

## A PROBLEM FOR MILL MEN.

The following was recently sent to the *Scientific American*, which, with answer given by that journal we give below. In a stick of timber 40 feet long, 24 inches square at one end, and 12 inches square at the other end, how many feet of lumber are there? It is also stated that the proposition has been given to several lumbermen in the Chicago Exchange building, who have found various results; among others, the following: 60 feet, 600 feet, 720 feet, 876 feet, 1,080 feet, 1,200 feet, and 2,400 feet: that if the cubical contents of the timber in it is what is wanted, 1,200 feet would be the correct answer, but if a lumberman were buying the stick, and desired to find how many feet of board measure there was in it, and put his rule at work, he would find but 1,080 feet, an allowance being made for sawing, of the "kerf" *Answer:* For obtaining the solid contents, the rule in Haswell's is for the frustum of a pyramid. Add together the areas of the two ends and the square roots of their product; multiply sum by height, and take one-third of the product. Thus: 4 sq. ft. plus 1 sq. ft. equals 5 sq. ft., and plus the square root of their product, which is 2, equals 7, which multiplied by height, which is 40 feet, equals 280 feet, which divided by 3 equals 93 1/3 cubic feet, which multiplied by 12 equals 1,120 feet board measure, without allowing for kerfs or waste. Considering the taper of the timber and allowing for kerf, you cannot make more than 10 feet of lumber to the cubic foot. Then  $93 \frac{1}{3} \times 10 = 933$  feet merchantable lumber 1 inch thick that could possibly be obtained from the piece.

## HARDWOOD.

(American Builder)

Hardwood as a building material is so rapidly superseding pine and other woods that it is creating an uncomfortable feeling among the dealers who handle soft woods only. There are dealers now engaged exclusively in the hardwood trade, who are working up an immense business in this stock, and those who are sharp enough to see the drift of the building trades are starting yards in which nothing but hardwood is found. Mahogany, oak and cherry have been the rage among cabinet makers for some months past, and builders and architects are using these woods whenever it can be found allowable.

There can be no doubt in the mind of any one possessing ordinary foresight that hardwood must furnish the material out of which the lumber trade of the future is to be carved. There is a good deal of pine left yet, although, perhaps, some of the otherwise wrestlers with this unsolvable problem of the timber supply may awaken some fine day to find that the "denudations" were not so very far wrong after all in predicting that it will not hold out at the present rate of cutting more than a dozen or two of generations. Put this aside, and independent all together of whether there be much or little pine yet to be sawed, it is unmistakable that some varieties of hardwood are crowding it closely for the first place. Time was when hardly a pine yard in the northwest thought of including maple flooring among the essential items of its stock; now where is the first class dealer who does not sell thousands of feet of it every year? Ten years ago hardwood finish for business buildings or dwellings was regarded as an unusual and unnecessary extravagance; but the time has come when it is an economical provision, and a necessity indispensable to a building of any pretensions. It is easy to perceive that white pine as a finishing wood has seen its best days, and although it will always find a market and command a good price, it is bound to give way to an increasing extent before the rapid and steady advance into favor of its superior rival. The hard and heavy yellow pine of Mississippi and Georgia is already displacing the white for building timbers, and no doubt it will before long be as much sought for that purpose as it has been these many years for car sills. Something of a revolution is in progress among the architects and builders, and many of them have already reached the point of preferring good, sound wooden beams, properly fire-proofed, to iron girders, and the spread of this belief in the superior merit of timber for such purposes must result in greatly increasing the sale of yellow pine and other strong and heavy

woods. As a matter of fact, hardwood of all kinds is but just beginning to find use, and its manufacture and sale is just as to develop and grow as the consumption of all kinds of materials is certain to be greater from now on than it was ever before. In all this, however, there is nothing to disturb the operator in white pine. If he has got a large stock of that variety of wood, either standing in the tree or piled upon his dock or in his yard, we would not by any means advise him to let it go into other hands without yielding him a satisfactory *quid pro quo*. He may rely upon having his business as long as there is a pine log left for his sawyer to operate on, but he ought not to be surprised if before many years his hardwood brother in trade should pass into the front rank, leaving him to fill the secondary place which the latter has always heretofore been content to occupy.

## STRAW LUMBER.

An important industry has just been started at New Portage, Ohio—the manufacture of straw lumber. The plant is a large one, and has back of it the straw-board trust, of which Q. C. Jarker is a leading member, and has sustained financial backing. If the hopes of the projectors are realized, an immense business will be speedily built up, and houses finished in various shades and fashions of straw lumber, instead of handsome hardwoods, will become common.

The establishment will be the first of its kind ever built, and its products will differ in many respects from the material out of which the so-called paper bucket is made. It will begin work immediately, and as soon as enough of its product is finished to make it possible, it is intended to erect a house out of the material and see whether it will stand the weather. The company is certain that it will be adapted to all kinds of inside finishings, if not fitted for exposure to weather, and expect it to take the place of plaster to some extent at least. It will be made in a great variety of styles for inside use and can be marbled so perfectly that it is difficult to distinguish it from the genuine stone itself. In this shape it is expected that it will be found available for use in halls, bathrooms and like places.

