

LAWS FOR
DRAINAGE, &c.,
IN THE METRO
POLIS.

which it has been our duty to inquire, we cannot conceal from ourselves, that in many cases a considerable time must elapse, before permanent structural arrangements can be placed on that footing, which their importance requires. Though those, who may be specially entrusted with the execution of the legislative powers recommended, will be enabled by an earnest discharge of their duties to accomplish great good, we still look to the co-operation of the public for important aid in the removal of those causes of disease, to which the poorer classes of your Majesty's subjects are more peculiarly exposed; we do this the more confidently from the interest that has been recently manifested so generally on this important subject, and from the extent to which causes affecting public health have been made known through so many different channels, leading to the introduction of simple, economical, and highly beneficial improvements even in the humblest dwellings. With such co-operation, we have the greatest confidence that vast physical benefits will ensue, and that they will be accompanied by a corresponding improvement in the moral and social condition of the poorer inhabitants of large towns and populous districts. All which we humbly certify to your Majesty.

(Signed)	BUCCLEUCH.	(L.S.)
	LINCOLN.	(L.S.)
	ROBT. A. SLANEY.	(L.S.)
	GEORGE GRAHAM.	(L.S.)
	H. T. DE LA BECHE.	(L.S.)
	LYON PLAYFAIR.	(L.S.)
	D. B. REID.	(L.S.)
	RICH ^d . OWEN.	(L.S.)
	W. DENISON, CAPT. R ^L . ENG ^{RS} .	(L.S.)
	J. R. MARTIN.	(L.S.)
	JAMES SMITH.	(L.S.)
	ROBT. STEPHENSON.	(L.S.)
	W. CUBITT.	(L.S.)

Gwydyr House, Whitehall;
February 3rd, 1845.

MINUTES OF EVIDENCE,

Taken before the COMMISSIONERS appointed to inquire into the STATE of LARGE TOWNS and POPULOUS DISTRICTS in ENGLAND and WALES, with reference to the CAUSES of DISEASE among the INHABITANTS.

James Aspinall, Esq., examined.

Jas. Aspinall, Esq.

1. Are you chairman of a Committee appointed under the Liverpool Health of Town and Buildings Regulation Act, passed in 1842?—I am.
2. Is this Committee connected in any way with other Boards of improvement, such as the sewerage and scavenging, or the parish authorities?—No, it is independent of the Highway Board and of the Parish Board. The Highway Board and the Sewerage Board are the same.
3. Do you consider that this absence of connexion with Boards so intimately connected with matters relating to health renders the operations of your Health Committee less effective than they might otherwise be?—I think not; I think they are better separated.
4. The sewerage and the supplies of water and the scavenging being so intimately connected with health, and all those being points which must tend to render the population healthy or diseased, according to the mode in which the measures are carried out, do you think that a Health Committee, having for its object the preservation of the health of the town, can operate efficiently without being connected with such Boards?—My own private opinion is that we are better separate, because we are differently constituted. The Health of Town Committee is under the Corporation, and the Highway Board and Commissioners of Sewers are under a particular Act. The qualification is totally different.
5. Do you think it advisable that they should be under different authorities? Would it not be better if they were under one authority under the Corporation, so that they should be all connected together?—I should think they are better separated.
6. Have your Committee any authority over the proceedings of the body who manage the drainage?—No, certainly not.
7. How are you enabled to carry out any recommendation you may make with respect to alterations or improvements of the drainage, which bears upon the health of the humbler classes, if you have no authority upon that subject?—We have no power to compel any drainage from the humbler class of houses in any Act we have.
8. Then your Committee has no power to carry out any alteration which they may suggest in the drainage?—Certainly not. We have the power of compelling upper drainage, by putting channels in courts, but we have no power over the under-drainage; that is entirely in the hands of the Highway Boards and Commissioners of Sewers.
9. The powers under the Health of Town Act apply chiefly to buildings, the width of courts, the flagging and paving, and the management of the surface?—And the channelling of the courts; everything relating to the upper drainage.
10. It is an open drainage?—It is.
11. Supposing that the cleansing is very defective in any one of those courts or in any one of those narrow places in Liverpool, and that the Health of Town Committee, seeing that to be the case, are desirous to have it amended, have you any authority to enforce your wishes?—Yes, we have the power of making bye-laws which are not in operation now, but we are waiting for the Metropolitan Act, and what may appear from this Board, before we carry those bye-laws into operation. We have the power of compelling the people to cleanse the courts under a penalty.
12. But you have no power over the Commissioners for Cleansing?—No.
13. You have no power of enforcing your wishes through them?—No; the Watch Board are the scavengers of the town, which is also a Board under the Corporation.
14. Their authority does not go into the close courts at all, does it?—Not at all. There are four Boards,—the Watch Board, which has the scavenging, and the Highway Board, which has the management of the Sewerage, and the Health of the Town is a different Board.
15. The authority of the Scavenging Board does not go into those close courts, so that there is no authority for cleansing those close courts?—Except the bye-laws we shall make.
16. And then the cleansing will be done through the medium of the people themselves?—Yes.
17. You say that you think these various Boards had better be separated, because they are differently constituted. Supposing they were not differently constituted, and that they were so constituted as to act in combination together, do you think that would be an improvement?—My reason is this, that the Highway Board, generally speaking, is a Board that acts

