

PRESERVATION OF WOOD.

The Thillmany Process to Impregnate Wood With Sulphate of Copper and Chloride of Barium.

The great and constantly increasing extent of our wood pavements demands that every person interested in its permanence should give attention to the best and most economical mode of preparing the same.

It is well known that the so-called "Nicholson Pavement," where the blocks are only dipped in coal tar, has proved a failure in all our cities. In some, where the "Nicholson" has been laid in the ordinary manner, it shows, at the expiration of three or four years, alarming signs of decay. In fact, no wood can be made to last any great length of time, unless the preserving substance is made to permeate thoroughly the pores of the wood, and as the coal tar cannot penetrate the wood, but merely covers the surface, it will be seen that, as soon as this coat is worn off the wood has no protection whatever, and will quickly decay. From dipping the blocks into coal tar results another great disadvantage. Generally we have to use blocks for paving, which are not thoroughly seasoned. By dipping such blocks into coal tar, the external pores are closed, the water or sap cannot evaporate, and decay will shortly take place. Matters grow worse as soon as the external coal tar coating on the surface of the street is worn off. Then the water can freely enter the pores at the top, of the block, but cannot be discharged at the bottom of the same because there the pores are still closed.

The really preserving substance of

coal tar is creosote, a light, ethereal oil, which evaporates at a very low temperature. The remaining constituents of the coal tar, consisting of greasy substances and minute particles of coal, cannot enter into the small cellular tissue of the wood, because of their tough, syrupy nature and form, as stated above, a surface coating, which can only accelerate decay.

Let us examine the wood and its constituents.

Wood, in its chemical combination, consists of a fibrous substance and a liquid filling up the interstices, called sap. The clear wood fibre, as demonstrated by chemistry, is composed of 52.4 parts carbon, 41.9 parts of Oxygen, and 5.7 parts of hydrogen, and is the same in all the different varieties, but the sap of each kind of wood contains a great many different substances; in pine the resin predominates, and the oak is well known for the superiority of its tanning qualities. Some varieties contain glutinous and saccharine matter, while from others we extract coloring pigments, salts and mineral substances, all soluble in water. Chemistry shows that it is almost impossible to destroy the clear wood fibre, and that it can be done only by the strongest acids or alkalis.

Wood, free from sap, will not decay for a very long time, even when put in the ground or exposed to rain or dampness. The cause of its decay, when so exposed, will be simply found in the different substances of which the sap is composed; its albumen parts act as yeast for all the others, and excite fermentation, which

finally ends in the destruction of the entire wood.

Sap is also the cause of its destruction by insects, as, for instance, the ship-worm, (*teredo navalis*). They do not bore into the wood to get the dry fibre, which contains no nourishment, but only for the sap. It follows therefore, that in order to preserve wood from decay, it is necessary first to remove the sap, and then fill up the empty pores with some anti-septic or preserving substance, which will keep the water and dampness away from the clear wood fibre.

To obtain this result has been the study of scientific men for more than thirty years past, both in this country and in Europe especially, where different methods have been experimented with, and but few have given satisfaction or been put to practical use.

Sulphate of copper (blue vitrol) has been found to answer the best, but the great disadvantage of it is the fact that it is soluble in water, and therefore easily washed out by the same, wherever the so prepared blocks of wood are exposed to rain or moisture. To overcome this obstacle has been the object of our process, by which sulphate of copper is made insoluble in water by the addition of chloride of barium, thus forming sulphate of baryta.

The sulphuric acid of the copper salts combines with the baryta, and forms an insoluble substance, sulphate of baryta, and fills the interstices of the fibre, petrifying the pores, and a part of the oxide of copper enters into a combination with

the organic substances of the fibre of the wood.

Wood prepared after this method has been in use on many European railways, and for many other purposes, for the past seventeen years, and has proved to be more substantial than wood prepared by any other process.

Soft wood, such as pine, white-wood, beech, etc., which, unprepared, only lasts from two to three years, has been found, when prepared by our process, to be in good and sound condition after sixteen years of service.

L. P. GILBERT'S LOG TURNER.

One of the most ingenious devices for labor saving is an invention for turning logs, patented April 14th, 1874, by Mr. L. P. Gilbert, of Fort Atkinson, Wis. The machine is far the most perfect one yet invented for rendering obsolete the hand labor formerly required in the turning of logs when upon the carriage ready for the saw. Mr. Gilbert's invention is of decided value and will, when brought to the attention of mill-men, meet with their unqualified endorsement and favor. The well-known firm of E. P. Allis & Co. will probably enter into the manufacture of these machines. In the next number of THE WISCONSIN LUMBERMAN we shall give a full illustration and description of this valuable invention for the benefit of the readers of this publication.

You will receive a circular inviting you to attend a lumbermen's convention in Chicago. Go!