Pine.

This is the same as PINUS HARTWEGII, *Lindley*. See *Pinetum*, p. 226.

Page 213.

PINUS AMECAENSIS, *Roezl*, the Ameca Pine.

This is the same as PINUS HARTWEGII, *Lindley*. See *Pinetum*, p. 226.

Page 259.

PINUS ANGULATA, *Roezl*, the Angular-scaled Pine.

This is the same as PINUS PROTUBERANS, *Roezl*. See *Pinetum*, p. 259.

Page 242.

PINUS ANTOINEANA, *Roezl*, M. Antoine's Mexican Pine.

This is the same as PINUS ORIZABÆ, *Gordon*. See *Pinetum*, p. 235.

PINUS ATROVIRENS, *Roezl*, the Dark-green Mexican Pine.

This is the same as PINUS HARTWEGII, *Lindley*. See *Pinetum*, p. 226.

* The Author desires especially to express his obligation to Mr. John Standish, of the Royal Nursery, Bagshot, for kindly allowing him to examine the very complete and extensive collection of the original cones and specimens of Roezl's Mexican Pines in his possession.

PINUS AYACAHUITE BLANCO, *Roetzl*, the White Ayacahuite Pine.

This is the same as PINUS BUONAPARTEA, *Roel*. See Pinetum, p. 218.

Page 230.

PINUS AYACAHUITE COLORADO, *Roetzl*, the Red Ayacahuite Pine.

This is the same as PINUS LOUDONIANA, *Gordon*. See Pinetum, p. 230.

Page 243.

PINUS AZTECAENSIS, *Roetzl*, the Azteca Pine.

This is the same as PINUS FILIFOLIA, *Lindley*. See Pinetum, p. 223.

PINUS BACKHOUSIANA, *Roetzl*, Backhouse's Mexican Pine.

This is the same as PINUS WINCESTERIANA, *Gordon*. See Pinetum, p. 241.

Page 214.

PINUS BESSERERIANA, *Roetzl* Besserer's Mexican Pine.

This is the same as PINUS TEOCOTE, *Schiede*. See Pinetum, p. 211.

Page 243.

PINUS BOOTHIANA, *Roetzl*, Booth's Mexican Pine.

Syn. *Pinus Boothiana*, *Vilmorin*.

This is the same as PINUS PSEUDO-STROBUS, *Lindley*. See Pinetum, p. 237.

Page 243.

PINUS BOUCHEIANA, *Roetzl*, Bouche's Mexican Pine.

This is the same as PINUS PSEUDO-STROBUS, *Lindley*.

Page 244.

PINUS BULLATA, *Roetzl*, the Puckered-scaled Mexican Pine.

This is the same as PINUS FILIFOLIA, *Lindley*. See Pinetum, p. 223.

Page 218.

PINUS BUONAPARTEA, *Roezl*, the Buonaparte Pine.

This is a new and distinct Pine, belonging to the Weymouth or Strobilus section. See Pinetum, p. 218.

PINUS CALOCOTE, *Roezl*, the White resin Mexican Pine.

Syn. Pinus Galocote, *Roezl*.

This is the same as PINUS TEOCOTE, *Schiede*. See Pinetum, p. 211.

Page 244.

PINUS CARRIEREI, *Roezl*, Carriere's Mexican Pine.

This is the same as PINUS MACROPHYLLA, *Lindley*. See Pinetum, p. 231.

Page 245.

PINUS CEDRUS, *Roezl*, the Cedar-like Mexican Pine.

This is the same as PINUS LEIOPHYLLA, *Schiede*. See Pinetum, p. 229.

PINUS CHALMAENSIS, *Roezl*, the Chalma Pine.

This is the same as PINUS WINCESTERIANA, *Gordon*. See Pinetum, p. 241.

Page 245.

PINUS COARCTATA, *Roezl*, the Contracted Mexican Pine.

This is the same as PINUS PSEUDO-STROBUS, *Lindley*. See Pinetum, p. 237.

Page 246.

PINUS COMONFORTI, *Roezl*, Comonfort's Mexican Pine.

This is the same as PINUS LEIOPHYLLA, *Schiede*. See Pinetum, p. 229.

Page 221.

PINUS CORNEA, *Roehl*, the Horn-shaped Coned Pine.
This is a new and distinct kind, in the way of *P. Devoniana*.

PINUS CORRUGATA, *Roehl*, the Crumpled-coned Pine.

This is the same as PINUS HARTWEGII, *Lindley*. See Pinetum, p. 226.

Page 246.

PINUS DECAISNEANA, *Roehl*, Decaisne's Mexican Pine.

This is the same as PINUS LINDLEYANA, *Gordon*. See Pinetum, p. 229.

Page 246.

PINUS DECANDOLLEANA, *Roehl*, De Candolle's Mexican Pine.

This is the same as PINUS LEIOPHYLLA, *Schiede*. See Pinetum, p. 229.

PINUS DEPAUPERATA, *Roehl*, the Starved Mexican Pine.

Little beyond the name is known of this Pine, but most probably it is either a starved form of *Pinus Russelliana*, or *macrophylla*.

Page 247.

PINUS DEPENDENS, *Roehl*, the Pendent-branched Mexican Pine.

This is the same as PINUS LEIOPHYLLA, *Schiede*. See Pinetum, p. 229.

Page 247.

PINUS DOLLERIANA, *Roehl*, Doller's Mexican Pine.

This is the same as PINUS RUSSELLIANA, *Lindley*. See Pinetum, p. 238.

Page 230.

PINUS DON-PEDRI, *Roezl*, Don Pedro's Mexican Pine.

Syn. *Pinus Ayacahuite colorado*, *Roezl*.

This is the same as PINUS LOUDONIANA, *Gordon*. See Pinetum, p. 230.

Page 218.

PINUS DURANGENSIS, *Roezl*, the Durango Pine.

This is the same as PINUS BUONAPARTEA, *Roezl*. See Pinetum, p. 237.

Page 248.

PINUS EHRENBERGII, *Endlicher*, Ehrenberg's Mexican Pine.

This is the same as PINUS LEIOPHYLLA, *Schiede*. See Pinetum, p. 229.

Page 248.

PINUS ELEGANS, *Roezl*, the Elegant Mexican Pine.

This is the same as PINUS PSEUDO-STROBUS, *Lindley*. See Pinetum, p. 237.

Page 248.

PINUS ENDLICHERIANA, *Roezl*, Professor Endlicher's Pine.

This is the same as PINUS LINDLEYANA, *Gordon*. See Pinetum, p. 229.

Page 249.

PINUS ENDLICHERIANA LONGIFOLIA, *Roezl*, the Long-leaved Endlicher Pine.

This is the same as PINUS MONTEZUMÆ, *Lambert*. See Pinetum, p. 232.

Page 249.

PINUS ESCANDONIANA, *Roezl*, the Escandon Pine.

This is the same as PINUS PATULA, *Schiede*. See Pinetum, p. 203.

Page 249.

PINUS EXSERTA, *Roetzl*, the Projecting-scaled Pine.

This is the same as PINUS PROTUBERANS, *Roetzl*. See Pinetum, p. 259.

PINUS FERTILIS, *Roetzl*, the Fruitful Mexican Pine.

This is the same as PINUS CEMBROIDES, *Gordon*. See Pinetum, p. 192.

PINUS FRONDOSA, *Roetzl*, the Leafy-branched Mexican Pine.

This is the same as PINUS HARTWEGII, *Lindley*. See Pinetum, p. 226.

PINUS GALOCOTE, *Roetzl*, the Milky resin Mexican Pine.

This is the same as PINUS TEOCOTE, *Schiede*. See Pinetum, p. 211.

PINUS GEITNERI, *Roetzl*, Geitner's Mexican Pine.

This is the same as PINUS HARTWEGII, *Lindley*. See Pinetum, p. 226.

Page 250.

PINUS GRACILIS, *Roetzl*, the Slender-leaved Mexican Pine.

This is the same as PINUS LEIOPHYLLA, *Schiede*. See Pinetum, p. 229.

Page 250.

PINUS GRANDIS, *Roetzl*, the Great Mexican Pine.

This is the same as PINUS PSEUDO-STROBUS, *Lindley*. See Pinetum, p. 237.

Page 251.

PINUS HAAGEANA, *Roetzl*, Haage's Mexican Pine.

This is the same as PINUS PSEUDO-STROBUS, *Lindley*. See Pinetum, p. 237.

