VARIETIES OF THE PINE.

A recent correspondent of the *Timber Trades Journal*, of London, expressed a sentiment of bewilderment which is probably not confined to England, but exists as well among many well-informed people in this country, and asks an explanation of the terms, "white pine," "yellow pine," "red pine," "Norway pine," etc. He truly remarks that white pine and yellow pine seem to be much alike, and but for the different designations given in different localities would not be distinguishable. The *Trades Journal*, as we remember its reply, asserted that the white and yellow were identical as the terms were used in the English trade, and that the red pine of commerce was what was known as Norway in North America. The fact is that the botanical classification of the timber growth of the American continent recognises no less than twenty-nine distinct species of the *Pinus* family, including distinctive white, red, yellow, and pitch pine designations. Of the white pine family, *Pinus strobus*, sometimes known as Weymouth pine, occupies the foremost place as a commercial wood, and is found from Newfoundland west to the Saskatchewan river, including Canada, Michigan, Wisconsin, and Minnesota, extending south, through the New England States, New York, Pennsylvania, and along the Alleghany mountains to Georgia. It is a white, soft-grained wood, easily worked, a favorite in house-building, and forms the principal wood of the lumber traffic and manufacture of the north and north-west, to which localities its production is now mostly confined. It grows from 80 to 150 ft. in height, and attains a size as great as 6 ft. in diameter in individual cases, the majority of that having a commercial value, however, being from 12 to 48 in. in diameter at the stump. This variety is known locally by designations varying in different localities, and includes the cork, bullsap, grove, sap, buckwheat, sugar, and other designations, applied to different stages of growth and development, or characteristics derived from peculiarity of soil.

The white pine, *Pinus flexilis*, of the Rocky mountain range, from Montana to New Mexico, on the high mountain ranges of Nevada and Arizona, on the Inyo mountains and Mount Silliman in California, is of a similar nature to that before described, being soft in wood, white, and of fair quality. It grows, however, only from 50 to 60 ft. in height, as a rule has a trunk from 24 to 48 in. diameter, and is a good tree for lumber. Its quality is intermediate between the eastern pine and the sugar pine proper.

The sugar pine, *Pinus Lambertiana*, is a distinct species from what is frequently spoken of in the north as sugar pine. It is a wood resembling the eastern pine, but is of a coarser grain, heavier, and stronger, grows to a height of from 150 to 300 ft., and its trunk reaches from 10 to 20 ft. in diameter. It is found on the west coast ranges, from the Santa Lucia mountains, along the Sierra Nevadas—especially on the western flank, at an elevation of from 4,000 to 8,000 ft.—and in Oregon, north to the Columbia river.

The above constitute the principal varieties of the white pine family, as classified by Professor Sargent, of the United States census commission, although there are several other varieties of an obscure and less valuable character, entering but little, if at all, into commercial uses.

Yellow pine, *Pinus ponderosa*, is a product of the Pacific coast. It is found in California and Oregon, principally on the western slope of the Sierra Nevadas, and is the most valuable of the western pines. Its wood is yellow, hard, heavy, strong, and durable. It is a large tree of a height of from 200 to 300 ft., with a trunk from 12 to 15 ft. in diameter. It is found extensively along the eastern slopes of the Sierra Nevadas, where it attains a lesser height, being from 100 to 200 ft. above the elevation of 5,000 ft., and having a diameter of from 10 to 15 ft.; it is often found in most arid situations. It is also found throughout the Rocky Mountains, from British Columbia to New Mexico and Arizona, where it grows to but from 80 to 100 ft. in height.

In the family of yellow, we have also a variety, *Pinus mitis*, known as yellow pine, short-leaved pine, and spruce pine. It has a wood yellow in color, hard and compact, and quite durable, growing to a height of from 40 to 70 ft., rarely exceeding 24 in. in diameter. It has been seen as far north as Staten Island but in few cases, and is found as far south as Florida and Alabama, on the Ozark Mountains of Missouri, where it is the only pine, and in Arkansas. Its wood is used for similar purposes as the yellow pine of the south, to which it is inferior.

The yellow pine, long-leaved pine, southern pine, Georgia pine, brown pine, hard pine, by which designations is known the one variety of *Pinus Australis*, or *Pinus palustris*, is found from southern Virginia to Florida, and Mississippi, Louisiana, the valley of the Red River of the South and eastern Texas, extending seldom into the interior more than 100 miles from the coast. It is strong, compact, straight in grain, has light sap, is very durable, and is the true pitch pine, although differing from *Pinus rigida*, to which the term pitch has been given. It is from *Pinus Australis* that the bulk of the turpentine, tar, pitch, and resin produced in the United States is derived. Its growth is from 60 to 100 ft. in height, with a trunk of from 24 to 48 in. in diameter, affects a dry, sandy soil, and is found rarely in low swamps. It is the commercial yellow pine of the south, *par excellence*.

