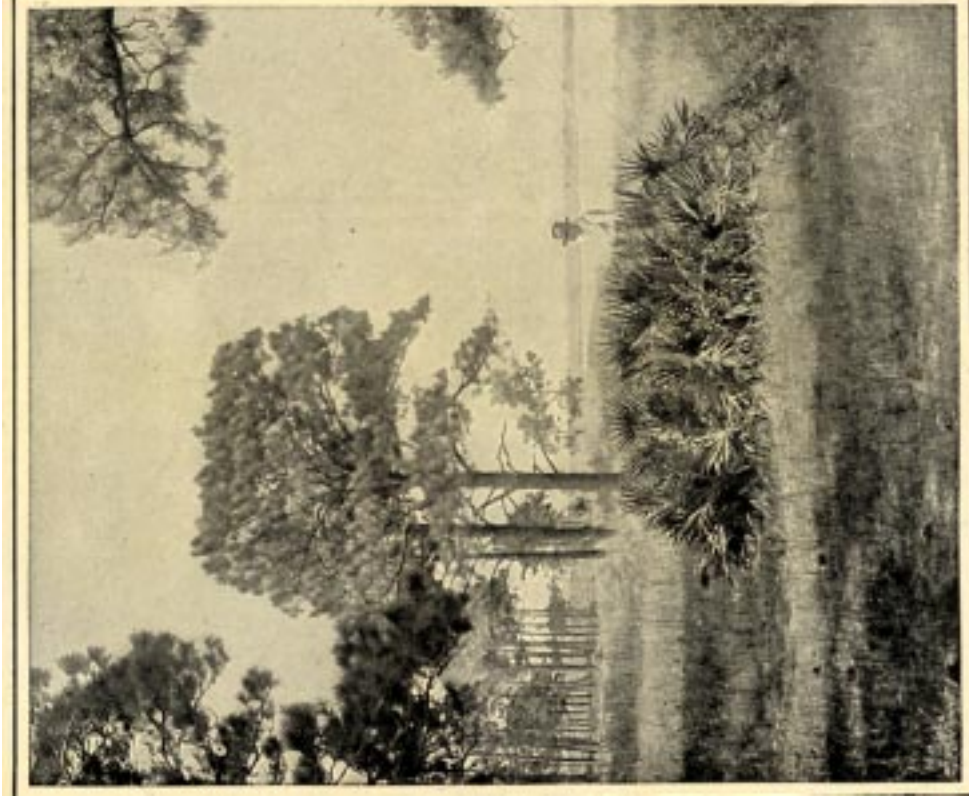


PINE (AS. *pin*, from Lat. *pinus*, Skt. *pirn*,

PINES

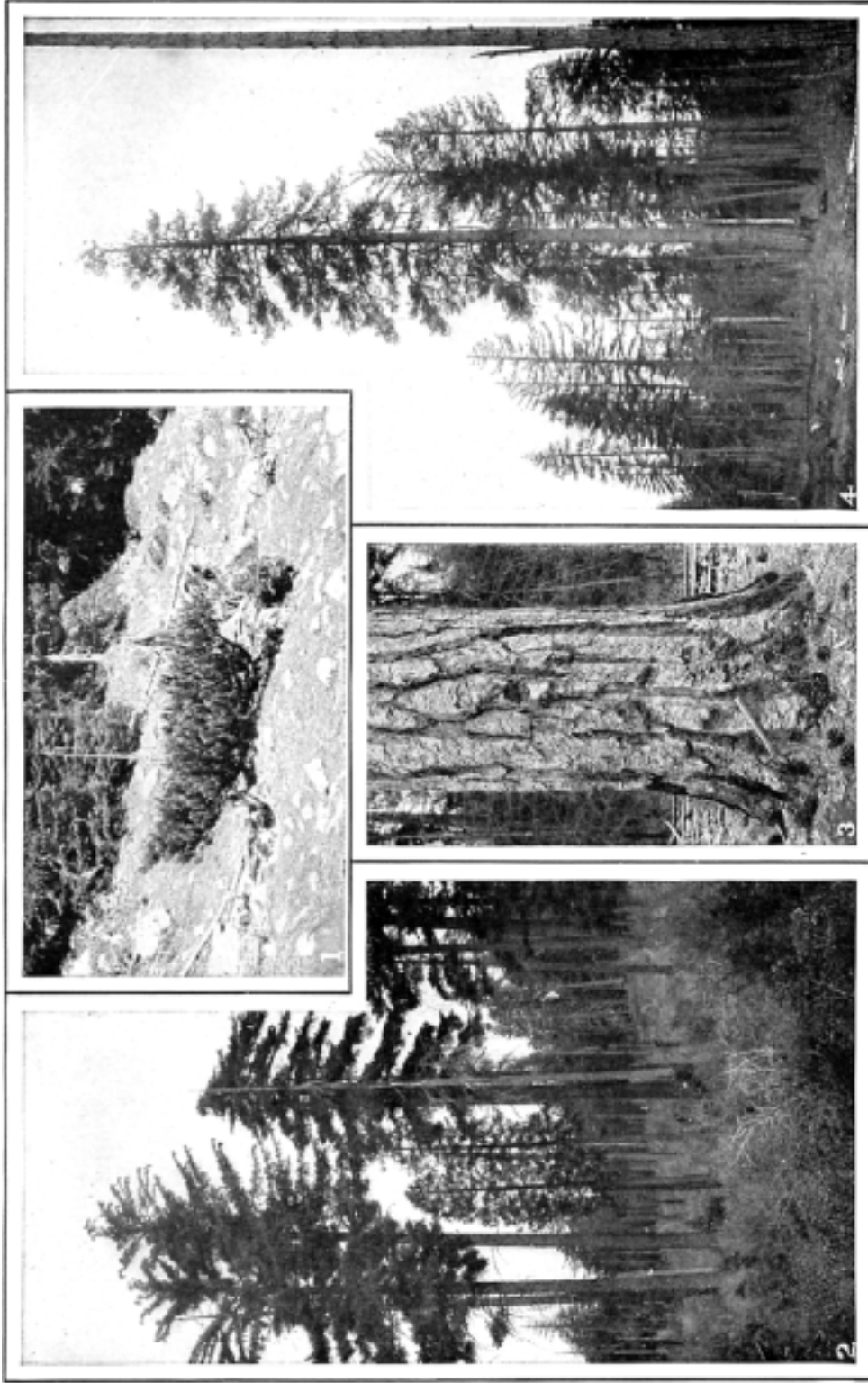


PITCH OR YELLOW PINE (*Pinus palustris*).
Saw Palmetto in foreground.



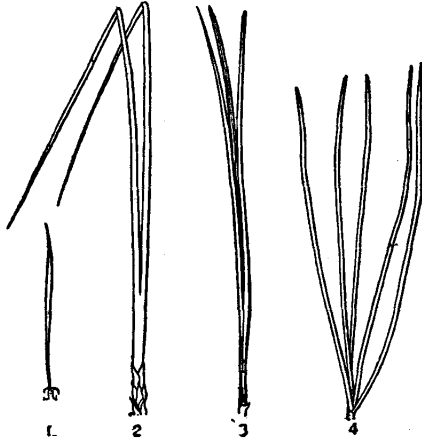
WHITE PINE (*Pinus Strobus*).

PINES



1. DWARF PINE. (*Pinus Pumillo*).
2. SUGAR PINE. (*Pinus Lambertiana*).
3. BARK OF BULL PINE (*Pinus ponderosa*).
4. BULL PINE (*Pinus ponderosa*).

pine; connected with Gk. *nirvs*, *pitvs*, OIr. *ith*, grain, Skt. *pinu*, sap), *Pinus*. A genus of trees of the family Pinaceæ, about 80 species being recognized. Nearly two-thirds of the species are natives of the northern part of the Western Hemisphere, the others occurring in the temperate and subarctic portions of Europe, Asia, and in Africa, extending as do some of the American species into the tropics upon the high mountains. The genus is readily distinguished by narrow, linear, needle-like leaves, growing usually singly or in clusters of two, three, or five, surrounded at their bases by a sheath of membranous scales; and in bearing its seeds in cones which usually mature the second year, some species the third



GROUPING OF PINE NEEDLES IN SHEATHS.

1, *Pinus monophylla*; 2, *Pinus pinaster*; 3, *Pinus sabiniana*; 4, *Pinus lambertiana*.

or later years. Pines embrace some of the most ornamental and useful trees, their size varying from shrubby specimens, which usually grow at high elevations or latitudes, to trees of great size.

