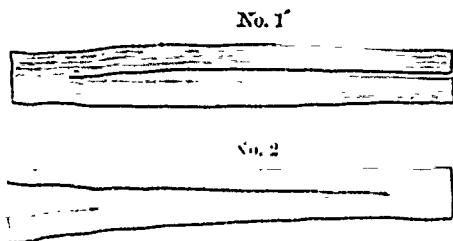


SOMETHING ABOUT SHRINKAGE.

BY R. H. DAVIES.

There is but very little material that keeps the same size under all circumstances. Metals shrink and expand—some very much more than others—according to change of temperature. I don't wish to treat of the shrinkage of metals in this article, but wholly upon the shrinkage of woods. Like metals different woods vary much in shrinkage. But all woods of the same variety will shrink in size, in proportion to the amount of water or sap contained in the wood. One variety of wood may contain four times the quantity of sap, and still not shrink near as much as others. Lumber sawed from trees growing on a side, hill, or near the water, or on the south side of a grove, will shrink very irregularly. Some parts will shrink very much more than others, more particularly endways. The same is true with a tree that grows very much out of perpendicular. Suppose a tall tree was growing at an angle of 45 deg. the tree itself being perfectly straight, as soon as the tree was cut down, it would partially assume the shape of a rainbow.

Nearly all the lumber shrinks, more or less, endways. Some lumber will shrink on one side and expand on the other the moment it is sawed. This is very noticeable in sawing lumber for logs. For instance, the first board sawed from a log may be longer than the log, or *vice versa*, according to which side the sawing was commenced. It is also very noticeable in ripping up lumber; sometimes when the saw gets well into the board, it begins to pinch, and has to be wedged, but after the saw gets

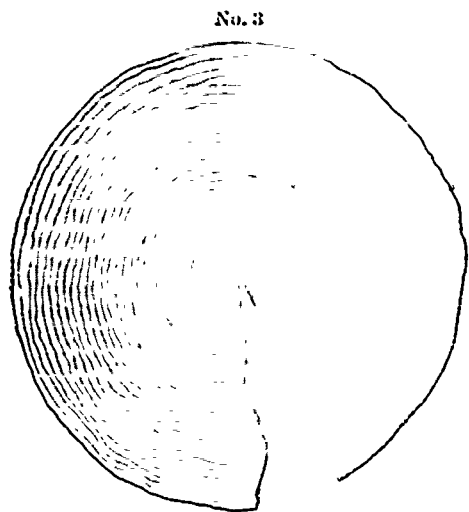


nearly through, the cut begins to open, as illustrated in cut No. 1. Or it may open instead of pinch, as shown in cut No. 2.

This is all done by shrinkage and expansion. In No. 1 the inside shrinks while the outside expands; and in No. 2 exactly the reverse. We will suppose that No. 1 and No. 2 each represents a board 12 or 14 ft. long, 1 inch thick and 12 inches wide. Now if a piece one inch wide is sawn out of the centre of No. 1 the piece would be shorter than either side; and if the same had been done to No. 2 the piece would be longer. Straight edges can never be made of such lumber.

It is doubtful if there is any lumber known that shrinks as much endways as redwood. The wood shrinks on an average $\frac{1}{4}$ of an inch in 12 feet; but there are cases when it is four times that amount. When window casings are nailed to green rustic, oftentimes the latter in shrinking will pull the frames open and let the sash out.

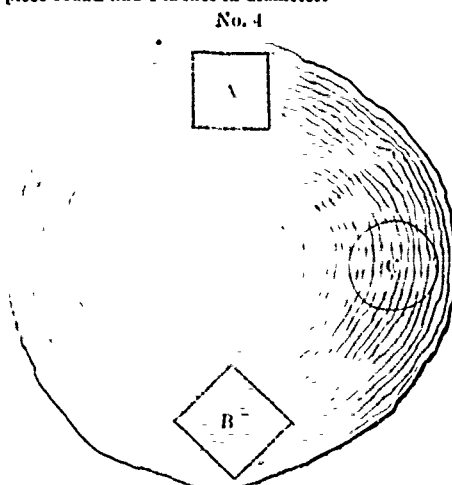
I wish to show now why lumber checks in seasoning. Nineteenths of all the cracking or checking in seasoning lumber is caused entirely by light and not by heat. Lumber can be seasoned very rapidly by intense heat, without even a check, provided not one ray of light is allowed to reach the lumber



during the process of seasoning. I also wish to show why a log will split while seasoning. For example, let me take a section of a green log of madrone, blue gum, or any other of that class of woods (which comprise at least one-half of the woods known); we will take a log of 18 inches in diameter and saw off a section 6 inches long, and let it season (in the dark if you please).

