

Report of Mr Lovick, Assistant Surveyor, on flushing operations : 8th February, 1849.

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Metropolitan Sewers.

REPORT of MR LOVICK, Assistant-Surveyor, on FLUSHING OPERATIONS.

Sewers' Office, February 8, 1849.

I beg to submit a Report on the Contract Flushing Operations in the several Districts of the Metropolitan Sewers, as follows:—

Since the commencement of the contract system in September last, in accordance with the direction of the Commission just expired, the flushing operations have been extended to the undermentioned districts, viz., the Counter's Creek, Ranelagh, Western Division of Westminster Sewers, Eastern Division of Westminster Sewers, Holborn and Finsbury, Spitalfields and Hackney Brook, Lower Wapping, Poplar, Surrey and Kent, embracing, with few exceptions, nearly the whole of the active jurisdiction of the Commission, and containing about 1,924,196 feet lineal, or 364½ miles nearly, of sewers. Of these upwards of 1,531,260 feet, or 290 miles,* embracing the whole of the Holborn and Finsbury, Tower Hamlets, Surrey and Kent, the Eastern and portions of the Western Divisions of the Westminster Sewers, the Counter's Creek, Ranelagh, and Poplar Districts, are now under contract, partly for the removal of existing, partly for the prevention of future accumulations. From these (excluding the Holborn and Finsbury Districts) about 79,483 cube yards of deposit have been removed from the open and covered sewers: this, with few exceptions, has been sent into the River Thames, at a cost of 2,209*L.*, or at the rate of sevenpence nearly per cube yard of deposit removed.

With the addition to this of the cost of flushing apparatus, the rate of charge will not exceed eightpence per cube yard.

The cost of inspection during the whole period is 148*L.*, or at the rate of about six and a half per cent. on the cost of the work done, or a charge of less than one halfpenny on each cube yard of deposit removed: the rate of cost with this addition, including also every other expense, will therefore be about eightpence halfpenny.

* These measurements are partly from the plans, partly from actual measurements in the sewers.

On an average of weeks, under present arrangements, about sixty-two miles of sewers are passed through each week, and deposit prevented from accumulating in them by periodic (weekly) flushing. The average cost per lineal mile per week is about 2*l.* 10*s.*

When the accumulations of years had to be removed from the sewers, the rate of cost per lineal mile has varied from about 40*l.* to 58*l.*, or from sixpence to eightpence per lineal yard. The works in these cases have not exceeded nine lineal miles; they are included in the previous rates of cost. They are special cases, and are specially contracted for.

Included in these rates of cost is the working and attendance on forty-six tide-flaps, sluices, and gates, in the Counter's Creek and Ranelagh Districts.

The amount of the deposit removed I believe to be under-stated, as no account has been taken of that removed from the drains and gully shoots by these operations, or of the accumulations formed by heavy rains during the progress of the works.

The periodic flushing of the sewers in the Holborn and Finsbury Districts has been continued, the rate of work performed being about 118,000 feet of sewers passed through each week, and the deposit prevented from accumulating in them at a weekly rate of cost of 23*l.*, the rate formerly paid being nearly 25*l.* In this district a reduction proportionate to the reduction on the other districts has not been effected, this district having had the benefit of several years' organization with men properly trained to this duty.

An approximation to the quantity of deposit removed from the sewers in this district can only be ascertained from its observed rate of accumulation: this has not hitherto—under my own observation—been tried on a sufficiently large scale to enable it to be given with sufficient accuracy.

The working and attendance on the various flaps and gates, 136 in number, in the Eastern and Western Divisions of the Westminster Sewers, extending from the King's Scholars' Pond Sewer, near Vauxhall Bridge, to Essex street, Strand, have been let at a weekly rate of 4*l.*, the rate formerly paid being 6*l.*

In the organization of this system there have been various difficulties to contend with in overcoming the prejudices and timidity of the men, and various others necessarily attendant upon an organic change, but it is needless to trouble the Commissioners with their recital, further than by stating that in one district, the Surrey and Kent, they still operate against the adoption of the same system of contracting pursued in the other districts.

The contracts now in operation, with the districts which they embrace, are as follows :—

TABLE No. 1.

Districts.	Sewers let for Prevention of Accumulations of Deposit.	Average Rate of Work performed in Sewers passed through each Week.	Contract Charge per Week.		
	Lineal Feet.	Lineal Feet.	£	s.	d.
Westminster	485,795	150,615	40	0	0
Holborn and Finsbury	355,085	118,000	23	0	0
Tower Hamlets	223,738	30,000	15	0	0
Surrey and Kent	440,642	40,000	75	0	0
Poplar	26,000	2,000	6	16	0
	1,531,260	340,615	159	16	0
Westminster—Attendance on Flaps, &c. . . .			4	0	0
			£163 16 0		

As sewers not contracted for are found upon complaint to be in a foul condition, these are let for cleansing ; the weekly amount is therefore at times increased, but this is a contingency that cannot well be estimated for.

The weekly cost prior to the contract system was in the several districts as follows :—

TABLE No. 2.

	£	s.	d.
In the Westminster District	78	10	0
„ Holborn and Finsbury do.	24	17	0
„ Tower Hamlets do.	23	0	0
„ Surrey and Kent do.	56	8	0
„ Poplar do.	6	13	0
	£189 8 0		

The nature of the agreements with the contractors or gangers are now for the prevention of accumulations of deposit in a district. For this purpose the large districts are subdivided, each subdivision being let to one man. In the Westminster District there are four, in the Holborn and Finsbury two, in the Surrey and Kent, seven subdivisions.

The Tower Hamlets and Poplar Districts are each let to one man. In these cases there is a weekly rate of charge for the work performed, as exemplified in Table No. 1.