Page 218.

PINUS HAMATA, *Roetzl*, the Hooked-scaled Pine.

This is the same as PINUS BUONAPARTEA, *Roetzl*. See Pinetum, p. 218.

Page 251.

[PINUS HENDERSONI, *Roetzl*, Henderson's Mexican Pine.

This is the same as PINUS FILIFOLIA, *Lindley*. See Pinetum, p. 223.

Page 251.

PINUS HETEROMORPHIA, *Roetzl*, the Various-scaled Pine.

This is the same as PINUS PROTUBERANS, *Roetzl*. See Pinetum, p. 259.

Page 252.

PINUS HORIZONTALIS, *Roetzl*, the Horizontal branched Mexican Pine.

This is the same as PINUS RUSSELLIANA, *Lindley*. See Pinetum, p. 238.

Page 252.

PINUS HOSERIANA, *Roetzl*, Hoser's Mexican Pine.

This is the same as PINUS PATULA, *Schiede*. See Pinetum, p. 203.

PINUS HUGELI, *Roetzl*, Baron Hugel's Mexican Pine.

This is the same as PINUS TEOCOTE, *Schiede*. See Pinetum, p. 211.

Page 253.

PINUS HUISQUILUCAENSIS, *Roetzl*, the Huisquiluca Pine.

This is the same as PINUS LEIOPHYLLA, *Schiede*. See Pinetum, p. 229.

Page 253.

PINUS INFLEXA, *Roehl*, the Inflexed Pine.

This is the same as PINUS MONTEZUMÆ, *Lambert*. See Pinetum, p. 232.

PINUS INTERPOSITA, *Roehl*, the Intermediate-leaved Mexican Pine.

This kind principally differs from PINUS TEOCOTE, *Schiede*, in having its leaves in threes, fours, and fives, in the sheaths, and in the cones being somewhat larger.

Page 214.

PINUS IZTACIHUATLI, *Roehl*, the Iztacihuatl Pine.

This is the same as PINUS HARTWEGII, *Lindley*. See Pinetum, p. 226.

Page 223.

PINUS JOSTII, *Roehl*, Jost's Mexican Pine.

This is the same as PINUS FILIFOLIA, *Lindley*. See Pinetum, p. 223.

PINUS KEGELII, *Roehl*, Kegel's Mexican Pine.

This is the same as PINUS TEOCOTE, *Schiede*. See Pinetum, p. 211.

Page 253.

PINUS KETELEERI, *Roehl*, Keteleer's Mexican Pine.

This is the same as PINUS FILIFOLIA, *Lindley*. See Pinetum, p. 223.

PINUS KRELAGI, *Roehl*, Krelag's Mexican Pine.

This is the same as PINUS HARTWEGII, *Lindley*. See Pinetum, p. 226.

PINUS LAWSONI, *Roehl*, Lawson's Mexican Pine.

A kind belonging to the three-leaved section. See Supplement, p. 64.

Page 254.

PINUS LERDOI, *Roetzl*, Lerdo's Mexican Pine.

This is the same as PINUS LEIOPHYLLA, *Schiede*. See Pinetum, p. 229.

PINUS LEROYI, *Roetzl*, Le Roy's Mexican Pine.

Syn. Pinus Le Royi, *Roetzl*.

This is the same as PINUS MACROPHYLLA, *Lindley*. See Pinetum, p. 231.

Page 254.

PINUS LOWI, *Roetzl*, Low's Mexican Pine.

This is the same as PINUS MONTEZUMÆ, *Lambert*. See Pinetum, p. 232.

Page 255.

PINUS MAGNIFICA, *Roetzl*, the Magnificent Mexican Pine.

This is the same as PINUS DEVONIANA, *Lindley*. See Pinetum, p. 221.

Page 214.

PINUS MICROCARPA, *Roetzl*, the Small coned Mexican Pine.

This is the same as PINUS TEOCOTE, *Schiede*. See Pinetum, p. 211.

Page 255.

PINUS MICHOCAENSIS, *Roetzl*, the Michoaca Pine.

This is the same as PINUS FILIFOLIA, *Lindley*. See Pinetum, p. 223.

Page 255.

PINUS MONSTROSA, *Roetzl*, the Monstrous Mexican Pine.

This is the same as PINUS PSEUDO-STROBUS, *Lindley*. See Pinetum, p. 237.

Page 256.

PINUS MONTE-ALLEGRI, *Roetzl*, the Monte Allegro Pine.

Syn. *Pinus Monteallegri*, *Roetzl*.

This is the same as PINUS LEIOPHYLLA, *Schiede*. See Pinetum, p. 229.

Page 215.

PINUS MULLERIANA, *Roetzl*, Muller's Mexican Pine.

This is the same as PINUS TEOCOTE, *Schiede*. See Pinetum, p. 211.

PINUS NE-PLUS-ULTRA, *Roetzl*, the Finest of Pines.

This is the same as PINUS WINCESTERIANA, *Gordon*. See Pinetum, p. 241.

Page 256.

PINUS NESSELRODIANA, *Roetzl*, Count Nesselrod's Mexican Pine.

This is the same as PINUS PSEUDO-STROBUS, *Lindley*. See Pinetum, p. 237.

PINUS NITIDA, *Roetzl*, the Glossy-coned Mexican Pine.

This is the same as PINUS FILIFOLIA, *Lindley*. See Pinetum, p. 223.

Page 257.

PINUS NORTHUMBERLANDIANA, *Roetzl*, the Duke of Northumberland's Pine.

This is the same as PINUS PSEUDO-STROBUS, *Lindley*. See Pinetum, p. 237.

Page 257.

PINUS OCAMPI, *Roetzl*, Ocampo's Mexican Pine.

This is the same as PINUS DEVONIANA, *Lindley*. See Pinetum, p. 221.

PINUS OCAMPI DEVONIANA, *Roezl*, Ocampo's Devonian Pine.

This is the same as PINUS DEVONIANA, *Lindley*. See Pinetum, p. 221.

PINUS OCOTE, *Roezl*, the Candle-wood Pine.

This is the same as PINUS FILIFOLIA, *Lindley*. See Pinetum, p. 223.

Page 257.

PINUS ORTGISIANA, *Roezl*, Ortgis's Mexican Pine.

This is the same as PINUS RUSSELLIANA, *Lindley*. See Pinetum, p. 238.

PINUS OTTOEANA, *Roezl*, Otto's Mexican Pine.

This kind is only known from the name being given in *Roezl's* list of Mexican Pines, and in *Vilmorin's* Catalogue from Paris.

Page 226.

PINUS PAPELEUI, *Roezl*, Papeleu's Mexican Pine.

This kind is the same as PINUS HARTWEGII, *Lindley*. See Pinetum, p. 226.

PINUS PAWLIKOWSKIANA, *Roezl*, Pawlikowsky's Mexican Pine.

This is the same as PINUS MACROPHYLLA, *Lindley*. See Pinetum, p. 231.

Page 258.

PINUS PAXTONI, *Roezl*, Sir Joseph Paxton's Mexican Pine.

This is the same as PINUS PSEUDO-STROBUS, *Lindley*. See Pinetum, p. 237.

PINUS PESCATORIA, *Roezl*, Pescator's Mexican Pine.

This kind is only known from the name being given in *Roezl's* list, and *Vilmorin's* Catalogue.

Page 258.

PINUS PLANCHONI, *Roetzl*, Planchon's Mexican Pine.

This is the same as PINUS MONTEZUMÆ, *Lambert*. See Pinetum, p. 232.

Page 230.

PINUS POPOCATEPETLI, *Roetzl*, the Popocatepetl Pine.

This is the same as PINUS LOUDONIANA, *Gordon*. See Pinetum, p. 230.

Page 258.

PINUS PRASINA, *Roetzl*, the Bright-green Mexican Pine.

This is the same as PINUS PATULA, *Schiede*. See Pinetum, p. 203.

Page 259.

PINUS PROTUBERANS, *Roetzl*, the Projecting-scaled Mexican Pine.

A very distinct kind. See Pinetum, p. 259.

Page 259.

PINUS REGELIANA, *Roetzl*, Professor Regel's Pine.

A new and distinct kind. See Pinetum, p. 259.

Page 226.

PINUS RESINOSA, *Roetzl*, the Resinous Mexican Pine.

This is the same as PINUS HARTWEGII, *Lindley*. See Pinetum, p. 226.