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for years; the Health of the Town Board is elected from the Corporation, and is liable to be changed every 1st of November, and therefore you get new members upon that Board, and they are not so thoroughly acquainted with the operations under the Act, as a Board that has been constituted for years, such as the Highway Board.

18. The question is not whether they should be put under the Corporation, but whether, if it could be so arranged that they should act in combination, it would not be better than to have several Boards, intimately connected with the health, all acting distinctly, without combination?—I am not prepared to say that. I am a member of all the Boards myself, and therefore I know how they do act. I have been a member of the Highway Board for 12 years. The operations are so totally different that I am hardly prepared to give an answer, but I think there is so much to do by each Board that it would be too much for one Board to do.

19. Then the Health of Town Committee, in endeavouring to carry out their benevolent wishes for the improvement of the health of the various districts, put forth certain recommendations, but you have no power to carry them out. The Sewerage Board and the Cleansing Board may or may not follow your recommendations, so that you have not the advantage of being able to enforce that which you recommend?—No, the town is not sufficiently sewered now, and we have not funds to carry it out. The expense of cleansing the town properly would be enormous, and how it could be carried out I do not see.

20. Was this Improvement Act obtained in consequence of some facts elicited on the reports of your surveyors on the state of the town?—Yes, it was.

21. What amount of population was found to reside in cellars situated in courts, and in cellars situated in streets?—I should say about 50 to 55,000 altogether; there were about 21 or 22,000 in courts; but it must be observed that although that number reside in cellars, in courts, yet, there are only 1252 cellars containing about 5000 souls, which are let independently of the houses, according to the returns of the surveyors for the north and south district.

22. How many in cellars in streets?—I should say about the same number.

23. Altogether about 45,000 residing in cellars?—Yes.

24. Was there found to be a considerable part of the population in courts and alleys?—Yes, a considerable part.

25. Then, in fact, it was ascertained by survey that nine-twentieths, or nearly one-half, of the population of the parish of Liverpool reside in courts and cellars?—In the parish of Liverpool. The Municipal Reform Act brought other districts into the borough of Liverpool.

26. The Corporation considered that this was so detrimental to public health that they applied for the Act referred to for the purpose of abating that evil?—They did.

27. What powers are given in the Act for improving the health of the town by diminishing the number of cellar dwellings?—There is a clause that the cellar dwellings shall be a certain height from the ground, and that they shall consist of a certain number of square feet, and that they shall be seven or eight feet high.

