

MUNICIPAL DEPARTMENT

THE INFLUENCE OF PAVEMENTS ON PUBLIC HEALTH.*

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In presenting to this Association a paper on the sanitary aspect of pavements, I have been actuated by a desire to obtain information, rather than to impart it. Ontario has so recently developed from a wilderness into the home of civilization and culture; our villages have grown so quickly into towns, out of towns into cities, and the advance of the various sciences has been so rapid, that our people scarcely realize the changed circumstances, and the need of carefully directing their energies in meeting the demands of the times. In my visits to different parts of the province, I am constantly met with evidences of the good wrought by this association. I find that in very small villages even, inefficient drainage, cess-pools, piggeries, slaughter-houses, and impure water supplies are not now tolerated as they were once, and that this is due to the work of your association.

It is with considerable hope, therefore, that I have undertaken to briefly lay before you the subject of pavements and public health, confident that you will lend your assistance in aiding our knowledge of this as of other matters pertaining to perfect sanitation, and that where reform is needed, your aid will be afforded.

There is no one paving material which possesses every quality desired in a pavement to meet all conditions and uses. The ideal pavement remains to be discovered; but the features which should belong to such an ideal pavement are so numerous and of such varying character as to render the search apparently a hopeless one. The ideal pavement

1. Should be cheap, and economical of maintenance;
2. Should be durable;
3. Should suit all classes of traffic;
4. Should offer little resistance to traction;
5. Should give a good foothold to horses;
6. Should be adapted to all grades;
7. Should have a good appearance;
8. Should not be muddy nor pervious to water;
9. Should be sanitary; that is, non-absorbant, not subject to decay, easily cleaned, not dusty, not noisy.

It is apparent, then, that notwithstanding the importance of the sanitary aspect of a pavement, there are other features which must be considered. The primary intention of a pavement is to accommodate travel, and to provide one which will do this satisfactorily, which will be durable, cheap, of good appearance, healthful, and possess in the highest degree the other

qualities enumerated, in view of the location, nature and extent of traffic, is the problem which presents itself to the paving engineer. Just as no absolutely perfect paving for every time and place has been discovered, it is doubtful if any paving material now used should be utterly condemned. Each has its place in which, until the ideal, universal pavement is found, it will be more satisfactory than any other which could be used under that particular set of circumstances of soil, climate, traffic, etc.

The purpose of this paper, however, is to treat of the healthfulness of paving in general, of the sanitary aspect of commonly used paving materials, that is, asphalt, stone blocks, vitrified brick, cedar block, and broken stone (macadam), with respect to absorption, decay, ease of cleaning, dustiness and noise. Of all these, cedar block has received the greatest censure on the score of unhealthfulness. Dr. O. W. Wright, a health officer of Detroit, is quoted as saying: "On sanitary grounds, I must earnestly protest against the use of wooden block pavements. Such blocks, laid endwise, not only absorb water which dissolves out the albuminoid matter that acts as a putrefactive leaven, but also absorbs an infusion of horse-manure and a great quantity of horse-urine dropped on the street. The lower end of the blocks, resting on boards, clay or sand, soon becomes covered with a fungoid growth thoroughly saturated with albuminous extract and the excreta of animals in a liquid, putrescible form. These wooden pavements undergo a decomposition in the warm season, and add to the unwholesomeness of the city. The street, in fact, might as well be covered a foot deep with rotting barn-yard manure, so far as unwholesomeness is concerned. Moreover, the interstices between the blocks and the perforations of decay allow the foul liquids of the surface to flow through, supersaturating the earth beneath, and constantly adding to the putrefying mass."

Cedar block has been condemned in similar terms by many others. On the other hand, Col. Heywood, Engineer of the city of London, Eng., has said: "It has been said that wood pavements at all times smell offensively and may be unhealthy; but although some city streets have been paved with wood for 30 years, no complaints that I am aware of have been made to the commission on this head, and the inhabitants at all times

have not only expressed great anxiety lest the wood should be replaced by other materials, but have subscribed towards the cost of its renewal. I have at times noticed offensive emanations from it near cab-stands, but am unable to find further evidence of its unhealthiness. These remarks must be held to apply only to public streets open to the sun and air and traffic; in confined places and under some conditions wood might be objectionable. I have seen it decaying in confined places without traffic."

The one statement by the Medical Health Officer of Detroit refers directly to the cedar block pavement as we understand it in this country. The other opinion, that of Col. Heywood of London, is expressed regarding the wooden pavement as laid in European countries. Between these two pavements there is a vast difference. Under European practice, many of the pavements are of the Kari and Jarrah woods of Australia, which are thoroughly saturated with resins, are very hard and are not subject to decay. They are sawn into brick-like blocks and laid on concrete. Where soft woods are used, they are also cut into regular oblong blocks and laid on concrete, and are saturated with creosote or treated with some other preservative process. Wooden pavements of America, however, represented by cedar block, are of a very different order. The round blocks, of irregular diameter, are merely the untreated wood, still carrying the bark. These, placed on a bed of sand, are under the most favorable conditions possible for decay, being constantly exposed to moisture, air and warmth. With no preservative treatment, they are enabled to absorb to the fullest extent all forms of liquid street filth which, in the process of putrefaction, feeds on the organic matter of the wood. The surface, which quickly becomes uneven, retains a large quantity of loose matter subject to decay, the whole giving rise at times to noxious odors. The effect, were sufficient of such paving used, would be to subject us to the conditions favorable to marsh-fever. From a sanitary standpoint, the cedar block pavement of this country would indicate a serious menace to health.

At the same time, while we are justified as a matter of theory in arriving at this result, there do not appear to be any statistics to prove the conclusion to be a correct one. The death-rate of cities most largely paved with cedar block does not bear any ratio to the extent of such pavement; nor does a change from cedar block to another less absorbant pavement produce a noticeable effect on the death-rate.

(Concluded in next issue.)

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* Paper read at the recent meeting of the Association of Executive Health Officers of Ontario.