

LETTER TO THE EDITOR.

Stone-Filled Sheet Asphalt.

Sir,—Referring to your March 8th issue and the letter printed therein, criticizing the article under the above title that appeared in your February 15th number, your correspondent is mistaken in thinking that the relative slipperiness of standard and stone-filled sheet asphalt surfaces "can be scarcely more than a matter of opinion." That may be true for those who have had little or no actual experience in mixing and laying, and later observing the different bituminous sheet layer surfaces. It is unfortunate to have to base one's judgments upon what may be found in the books upon this subject, for they are but few, and those few are very inadequate.

But it is a matter of known fact that the addition of stone chips to any sheet asphalt surface mixture produces a pavement that is not only less slippery, though "almost as smooth" after the initial roughness has worn off, but that is also harder to mark up, easier of traction, less liable to displacement, and less expensive to make than the mixture not containing the stone-chip filling.

Experiences and tests of the most practical sort, the driving of horses and automobiles almost daily over many such surfaces that we have ourselves constructed, do not result in a "matter of opinion" on the first three points. The fourth is almost self-evident, and supported by the general observations of many; the fifth is easily demonstrated.

The way in which an asphalt surface "marks up" in warm weather is a valuable indication of its quality. Much less marking is compatible with good quality in a stone-filled than in a standard asphalt surface, due to the resistance offered by the fine stone chips dispersed through the former.

While the failure of a surface to "mark up" to a certain degree, dependent upon the type of mixture of which it is laid, is an indication that the asphalt cement is too hard, its acquiring of certain markings does not even prove that the cement is sufficiently soft. There are several other elements that enter into the matter and affect the result materially.

The "marking up" is not a desirable feature. It would be better if pavements that were otherwise all right could be so laid that they would not mark up at all. The advantage gained by the horse in better footing is overcome by the greater tractive resistance of the load on the markable surface. As the pavement cools off, the marks disappear under traffic.

Your correspondent remarks that "This condition, we always believed, was controlled by the filler and the penetration of the bitumen." Well, we had given your readers credit for knowing that much. The hardness produced by stone chips in the mixture, to which we had reference, is additional to any hardness that such mixture may possess from other causes. This additional hardness is much greater than might be thought.

On the matter of cost, your correspondent seems also to be misinformed and uninformed. His price for $\frac{3}{4}$ -in. stone is not in reasonable relation to the other prices used; and, in comparing a two-course surface to a one-course surface, he has apparently overlooked the necessity and added expense of laying, raking and rolling the former surface in two courses. He has also charged himself with five pounds too much stone dust, unless he intends to use that in his close binder, which, though not

usual, would be very commendable as long as the "bitulithic" people did not object that his "close binder" infringed their patents.

But why compare a two-course to a one-course surface in this instance? The writer recommended that the "binder course be eliminated," and that the "stonefilling be introduced," and then stated that "either change might be made to advantage without the other." Why not compare one inch of binder and one inch of standard surface to one inch of binder and one inch of stone-filled surface? The latter would still be about $2\frac{1}{2}$ cents per square yard cheaper.

Or, if a two-course surface must be compared to a one-course surface, then compare a 2-inch two-course surface to a $1\frac{1}{2}$ -inch one-course surface, as these are about the thicknesses that would be thought to be of more comparable values. Also, do not forget to add the additional labor cost for laying the two courses instead of one. The writer, however, would not recommend the laying of the two-course surface, even if it were as much cheaper as your correspondent would make it, as cheapness in first cost is not necessarily economy, and would not be apt to be in this case.

Concerning your correspondent's request to know why stone-filled sheet asphalt is recommended for adoption by "most" cities instead of by "all" cities, the writer must confess that the principal reason is that he does not know "all" cities. Other reasons are that some cities are built on hillsides, some cannot secure stone chips at a reasonable price, and still others are affected by local conditions peculiar to themselves or their geographical districts. There are many variables in the road and street paving problem.

Regarding your correspondent's final facetious remark that he is "from Missouri," the writer is not. Whenever the writer has been unable to "see" what was told him, he has usually proceeded to do his own "looking" instead of waiting to be "shown."

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Montreal, March 29th, 1917.

NEW LINE OF CENTRIFUGAL PUMPS.

The Bawden Machine Co., Limited, of Toronto have incorporated a subsidiary company called the Bawden Pump Co., Limited, for the manufacture of centrifugal pumps for waterworks, sewage, filtration and industrial purposes, and also intend manufacturing valves and other waterworks specialties, and to supply turbines, engines, motors, etc., for pump drives.

The Bawden Machine Co., Limited, have been manufacturers of boiler feed pumps for many years past, but only recently decided to go into the larger field of centrifugal pumps.

C. N. Schrag, formerly sales engineer in charge of the Ontario District Office of Canadian Allis-Chalmers, Limited, was induced to join the organization as sales manager, and T. M. Jones, designer at Canadian Allis-Chalmers, Limited, as chief engineer and general manager.

Of the quantity of coal and coke produced in England in 1915, over 155,000,000 tons were carried on the railways, compared with 7,135,000 tons by canals.