28. The clause which applies to this subject is the 11th clause?—It is.

(The same was read as follows:—)

"And be it enacted, That from and after the First day of July, One thousand eight hundred and forty-four, it shall not be lawful to let separately, except as a warehouse or storehouse, or to suffer to be occupied, as a dwelling-place, any cellar or room under any other house whatsoever, which cellar or room shall be less in height from the floor to the ceiling than seven feet, or which shall be less than one-third of its height above the level of the street adjoining the same, or otherwise shall not have two feet, at least, of its height from the floor to the ceiling above the said level, with an open area of two feet wide from the level of the floor of such cellar or room up to the level of the said street, or which shall not have attached thereto the use of a privy and an ash pit; according to the enactment herein contained, or which shall not also have a window of not less than three feet square, or otherwise of an area of not less than nine feet clear of the sash frame, and a fire-place with a chimney or flue, or being an inner or back cellar let or occupied along with a front cellar, as part of the same letting or occupation, shall not have a ventilating chimney, unless such inner or back cellar shall be part of a house built before the commencement of this Act."

29. Have you formed any estimate of the number of persons who will be removed from cellars in compliance with the Act?—I think about 5000 or 6000 in courts. I should say that almost all would be removed in compliance with this Act.

30. You issued a notice for their removal?—We issued a notice for the 1st of May this year. There was a notice given that they were all to leave before the 1st of May, and we found there were so few that would comply with the Act that we were obliged to extend it to the 1st of July. What we are to do with those poor creatures when we turn them out, or where we are to place them, I do not know. We find it very difficult to remedy the evil.

31. Have the public authorities, or any associations of private persons, made arrangements for accommodating so large a number of persons on their removal?—Certainly not.

32. Is this clause of the Act compulsory?—Yes.

33. So that if you do not obey the Act you may be prosecuted?—We may, if we do not carry out the Act. A great number of those cellars are under Corporation leases, and, therefore, we are just as liable to be prosecuted as the landlord.

34. So that, in fact, you are bound to expel 23,000 persons in cellars, out of courts, from their dwellings on a given day, without having provided means of accommodation for them?—Certainly.

35. What must be the consequence of such a step?—I am not aware. I should say that a great number of those unfortunate wretches would have to be provided for by the parish.

36. Many would go into houses?—Many would go into houses. Three or four, or five, families would go into a house, where only one or two families were before.

37. Are there any houses of the poorer sort building upon speculation for the purpose of accommodating those persons?—Not that we are aware of.

38. It has been stated by physicians of great eminence that one principal cause of the unhealthiness of Liverpool is the crowded state of its population in the poorer districts. So that the summary abolition of cellars, as dwellings, must, in the first place, at least, increase this evil?—That is the opinion of two eminent gentlemen whom we have on our Board of Health, Mr. Blackburn and Mr. Chalmer. We had a very eminent man who died about a month ago. Mr. Boutflower, and it was decidedly his opinion also. They all considered that if the poorer classes be driven to the necessity of going into the old houses in the courts, which were built before our Act passed, and which cannot be altered, and where three or more families are living together, the evil would be greater. The houses now building will be more expensive than the abodes which they are compelled to leave, and they cannot afford to go there; and it is very natural for them to go where they can get the cheapest residences.

39. Are you aware of the fact which has been ascertained in Liverpool, that there is much more sickness in cellars than in houses?—In damp cellars; but you will see that there are dry cellars, damp cellars, and wet cellars.

40. The question is, whether great distress would be occasioned by the sudden expulsion of such a large number from cellars without houses being provided for them?—Certainly, and I cannot see how the evil is to be remedied if it is to be done instantaneously.

41. No steps have been taken by the Corporation to select the worst cellars first for the expulsion of the inmates?—We have been obliged to carry out the Act, and we have given notice to all.

42. Have there been many instances of cellars being disused, as dwellings, in consequence of this Act?—Yes, lately; but we were obliged to extend the time from the 1st of May to the 1st of July. Now there are several families quitting, and many cellars are being altered according to the Act.

43. Your Act gives power for regulating buildings, the width of streets, courts, &c.?—That is in the Building Act. It is in our Act also.

44. In this respect is the Act retrospective, or is it framed with a view to prevent the aggregation of evils in old districts, without amending or promoting the health of those districts?—Certainly. With the exception of compelling them to flag and channel their courts it is prospective.

45. In clauses 4 and 5 it is enacted, that no carriage way shall be less than 24 feet wide, and no court, closed at one end, less than 15 feet. Have you found those clauses to be efficient?—Certainly not.