PINUS RETRACTA, *Roetzl*, the Retracted-coned Mexican Pine.

This is the same as PINUS WINCESTERIANA, *Gordon*. See Pinetum, p. 241.

Page 260.

PINUS RICHARDIANA, *Roetzl*, Richard's Mexican Pine.

This is the same as PINUS LINDLEYANA, *Gordon*. See Pinetum, p. 229.

Page 260.

PINUS RINZI, *Roetzl*, Rinzi's Mexican Pine.

This is the same as PINUS RUSSELLIANA, *Lindley*. See Pinetum, p. 238.

Page 260.

PINUS ROBUSTA, *Roetzl*, the Robust Mexican Pine.

This is the same as PINUS LINDLEYANA, *Gordon*. See Pinetum, p. 229.

Page 261.

PINUS ROHANI, *Roetzl*, Rohan's Mexican Pine.

This is the same as PINUS RUSSELLIANA, *Lindley*. See Pinetum, p. 238.

Page 261.

PINUS RUBESCENS, *Roetzl*, the Reddish-bark Mexican Pine.

This is the same as PINUS RUSSELLIANA, *Lindley*. See Pinetum, p. 238.

PINUS RUDIS, *Roetzl*, the Strong-growing Mexican Pine.

This is the same as PINUS PROTUBERANS, *Roetzl*. See Pinetum, p. 259.

Page 262

PINUS RUMELIANA, *Roetzl*, Rumel's Mexican Pine.

This is the same as PINUS PSEUDO-STROBUS, *Lindley*. See Pinetum, p. 237.

Page 262.

PINUS SAN-RAFAELIANA, *Roetzl*, the San Rafael Pine

This is the same as PINUS PSEUDO-STROBUS, *Lindley*.

Page 215.

PINUS SCOPARIA, *Roetzl*, the Broom Pine.

This is the same as PINUS HARTWEGII, *Lindley*. See Pinetum, p. 226.

Page 262.

PINUS SOULANGEANA, *Roehl*, Soulange-Bodin's Pine.

This is the same as PINUS PSEUDO-STROBUS, *Lindley*. See Pinetum, p. 237.

Page 263.

PINUS SPINOSA, *Roehl*, the Spiny-coned Mexican Pine.

This is the same as PINUS PSEUDO-STROBUS, *Lindley*.

Page 226.

PINUS STANDISHI, *Roehl*, Standish's Mexican Pine.

This is the same as PINUS HARTWEGII, *Lindley*. See Pinetum, p. 226.

PINUS SUBPATULA, *Roehl*, the Half-spreading Leaved Mexican Pine.

This is the same as PINUS PATULA, *Schiede*. See Pinetum, p. 203.

PINUS SUFFRUTICOSA, *Roehl*, the Half-shrubby Mexican Pine.

This is the same as PINUS HARTWEGII, *Lindley*. See Pinetum, p. 226.

PINUS TENANGAENSIS, *Roehl*, the Tenanga Pine.

This is the same as PINUS PSEUDO-STROBUS, *Lindley*. See Pinetum, p. 237.

Page 263.

PINUS THELEMANNI, *Roehl*, Thelemann's Mexican Pine.

This is the same as PINUS PSEUDO-STROBUS, *Lindley*.

Page 264.

PINUS THIBAUDIANA, *Roehl*, Thibaud's Mexican Pine.

This is the same as PINUS DEVONIANA, *Lindley*. See Pinetum, p. 221.

PINUS TLAMACAENSIS, *Roehl*, the Tlamaco Pine.

This is the same as PINUS HARTWEGII, *Lindley*. See Pinetum, p. 226.

PINUS TOMACOCAENSIS, *Roehl*, the Tomacoca Pine.

This is the same as PINUS PSEUDO-STROBUS, *Lindley*. See Pinetum, p. 237.

Page 264.

PINUS TROUBEZKOIANA, *Roehl*, Troubezkoï's Mexican Pine.

This is the same as PINUS RUSSELLIANA, *Lindley*. See Pinetum, p. 238.

PINUS TUMIDA, *Roehl*, the Swelled Mexican Pine.

This is the same as PINUS TEOCOTE, *Schiede*. See Pinetum, p. 211.

Page 265.

PINUS TZOMPOLIANA, *Roehl*, the Tzompoli Pine.

This is the same as PINUS PATULA, *Schiede*. See Pinetum, p. 203.

Page 265.

PINUS VALIDA, *Roehl*, the Strong-growing Mexican Pine.

This is the same as PINUS FILIFOLIA, *Lindley*. See Pinetum, p. 223.

Page 265.

PINUS VAN-GEERTI, *Roehl*, Van-Geert's Mexican Pine.

This is the same as PINUS FILIFOLIA, *Lindley*. See Pinetum, p. 223.

Page 265.

PINUS VAN-HOUTTEI, *Roehl*, Van-Houtte's Mexican Pine.

This is the same as PINUS PSEUDO-STROBUS, *Lindley*. See Pinetum, p. 237.

PINUS VEITCHI, *Roehl*, Veitch's Mexican Pine.

This is the same as *PINUS BUONAPARTEA*, *Roehl*. See *Pinetum*, p. 218.

Page 226.

PINUS VERRUCOSA, *Roehl*, the Warded Mexican Pine.

This is the same as *PINUS LEIOPHYLLA*, *Schiede*. See *Pinetum*, p. 229.

PINUS VERSCHAFFELTI, *Roehl*, Verschaffelt's Mexican Pine.

This is the same as *PINUS WINCESTERIANA*, *Gordon*. See *Pinetum*, p. 241.

Page 215.

PINUS VILMORINI, *Roehl*, Vilmorin's Mexican Pine.

This is the same as *PINUS TEOCOTE*, *Schiede*. See *Pinetum*, p. 211.

Page 267.

PINUS WILSONI, *Roehl*, Wilson's Mexican Pine.

This is the same as *PINUS MONTEZUMÆ*, *Lambert*. See *Pinetum*, p. 202.

Page 267.

PINUS ZACATLANÆ, *Roehl*, the Zacatlan Pine.

This is the same as *PINUS APULCENSIS*, *Lindley*. See *Pinetum*, p. 216.

PINUS ZAMORAENSIS, *Roehl*, the Zamora Pine.

This is the same as *PINUS FILIFOLIA*, *Lindley*. See *Pinetum*, p. 223.

Page 267.

PINUS ZITACUARIA, *Roehl*, the Zitacuaro Pine.

This is the same as *PINUS DEVONIANA*, *Lindley*. See *Pinetum*, p. 221.

P. S. The following corrections, &c., also apply to M. Roetzl's Mexican Pines, *viz*:—

- Roetzl's *Pinus macrophylla*, is *Pinus Pseudo-Strobus*, *Lindley*.
 „ „ *Hartwegii*, is *Pinus Montezumæ*, *Lambert*.
 „ „ *Montezumæ*, is *Pinus filifolia*, *Lindley*.
 „ „ *rudis*, is *Pinus protuberans*, *Roetzl*.
 „ „ *Pseudo-Strobus*, is *Pinus Apulcensis*, *Lindley*.
 „ „ *Ocote-Chino*, is *Pinus leiophylla*, *Schiede*.
 „ „ *Grenvilleæ*, is true to name.
 „ „ *Wincesteriana*, is true to name.
 „ „ *Llaveana*, is true to name.
 „ „ *patula*, is true to name.
 „ „ *Oocarpa*, is true to name.

Gen. PODOCARPUS, L'Heritier, the Long-stalked Yews.

Page 268.

PODOCARPUS AMARA, *Blume*, the Bitter-fruited Podocarpus.

This tree attains to a height of 200 feet in Java, where the people call it “Kimerak.”

Page 270.

PODOCARPUS BRACTEATA, *Blume*, the Bracteated Podocarpus.

The natives of Amboyna call this tree “Ayewen,” and “Essoyr.”

Page 271.

PODOCARPUS CHINENSIS, *Wallich*, the Chinese Podocarpus.

Syn. *Podocarpus Maki*, *Siebold*.

Leaves linear, lanceolate, reflected on the margins, closely placed alternately along the branches, and from $1\frac{1}{2}$ to 3 inches long, and from 2 to 3 lines broad.

The Chinese name for this species is “Sin-koja-Maki” (the common or Wild Maki), and the Japanese one, “Inu-Maki,”

(false, or spurious Maki). "Maki" is the name commonly applied, both in China and Japan, to all the large-leaved, Yew-like plants—such as *Podocarpus*, *Sciadopitys*, &c.