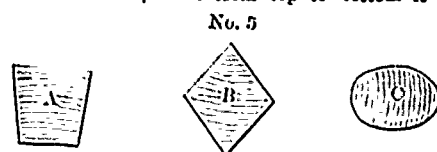
Here we have it at cut No. 3, thoroughly seasoned and find it about the same diameter and circumference that it was before seasoning; we find that the depreciation in size lies in the V-shaped cleft; and this cleft is caused by the wood shrinking very much in circumference, and in diameter hardly perceptible, consequently the fibre must be torn asunder. To illustrate this more fully we will take another section of the same log and cut three

pieces out as shown in No. 4, two pieces being 4 inches square, and 1 piece round and 4 inches in diameter.



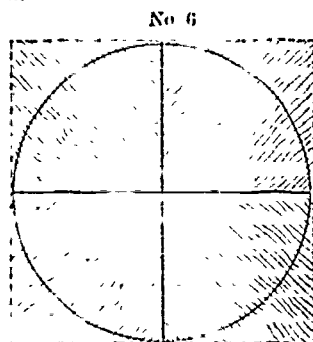
We find them as shown after seasoning to be in the shape as shown in cut No. 5.

We find that A has shrunk in width at the top $\frac{1}{2}$ inch, and at the bottom $\frac{1}{2}$ inch, while from top to bottom it has only



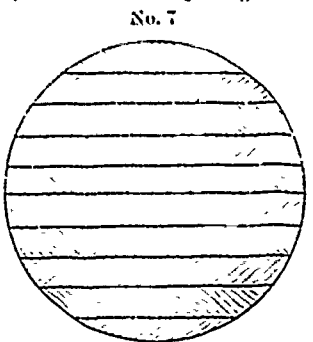
shrunk 1-32 inch. B we find has shrunk from right to left $\frac{1}{2}$ inch, while from top to bottom it has only shrunk 1-16 inch, which leaves it in the shape of a diamond. C we find to be egg-shaped; the longest way has shrunk 1-32 inch, while the shortest has shrunk $\frac{1}{2}$ inch. "Well," says one, "what are we to do about this shrinkage, we can't help it, can we?" That is very true you can't stop the wood from shrinking, but you can help using that shrinkage in the wrong direction.

Suppose you have a solid cylinder to make, say, 12 inch diameter and 3 feet long, to be and keep perfectly round. This cannot be made of one piece (even if you had it), neither can it be made of several pieces, unless glued up in the right manner, and with the right kind of lumber, or with lumber having the grain the right way, which should be an angle of 45 deg. It makes no difference how many pieces are used, provided there is no less than four.



Cut 6 is a section glued up of 6 inch square timber.

Cut 7 is formed of $1\frac{1}{2}$ inch plank, glued together with the grain running like either No. 6 or 7; once made it will always keep round; whereas, if the timber is put together with the grain



running as it did in the log, it will not make so good a job as if made of only one piece.

The reason that articles made of pieces glued together will not warp and twist as much as if made of one piece, is owing to the mixing of the grains, which generally gets mixed more or less, but without any regard to it on the part of the workman. Woodworkers, bear this in mind—wood shrinks in circumference of the grain, but comparatively nothing in diameter.

THE COST OF THE BIG RAFT.