46. In what way have you found them defective?—We have found that 15 feet at the entrance of a court is not sufficiently large if it is confined at the entrance, and I am sorry to say that in most of our courts there is merely an entrance; in many cases they merely put an entrance of 15 feet, and then the rows of houses go up in a wedge shape, branched off like a tree.

47. That evades the intention of having a good current of air coming into it?—Yes. I do not care whether it is 5 or 6, or 15 feet, if you have not a current of air, or a sufficient space for the air to rush up.

48. Are each of those branch courts 15 feet wide?—Yes, we are very particular about it. If it is two or three inches too little we make them take it down.

49. The entrance is 15 feet wide, but they evade the Act by making a great many branches, and have only one entrance to all those branches?—It is evading the spirit of the Act. The Act was never intended to allow that. If I might suggest anything, I should say that if it was not open at one end, they ought to increase the width at least to 20 feet; but, I should say, 24 feet would not be too much, if there is not to be a current of air.

50. There is no restriction under this Act as to the depth of those courts?—Not at all; they may extend to any length.

51. So that it is nominally a court, but it is, in fact, a prolonged street?—Yes.

52. Was it thought a sound principle to fix a minimum width of 15 feet for courts without reference to the height of the buildings? Might not the Act be further evaded by running up high buildings of several stories, similar to those in Edinburgh or Glasgow?—You might run them up to any height.

53. So that the circulation would, in fact, be impeded?—Yes.

54. Is that, in fact, done?—Yes, they are three or four stories high.

55. Are the houses back to back?—Some houses have small yards and privies, and cesspools.

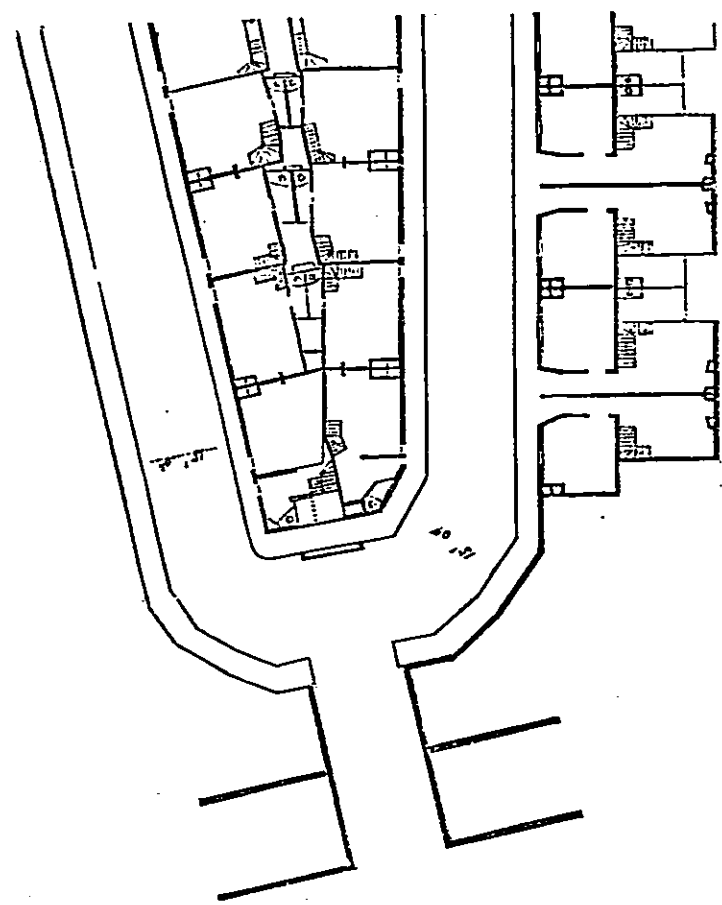
56. Then there is a small space at the back of each house?—Yes; some, but not all.