PODOCARPUS CHINENSIS AUREA, *Gordon*, the Golden Variegated Chinese *Podocarpus*.

This variety differs from the original form of the plant, in having its leaves sometimes one half golden yellow, or furnished with yellow marginal borders, or striped down the middle like a ribbon.

It was first sent to the Royal Nursery at Bagshot by Mr. Fortune, from Japan, in 1861.

PODOCARPUS CHINENSIS ARGENTEA, *Gordon*, the Silver Variegated Chinese *Podocarpus*.

Another fine variegated variety, with silvery white striped leaves, variously marked, sometimes with broad bands running the entire length of the leaf, like a ribbon, while other leaves are half white and half green, or all white and all green.

This handsome variety was first sent to the Royal Nursery at Bagshot in 1861, by Mr. Fortune, from the neighbourhood of Yeddo, in Japan.

PODOCARPUS CORRUGATA, *Gordon*, the Corrugated-leaved *Podocarpus*.

Leaves very narrow, linear-lanceolate, acute-pointed, straight, and tapering much to the base; from 3 to 4 inches long, and 2 lines wide, with an uneven or corrugated surface above, and minutely streaked or irregularly marked with small bright green stripes, on a yellow ground colour, all over both faces, and furnished with an elevated rib along the middle of each leaf, both above and below.

A large evergreen bush or small tree, with delicately variegated foliage, much cultivated in the Japanese gardens about Yeddo, and sent from thence to Mr. Standish, of the Royal Nursery at Bagshot, by Mr. Fortune, in 1861.

Page 275.

PODOCARPUS JAPONICA ELEGANTISSIMA, *Hort*, the Very Elegant Japan Podocarpus.

A somewhat variegated variety of the Japan Yew, with long, linear, narrow, lance-pointed leaves, which are, when young, of a pale yellow, but afterwards change to a dull green, and finally, when fully matured, become of the usual colour of the species.

It is a continental production, by no means deserving the term "elegantissima."

Page 278.

PODOCARPUS MACROPHYLLA, *Don*, the Long-leaved Podocarpus.

The Chinese names for this species are "Fon-Maki" (true Maki), and "Sin-Maki" (common Maki); and those of the Japanese, "Inu-Maki" (wild Maki), and "Ksa-Maki" (fœtid Maki).

It forms a tree from 40 to 50 feet high, with vertical branches, and an ample head.

Page 279.

PODOCARPUS NEREIFOLIA, *R. Brown*, the Oleander-leaved Podocarpus.

Syn. *Podocarpus macrophylla*, *Wallich*, not *Don*.

This tree is called "Goonsi," in Nepal, and affords an article of food; the peduncles of the fruit, not the fruit itself, are edible.

Page 280.

PODOCARPUS NUBIGÆNA, *Lindley*, the Cloud-born Podocarpus.

Syn. *Podocarpus nubicola*, *Makoy*.

A large tree, from the Patagonian Andes, and colder parts of Chili; found growing associated with the *Araucaria imbricata*.

Page 282.

PODOCARPUS RIGIDA, *Klotzsch*, the Stiff-leaved Podocarpus.

Syn. *Juniperus rigida*, *Pavon*.

A tree found in Peru.

Page 285.

PODOCARPUS TOTARA, *Don*, the New Zealand Totara.

Syn. *Dacrydium spicatum*, *Hort*.

„ *Podocarpus spinulosa*, *Makoy*.

This is one of the best timber trees in New Zealand, growing 120 feet high. Its timber is in great repute among the Colonists for its durability and freedom from the ravages of insects.

Page 287.

PODOCARPUS SPICATA, *R. Brown*, the Spike-fruited Podocarpus.

The natives of New Zealand call this tree “Kaka-terro” (big tree), on account of its enormous size and great height, which is sometimes as much as 200 feet.

Page 289.

PODOCARPUS CUPRESSINA, *R. Brown*, the Cypress-like Podocarpus.

Syn. *Glyptostrobus Horsfieldii*, *Knight*.

A tree 180 feet high, clothed with vivid green foliage, found in Java, where it is called “Chomoro,” and constitutes one of the best timber trees on the island.

Page 290.

PODOCARPUS DACRYOIDES, *Richard*, the Dacrydium-like Podocarpus.

Syn. *Podocarpus dacrydioides*, *Carriere*.

The Aborigines of New Zealand call this tree “Kaki-Katea” (water-pine), on account of the tree only growing in marshy places, or probably from its large and soft white timber, being principally used by them in making canoes of large dimensions.

The Colonists call it “White Wood.”

Gen. PSEUDOLARIX, *Gordon*, the Golden Pine.

Page 292.

PSEUDOLARIX KÆMPFERI, *Gordon*, Kæmpfer's Larch.

The Chinese call this tree "Kara-mats" (Pine full of buds), and "Kin-le-sung" (common golden pine); and the Japanese, "Fusi," or "Fusji" (buds crowned with leaves), and "Seosa-mats" (deciduous fir).

Gen. RETINISPORA, *Siebold*, the Japan Cypresses.

Page 294.

RETINISPORA ERICOIDES, *Zuccarini*, the Heath-like Japan Cypress.

Syn. Cupressus ericoides, *Hort.*

„ Thuja ericoides, *Hort.*

The Japanese name for this kind is "Nezu-hiba" (dwarf tree of life).

It is quite hardy, and most probably only the primordial form of *Retinispora leptoclada*.

RETINISPORA LEPTOCLADA, *Zuccarini*, the Slender or Flat-branchletted *Retinispora*.

Syn. *Retinispora squarrosa leptoclada*, *Siebold*.

„ *Chamæcyparis squarrosa leptoclada*, *Endlicher*.

Leaves of two kinds, the primordial ones being in whorls of three, spreading, and curved more or less backwards; linear, flat on the upper surface, and awl-shaped at the points; thickly placed somewhat spirally all round the shoots, one fourth of an inch long, bright green above, and furnished with two glaucous white bands on the under side, which separate the thickened margins and green mid-rib. The foliage on the mature two-edged branchlets of adult plants are small scale-formed bodies, closely imbricated in four rows, in opposite pairs, the marginal ones being keeled on the back, overlapping on both sides, mucronate, and sometimes a little incurved, and more or less extended at the points, while those along the centre, on the upper

and lower sides of the branchlets, are flatly placed in straight rows, of an ovate-rhomboid figure, and glossy-green towards the points, with a transparent gland on the back, and two glaucous white marginal bands, which only extend along the lower half of the leaf, and are partially covered by the points and sides of the hinder leaves; branches thickly placed along the stem, spreading and horizontal, lateral ones compact, very dense, more or less irregularly clustered towards the points of the branches, and composed of slender, closely imbricated, two-edged, strap-shaped branchlets, little forked, but thickly placed laterally on the fan-shaped spray, in irregularly arranged clusters, especially towards the outer parts of the principal branches. Cones globular, solitary, about the size of a pea, and terminal on the points of the preceding year's branches. Seeds in twos at the base of each scale, with a membranaceous wing.

This kind forms a dense compact pyramidal evergreen bush, growing from 3 to 6 feet high, furnished with branches down to the ground, and thickly covered with numerous horizontal branchlets and small spray, closely covered with imbricated, more or less glaucous foliage, which gives the plant quite a silvery-grey appearance.

It is a native of the mountains of Japan, and is much cultivated in the Japanese gardens about Yeddo, where it is called "Nezu" (dwarf), on account of its low, compact, pyramidal appearance.

A very desirable plant for small gardens, as it is quite hardy. It was introduced by Messrs. E. G. Henderson and Son, of the Wellington Nursery, St. John's Wood, in 1861, from the continent.

RETINISPORA LYCOPODIODES, *Standish*, the Clubmoss-like Retinispora:

Syn. *Cryptomeria* sp., *Veitch*.

„ *Retinispora monstrosa*, *Hort*.

Leaves variously shaped, and densely arranged all round the shoots, those on the upper parts of the principal branchlets being more or less terete-pointed, or bluntly awl-shaped, or

slightly flattened on the sides, keeled on the back, and densely arranged more or less spirally all round the branchlets, while those near the base of the principal shoots, and on the lesser spray, are more or less scale-formed, adpressed in opposite pairs, keeled on the back, oval-shaped, closely imbricated, and all of a deep glossy green colour. Branches spreading, and rather slender, with the branchlets and lesser spray scattered irregularly all round, and very dense, especially towards the ends of the branches; branchlets numerous, short, linear, and thickly placed irregularly along the sides of the lateral branches, with the leading ones frequently confused, and ending in a flattened kind of monstrosity, more or less contorted near the points, and densely covered with small pointed scale-like leaves, sometimes more or less glaucous on the under side.