All efforts to launch the big raft at the Joggins has hitherto failed. The Telegraph says: "Since the raft has been upon the waves it has altered in shape considerably. It was originally 55

feet broad and 38 feet high. It is now 62 feet broad and 31 feet in height. At high tide the water at the lower end of the raft is 19 feet in depth, and causes the structure to lift a trifle. A number of hydraulic jacks have arrived from New York, and the work of pushing the raft to deep water will be proceeded with at once. Mr. Robertson has obtained some eye bolts which will be placed in the rocks on the ledges on either side of the passage way through which the raft has to go. Hawsers will be attached to these, and the raft will be kept there in position until the tugs arrive to take her in tow. It may interest the public to know how much this great raft cost and how much would have been saved if it had been launched when the first attempt was made. A reporter of the Sun interviewed several of the principal business men in the vicinity of the Joggins, most extensively engaged in the piling business. The result of the interview was about as follows: There are in the raft about 2,225,000 feet of lumber, which could not be carried from the Finger Board to New York in less than fifty schooners. The average price of piling cut conveyed to the shore ready for shipment is $1\frac{1}{2}$ cents per foot. There are required to place it on board the vessel $2\frac{1}{2}$, which includes the freight and the cost of discharging. This brings the cost of the piling delivered in New York, up to $3\frac{1}{2}$ cents per foot, and in addition the port charges and commission will bring the costs up to $4\frac{1}{2}$ cents these charges averaging about $\frac{1}{2}$ of a cent per foot. An ordinary schooner will carry about 20,000 feet, and her cargo landed in New York will cost the shipper \$825. As there are about fifty such cargoes in the raft, the cost of the lumber, if it had been carried in vessels would have been about \$40,000. The raft, as it stood in August last, when it was first in readiness for launching, was in the vicinity of \$13,000, it is perhaps not out of the way to mention that the builder B. B. Barnhill, lost something like \$5,000. Already about \$10,000 have been expended in attempts to launch it, which brings the cost up to \$23,000. From this it will be seen that the owners can afford to expend some thousands of dollars yet to launch the raft and land it in New York with a lesser outlay than would have been required had the lumber been shipped in vessels.

FREIGHT RATES ON LUMBER.

The Orillia Packet of a late date contained the following, which will, doubtless, be of interest to readers of the LUMBERMAN:

Before the Railway Commission, sitting last week at Toronto, Mr. J. S. Peckham favored the regulation of freight rates by the railway companies rather than by a court, constituted for that purpose. In the matter of special rates he had been treated impartially. He was of the opinion that the small lumber shippers, whose business was purely local, should not get the same rates as the larger dealers. He had not experienced any local discrimination, that is, between two towns. From navigable points the rates were lower in summer than in winter. That was owing to competition during the navigation season. The question of transshipment was one which a court might deal with advantageously. Mr. James Scott, Waubesa, said that special rates were a necessity owing to the keen competition between railway companies. The establishment of a railway court would be of immense advantage in settling disputes which from time to time arise between railway companies and individuals. It would expedite a settlement at a small cost, and consequently would be of great service to the community. At the present time it was almost impossible to obtain justice, unless at considerable cost and delay. He preferred a railway court to the common law courts. The question of rates should be determined by the companies themselves. Mr. Thomas Long, Collingwood, said the rates were lower from competing points than from points where there was no competition. He understood there were special rates, but he had never got any. He had applied for special rates but was not successful in obtaining them. He complained of the discriminating rates on the Northern railway. He had been obliged to close up his flour mill two years ago and had not since opened it, owing to this system of discrimination. The proposed court, if established with full powers to deal with railway matters, would be a great benefit to the Dominion. Merchants were not permitted to ship mixed cargoes of a similar classification and if a carload consisting of one half sugar and the other half rice were shipped the company would charge what was called tariff rates, whereas if the load was entirely made up of either commodity the carload rates would be charged, which were considerably lower, notwithstanding that the carload rates were the same in both instances. Again, the railway companies do not hold themselves responsible for loss in transit of wheat through defective cars. Sometimes half of the carload fell through the cracks and openings of old cars, which was a dead loss to the consignor. The terms of the contract were generally for four hundred bushels, more or less, but often they only delivered one hundred bushels and refused any compensation for the loss sustained by leakage. In fact the merchants were entirely in the hands of the companies.

A gang of shanty men arrived from the Nipissing district on Saturday last. They were employed on Mr. J. R. Booth's tow boats on Lake Nipissing forwarding logs to his new saw mill, which was constructed last summer on the edge of that lake. The winters cut on that limit has been secured in a boom, and the mill will run for about two weeks more.—*Ottawa Evening Journal*.