Pines grow in almost every kind of soil and situation, from the bleak mountain side to the plain of almost pure sand. They are more or less gregarious in habit and frequently cover extensive areas to the almost total exclusion of other species, as in the pine barrens of North America. The thickened epidermis and reduced surface of the needles check transpiration and fit the trees admirably for the situations in which they often grow.

One of the most scientific systems of classification, that given by Engelmann in the Transactions of the St. Louis Academy of Science for 1882, is based upon rather technical characters. By others artificial groupings are made, based on the number of leaves in the cluster and the position and character of the cones. The following scheme, adapted from Veitch, shows the relationships of some of the more common species:

Strobi, leaves in bundles of five; cones pendulous; scales thin, blunt; seeds winged—*excelsa*, *lambertiana*, *monticola*, *strobus*.

Cembra, leaves in fives; cones erect or horizontal; seeds large, obscurely winged—*albicaulis*, *balfouriana*, *cembra*, *flexilis*.

Edulis, leaves in bundles of one to five; cones subterminal; scales thickened; seeds large, very obscurely winged—*monophylla*, *parryana*, *edulis*, *cembroides*.

Tædæ, leaves in threes; cones subterminal or lateral; scales much thickened, with sharp prickles; seeds winged—*coulteri*, *palustris*, *ponderosa*, *tædæ*.

Pinaster, leaves in twos; cones lateral, often clustered, mostly persistent; scales thickened, blunt or spiny—*contorta*, *echinata*, *muricata*, *pinaster*.

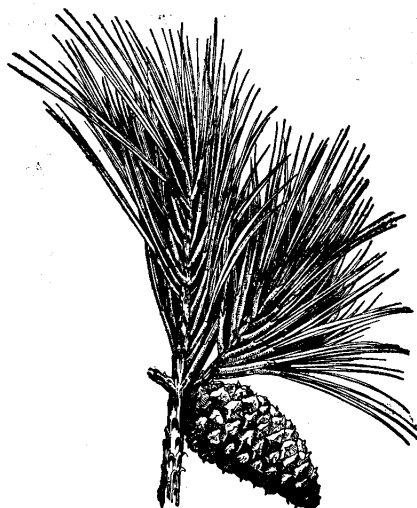
Sylvestres, leaves in twos; cones subterminal, small, mostly falling off; scales slightly thickened; seeds with elongated wings—*banksiana*, *halepensis*, *resinosa*, *sylvestris*.

The white pine (*Pinus strobus*) is one of the most important timber trees of North America. Its range extends from Newfoundland to Minnesota and southward to the mountains of Georgia. It attains a height of 75 to 150 feet, with a diameter of 4 feet. The wood is white or light yellow, soft, straight-grained, and not very resinous, although some resin is obtained from it. It is easily worked and is largely used in building, cabinetwork, etc., being especially in demand for doors, frames, window sash, blinds, shingles, etc. This tree is becoming scarce in the northern United States and the adjacent parts of Canada. It is one of the most rapid-growing coniferous trees and as an ornamental tree has no superior in the northeastern part of the United States. It is propagated from seed, and the young seedlings required some shade. It is not considered as hardy as the Scotch pine, but is longer lived. This species has been extensively planted in Europe, where it is commonly known as the Weymouth pine.

The yellow, long-leaved, or Georgia pine (*Pinus palustris*), a tree of the widest distribution and the greatest economic importance of all in the South Atlantic and Gulf States, ranks second among American pines. It is found in the sandy and gravelly soil from a region near Norfolk, Va., in a belt about 125 miles wide, to Texas, following the contour of the coast, and is readily distinguished by its long leaves, 9 to 15 inches long, and its cones, which are rather larger than those of other species that accompany it. The average height of the mature tree is about 100 feet, with a diameter of from 2 to 3 feet, tapering very gradually. The wood is heavier and stronger than that of any other pine on the market. The layer of sapwood is rather thin, and the heartwood is prominently marked by the annual rings. The timber is used in all kinds of building, being especially adapted to ship carpentry, bridge building, flooring, etc. Large quantities are exported annually, and the building operations of the Southern States are almost wholly dependent on it. The tree is very resinous, and wherever the sapwood is laid bare there is an abundant flow of resin, which is used largely in the manufacture of naval stores, turpentine, rosin, pitch, tar, etc. The industry ranks second only to the lumber interests. The leaves are utilized for the production by distillation of an oil closely resembling the oil of turpentine, and for the production of pine wool, made by boiling with alkalies, the resulting fibre being used in upholstering.