57. Have the houses been run up higher than they were before, two or three stories?—Yes.

58. So that the Act is evaded in that way?—Yes.

59. The yards which contain privies and cesspools are between those high houses?—Yes, and they have to come down. I should say that that is a very great nuisance. This engaged the attention of the Committee, and we took the opinions of two eminent counsel upon it, and they said that it came within the Act, and that we could not interfere. Annexed is a plan of one of the courts lately built.

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60. It is to be presumed that the object of fixing a minimum width for courts, closed at one end, was to secure for them a proper ventilation from the open or exposed end?—Certainly.
61. In some cases, is not the width of the entrance diminished to the width of six feet by the erection of privies and ash-pits?—We do not allow that now, it was so.
62. You have the power to do so by the Act?—We always find that there is something or other that will put a stop to it, and we have set our faces against it, as much as possible, as it is a great evil.
63. Your opinion is that, as the only entrance for air is from the front, if privies and ash-pits are erected there, it must become charged with all the filthy emanations from those places?—Certainly.
64. It was represented by both your surveyors that the mode of cleansing cesspools and ash-pits by private nightmen was an intolerable nuisance, alike injurious to the property of the owners, and to the comfort, health, and morals of the occupiers. Have you powers in the Act for the more efficient cleansing of privies and ash-pits?—No.
65. You have a clause to compel the occupiers to clean them out at 14 days' notice?—Yes, it must be done between sunset and sunrise. I think it cannot be done before 11 o'clock at night, or after 5 o'clock in the morning.
66. The clause gives you power to compel the occupiers. Are not those occupiers generally weekly tenants?—Most of them are.
67. Therefore they are a migratory population?—They are.
68. As you have to give 14 days' notice to those tenants is not the clause altogether inoperative?—It is.
69. You have no power to appoint a regular scavenger whose duty it shall be?—No.
70. The expense of cleansing an ash-pit and a privy is considerable?—It is.
71. Then the occupier will rather remove from his dwelling than bear that expense?—He will.
72. Then the clause is of no avail?—It is.
73. And the consequence is, that it remains undone?—It does. Sometimes, when those cellars cannot be let for a month, you often find them half filled by the filth deposited in them.
74. You have power in the Act to oblige the owners of houses to erect privies to them?—Yes.
75. And you exert that power?—Yes, we are very particular as to that.
76. What rule do you follow?—We do not approve of any plan for new houses unless they have a sufficient number of privies to those houses—say a privy to two houses; the privies must be open at the top, and there must be a flue to every privy.
77. Have you the same power with regard to existing houses?—We cannot touch those.
78. In your Health Act you proceed upon the supposition that a sufficient supply of privies and ash-pits is adequate for the preservation of health, and that it is not necessary to obtain the thorough and immediate removal of decomposing refuse by water?—I do not think, as those courts are constituted, you can remove it by water.
79. You proceed upon the supposition that it is not necessary?—That it is not practicable. You cannot bring the water into the sewers to remove it.
80. Would you consider it an improvement in the Act to have power to effect that?—I think not.
81. Why not?—Because I do not think that in that part of the town there is sufficient fall into the sewers to carry it off; and I do not think you could get a quantity of water sufficient to carry it off.

82. Are you aware that there is a prohibition in your Sewerage Act against the connexion of soil-pipes from water closets with the public sewers?—There is a clause to that effect. I think it is evaded very much; but parties are allowed to carry the overflow from their privies and water-closets into the sewers.

83. Does not the very fact of its being evaded show the importance it is of to the inhabitants to have that communication?—I think that eventually the Act must be altered.

84. Must not the consequence of the prohibition be to prevent the construction of water-closets, or, if not to prevent them, to check the extension of them?—No, I should say not, because I think they have cesspools in their yards; and they have also necessities, which are cleaned by the night-soil men.

85. The cleansing of cesspools necessarily implies considerable expense, at least to some person; therefore must it not tend to check the formation of water-closets by increasing materially the expense of their formation?—Yes.

86. Therefore that clause does check the extension of water-closets?—I do not know how far that may be the case throughout the town; but I do not think that if water-closets were turned into the sewers there would be more water-closets than you have now in the better class of houses.

