dry soil, and generally for wood exposed to the weather, but not to constant moisture, kyanizing—steeping the timber in a solution of corrosive sublimate—may be relied upon. Hemlock was exhibited that was exposed for 40 years at Fort Ontario, Oswego, N. Y., and various kinds of timber that were exposed for 20 years at Lowell, in a sandy soil; while the samples of spruce, from the gate-boxes of the Lowell water works, exposed in various soils for ten years, exhibit the effect of various degrees of moisture, and show that kyanized timber should be kept dry. Kyanizing costs about $6 per thousand feet, board measure. Under favorable circumstances it may be relied on to double or quadruple the life of the more perishable woods. Where and when it will pay to use this method will depend upon the price of the timber and its subsequent exposure.

Burnettizing consists in injecting the timber with a solution of chloride of zinc. It cannot be done successfully unless the wood is first seasoned, either naturally or artificially, to deprive it of moisture, and make room for the solution. This is forced in under pressure in closed cylinders, and is liable to wash out subsequently from the outer layers of the timber, unless retained in some way. For cross-ties, and for timber exposed to weather and moisture, but not in very wet situations, burnettizing is probably, in view of the present price of timber, the most economical method to use. It costs, if well done, about $5 per thousand feet, board measure, or some 20 to 25 cents a tie. It can be done for even less, but the result is not likely to be satisfactory. The hemlock and maple ties exhibited, which have been in use 15 years on the Lehigh & Susquehanna railroad, and the oak tie, 17 years in use on the Erie railway, show the results which may be accomplished. In Germany brunettized fir and beech ties average from 15 to 18 years in the track, and this method has there become the favorite for ties, after extensive trial of all the others. This process should by preference be applied to the cheaper and more open-grained woods. It does not answer so well for bridge ties and timber, as burnettized timber is apt to check and split when dry and exposed to the sun. It will probably not pay to burnettize ties where white oak, or other equally durable woods, can be obtained at 40 or 45 cents a tie, but a recent investigation upon one of the eastern trunk lines, about 1,000 miles long, has established the probability that, with white oak ties at 62 cents each, an annual economy of $250,000 may be expected by burnettizing the hemlock, instead of laying down the oak unprepared.

Creosoting consists in injecting the timber with hot creosote oil under pressure. The mode of application, and necessity for seasoning, are much the same as for burnettizing. For timber in very wet situations, or exposed to marine worms, the best method to use is that of creosoting. It is the most effective, but also the most costly of the various processes. When well done, it costs from $12 to $20 per thousand feet, board measure, or from 50 to 60 cents a tie. It is the favorite method used in England, and is there materially cheaper than here, in consequence of the lower price of the oil. The English ties exhibited have been from 20 to 22 years in use, and show perfect preservation. Ties and timber creosoted in this country are also shown, but have not had so long an exposure. It is probable they would be thrown out of service, by being cut into by the rail, long before they would decay. Where it will pay to use this process, depends upon a number of local circumstances and prices, which cannot well be enumerated here. It is very good, but costly. There are other substances, such as pyrolignite of iron and sulphate of copper, which have proved fairly effective in preserving timber, but European experience seems to favor most burnettizing and creosoting. The sections of ties exhibited from the Wabash line, and from that of New York, Pennsylvania & Ohio, were prepared by a modification of the sulphate of copper process. The original patents on all the effective processes have long since expired. There are several patented modifications and modes of application, some valuable, and some otherwise, which are still in force. It cannot be too strongly insisted upon, that to be effective the work must be well done. The sap or moisture must be gotten out of the timber, and a sufficient amount of antiseptic put in. If the solution exceeds a certain strength, the wood is rendered brittle and inelastic, so that both skill and honesty are required to accomplish success. —*Northwestern Lumberman.*

CUMBERLAND MOUNTAIN TIMBER.

A correspondent of a southern journal has made a tour over the Cumberland mountains, and tells about the timber he saw. In Monroe county cherry is very abundant, ranging from two to six feet in diameter at the butt, and 60 feet to the first limb. It is difficult to get out and will have to be hauled from one to sixteen miles, and then floated down to a mill site. The benches are not smooth but rocky and rugged. The standing cherry in this county is estimated at from 10,000,000 to 16,000,000 feet. It can be bought very cheap, and the correspondent is of the opinion that a man with money and pluck could make a fortune out of it.

In McMinn, Polk, Bradley, Hamilton, Marion, Franklin and Lincoln counties there is a heavy growth of timber, but little cherry and pine, and these counties have some good logging streams. The poplar is very fine, and most of it is accessible at a reasonable cost. The hickory is straight, long-bodied, free from knots and tough. Franklin county is one of the best of this range, both for choice timber and the ease with which it can be marketed. The mountains in this county are less rocky than in the others, and the benches not so steep, with good points for road-beds. There is hickory enough on a tract of 6,000 acres to pay the state debt, if worked up into awl handles and sold at one cent each On this tract there are estimated to be 15,000,000 feet of poplar, and it can be bought for $4,000. There is, however, a question as to the title, as there is too much of the land.

One man was cutting butternut and walnut to fence his 10-acre lot, and ash trees, four feet in diameter, were deadened to give his crop sunshine. Small mills, with a capacity of from 2,000 to 4,000 feet per day should be used, as moving often is necessary. The most wonderful mill was found on Robinson creek, in Franklin county. It is very primitive. The mill is made entirely of wood, with the exception of the saws, and was built by George Keller, a 19-year old boy. The mill is driven by three turbine water wheels, all made of wood. The head-blocks are of wood, with wooden ratchets. The sawing is smooth, and the working of the mill would surprise the most credulous.

Mills are being put in operation all along the range of mountains, where a few years ago it was thought out of the question to handle logs In a short time the sombre stillness of this mighty forest, where now only the plaintive call of the lonely owl is heard, will be broken by the busy hum of many saw-mills.—*Northwestern Lumberman.*

Manitoba Shipbuilding.

The following from the Manitoba *Free Press*, of Winnipeg, shows considerable activity in vessel building among the lumbermen of the Canadian Northwest: The Couchiching, a double screw propeller, was launched May 24. She was built by John Short for the Rainy Lake Lumber Company, and is 93 feet in length over all, 18 feet beam, and 7½ feet deep of hold. Mr. Short has two more boats on the stocks, one for Garden & Short, to be 88 feet over all, 16 feet beam, and 6½ feet depth; and the other for W. T. Gibbins, to be 60 feet over all, 12 feet beam, and six feet depth. The Winnipeg Lumber Company has also two boats on the stocks. One is to be 100 feet long, 20 feet beam, and 8 feet depth; the other is for a steam pleasure yacht 50 feet in length.