The pitch pine, *Pinus rigida*, is found in Maine and Vermont, and extends to the upper districts of Georgia, and is but little found west of the Alleghanies. Its wood is heavy and resinous, and when grown in low ground is soft and largely sapwood. It grows to a height of from 40 to 80 ft., reaching sometimes 30 in. in diameter, and affects a dry, barren, sandy soil, or a deep swamp. It is included in the cheapest grades of lumber.

Norway pine, sometimes called red pine, *Pinus resinosa*, or *Pinus rubra*, is a growth of the north-west, being found in Canada and the New England States, south to the mountains of Pennsylvania and west to Minnesota. Its wood is light-coloured, resinous, hard, heavy and durable in dry situations, used somewhat for ship-building, and in the west for joist and other building timber. It is usually from 60 to 80 ft. in height, although in the forests of Michigan, Wisconsin, Minnesota, and the British Provinces it attains from 100 to 150 ft., with a trunk from 15 to 48 in. It affects a high, sandy soil, and in favourable locations resembles the wood of the spruce, being equally white. As a rule it borders more closely on the yellow pine of the south, and we are at a loss to understand, from the general character of the two, why it should ever be classed among the reds rather than the yellows.

Redwood proper, *Sequoia sempervirens*, is exclusively a California tree, resembling the white pine in grain and texture. Its colour is a decided red; it is light, close-grained, compact, easily split and worked, is susceptible of a fine polish, is very durable, and in California is sawed into boards and shingles, furnishing the cheapest lumber, fencing, posts and ties of the Pacific coast, and being quite accessible to tide water, is likely to be soon exterminated. It reaches a height of 200 to 300 ft., with a straight, cylindrical trunk of 8 to 12 ft. in diameter, free from limbs to a height of 80 or 100 ft. Unlike the *Pinus* group, the stumps and roots throw up great numbers of vigorous suckers, which would indicate a capacity for cultivation. This wood is seldom seen in the east, except in the shape of packing boxes, in which goods have been brought from the Pacific coast. California has also a red wood, *Ceanothus spinosus*, found in the coast ranges, but it is a small and insignificant tree, of little or no commercial value.

The varieties of pine which our English cousins come in contact with from this continent are the white pine, *strobus*, in its different subdivisions, some of which are sufficiently rich in color to lead to no surprise that they should sometimes class it as yellow, although in fact we doubt if a true yellow pine stick is ever seen by them except as it comes from the south, and is known as Pensacola, Fernandina, Georgia, etc.

They also receive of the Norway *Pinus resinosa*, which no doubt has been recognised by them as a red pine, through its botanical description rather than classification as *resinosa*, and this description is measurably warranted by the reddish cast of the thin bark of the growing tree, although the wood partakes more of the pitchy character of the yellow pine of the south. From southern ports they obtain what is known in this country as yellow pine, the variety *Australis* or *palustris*, or that of *mitis*, which, while more properly called pitch pine, has by common consent and custom become known as yellow pine, but should not be confounded with the true yellow, or *ponderosa*, of the Pacific coast, the timber of which is free from the resinous character of the *Australis*, or the *mitis*, or yet of the *resinosa*.—*North-western Lumberman*.

SUBSTITUTES FOR LUMBER.

We are in receipt, from Mr. S. W. Hamilton, of Lawrence, Kansas, of a sample of lumber made from straw, manufactured after a process patented by himself, the particulars of which he does not explain. He informs us, however, that he can manufacture lumber like the sample sent, in any desired length, from 12 feet upward, and to 32 inches in width, and cost competing with the better or finishing grades of pine, although he does not inform us whether this competition will apply equally to sections where lumber is comparatively cheap, as at Chicago, and at Western grain producing points, as at Kansas. We imagine, however, that the expense will vary but little at any point where straw is obtainable in large quantities.

The manufacture is, of course, confined to a grade which will compete with the better class of lumber, as there would be no object in filling the new product with knots, and shakes would scarcely be obtainable even if desired, while sap and decayed wood must be impossibilities. The sample sent to us will hold a nail as well as wood, is equally susceptible to a high painting finish, and can be polished to as high a degree as is at all desirable. Being made waterproof, we can discover no possible reason why it should not be as durable, or even more so, than pine or even oak, while its adaptability is evidently as great for roofing purposes, as for the fine work of a dwelling.

The question of cost appears to us to be the most important element yet to be practically solved. We can see no reason why it is not susceptible of being worked under the plane or other ordinary tools of the carpenter, and when once fitted to its place, we can readily believe that it will be free from shrinkage or swelling. In appearance, the sample before us resembles hardwood, being about as dark as oak and more dense in texture, with a specific gravity one-fifth greater than thoroughly seasoned black walnut. For finishing purposes, it will not, as a rule, be necessarily as thick as ordinary lumber, its tensile strength being apparently double that of wood of the same thickness. On the whole, we are favorably impressed with the appearance of the new artificial lumber.—*N. W. Lumberman*.