Two species associated with the Georgia pine in its lower limits are the Cuban pine (*Pinus heterophylla*), very similar to the Georgia pine in size and manner of growth, but considered somewhat less valuable, and the loblolly or old field pine (*Pinus tædæ*). The loblolly pine springs up in abandoned fields, soon affording

a supply of timber and wood for fuel, the quality of which varies widely with the conditions under which it is grown, approaching the long-leaved pine in quality when grown in the forest, but considered inferior when grown



LOBLOLLY OR OLD FIELD PINE (*Pinus taeda*).

in open fields. Another valuable species of the Southern and Eastern States is the short-leaved pine (*Pinus echinata*), a tree that attains a height of 75 to 120 feet, with a diameter of about 2 feet, and that ranges from New Jersey and Pennsylvania through southern Illinois to Arkansas and eastern Texas, in some places occurring in almost pure forests. The wood is heavy, hard, coarse-grained, but strong, and is largely used for the framework of buildings, weatherboarding, railway ties, car and other building. It is less resinous than the long-leaved pine, but in importance ranks next to that species in the South. The jack pine or scrub pine of the Northern States is *Pinus divaricata* or *Pinus banksiana*. It abounds from New Brunswick to the Mackenzie River and southward about the Great Lakes, furnishing the cover to the extensive pine barrens of that region, especially in Michigan. It is of little value except for fuel. Next to the white pine perhaps the most valuable species in the North is the red or Norway pine (*Pinus resinosa*), which is found from the Gulf of St. Lawrence to Manitoba and south to Minnesota and Pennsylvania. It occurs as trees 60 to 100 feet tall and 2 feet in diameter, often forming extensive forests upon dry sandy soils. The wood is light, hard, elastic, resinous, and durable except when in contact with the ground. Its uses are similar to those of the short-leaved pine farther south. The Northern pitch pine (*Pinus rigida*), which occurs throughout the northeastern portion of the United States and adjacent Canada and as far south as Tennessee and Georgia, is of little value except for fuel and charcoal, but, although rich in resin, it is little used, the Georgia or yellow pine yielding the principal supply of the market. The Jersey or scrub pine, that abounds in barrens from Long Island to southern Indiana and southward to Alabama, is *Pinus virginiana*.

Among the important species of the Pacific region may be mentioned the sugar pine (*Pinus*

lambertiana) and the bull pine (*Pinus ponderosa*). The former is one of the largest of the genus, the trees attaining a height of 150 to 300 feet and more than 10 feet in diameter. It occurs through Oregon and California. The tree trunks are straight and without branches for a considerable portion of their height. The timber is of excellent quality, solid, straight-grained, does not warp, and is easily worked, so that it is in demand for finishing lumber and cabinetwork. The tree exudes a resin which when burned has a sugar-like flavor, hence the name. The seeds of this and many other species of Western pines are eaten in considerable quantities as nuts. The bull pine, which has several well-marked varieties of diverse utility, is found from the Rocky Mountains to the Pacific coast, where it attains a height of 100 to 150 feet and a diameter of 5 to 3 feet; occasional trees are found 250 feet high and 10 feet in diameter, but it is rather smaller in the Rocky Mountain region. In the Pacific coast region the timber is heavy, hard, strong, and fine-grained; farther inland it is coarser-grained, harder, and more brittle. The lodge-pole pine, so called on account of its former use, is *Pinus contorta murrayana*. It is found from Alaska to California and eastward through the Rocky Mountain region, where the trees often grow in great numbers almost to the exclusion of other species. In the southwestern part of the United States are four species known as Piñon pines (*Pinus parryana*, *Pinus cembroides*, *Pinus monophylla*, and *Pinus edulis*). These various species found from Colorado and Utah to Texas and California are chiefly known for their large edible seeds called piñons. These are eaten as nuts (see NUT). The trees are for the most part small and of little value except for their seeds and for fuel. Among the Mexican species of pines the most valuable and interesting are *Pinus ayacahuite* and *Pinus montezumæ*, trees of considerable size, the former somewhat resembling the white pine of the United States.