In those portions specially contracted for, the work has been let by the lineal measure of the sewer, in preference to the amount of deposit removed.

In the Surrey and Kent Districts the open ditches have been cleansed thrice as often as formerly, the arrangements under this system having enabled me to draft from other districts to this district seventeen men; or this number might have been discharged, and the cost of flushing further reduced by that amount.

In the Tower Hamlets it will be perceived that a reduction has been effected for the performance of precisely the same work as that heretofore performed of 8*l.*; the rates of charge standing thus:—

Under the day-work system	23 <i>l.</i>	per week,	
,, contract	,,	15 <i>l.</i>	,,

A large proportion of the deposit removed is from the open ditches; in these the accumulations are rapid and continuous, caused chiefly by their being the receptacles for the ashes and refuse of the houses, the refuse of manufactories, and the sweepings of the roads.

In the covered sewers one of the chief sources of accumulation is the detritus and mud from the streets, swept into the sewers.

The accumulations from these sources will not, I think, be over-estimated at two-thirds of the whole amount of deposit removed.

By the exercise of the powers vested in the Commission, much of this may in future be prevented.

With regard to the effect of these operations as far as my own observations and inquiries have extended, I believe that they have conferred a vast amount of benefit in the prevention of disease and death by the removal of the pestilential accumulations.

With respect further to these operations, I may be permitted to state, that although I do not approve of the flushing as an ultimate system, or as a system to be adopted in the future permanent works of sewerage of this Commission, or that its use should be contemplated with regulated sizes of sewers, regulated supplies of water, and proper falls, it appears to be the most efficacious and economical for the purpose to which it is adapted of any yet introduced.

Pending, however, the adoption of a perfect system, I am of opinion that some mode of removing the constant accumulations of foul matter which the levels, form, and size of the present sewers generate must be adopted; whether by the system

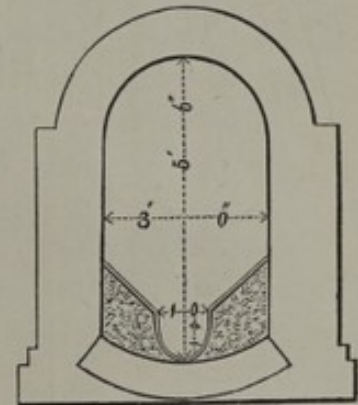
of flushing, or by the old method of casting on the surface of the street from man-holes, and carting it away, the relative merits of the systems must determine.

A comparison of the relative cost of the flushing system by contract, and of the cost of the old system by casting the deposit on the surface and carting it away, taking the cost of the old system at the price stated in the Report of the Surveyors to this Commission of 31st August, 1848, 7s. per cube yard, and the cost of the contract flushing system at the price before stated, 8d. per cube yard, gives the following result:—

		£
By the contract flushing system	} 79,483 cubic yards of deposit removed, at 8d.	2,649
By the old system of casting and cartage		

It appears, therefore, that by the adoption of the contract flushing system a saving has been effected, within the comparatively short period of its operation, over the filthy and clumsy system formerly practised of 25,170*l.*, showing the cost of this system to be ten and a half times greater than the cost of flushing by contract.

It has been proposed* to employ for the prevention of the accumulations of deposit in sewers an arrangement similar to that exhibited in the annexed drawing, whereby the flow of water is concentrated, the velocity of the stream augmented, and a greater scouring action maintained.



In some situations this may to a certain extent have the desired effect, and it would be useful and important to ascertain this; and I would beg to recommend that, as an experiment, it should be tried in various situations. I am bound, however, to state

my conviction, that from what I have observed of the general levels of a large number of the present sewers, it will prove but partially effective.

I beg to direct the attention of the Commissioners to two modes in which the flushing operations, either on the same, an extended, or a limited scale, may hereafter be conducted, viz. :—

- By the present system of contracting with the flushing men.
- By contracts on open tenders, as pursued with the other works.

I believe that I have fulfilled the instructions of the Commissioners in letting this work and organising a system. I consider, therefore, that my superintendence in this particular is at an end. Your further directions as to the future disposition of these works are therefore needed.

THOMAS LOVICK.

February 8th, 1849.

* By Mr Phillips : see his Evidence before the Sanitary Commission—vide their 1st Report.

of flushing or by the old method of emptying on the surface of the street from man-holes.

A comparison of the relative cost of the flushing system by contact and of the old system by emptying the deposits on the surface and emptying it away.

The cost of the old system at the time stated in the Report of the Surveyors is 11s. per cubic yard, and the cost of the flushing system at the present time is 5s. per cubic yard. This gives the following result:

By the flushing system 5s. per cubic yard. By the old system 11s. per cubic yard. At 2,500,000 cubic yards of deposit removed at 5s. per cubic yard, the saving would be 10,000,000s.

The saving, therefore, that by the adoption of the contact flushing system has been effected, would be approximately about equal to the cost of the old system, showing the cost of flushing by contact.

It appears, therefore, that by the adoption of the contact flushing system a saving has been effected, which is approximately about equal to the cost of the old system, showing the cost of flushing by contact.



in various situations. I am bound, however, to state that in the flushing effect, and it would be useful and important to ascertain this; and I would beg to refer to the Report of the Surveyors, which would be of great value in various situations. I am bound, however, to state that in the flushing effect, and it would be useful and important to ascertain this; and I would beg to refer to the Report of the Surveyors, which would be of great value in various situations.

8TH FEBRUARY, 1849.

I believe that I have fulfilled the instructions of the Commissioners in stating the work and of giving a system. I consider, therefore, that my responsibilities in the particular is at an end. Your further directions as to the future disposal of these works are therefore needed.

THOMAS LOVICK.

LONDON: 1849.