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THE PRESERVATION OF TIMBER.

Perhaps the solution of no modern engineering problem has been more eagerly sought than a cheap, reliable and universally applicable method of preserving timber. Although methods have been devised which approximately fulfil these conditions there has yet been nothing attained that is suitable for universal adoption in architecture and in other branches of the arts.

It would appear at first sight an easy matter to preserve wood from decay, when it is remembered that the chief causes of decomposition, at least the chief immediate causes, are changes in its hygrometric condition.—Rapid successions of dampness and dryness will speedily destroy most species of timber. There are a few species which are naturally protected by essential oils contained in their texture, but such woods are too rare and valuable for general use.

The physical characters of different kinds of timber afford the clue to the difficulties in solving this problem. Wood is a porous material of great absorbent power upon nearly all kinds of liquids. Many kinds will absorb their own weight of water under favorable circumstances, and part with a large portion of it again when exposed to warm currents of air. To preserve such woods from decay implies the stoppage of the pores, by filling them with some impervious substance, or the saturation of the timber with some antiseptic material.

No process based upon either of these principles has as yet been discovered not attended with some drawbacks. Either the process is expensive, or the texture and grain of the wood suffer change, or its natural beauty is marred so as to render it unfit for ornamental work. The latter consideration may be left out of the account when wood is to be applied to the coarser purposes of engineering, as piles, railroad ties, pavements, &c., but the item of expense tells more heavily in these cases than in ornamental work, where the cost of the material is a small item in the cost of the structure.

But natural decay is not the only destructive agent against which it is desirable to provide. One of the greatest objections to wood for building purposes is its liability to destruction by fire. Many processes have been devised to remedy this evil, and altho' a recent Italian process has been favorably spoken of as being free from the objections pertaining to processes of earlier date, it is quite probable that further news respecting it may not be so favorable.

So far as we are aware, no process has ever been discovered that could be very cheaply applied to the preservation of wood from decay, and also from fire, and which at the same time could be relied upon as certain, The most simple and the cheapest method adopted has been that of the application of fire-proof paints; but paints are liable to crack upon exposure, and from the natural shrinking and springing of timber, and thus give access to moisture. This method has been only partially successful.

It is impossible to give here anything like a detailed notice of the various wood preserving processes. A whole class of them is included in the impregnation method, in which different chemicals possessing antiseptic qualities have been forced by pressure or absorption into the pores of the wood. Sulphate of zinc, sulphate of copper, corrosive sublimate, creosote, carbolic acid, coal tar, &c., have been employed, the three last with the best results yet obtained, so far as preserving from natural decay is concerned. None of these processes have been without failures in some instances, So far as these failures relate to the creosoting of wood, they are doubtless due to the imperfections in the method of performing the work.—Sulphate of copper has also been used quite successfully but is expensive. The use of coal tar products is the cheapest method yet devised, but it is obviously unadapted to use where a finish is to be given to wood. The smell of timber thus preserved is also an objection to the process. We see then that anything like a perfect process for preserving timber under exposure to high temperature and variations in hygrometric condition is yet to be devised. It may be that it is impossible to invent any method that shall cover all the conditions of the problem.—The rich reward, however, which most certainly awaits the fortunate discoverer of such a method, ought to stimulate experiments in this field, and give the world something far ahead of anything yet proposed.—Scientific American.

WORKMEN AND THEIR TOOLS.—A good test of a good workman—one of the best apart from his workmanship—is his care of tools. If he leaves a worn out or dilapidated tool in its imperfect state until he gets time to put it into shape, he lacks in the organ of order, which should be the shop's first law. But if he repairs the tool as soon as it is injured, whether wanted for use at the time or not, he can be depended upon. A carpenter may be known by his chips; but a workman at any business may be known by the state of his tools.

☞ Over ninety per cent. of the rays issuing from most kinds of artificial lights are, according to the German chemist Landsberg, calorific or heat rays, and as such non-luminous. Sunlight has only fifty per cent. of heat rays. He attributes the painful effect of artificial light upon the eyes to this large amount of heat rays. By passing artificial light through alum or mica, the heat rays are intercepted, and the light is rendered much more pleasant and less injurious.