

DRYING AND PRESERVING WOOD.

I have read several articles in the lumber journals on the subject of drying or seasoning of lumber, which I think have not exhausted the subject, and if you would afford the space I would like to give my views based on facts, and an experience of over thirty years in the business. The drying of lumber is expelling the sap or fluids contained in it, and to treat it properly we must be informed of the quantity and nature of these fluids. One cord of wood (128 cubic feet) contains one hundred and eighty-five gallons of pyroligneous acid, or in one thousand feet of lumber 83½ cubic feet, one hundred and twenty gallons, the balance being substance. We must now consider the effect of the fluid upon the substance when left to act naturally.

The creator of all animal and vegetable bodies has decreed that when life ceases the body shall be destroyed, and has placed within each body the means for its destruction. The animal body is said to be composed of 50 per cent. of substance and 50 per cent. of corruption, which is the blood and fluids. During life these fluids are the life sustaining principle, but when life ceases they are instantly changed to a destroying power, and commence immediately their work of destruction. In the vegetable kingdom the same natural laws exist. The sap in the vegetable takes the place of the blood and fluids in the animal. During life it is the life-sustaining principle, and when life ceases decay begins.

The distillation of wood is carried on quite extensively in the United States and Canada. Professor J. A. Mathieu, of Detroit, Michigan, has erected a large number of retorts to be used for this purpose. The acetic vapor being condensed, the product is as before stated, 185 gallons of pyroligneous acid; from this is obtained mythic alcohol, acetic acid and tar, and from acetic acid are obtained the acetates of lime, lead, copper, nickel, iron, manganese, etc. This shows the power of these acids on mineral substances. The following is given as the product of one cord of Georgia pitch pine: 15 gallons of turpentine, 80 gallons of pine oil, 150 gallons of pyroligneous acid, 45 pounds of vegetable asphaltum; and from yellow pine, two gallons wood alcohol, 12 gallons turpentine, and 160 gallons pyroligneous acid. By the slow process of weather drying these acids are allowed to carry on their work of decay so long as moisture remains, and the fibre is eaten away and the wood rendered more porous and spongy, becoming weaker and more brittle. In order to preserve the wood in its most perfect condition and strength, we must extract the pyroligneous acid as soon as the tree is dead and cut into lumber. This may be done by heat in a properly constructed lumber dryer. One cubic inch of water makes one cubic foot of vapor or steam thus increasing its volume about 1,700 times. When the lumber is heated to 140° or 150° Fahr., the volume being so increased the vapor is rapidly forced out of the lumber to the surface. Now if a rapid current of dry, hot air is caused to pass through the interspaces of the pile of lumber to absorb and carry off the vapor as rapidly as it comes to the surface, the lumber will be thoroughly dried in six to eight days, and retain all its natural strength, and being entirely sound, will absorb far less moisture than when weather dried. The whiskey distillers say that a barrel made from green staves, kiln-dried, will absorb one gallon less of whiskey than a barrel made from old weather dried staves. If the wood can be made incapable of absorbing moisture, it will not swell or shrink. I found in the manufacture of barrels from green staves, kiln dried, that breakage in bending in the truss was far less than in old weather dried staves. It is my conviction that green lumber quickly dried in a perfectly constructed lumber dryer, is stronger and much less capable of absorbing moisture, and consequently much less affected by the changes from damp to dry and dry to damp, and much more durable. There are two conditions in which it may be said that wood is imperishable. In drying of lumber we can only extract that part of the destroying element alluded to, which is susceptible of being vaporized, and there still remains an essential part of it, but in

a dormant state; deprived of power to act in the entire absence of moisture, and when kept in this state the wood will last for ages. Then add the moisture, and this dormant enemy awakes to activity and will soon accomplish its work of destruction. Here is, one condition in which we may hold the destroyer powerless, not conquered.

There is another condition by which we can accomplish the same results, viz., by submerging. Timber submerged will last for ages; then it is not the water that destroys, but holds this element dormant by a superabundance of moisture. When brought to the surface and relieved of this superabundance of moisture, this element awakes and begins its work of destruction. To render wood imperishable in all conditions has long been the study of man, but up to the present time he has not been able to conquer and destroy this mysterious element.—*P. G. Finn in Lumber World.*

SALT AND SAW MILL WASTE.

There are doubtless many saw mill operators in the South, and on the Pacific coast, to whom saw mill waste is a nuisance, who are not acquainted with the part which this waste plays in the production of salt at several points in Michigan, notably in the Saginaw valley, where salt springs of great strength and purity occur adjacent to some of the largest lumber industries in the country.

The principal item in the cost of manufacturing salt is the fuel required to evaporate the brine, which as pumped from depths of from 700 to 800 feet, and occasionally much deeper, usually contain about 95 per cent. of a saturated solution of salt, and a certain amount of the water it contains must be expelled by heat before crystallization of the salt can take place. This operation is performed in the Saginaw valley in what appears at first to be a very crude and primitive method, but closer examination shows it to be the most effective which can be devised where artificial heat is used.

The salt solution, or brine, is pumped directly from the wells or springs into wooden tanks from which it is allowed to flow as required into shallow evaporating troughs of wood about 20 feet long, six feet wide, and 18 inches deep, each trough containing a series of galvanized iron steam pipes immersed in the salt solution from which the heat necessary for the evaporation is obtained. In large works a series of these evaporating pans are placed side by side in the same building and the steam coil carried through the whole series, the steam entering the coil in the first pan and the condensed water being discharged from the last.