A fine evergreen tree, resembling *Retinispora obtusa*, found in the gardens near Yeddo, in Japan.

It was first imported by Mr. Standish, of the Royal Nursery, near Bagshot, in the early part of 1861, through the valuable exertions of his friend, Mr. Robert Fortune.

Page 295.

RETINISPORA OBTUSA, *Siebold*, the Blunt-leaved Japan Cypress.

Syn. Chamæpeuce obtusa, *Zuccarini*.

„ *Retinispora Fusinoki*, *Zuccarini*.

This beautiful tree is called “Hen-hak” by the Chinese, and “Fu-si-no-ki” (tree of the Sun) by the Japanese, and of which there are the following varieties, viz:—

RETINISPORA OBTUSA AUREA, *Fortune*, the Golden Variegated Japan Cypress.

This variety differs from the ordinary form of the tree in having a portion of the smaller spray and leaves of a golden colour, intermixed with the usual glossy-green ones, all over the plant.

A nice variegated variety, found by Mr. Fortune, cultivated in the Japanese gardens about Yeddo, in Japan, where it is called “Kwa-furi-hak” (variegated tree of life). It has been

introduced by Mr. Standish of the Royal Nursery, Bagshot, along with the following variety.

RETINISPORA OBTUSA ARGENTEA, *Fortune*, the Silver Variegated Japan Cypress.

This variety has a portion of its leaves and lesser branchlets of a silvery white, intermixed throughout the branches. It is much cultivated in the gardens about Yeddo, and other parts of the Island of Nippon, in Japan.

RETINISPORA OBTUSA PYGMÆA, *Gordon*, the Pigmy Japan Cypress.

Syn. *Thuja pygmæa*, *Veitch*.

This very singular variety forms a dwarf, cushion-shaped, little bush, which seldom grows more than a foot or two high, but spreads out in a horizontal direction all round, to more than double that distance, and forms a large, dense, flat tuft of glossy-green spray when old, with branchlets and leaves exactly like those of the species.

A very curious miniature evergreen bush, much cultivated in the Japanese gardens about Yeddo, on account of its very dwarf habit, dense, compact appearance, and glossy deep green colour. It is quite hardy, and forms quite an interesting object for rock-work or miniature gardens.

It was first sent from Japan by Mr. Fortune to the Royal Nursery at Bagshot, in the early part of 1861, as a dwarf variety of *Retinispora*; but more recently it has been erroneously named *Thuja pygmæa*, through inadvertence, by others.

RETINISPORA PISIFERA AUREA, *Fortune*, the Golden Variegated Pea-fruited Japan Cypress.

This variety differs in having some of its smaller spray and a portion of its leaves of a golden yellow colour, intermixed with the usual green ones.

A striking variety when well variegated, found near Yeddo, where it is called "Kwa-hak" (flowering tree of life) by the

Japanese. It was introduced to the Royal Nursery at Bagshot, in 1861, by Mr. Fortune.

RETINISPORA PISIFERA ARGENTEA, *Fortune*, the Silver Variegated Pea-fruited Japan Cypress.

Another pretty variety, with some of the smaller branchlets and leaves of a silvery white colour, intermixed all over the plant. It is much cultivated in the gardens about Yeddo, and other parts of the Island of Nippon, in Japan, and was first introduced to the Royal Nursery at Bagshot by Mr. Fortune, in the early part of 1861.

Gen. SALISBURIA, *Smith*, the Maiden-Hair Tree.

Page 298.

SALISBURIA ADIANTIFOLIA, *Smith*, the Ginkgo Tree.

Syn. *Salisburia* Ginkgo, *Salisbury*.

The Japanese names for this tree are "Ginan" (deciduous tree), and "Fusi-kin-go" (buds crowned with leaves in summer). The Chinese call it "Gink-go" (full of leafless buds in winter), in addition to "Ginan," "Quachow," and "Gin-ki-go" (a tree without leaves in winter).

Gen. SCIADOPITYS, *Siebold*, the Parasol Fir.

SCIADOPITYS VERTICILLATA, *Siebold*, the Whorl-leaved Parasol Fir.

The Parasol Fir, according to Mr. Fortune (who first sent living plants of it to Mr. Standish of the Royal Nursery at Bagshot, in 1861), is a large pyramidal tree with horizontal spreading branches, which attains a height of from 100 to 150 feet, and from 10 to 11 feet in circumference, 3 feet from the ground, and not a large bush or small tree from 12 to 15 feet high, as originally stated by Dr. Siebold, in his "Flora Japonica." The Japanese, however, have several varieties, among which some are dwarf bushes, others beautifully variegated,

and others with leaves varying from 2 to 4 inches or more in length, and two lines broad : but all linear, a little sickle-shaped, blunt, or slightly notched at the points, leathery, double-ribbed, with a shallow channel running through them, and all spreading out horizontally like the ribs of a parasol, and so closely clustered alternately as to look as if they stood in whorls of from 30 to 40 together at the ends of all the branchlets. Mr. Fortune says they are of a deep green colour, while, according to Dr. Siebold, they must be of a yellowish green, and remain on the tree for about three years, by which time each branch has from one to three parasols on it, according to its age ; but in the fourth year they fall off. The cones are elliptic or cylindrical, obtuse at the ends, and from $2\frac{1}{2}$ to 3 inches long, and $1\frac{1}{2}$ inch in diameter, and not unlike those of *Pinus Cembra*, but longer, and require two years to ripen. The seed leaves are in twos, and very similar to those of the common Yew.

Dr. Siebold considers the Umbrella Fir the finest conifer of Japan, and one which presents an appearance as strange as elegant, in consequence of its innumerable ramifications, which always end in a parasol-like tuft of leaves. Dr. Lindley says the *Sciadopitys* is nearly related to the Genus *Wellingtonia*, a statement which, from all appearances, seems very questionable.

Its Japanese names are “*Koja-Maki*”* (the wild or Mount Kojasan Maki), and “*Inu-Maki*” (the spurious or false Maki) ; while those of the Chinese are “*Kin-sung-Maki*” (the pale yellow Maki), and “*Kin-sjo*” (common yellow), on account of the leaves being of a pale or yellowish-green colour, especially when young.

SCIADOPITYS VERTICILLATA VARIEGATA, *Fortune*, the Variegated Parasol Fir.

This variety differs in having some of its leaves of a pale yellow colour, intermixed in the parasol-like whorls.

It forms a striking object, and is much grown in the gardens

* *Maki* is the name commonly applied, both in China and Japan, to all the large-leaved Yew-like plants, such as *Podocarpus*, *Sciadopitys*, &c.

belonging to the wealthy Japanese, especially in the eastern part of the Island of Nippon, where it is also much planted around temples and other sacred places of worship.

Mr. Fortune first sent it to the Royal Nursery at Bagshot in 1861, from the neighbourhood of Yeddo, in Japan.

Gen. SEQUOIA, *Endlicher*, the Californian Red Wood.

The name *Sequoia* is probably derived from "Sequence," separated, or following in order of succession, after *Taxodium*, from which Genus Professor *Endlicher* separated it.

Page 303.

SEQUOIA SEMPERVIRENS, *Endlicher*, the Red-wood Tree.

Syn. *Condylocarpus sempervirens*, *Salisbury*.

The seed leaves are mostly in twos, but sometimes in threes, ovate-lanceolate, obtuse at the ends, slightly convex, and pale green on the under-side, but of a much darker colour, and somewhat glossy, above.

It was first discovered by Mr. Menzies, in 1796; afterwards by Douglas, in 1836; and by the Russians (who first introduced it to Europe in a living state), in 1843; but since which time it has been found growing abundantly on the mountains of Santa Cruz, about 60 miles from Monterey, in California, where Mr. Hartweg found that it averaged 200 feet in height, with trunks from 18 to 24 feet in circumference, quite straight, and clear of branches to a height of 60 feet. One tree, which was called by the American settlers "the Giant of the Forest," measured 270 feet in height, and had a trunk 55 feet in circumference, at 6 feet from the ground.

