

# MUNICIPAL DEPARTMENT

## THE SANITARY ASPECTS OF WOOD PAVEMENTS.\*

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The title of this paper has been chosen by the author mainly with the view of eliciting a discussion upon a subject which, in his opinion, requires more ventilation from those competent to form an opinion than has been accorded in the past. It is the author's firm opinion that most of the adverse criticism bestowed upon wood as a paving material is due to careless and improper methods of laying and subsequent maintenance rather than to the material itself. In the author's opinion wood, if properly selected and treated and thoroughly well laid, has advantages which should favour a continuance of its adoption as a carriage-way pavement until some better substitute has been discovered. In comparing different materials for street pavements, asphalt is undoubtedly the most sanitary of all, but its general adoption on other than comparatively level roads is practically prohibited until horse haulage becomes a thing of the past.

It is not for the author here to give you the history and development of wood pavements; a brief reference, however, to the different kinds of wood employed, their treatment and method of laying, is necessary to enable us to grasp the sanitary conditions of such pavements. The wood now employed is generally distinguished under the titles of "hard" and "soft" the former embracing the hard woods from Australia and other places at the Antipodes, mostly of the eucalyptus family; the "soft" wood now generally in use being red or yellow pine from North Europe. Hard woods are generally laid in their natural state—that is, not subjected to any preservative while the soft woods are now seldom laid unless previously treated with creosote or other preservative. An essential qualification for a good pavement is a cement concrete foundation formed to a proper contour and floated over to receive the wood blocks, which must be laid directly thereon with necessary falls longitudinally in the channels towards the gullies for surface drainage. The life of a wood pavement varies from 5 to 12 years, according to the amount of traffic, quality of wood, and method of laying. It is the author's object to show that the method of laying and maintaining wood pavements, coupled with the fact that the renewals are not sufficiently frequent, is mainly the cause of complaints as to the insanitary condition of wood pavements; of course excepting a faulty system of scavenging, which can easily be remedied.

The author intended taking samples of wood pavements that had been laid for a number of years in London, and analysing the blocks and their jointing materials to show you the quantity of matter injurious to health contained in, say, a square yard of pavement. This, however, has not been done, as the results would be misleading, so much depending upon the system of scavenging, contour of roadway, and other facts that would in the author's opinion render any statistics unreliable. Experience as to scavenging, method of paving, street watering, repairs, and other matters incidental thereto are far more important in determining the conditions of wood pavements. The author, therefore, from an experience of seven years in

the construction and maintenance of wood pavements in London, has arrived at the following conclusions:

Wood pavements are condemned on sanitary grounds, because (1) too little attention has been given in the past to the contour of the road to allow for a natural fall to the gullies; (2) the wood used has in many cases not been carefully selected and properly treated with a preservative; (3) the expansion joint in each channel is a source of nuisance; (4) repairs have not been carefully executed, and renewals have not been made at frequent intervals; (5) an inefficient system of scavenging has been allowed to exist.

Taking these seriatim: (1) The faulty contour of the carriage-way is due in many cases to the original foundation having been laid without due consideration to the falls. This foundation is, and should always be, treated as the roadway itself, the wood being merely a covering for convenience. In cases where this foundation is found to require re-forming, expense should not be spared in chipping over and re-floating when the wood is "up" for renewals. It is, I regret to say, more the rule than the exception upon a tolerably level street paved with wood to see the channels so arranged that water will not flow naturally to the gullies.

(2) The wood should be carefully selected, free from sap, and close and even grained. It is not necessary in paving works to have "thoroughly well-seasoned" wood, and the soft woods should be treated with creosote or other preservative. The author has used satisfactorily wood impregnated with creosote (10lb. to the cubic foot), and also wood treated with "carbolineum avenarius" (65 gallons to 1,000 blocks), and tests of the absorption of each of these compared with a plain block (yellow deal) have been made with the following results: No. 6 blocks measuring 3 in. by 9 in. by 5 in. immersed in water for 24 hours:

	Weight before.	Weight after.
Plain blocks.....	16lb. ....	18lb.
Creosoted blocks..	20½lb. ....	21lb.
Carbolized blocks.	18lb. ....	19½lb.

These statistics prove the wood to be less susceptible to absorption after treatment than before, the advantage being in favor of creosote. Creosote, however, having a strong smell which is often, the author regrets to say, objected to by adjoining occupiers, favors the introduction of carbolized blocks in special places.

(3) The expansion joint in the channel of a wood-paved road is, from a sanitary point of view, a great objection, and is the means of road detritus and other matter being retained thereon, and finding its way beneath the wood pavement. The author has frequently found from this cause large quantities of filthy black mud, etc., beneath the channels and surrounding the gullies, which is a considerable source of nuisance.

(4) The greatest care is necessary in carrying out repairs to gas, water, and other excavations. The foundation and pavement over should be done, if possible,

in a more skilful manner than the laying of the original pavement, and all defects in the wood likely to cause depressions for the reception of deleterious matter should also have immediate repair. The parsimonious manner in which public authorities often allow wood pavements to remain longer than their proper "life" is undoubtedly the chief cause of complaints as to the insanitary condition of such pavements, and on no account should an uneven and worn pavement be allowed to remain in what must naturally be an insanitary condition.

(5) Inefficient scavenging has only to be mentioned to receive the just condemnation it merits. Any sanitary authority who curtails the scavenging expenses to the detriment of efficient work ought to be immediately superseded by some more capable system of local government, for the root of the whole matter lies in a perfect system of scavenging, which can only be properly carried out when the necessary funds are allowed, and every official should have a free hand in this in order to carry out the work with credit to himself and the public whom he serves. The hard woods mostly used for street paving works are those known as "Karri" and "Jarrah," from Western Australia. These woods are generally laid close jointed, grouted with pitch and tar, and form an excellent sanitary pavement; their liability to contraction, however, has proved a drawback, as the spaces left between the blocks when contraction takes place become filled with horse dung and road detritus, which it is impossible to get out. It is to be hoped this wood will soon be supplied in such a condition that this, its only fault from a sanitary point of view, will soon be a thing of the past.

The foregoing remarks may be summarised by stating the essentials towards a satisfactory wood pavement to be (1) a properly constructed roadway; (2) careful maintenance and frequent renewals; (3) good scavenging.

Wood is, in the author's opinion, best suited for town pavements on account of its being less noisy and less slippery than any other kind of pavement suitable for heavy traffic, and in order to overcome the objections before mentioned, all soft woods should be properly creosoted (in vacuum, and not simply dipped), the blocks laid "close jointed" to a proper contour both transversely and longitudinally, and grouted with bituminous composition. This method is adopted by the author, and it has been found that the blocks do not when thus laid expand more than is requisite to bind the whole pavement together. Wood blocks thus laid and cleansed by periodically washing form as perfect a pavement for carriage-ways as it is possible to obtain, and the author refers those interested in the subject to that portion of the Strand between Trafalgar-square and Charing Cross Station, which has now been in use for four years and washed daily without any material defects, although subject to an enormous daily traffic.

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