MUNICIPAL DEPARTMENT

ASPHALT PAVEMENTS.

Editor CANADIAN CONTRACT RECORD.

DEAR SIR,—It is popularly supposed that asphalt pavements are more slippery than any other kinds of pavement, but careful observations, extending over a long period, show that such is not the case. In 1885 systematic observations were made in ten different cities, extending over a period of 192 days, in which over 800,000 horses were observed, and it was shown that on an average a horse travelled 583 miles before falling on asphalt and only 413 miles before falling on stone, or in other words, that for the same distance travelled, there were 41 per cent. more accidents on stone than on asphalt. The gritty surface of the Trinidad asphalt pavements, due to the combination of sand and bitumen, is incapable of taking the polish which makes the stone pavements so slippery. The stone surface yields no security to the horse; it is only by catching his shoe in the joints that he is enabled to retain his footing; if his shoe slips beyond the second joint it is almost impossible to recover himself, and it is due to this cause that more horses fall in the long run on stone than on asphalt.

The asphalt pavement also dries quickly after a rain, and thus escapes in a measure the damp, greasy condition which renders wood so slippery. The pavements of French rock asphalt or bituminous limestone have not been extended of late years in Paris or London, as already stated, because they are so very slippery that they are dangerous. They were definitely rejected after full trial in Washington for this same reason, while the Trinidad pavement has obtained a development of 125 miles in that city. The bituminous limestone pavements of Washington as well as those laid on Fifth avenue in New York and in other localities, have been taken up and replaced by pavements of Trinidad asphalt. During the years of 1890 and 1891 the pavement of rock asphalt or bituminous limestone was again introduced in New York, only to be again abandoned on account of its slipperiness. None of it has been laid since 1891. A piece of it was laid on a portion of Madison ave. in New York in 1890, and two years before a piece of Trinidad asphalt of about equal area and the same grade had been laid on another portion of Madison ave. The two pavements were subjected to identically the same conditions and afforded a good opportunity for testing their relative merits on the score of slipperiness. Careful observations were therefore made on an extended scale, lasting through a period of five weeks or 30 days (Sundays excepted), from January 19th to February 21st. The number of passing vehicles was carefully counted on the Trinidad pavement at the intersection of 27th street and on the Sicilian or bituminous limestone pavement at the intersection of 39th street. The number of horses falling within a distance of 200 feet on either side of each observation point was also recorded, and the accidents were classified into complete falls, falls on knees and falls on haunches. The observers were changed from one pavement to another at the end of two weeks and their reports were all verified by affidavits. The following results were obtained:—

HOURS	VEHICLES				ACCIDENTS				REMARKS
	Less than 1 ton	Between 1 ton and 3 tons	Over 3 tons	Total	Falls on knees	Falls on haunches	Complete falls	Total	
Jan. 19-31	21,700	7,121	320	29,141	15	28	41	84	Sicilian Rock asphalt cor. 39th St.
Feb. 2-14	21,595	9,551	1,206	32,352	27	20	102	149	
Feb. 16-21	11,006	4,939	560	16,505	7	13	54	74	
	54,301	21,611	2,086	77,998	49	61	197	307	
Jan. 19-31	21,174	9,456	2,842	33,472	3	1	.....	4	Trinidad Asphalt cor. 27th St.
Feb. 2-14	22,463	13,261	2,633	38,359	.....	.....	.....	0	
Feb. 16-21	13,305	6,276	1,227	20,808	.....	1	.....	1	
	56,945	28,993	6,701	92,639	3	2	.....	5	

In other words there were more than sixty times as many accidents on the Sicilian pavement as on the Trinidad, and of the accidents on the Sicilian pavement, more than half were complete falls. Nothing further is required to show the vast difference between the rock asphalt pavements as laid in England and elsewhere and the Trinidad asphalt pavements as laid in Toronto.

Yours truly,

W. G. MACKENDRICK.

NEW MATERIAL FOR STREET PAVING.—An iron brick for street paving has been invented by William H. Nevins, of Rock Island, Ill. The iron brick is the size of ordinary paving brick, and is hollow, with open ends. In the upper or surface edge are a series of perforations, through which sand is swept after the pavement is laid, until it is filled. The sand is meant to add strength to the brick and deaden sound, while the holes admit water to drain off and serve as a vent so that no damage can result to the iron by the action of frost. The cubes are even and regular, and are cast strong enough to prevent breaking under the heaviest load; a street laid with them would be ideally level and the spacing would afford a foothold for horses. Mr. Nevins says that these bricks can be cast from stove plate iron at any foundry, which would be an advantage to any town in which they were used, affording employment in their manufacture to the home manufacturers.

MAINTENANCE OF A SEPARATE SYSTEM OF SEWERS.*

By T. HARRY JONES, A. M. Can. Soc. C.E., Brantford.

The Brantford sewerage system was designed by Willis Chipman, Civil and Sanitary Engineer, Toronto, in 1889, and constructed in 1890, 1891 and 1892, Mr. Chipman being the Cheif Engineer, and the writer Resident Engineer.

During the past three years, the system has been in charge of the writer as City Engineer, and all work in connection with the extension and maintenance of the system has been performed by the city by day labour.

The following summary will give an idea of the extent of the system:

Population of the City of Brantford	16,314
Assessed value	$5,760,410
Total expenditure on sewers, including cost of street portion of house sewe s and maintenance to end of 1894	$137,314
Total length of main sewer 15 in. to 24 in. in diameter	2.1 miles
Total length of sub-mains and laterals, 9 in. to 15 in. in diameter	11.2 miles
House sewers. On streets 4.3 miles. On property 5.1 miles. Total	9.4 miles
About 1 per cent. of the above is of 6 in. pipe and the balance 4 in.	
Number of connections with sewers	497
Population using sewers	3,000
Average annual increase of population using sewers	500
Number of Manholes	178
Number of lamp-holes	75
Number of flush tanks	32

The general character of the soil is sand and gravel, with clay and quicksand in a few sections.

FLUSH-TANKS.

Of the 52 flush-tanks in use, 9 are the Van Vranken and the remainder a compound of the Field and Van Vranken, consisting of the Field syphon and the Van Vranken tilting tank. The best results we have obtained from the Van Vranken.

Monthly inspections are necessary in order that they may be kept properly working, it being generally found that on each visit two or three require some slight attention, such as regulating the water or giving air. We found that during the year some three or four need repairing, the chief difficulty arising from the rusting and catching of the tilting tank.

Each tank holds about 200 gallons of water and is set to discharge once a day.

FLUSHING.

The flush-tanks are generally found sufficient to keep the 9 inch sewers clear, although it is occasionally found advisable to turn the water in the flush-tanks on to the full extent.

It has been found necessary to pass the plunger through only two of the 9 inch sewers during the past three years, each of these sewers having been flushed once in this manner.

There are two of the 12 inch sewers which require flushing about once in every three months. In one of these the sewage backs up owing to a fungus growth becoming attached to the pipes. The other 12 inch sewer—known as the Clarence street sewer—was constructed under great difficulties, being laid for a distance of 2,300 feet in running sand, and at an average depth of 12 feet below the ground and 5 ft. below the water level, and running parallel to and about 15 feet distant from a line of railway.

*Paper read at the annual meeting of Ontario Land Surveyors.

(To be Continued.)