How to Use Oil Stones.

Instead of oil, which thickens and makes the stones dirty, a mixture of glycerine and alcohol is used by many. The proportions of the mixture vary according to the instrument operated upon. An article with a large surface, a razor, for instance, sharpen best with a limpid liquid, as three parts of glycerine to one of alcohol. For a graving tool, the cutting surface of which is very small, as is also the pressure exercised on the stone in sharpening, it is necessary to employ glycerine almost pure, with but two or three drops of alcohol.

Cement for Leather.

One who has tried everything, says that after an experience of fifteen years he has found nothing to equal the following as a cement for leather belting: Common glue and isinglass, equal parts, soaked for ten hours in just enough water to cover them. Bring gradually to a boiling heat and add pure tannin until the whole becomes ropy or appears like the white of eggs. Buff of the surface to be joined, apply this cement, and clamp firmly.

THE *Northwestern Lumberman* says that the cedar post and telegraph pole business, which languished during 1880 for want of adequate supplies, seems likely to be overcome during the coming season, and that unless trouble is experienced in obtaining transportation, there is little probability of cedar being in short supply at the distributing points on the chain of lakes during 1881.

CEDAR PENCIL-MAKING.

From the forests of Florida the timber is received in roughly-squared logs about fifteen feet in length and eighteen inches square. After being opened—that is, sawn into two pieces by an ordinary double-handed saw—in the saw pit, *the timber is allowed to season. This period of* probation being passed, the logs enter the wood cutting room. Here the timber is cut up into the required lengths and thicknesses by circular saws, but as they cannot be relied upon to produce absolutely true surfaces, the "leaves," as they are termed, are passed under a thicknessing or planing machine, which reduces them to a perfectly uniform size. From this room the "leaves" *pass to a second wood-cutting room*, where, following their progress, we find them again sawn up into slips or scantlings, and which are technically termed "tops" and "bottoms." The latter is the portion into which, after being grooved, the lead is inserted, while the former is the covering that protects it, the one slip being just half the thickness of the other. The operations of cutting the "tops" and "bottoms" and grooving are performed by *little machines* running at the almost inconceivable speed of 7,000 revolutions per minute. The groove cut corresponds exactly to the size of the stick of lead to be inserted. From this department the cedar slips are passed on to the "filling in" room, where, while one operator inserts the lead, another glues the "tops" on. The "gluein, up" operation being performed, the pencils are placed in a frame and tightly screwed into position. When firm and dry they are placed in a clump a gross at a time, and the ends cut off by means of a circular saw, in order to make the pencils one uniform length. The next operation is the rounding of each pencil, and the marvellous ease, precision, and regularity with which this is performed renders it one of the most beautiful in the entire manufacture. The square pencil is inserted in a small machine containing a rounding chuck running at a high rate of speed. Before the eye can seize all the details of the process the pencil has come out at the other end of the machine rounded to a nicety, without flaw or blemish. One such piece of machinery will turn out twenty gross *per diem*.

Walls and Beams.

One precaution that is very seldom taken with high buildings is so supporting the timbers of the floor that, in case they break or fall, they shall not pry the wall over inward, and in case they expand they will not push it over outward. As ordinarily constructed, holes are left in the walls, into which the ends of the joists are set, the holes being about the size of the ends of the *joists*, so that in case the floor falls the timbers are apt to tumble the walls inward on the contents of the building. The *Paper Trade Journal* suggests two ways of getting around this. One is to set the end of the joist upon a corbel or projection from the face of the wall, so that the joists clears the face of the wall entirely, and in case it falls it exerts no influence upon the wall. The other method has the same object in view, and accomplishes it in a simple way. The holes made to receive the joists are made about twice as high as the joists, so that in falling the joist has no prying effect upon the wall. These remarks apply to iron as well as wooden beams; but for iron beams there should be observed the additional precaution to leave a greater space between the end of the beam and the wall, so that the inevitable expansion of the *beam from fire shall cause no thrust outward*, tending to overthrow the walls. It would perhaps be as well if all external walls were bound together by anchor bolts with external plates which, although not very slightly, yet often tend to hold the wall up when otherwise it would topple and fall outwards. Of course, if the beams are properly cased below with some fire-proof material or by some heatproof method, *their expansion will be very much less than* if they are left naked to the action of the heat.

THERE were received in Boston during the year 1880, 351,744,000 feet of lumber in all. Of this quantity about 209,400,000 feet was received by rail, 41,000,000 by sailing vessels from the south, 1,500,000 by southern steamers, about 100,000,000 by water from Maine and the British provinces.