Gen. TAXODIUM, *Richard*, the Deciduous Cypress.

Page 305.

TAXODIUM DISTICHUM MEXICANUM, *Gordon*, the Montezumæ Cypress.

Syn. *Taxodium distichum excelsa*, *Booth*.

„ *Cupressus disticha sempervirens*, *Rinz*.

This tree is called "Sabino" by the Mexicans, and yields excellent timber, but is too tender for the climate of England.

Gen. TAXUS, *Tournefort*, the Yews.

The word Taxus, like the Greek word "Toxen," a bow, is derived from "Tazo," or "tasso," to draw, to pull; man having learned the arts of war and hunting before his language was perfected. The English name *Yew* is said to come from the Celtic "iw," green.

Page 312.

TAXUS BACCATA CHESHUNTENSIS, *W. Paul*, the Cheshunt Yew.

A nice variety, with rather a pyramidal habit of growth, in the way of *Taxus baccata sparsifolia*, but with the leaves smaller and more closely disposed all round the shoots; the spray is also much slenderer and more twiggy, with the leaves of a bright glossy green.

It was raised by Mr. William Paul, of the Cheshunt Nursery, from a seed of the Irish Yew, and appears to stand midway between the common and Irish Yews, but less formal than the latter, and grows twice as fast.

Page 312.

TAXUS BACCATA ERECTA, *Loudon*, the Erect Common Yew.

Syn. *Taxus baccata erecta Crowderi, Hort.*

This is quite an erect growing kind, with smaller leaves, and slenderer branchlets than the common Yew.

A nice variety, not unfrequently obtained from seeds of the common kind.

Page 313.

TAXUS BACCATA GLAUCA, *Carriere*, the Dark-green Common Yew.

Syn. *Taxus baccata nigra, Paul.*

This is the largest and finest of all the varieties of the common Yew.

TAXUS BACCATA JACKSONII, *Wm. Paul*, Jackson's Weeping Common Yew.

Syn. Jackson's Weeping Yew, *Hort.*

A somewhat pendulous kind, with broad light-green foliage, all more or less incurved, falcate, and thickly covering the upper part of the branches, with the branchlets reddish-brown, numerous, short, obliquely placed, and more or less curved.

Page 316.

TAXUS LINDLEYANA, *Lawson*, Dr. Lindley's American Yew.

This kind is called "Wa-wa-neens" (fighting wood) by the Indians along the N. W. coast of America, on account of its wood being used by them for making bows.

Page 317.

TAXUS WALLICHIANA, *Zuccarini*, Dr. Wallich's Indian Yew.

This species is common in the British Himalayas and Bhotan, flourishing best between 8,000 and 9,000 feet of elevation, but ascending in a dwarfish form to 11,800 feet. In Kunawur and Gurhwal it is called "Rikaling," "Ikaling," and very commonly "Sung-cha" (Yew-tree), or "Pung-cha" (Tea-tree), and from the leaves and smaller twigs of which, according to Captain Strachey, the people of Ladakh make an inferior kind of black tea, under the name of "Zang-cha," the first infusion of which, if used, would heat the blood, and occasion pains in the limbs. In the damp climate of Sikkim it does not descend below 9,000 feet, and is very rare on the inner ranges, and unknown on the rearward ones, but attains to a large size in Kooloo, and on the Chumba ranges, at an altitude of 9,000 feet, where it forms large forests; but of all the places in the Himalayas where it is met with in greatest perfection, is at Tonghnath, at an elevation of 9,000 feet, where it occurs in company with *Abies Smithiana*.

Gen. THUIOPSIS, *Siebold*, the Broad-leaved Arbor-Vitæ.

Page 319.

THUIOPSIS DOLABRATA, *Siebold*, the Hatchet-leaved Arbor-Vitæ.

This is a tree growing from 40 to 50 feet high, and from one to two feet in diameter, according to recent travellers in Japan ; but, according to Professor Thunberg, “ a lofty, vast, and beautiful tree, of all evergreens the fairest.”

Its Japanese names are “ Asufi,” and “ Asu-naro” (white or silvery beneath), and that of the Chinese, “ Gan-si-hak” (white on the under side—tree of life). The term “ Hak” (tree of life) is applied to all the Arbor-Vitæ in China, on account of their being green at all seasons of the year.

The tree is quite hardy, and prefers a shady situation, and one that is rather moist. There are the following varieties :—

THUIOPSIS DOLABRATA VARIEGATA, *Fortune*, the Variegated Hatchet-leaved Arbor-Vitæ.

This variety differs from the original form of the tree in having a portion of its lesser spray and leaves of a pale yellow colour, intermixed on the branches, all over the plant.

A pretty variegated variety, first introduced to the Royal Nursery at Bagshot by Mr. Fortune, in 1861, from the gardens near Yeddo, in Japan.

THUIOPSIS DOLABRATA NANA, *Siebold*, the Dwarf Hatchet-leaved Arbor-Vitæ.

A dwarf bush, seldom or ever exceeding 6 feet in height, with smaller leaves than the species, and much cultivated in the gardens about Yeddo in Japan, especially in pots, and called “ Nezu” (dwarf) by the Japanese.

THUIOPSIS ? STANDISHI, *Gordon*, Standish’s Japan Arbor-Vitæ.

Leaves ovate, blunt-pointed, in opposite pairs, and closely imbricated in four rows along the branchlets, the marginal ones clasping over on each side, and overlapping the addressed upper and lower ones, so as to have the appearance of being

arranged in three rows on each side of the flat two-edged branchlets, with the two outer ones the narrowest, and slightly curved inwards at the points, while the central or flattened ones above and below are broad, blunt-pointed, more or less enclosed by the marginal ones, and all of a deep glossy green above, and dull glaucous white below, except the mid-rib and thickened margins, which are of a bright glossy green and glandless, but thickened at the points. Branches scattered all round the stem, distantly placed, spreading, and more or less horizontal or declining towards the ends; branchlets and smaller spray two-edged, flat, alternate, quite straight, linear, closely imbricated in four rows, and of a deep glossy green above, and dull glaucous white below.

A tree, somewhat resembling *Thuiopsis dolabrata* in general appearance, but with slenderer branches, and smaller leaves, much less silvery below.

This kind was first introduced by Mr. Standish, of the Royal Nursery at Bagshot, in the early part of 1861, through his collector, Mr. Robert Fortune, who discovered it near Yeddo, in Japan, and no doubt will prove quite hardy in England. It has been named in compliment to Mr. John Standish, who has been the means of introducing and disseminating so many beautiful and valuable Eastern plants throughout Europe and America.

Gen. THUJA, *Linnæus*, the American Arbor-Vitæ.

The name *Thuja* is derived from "Thyon," sacrifice, in consequence of the twigs and resin being formerly used in the East instead of incense in sacrifices. The common English name, Arbor-Vitæ (tree of life), is deduced from its China and Japan ones. In Japan it is called "Hiba" (tree of life), and in China "Hak" (everlasting life), on account of the plants being evergreen, and of a lively or bright green at all seasons of the year. But as the Genus *Thuja* is now defined, none of the original China or Japan kinds belong to it, they being all transferred to that of *Biota*.

THUJA DUMOSA, *Gordon*, the Bush Arbor-Vitæ.

Syn. *Thuja Occidentalis dumosa*, *Hort.*

” ” ” *nana*, *Hort.*

” ” *minor*, *Wm. Paul.*

” ” *nana*, *Hort.*

” ” *plicata* *Llaveana*, *Hort.*

” ” ” *dumosa*, *Hort.*

” ” *Antarctica*, *Hort.*

A spreading little bush, densely clothed with numerous short, tufted, flat, fan-shaped branches, growing in all directions, and thickly set with short, forked, two-edged branchlets, of a glossy light-green above, but much paler below, and furnished on the back-rib with an elevated transparent gland.

This kind forms a dense, dwarf, little, confused bush, seldom growing more than two or three feet high, somewhat resembling in its branchlets the Nootka Sound Arbor-Vitæ (*Thuja plicata*), but of a much lighter colour.

It is said to be found in the Antarctic regions, and is quite hardy.

Page 321.

THUJA GIGANTEA, *Nuttall*, the Giant Arbor-Vitæ.