Where the salt works are on a small scale the exhaust steam from the saw mill engine is sufficient to perform the work of evaporation, while in large works this supply is supplemented with live steam. In both cases, however, the steam used for evaporating the salt solution, as well as that required for power to drive the saw mill engine, is generated by the combustion of sawdust which is taken directly from the saws, usually by means of a conveyor chain and carried through a sheet-iron trough extending over the boiler furnaces, from which, through openings in the bottom, it drops between the boilers into the fires.

During the sawing season, steam is generated for both these purposes almost exclusively with sawdust, the remainder of the waste, consisting of slabs, edgings, etc., being piled in the vicinity and held in reserve to generate steam for evaporating the salt solution in the winter, when the mills are not running, and no sawdust is being produced.

By these means, nearly all the saw mill waste produced in the locality named above is very advantageously utilized, and the salt manufacturers, who are generally also saw mill operators, as has been seen, have an effectual method of "killing two birds with one stone," a method which gives them a decided economical advantage over their less fortunate brethren in other localities, who are obliged to purchase fuel to evaporate their brine.—*Northwestern Lumberman.*

A RAILROAD route is being staked out between Grand Rapids and Muskegon.

PETER ROBERTSON

CHAUDIÈRE, - OTTAWA,

MANUFACTURER OF

LUMBERMANS' TOOLS!

Which took every honor awarded at the Centennial Exhibition.

THE CELEBRATED

Lightning Cant Dog.

PETER ROBERTSON, Chaudière, Ottawa.

2017

Driving by Friction.

An objectionable method of employing friction driving is to use a metallic surface against a wooden or leather surface; two surfaces of wood are better; but if iron and wood are used together, the driver should, in all cases, be made of the softer material. For when the driver is thrown in contact with the driven, it must take a number of revolutions before its contact will be sufficient to start the driven wheel. It is evident, therefore, that if the driver is of iron while the driven is of some softer substance, it (the driver) will wear a crease that will injure the driven wheel. It is much better, where it is practicable, to make both the driving surfaces of wood.—*Scientific American.*

"No Physic, Sir, in Mine!"

A good story comes from a boys' boarding-school in Jersey. The diet was monotonous and constipating, and the learned Principal decided to introduce some old-style physio in the apple-sauce, and wait the happy results. One bright lad, the smartest in school, discovered the secret mine in his sauce, and pushing back his plate, shouted to the pedagogue, "No physic, sir, in mine. My dad told me to use nothin' but Dr. Pierce's Pleasant Purgative Pellets, and they are doing their duty like a charm!" They are anti-bilious and purely vegetable.

266th Edition. Price Only \$1

BY MAIL POST-PAID.

**KNOW THYSELF.****A Great Medical Work on Manhood,**

Exhausted Vitality, Nervous and Physical Debility, Premature Decline in Man, Errors of Youth, and the untold miseries resulting from indiscretion or excess. A book for every man, young, middle-aged and old. It contains 125 prescriptions for all acute and chronic diseases, each one of which is invaluable. So found by the Author, whose experience for 23 years is such as probably never before fell to the lot of any physician, 300 pages, bound in a beautiful French muslin, embossed covers, full gilt, guaranteed to be a finer work in every sense—mechanical, literary and professional than any other work sold in this country for \$2.50, or the money will be refunded in every instance. Price only \$1.00 by mail, post-paid. Illustrative sample 6 cents. Send now. Gold medal awarded the author by the National Medical Association, to the officers of which he refers.

This book should be read by the young for instruction, and the afflicted for relief. It will benefit all.—*London Lancet.*

There is no member of society to whom this book will not be useful, whether youth, parent, guardian, instructor or clergyman.—*Argonaut.*

Address the Peabody Medical Institute, or Dr. W. H. Parker, No. 4 Bulfinch Street, Boston, Mass., who may be consulted on all diseases requiring skill and experience. Chronic and obstinate diseases that have baffled the skill of all other physicians, are cured specially. Such treated success fully without an instance of fail

**50 Per Cent. Reduction**

ON OLD CATALOGUE PRICES.

Gent's 14k. Gold Watch reduced to \$25.
Ladies' 14k. Gold Watch reduced to \$20.
Gent's Key Wind Jewel, Cut Expansion Balance, in Solid 3oz. Coin Silver Case. Hunting or Open Face reduced to \$8.
Gent's Patent Lever, Jewelled, Cut Expansion Balance, Solid Coin Silver Cases, reduced to \$7.
Men's size, Heavy, Useful, Cheap Watches, Hunting Case, Key Wind, White Metal Silvered, \$4.50; Yellow Metal, Gilded, \$4.50.
Nickle, Stem Wind, Open Face, \$4.50.
Sent by Mail. Prepaid; Safe Delivery guaranteed.

CHAS. STARK,

52 Church Street, Toronto, Near King
Importer, Wholesale and Retail Dealer in every description of Fire Arms, Gold and Silver Watches, Gold and Silver Jewellery, Diamonds, Silversware, etc.
Send address for our 120-page Catalogue, containing over 500 illustrations of all the latest and most elegant designs.

A PRIZE

Send six cents for postage and receive free, a costly box of goods which will help you to more money right away than anything else in this world. All of either sex, from first hour. The broad road to fortune opens before the workers, absolutely sure. Address Tait & Co., Augusta, Maine.