The company expect to be able to put the straw lumber on the market as a substitute for lath and plaster at a cost about the same as the actual plaster, and claim it will be more durable and easier to use. In the marbled form it will cost, it is calculated, about one-third as much as marble. In interior finishings, a wide market is expected for it as an embossed decoration similar to *Incrusta Walton*, but costing one-third as much.

The company believe their product will withstand the weather and prove available for fancy tiling for roofing purposes and the like, and that it will be both water-proof and weather-proof and in a measure fire-proof as well. Should their expectations be realized, there is a wonderfully wide field before this new enterprise.

## SHE MEANS BUSINESS.

(From the Mississippi Valley Lumberman.)

Some time ago Frank Waltenburger, a young painter living in Minneapolis, received undoubted proof that he was the owner of valuable timber land in Florida. It appears that Mrs. Ellen Waldo believed she was the owner of the land and has been pluckily engaged in manufacturing lumber on the land. She has written Waltenburger the following frank letter; "In writing you this letter I, perhaps, am violating the laws of conventionality; but, as we never met, in fact, as you have never heard of me until now, there can be nothing of sentiment in the proposition that I am about to make to you. To explain, first of all, how I know your address and name. Last week the Washington County *Times* published a story credited to a St. Paul paper, in which it was set forth that you were legal owner, by the possession of an old deed, of section 30, township 3, range 14, in this county. I laughed at the story at first, for I own half of that section myself, though, as it now appears, my title is imperfect. The other day I received notice from a firm of lawyers in Jacksonville of the true state of affairs, and what I have now to say to you is, after due deliberation on the situation, I have

improved the property in such a manner that it is now very valuable. I own a timber mill which employs twelve hands and yields me a fair income, besides I have property in Pensacola giving me an income of \$1,000 a year. I have also three farms, railroad land along the line of the Louisville & Nashville railroad, yielding me a fair annual profit. The newspaper account I read of your appearance stated that you were good looking, poor and hard working. I am a widow, 28 years old, am called good looking by my friends and by those who dislike me I am said to be stout. I have two children, Mamie, 5 years old, and Elsie, 3. Their father died some years ago, and was unable to attend to business during the last few years of his life, being an invalid from rheumatic trouble, and I carried on the business myself then as I do now. Now, Mr. Waltenburger, you have a title to this property which I have labored very hard to render productive. I am attached to the place, and should dislike to abandon prospects which seem fairly brilliant. Here, then is my offer: I have a growing business, a fair income and two children. You have a deed of some property, of which you know but little, except it is said to be of value. Will you marry me, share equally with me in everything, and as my husband relieve me of the burden of a business which has grown to greater proportions than I can successfully operate alone? You may have an attachment; if so, the subject is one to be dropped at once, and we must negotiate on different lines. If, on the other hand you are heart-whole and like my appearance from the photo I send you, let me have yours in return, together with your views on the subject proposal. All other things being satisfactory, I can arrange to come to St. Paul for the purpose of becoming better known to you, or I will make any arrangement you wish should you prefer to visit Chipley or Pensacola with the same object. There's a woman that it is dollars to nickles it would be safe to go into the saw mill business with.

## CARE OF BAND SAWS.

By J. H. Allen.

The band saw has come to stay and is no longer considered an experiment. Its universal adoption among practical mill men will only be a question of time. The lack of the proper skill to operate it is now the obstacle. This is confined principally to the filer. The style of mill need not be mentioned, as there are many prominent makes.

Few realize, in the erection of mills, the extreme sensitiveness of such a saw, and have not built as firm and perfect a carriage track as necessary, observation being drawn from what would make a perfect running rotary. The filer has been much behind in this respect, and men who could hammer a band saw dealt such heavy blows as not only fill the saw full of lumps, but crystallize the steel. A glance into every band mill will demonstrate this from the number of broken saws. The tension of the band saw is its life; its longevity is determined from the manner in which this is applied. The band saw is not a tedious saw to hammer by any means. The prevalent way of striking a saw too heavily is practiced by nearly all. A round, but nearly flat-faced, hammer should be used, and the saw should scarcely show a hammer print. The principal feature is to keep the centre of the saw a little looser or longer than the edges. This supports the saw while if it were a little slack on the edges it would snake badly, on the same principle of a circular in the same condition.

In opening a saw, the tension must not be extended closer than one-half inch of the edge. This is determined by sagging the saw while on the bench and applying the straight edge. One-half inch on either edge should stand to the saw, or very nearly so, while the center should show good light. Now, this opening must be the same throughout the saw. Great care must be taken that there are no places where the tension is too close to edge or varies from the center. The next thing is to keep the back perfectly straight, or a little convex, still maintaining the tension. The back is kept straight by hammering the concave parts gently from edge to center, care being taken to have the tension right when back edge is straight. Many have