Syn. *Libocedrus Craigiana*, *Low.*

” ” *gigantea*, *Low.*

” ” ” *glauca*, *Lawson.*

” *Thuja Nuttalliana*, *Douglas.*

The Indians on the N. W. coast of America call this tree “Noo-wy-as” (Cedar), and, according to Sir E. Belcher (in his voyage round the world), its timber is very fine grained, bright yellow, very valuable, and much used at the Russian settlement of Sitcha for building purposes; and that the natives at Nootka Sound manufacture their cloaks of its inner bark, which turns the rain, is very pliable and soft, and is in use for mats, sails, ropes, clothing, &c.; the bark, which is rather thin, is also used in covering the roofs of houses and other buildings.

This kind is quite hardy, and very distinct from *Thuja Menziesii*, a kind misnamed “Lobbii” by the Veitches.

THUJA OCCIDENTALIS Densa, *Gordon*, the Bagshot Park Arbor-Vitæ.

Syn. *Thuja compacta*, *Standish*.

„ „ *Caucasica*, *Hort*.

A fine dense, conical bush, with short, stout, compact branches, and horizontal, flat, fan-shaped branchlets, of a rich glossy-green colour, regularly imbricated with ovate, compressed, glossy-green leaves, arranged in four rows.

This kind forms a large, compact, pyramidal bush, growing from 20 to 30 feet high, and nearly as dense as the Chinese Arbor-Vitæ. It somewhat resembles the *Thuja plicata*, but is of a much brighter green, and less coarse in its branchlets.

Some fine old plants of this kind are to be seen in the pleasure grounds at Bagshot Park, the late residence of Her Royal Highness the Duchess of Gloucester, in Surrey.

THUJA OCCIDENTALIS PENDULA, *Gordon*, the Reverted-branched Arbor-Vitæ.

This variety differs in having the principal branches along the main stem in a reverted position, and in the branchlets being more densely clustered or tufted towards the ends of the branches, and in a more declining position.

The original plant is in Mr. Standish's Nursery at Bagshot.

THUJA OCCIDENTALIS VERVAENEANA, *Hort*, the New Belgian Variegated Arbor-Vitæ.

Syn. *Thuja Vervaeneana*, *Van-Geert*.

This is a pretty variegated variety, with rather slender branchlets, obtained by M. Vervaene, of Ghent, from the common American Arbor-Vitæ.

Page 326.

THUJA PLICATA VARIEGATA, *Carriere*, the Variegated Nootka Sound Arbor-Vitæ.

A pretty variety, only differing from the original form in having a portion of its leaves and lesser spray of a pale yellow,

intermixed all over the plant in a variegated manner, and in its less robust habit.

It is of French origin.

THUJA TATARICA, *Loddiges*, the Tartarian Arbor-Vitæ.

Syn.	Thuja	Tatarica	Wareana,	<i>Hort.</i>
„	„	Sibirica,	<i>Hort.</i>	
„	„	„	compacta,	<i>Knight.</i>
„	„	„	Wareana,	<i>Hort.</i>
„	„	Occidentalis	Wareana,	<i>Knight.</i>
„	„	Wareana,	<i>Hort.</i>	
„	„	pyramidalis,	<i>Tenore.</i>	
„	„	Australis,	<i>Hort.</i>	
„	„	Orientalis	Tatarica,	<i>Lawson.</i>
„	Biota	Tatarica,	<i>Loudon.</i>	
„	„	„	Wareana,	<i>Hort.</i>
„	„	Wareana,	<i>Hort.</i>	
„	„	pyramidalis,	<i>Carriere.</i>	
„	„	Orientalis	Tatarica,	<i>Endlicher.</i>

Leaves in opposite alternate pairs, closely imbricated in four rows, bluntly oval, thick at the points, somewhat flattened, and furnished with a transparent gland on the back; branches thickly set on the main stem, somewhat horizontal, rather flat, short, very compact, and dense; branchlets very short, flat, dense, compact, fan-shaped, and thickly placed in two horizontal rows along the lesser spray; cones identical with those of the America Arbor-Vitæ.

The Tartarian, or, as it is sometimes called, the Siberian Arbor-Vitæ, has been misplaced in the Genus *Biota* by Mr. Loudon and nearly all modern writers, although it strictly belongs to the Genus *Thuja*, as now defined, it having cones exactly similar to those of the American Arbor-Vitæ, with valvata scales, and two-winged seeds, emarginate at the ends.

This kind was originally raised many years ago, by Mr. Weire, a Nurseryman at Coventry, and forms a dense conical bush, furnished with branches down to the ground, and from 8 to 10 feet high.

Gen. TORREYA, *Arnott*, the Stinking Yews.

TORREYA NUCIFERA, *Zuccarini*, the Nut-bearing Torreyia.

This species is called "Fi-Koja" (slender Yew) by the Japanese, and, according to Kämpfer, is very frequent in the northern provinces of Japan, where it forms a tree 20 feet high, with many opposite scaly branches. Dr. Royle erroneously (as pointed out by Major Madden) extends its habitat to the Choor and Kedarkanta mountains in Sirmore and Gurhwal, he having confounded *Taxus* (*Torreyia*) *nucifera* with *Taxus Wallichiana*, under the mere provincial variations of "Thoona," and "Thooner," from the Sanscrit "Thooner-Birmee" (*Taxus Wallichiana*), and so copied an error committed by Dr. Wallich, of long standing.

Gen. VEITCHIA, *Lindley*, the Japan Veitchia.

This is a new Genus, according to Dr. Lindley, with the seeds of a *Chamæcyparis*, the leaves of an *Abies*, and cones, which become, when ripe, more like spherical honey-combs than anything else to which it can be compared. He also says, "One would fancy the plant to represent an *Abies*, permanently assuming in the cone the monstrous form so often given to the common Spruce, by the attacks of insects, and struggling onwards to become a *Sciadopitys* or a *Cryptomeria*." Nothing more seems to be known about this Genus as regards stature or its habitats in Japan.

VEITCHIA JAPONICA, *Lindley*, the Japan Veitchia.

Leaves linear, half an inch long, blunt-pointed, and glaucous beneath. Branches short, and covered with spirally arranged projecting, curved pulvines (cushions), resembling those of *Abies Menziesii*. At the base of each branchlet is a small cup, formed of recurved scales, from which branchlets emerge when young. Cones erect, downy, nearly spherical, and about an inch in diameter; before ripening, furnished with incurved, horn-like, projecting bracteal scales, which, at maturity, break and disclose as many four-sided sockets or cavities, within which

lodge an uncertain number of small, two-winged seeds, terminated by a pair of short, straight, tooth-like processes. (*Lindley*.)

Nothing more appears to be known about this kind as regards whether it is a tree or shrub, or if evergreen or deciduous, or in what part or situation in Japan it was found. Dr. Lindley merely states that it was named after the younger Veitch, who went out to Japan as a plant collector, and that he made his generic and specific descriptions "from the examination of two mutilated cones, a few seeds, and a small branch," which certainly must be considered a clever piece of botanical skill.

Gen. WELLINGTONIA, *Lindley*, the Mammoth Tree.

Syn. Americanus of the *Americans*.

„ Sequoia, *Endlicher*, *Deçaisne*, and *Carriere*.

„ Washingtonia of the *Americans*.

The Genus Wellingtonia is considered by most systematic botanists as untenable, it not being sufficiently distinct from Professor Endlicher's Genus *Sequoia*; nevertheless, as the name has now been universally adopted in Garden Literature, it had much better be allowed to stand, as its alteration would cause great inconvenience and much confusion in practical Botany. It, however, is much to be regretted that any sinister motives should ever interfere with botanical science, so as to drive Botany from its high position, to occupy the low footstool of flattery.

Page 330.

WELLINGTONIA GIGANTEA, *Lindley*, the Great Wellingtonia.

Syn. Americanus giganteus, *Hort*, *America*.

„ Washingtonia Americana, *Hort*, *America*.

The seed leaves (cotyledons) are from three to six in number, but mostly in fours, while those of the *Sequoia* are mostly in twos, but sometimes in threes.

Gen. WIDDRINGTONIA, *Endlicher*, the African Cypresses.

Page 334.

WIDDRINGTONIA JUNIPEROIDES, *Endlicher*, the Juniper-like African Cypress.

Syn. *Parolinia juniperoides*, *Endlicher*.

This is the Cypress-boom of the Dutch settlers at the Cape of Good Hope, where it forms a middle-sized tree.

Page 335.

WIDDRINGTONIA WALLICHIANA, *Endlicher*, Dr. Wallich's African Cypress.