In Europe the most valuable as well as the most widely distributed species are *Pinus sylvestris*, *Pinus laricio* with its varieties, and *Pinus halepensis*.

The Scotch pine or Scotch fir (*Pinus sylvestris*) occurs in immense forests, sometimes mixed with spruce fir, in some European countries, and is the only species indigenous to Great Britain. It attains a height of 80 to 100 feet and a diameter of from 2 to 4 feet and is frequently seen with very large branches resembling trunks. It is of quick growth and has been known to attain the age of 400 years. Its very resinous and durable timber, known as red deal and red pine, is highly valued, being used in house and ship carpentry. There is great difference, however, in the timber grown in different soils and situations, inferior white, soft, and comparatively worthless grades being produced in rich soils and sheltered situations. Several varieties yield very superior timber. The Scotch pine is valuable also on account of its turpentine, tar, pitch, and resin. Oil of turpentine is sometimes distilled from the cones and the leaves, which last have also been used in Germany for the manufacture of a towlike substance called *Waldwolle* (forest wool), suitable for stuffing cushions, etc.

The black or Corsican pine or black fir (*Pinus laricio*, or *Pinus nigra*), a native of Austria,

but found throughout southern Europe, is another species closely allied to the Scotch pine. It is remarkable for its very long leaves and its content of resin, which is more abundant than in any other European tree. It often attains a height of 140 feet upon sandy soils and has been employed to prevent sand drifting. Its timber is of little value, but a great part of the turpentine of the maritime districts of France is obtained from it. It yields also part of the Burgundy pitch in the market. The Aleppo pine (*Pinus halepensis*), a native of the south of Europe, Syria, etc., is a very graceful tree of moderate size, with slender leaves in pairs. It yields a liquid resin or turpentine, which is extracted from it in Provence and elsewhere and sold as Venice turpentine. The wood is extensively used in the Levant for shipbuilding. The pinaster or cluster pine (*Pinus pinaster*) is another important European species. It is found on the shores of the Mediterranean and also in the Himalaya and in China. Like the black fir, it has been largely used in France for covering waste sandy tracts. The timber is of inferior quality, but it yields large quantities of resin and Bordeaux turpentine.

The stone pine (*Pinus pinea*), a tree with a broad umbrella-shaped head, forms a characteristic feature of the scenery of the Mediterranean and is very often introduced in paintings. It is the *Pinie* of the Germans, the *pignon* of the French. The seeds, which do not ripen till the fourth year, are large, abound in a fixed oil, and when fresh have a sweet taste resembling that of almonds, like which they are used in Italy and other countries. Their use, however, is almost entirely confined to the countries in which they are produced, as they very soon become rancid. The wood is useful and beautiful. The cembra pine or Swiss pine (*Pinus cembra*), which grows in the central part of Europe and the south of Siberia, is a stately tree, with more persistent lower branches than in most pines. It has rigid leaves in groups of five and produces edible seeds (cembra nuts), which, although extracted with difficulty, are much used in Siberia, this fruit being so much prized that trees are often cut down to obtain it. The cembra pine yields a pellucid, whitish oil, resembling oil of turpentine, and known as Carpathian balsam. The Himalaya Mountains abound in pines, some of which rival in magnificence those of northwest America. The Bhotan pine (*Pinus excelsa*), much resembling the white pine in botanical characters and attaining a height of 90 to 120 feet, abounds in Bhotan, but is not found in the neighboring countries of Sikkim and Nepal. The wood is durable, close-grained, and so resinous as to be used for flambeaux and candles. The cheer pine (*Pinus longifolia*) of India, where it is often cultivated as an ornamental tree, is of graceful appearance. It is abundant on the crests of hills in the lower Himalaya, growing at a lower elevation than other pines. It is much valued for its resin, and the wood is used in India as a substitute for European deal. Most of the turpentine produced in India is from this and the preceding species. *Pinus insularis*, a species occurring on the higher elevations in the Philippines, has a wood resembling the yellow pines of the United States, and it is of considerable importance for building purposes. Of the European species introduced in the United States, the Scotch pine has proved best adapted to the

climate and soils. It is frequently planted as an ornamental. *Pinus laricio*, has been introduced into the United States, and its variety *austriaca*, known as the Austrian pine, appears especially adapted to the prairie regions. The dwarf pine (*Pinus pumilio*) is an alpine species whose stems are usually prostrate.

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