This kind forms a middle-sized tree, with a stem from 15 to 18 inches in diameter.

LIST OF THE CHINESE NAMES FOR CONIFERS.

- Ginan (deciduous tree),—*Salisburia adiantifolia*.
 Ginkgo (full of leafless buds),—*Salisburia adiantifolia*.
 Go-sju-mats (Pine with five leaves),—*Pinus parviflora*.
 Hai-sung-tse (common on Sea Shore),—*Pinus Koraiensis*.
 Hak (everlasting life, or evergreen),—*Biota Orientalis*.
 Hen-hak (tree of life),—*Retinispora obtusa*.
 He-sung-mats (common female pine),—*Pinus Sincensis*, and
densiflora.
 Jo-bi-sjo (common tree),—*Abies Smithiana*.
 Kara-mats (Pine full of buds),—*Pseudolarix Kæmpferi*.
 Keu-sung }
 Kiu-sung } (spurious or false),—*Sciadopitys verticillata*.
 Kisu-sin }
 Kin-tsian-sung (common yellow deciduous),—*Larix leptolepis*.
 Kieu-lung-mu (skin or bark shedding),—*Pinus Bungeana*.
 Kin - le - sung - mats (common Golden Pine),—*Pseudolarix*
Kæmpferi
 Kin-sung-Maki } (common Yellow Maki),—*Sciadopitys verti-*
 Kin-sjo } *cillata*.
 Kok-sung-mats (common black pine),—*Pinus Pinaster*, and
Pinus Massoniana.
 Kwa-hak (flowering tree of life),—*Retinispora pisifera*.
 Lin (Spruce or Silver Fir),—*Abies* and *Picea*.
 Lin-ki-momi (native fir),—*Cunninghamia Sinensis*.
 Maats (all Pines, Junipers, and other conifers with sharp,
 needle-shaped leaves are called Mats or Maats by the
 Chinese).
 Maki (*Podocarpus Chinensis* and all the large Yew-like plants
 resembling it are called Maki).

- Maki-ksa (strong-scented Maki),—*Torreya nucifera*.
 Mats (true pines),—*Pinus Sinensis*.
 Na, or Nagi (catkin-bearing),—*Nageia Japonica*.
 Pian-fa (everlasting life),—*Biota Orientalis*.
 San or Sin, }
 and } (common),—*Cryptomeria Japonica*.
 Sung }
 Sjo-mats (common pine),—*Pinus Sinensis*, and *Pinus Mas-*
 soniana.
 Sugo (evergreen),—*Abies Tsuga*.
 Seosi-mats (deciduous fir),—*Pseudolarix Kæmpferi*.
 Tceu-pe (bamboo-like),—*Nageia Japonica*.
 Tsian sung (common drooping),—*Cupressus funebris*.

LIST OF THE JAPANESE NAMES FOR CONIFERS.

- Aka-matsu (red pine),—*Pinus densiflora*, and *Pinus Sinensis*.
 Araraga (Yew),—*Taxus cuspidata*.
 Asufi } (leaves white, or silvery beneath),—*Thuiopsis do-*
 Asu-naro } labrata.
 Fi, or Fime (dwarf, or slender),—*Biota pendula*.
 Fi-no-ki (dwarf or compact tree or shrub),—*Biota Orientalis*, &c.
 Fitots-matsu (single-leaved pine),—*Pinus Massoniana mono-*
 phylla.
 Fon-Maki (true large-leaved Maki),—*Podocarpus macro-*
 phylla, &c.
 Furi-hiba (variegated tree of life),—*Biota Orientalis variegata*.
 Fusi-matsu (pine full of buds),—*Larix leptolepis*.
 Fusi-kin-go (buds crowned with leaves in Summer),—*Salis-*
 buria adiantifolia.
 Fusji (buds crowned with leaves),—*Larix leptolepis*.
 Gin-an (deciduous tree),—*Salisburia adiantifolia*.
 Gink-go, and Gin-ki-go (tree full of leafless buds in Winter),—
 Salisburia adiantifolia.
 Go-jo-no (having five leaves),—*Pinus parviflora*.

- Hiba (tree of life, or Arbor-Vitæ),—*Biota Orientalis*.
Hime-tsuga (dwarf Yew-leaved),—*Abies Tsuga nana*.
Hinoki (tree of the Sun),—*Retinispora obtusa*.
Jezo-momi (Jezo Spruce),—*Abies Jezoensis*.
Jezo-mats (Jezo Silver Fir),—*Picea firma*.
Inu-kaja (wild or spurious Yew),—*Cephalotaxus pedunculata*.
Inu-Maki (wild or native Maki),—*Podocarpus Chinensis*.
Ito-hiba (thread or cord-branched tree of life),—*Biota pendula*.
Ito-suga (thread-branched evergreen),—*Biota pendula*.
Its-jo-ki (common or native tree),—*Salisburia adiantifolia*.
Kaja, or Koja (Yew-like),—*Taxus*, &c.
Kaja-ksa (strong-scented Yew),—*Torreya nucifera*.
Kara-mats (Pine full of buds),—*Larix leptolepis*.
Koja-Maki (Yew-like Maki),—*Sciadopitys verticillata*.
Kuro-matsu (black pine),—*Pinus Massoniana*.
Kus-jak (Peacock's tail),—*Biota Orientalis Sieboldii*.
Kwa-hiba (flowering tree of life),—*Retinispora pisifera*.
Lin-kiu-momi (Chinese native fir),—*Cunninghamia Sinensis*.
Maki* (large-leaved Yew-like plants),—*Podocarpus*, *Sciadopitys*, &c.
Mats (all Pines, Junipers, and Cypress-like plants with needle-shaped leaves, are called Mats in Japan).
Matsu (true pines),—*Pinus Sinensis*, &c.
Matu (Larch),—*Larix leptolepis*.
Me, or He-matsu (female pine),—*Pinus densiflora*, and *Pinus Sinensis*.
Momi (Spruce or Silver Firs),—*Abies* and *Picea*.
Mora, or Moro (form or habit),—*Juniperus rigida*.
Nire-momi (short-leaved, or small-coned Fir),—*Picea firma*.
O-mats (male pine),—*Pinus Pinaster*.
Rax-jo-sjo (common deciduous),—*Larix leptolepis*.
Sago-momi (White, or Silver Fir),—*Picea bifida*.
Sak-sin (common Cypress),—*Cupressus funebris*.
Se-ki-go (common tree),—*Pinus Sinensis*, and *Pinus densiflora*.
Sen, or Sin-Maki (common Chinese Maki),—*Podocarpus Chinensis*.

* This name is commonly applied, both in China and Japan, to all large Yew-like trees or shrubs.

Sinoba-hiba (tree of life like shrub),—*Retinispora leptoclada*.
 Siruga-matsu (variegated pine),—*Pinus Massoniana variegata*.
 Siura-momi (white, or Silver Fir),—*Picea firma*.
 Sjo-mats (common pines),—*Pinus Pinaster*, &c.
 Sjura, or Siro-momi (white-wooded fir),—*Abies Smithiana*.
 Sonora-mats (slender or drooping),—*Juniperus rigida*.
 Ssuga, or Suga-mats (evergreen fir),—*Cryptomeria Japonica*.
 To, or Too-momi (fir belonging to China),—*Picea firma*, (*var?*)
 Torano-wo-momi (tigers tail fir),—*Abies Smithiana*.
 Tsabo-hiba (evergreen tree of life),—*Biota Orientalis*.
 Tsuga (Yew-leaved),—*Abies Tsuga*.
 Uro-siro (leaves white beneath),—*Picea firma*, and *Picea bifida*.
 Wo-matsu (male pine),—*Pinus Pinaster*, and *Pinus Massoniana*.
 Wumi-matsu (sea-coast pine),—*Pinus Koraiensis*.

The meaning for some of the Japanese words in the above list is as follows; but they very frequently change L to R, K to G, B to F, H to M, F to B, and W to B, and vice-versa, in their names:—

Ki, is a tree or shrub.	Jamma, is abundant in woods.
Ko, is very small.	He, is female.
Kum, is golden.	Gire, or Kire, is a large tree.
Fi, is dwarf.	No, is growth or habit.
Fon, is true or genuine.	Nezu, is small or dwarf.
Fanna, is handsome or elegant.	Sung, is common.
Inu, is found wild.	





New York Botanical Garden Library



3 5185 00226 7530