87. The question refers to the poorer classes?—I do not think the poorer classes have anything of the kind.

88. Is not that because it is so expensive?—Yes.

89. Then, as this clause renders greater expense necessary, it prevents the poorer classes from having water-closets?—Exactly. But though there is plenty of water for the use of the town at Liverpool, it is impossible to get the same quantity of water as you have in London to carry off this mass of corruption by water.

90. So that this clause operates by increasing the number of cesspools in your town; or, in other words, by retaining the refuse which it is the legitimate object of sewers to remove?—It never was contemplated to take that off by the sewers.

91. What is the use of sewers? Is not the use of sewers to remove refuse from the town?—Exactly, but not of that description. It is a grave matter for consideration whether the filth and soil from water-closets being allowed to go into the sewers, and thus pass through a great portion of the town, emitting noxious smells to escape from the eyes of the sewers, is not more detrimental to the general health of the inhabitants than when it runs into cesspools upon the premises of the occupants, and emptied only when necessary, because the cesspools can be so constructed as to be perfectly air-tight, and prevent any escape unless when emptied.

92. Is not that the use of them in London and other places?—If they have plenty of water.

93. Are you one of the Commissioners of Sewers?—I am.

94. You have not introduced sewerage clauses into your Health Act, as you consider your Sewerage Act to be sufficient?—I think so.

95. Do you know Mr. Holme, a builder in Liverpool?—I know Mr. Samuel Holme very well.

96. Do you consider, from his experience in town matters, that he is well fitted to express correct opinions upon the sewerage and other structural arrangements in Liverpool?—Certainly, no man more so.

97. In describing the sewers of Liverpool Mr. Holme says, "Notwithstanding the Commissioners of Sewers have expended above 100,000*l.* in new sewers and paving during the last few years, very much remains to be done, even in the principal thoroughfares, before our sewerage can be considered to be accomplished. And although the Commissioners will permit any person on application to make a branch drain into the public sewer on payment of the sum of 18*s.*, yet with strange perversity they forbid an overflow from a water-closet to be turned into them; and the consequence is, that nearly all the water-closets are discharged into open ash-pits or cesspools, impregnating the atmosphere in numerous places, and exposing that offensive matter to the surface, and to the decomposing effects of the atmosphere, which ought to be carried by the public sewers into the main artery of the river, and the air is thus tainted through the mistaken views of those whose functions it especially is to provide the means of carrying off this effluvia." He says also, "In numberless instances courts and alleys have been formed without any declination for the discharge of surface water. Many are laid without channels; and while the solid refuse thrown upon them rots upon the surface, the liquid matter is absorbed, and much of it finds its way into the inhabited cellars of the courts. The north end of the town is full of pits of stagnant water, which form so many receptacles for the putrid matter that is constantly thrown into them, such as dead animals, the drainage from starch and other manufactories; and in hot weather the stench from these places is frequently intolerable. The whole of the north end of the town being, as I have before described, a bed of clay, these poisonous pools are never lessened except by evaporation; and from these, and the imperfect drainage, and other causes to which I shall advert, instead of being surprised at the mortality of Liverpool, I am surprised that the mortality, taking all things into consideration, is so exceedingly small." He states, "There are thousands of houses and hundreds of courts in this town without a single drain of any description; and I never hail anything with greater delight than I do a violent tempest, or a terrific thunderstorm, accompanied by heavy rain; for these are the only scavengers that thousands have had to cleanse away the impurities and the filth in which they live, or rather exist." Do you coincide with him in his description of the state of sewerage in Liverpool?—Yes, certainly.

98. In the evidence given in by the Health Committee to this Commission, it is stated that the Commissioners that act under the authority of the 11th of Geo. IV., since 1839, have constructed 33,440 yards, or 19 miles, of sewers, at an expense of 100,000*l.* Have you any reason to believe that there is any error in those numbers?—I believe not. I have a letter on

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the subject from Mr. Ashlin. I sent for this information to Mr. Ashlin, who is our treasurer and clerk, and he said that he had no reason to alter his opinion.

99. In the neighbouring town of Manchester the cost of sewers, that is, of excavating, building, relaying, and procuring materials, is 15s. per lineal yard. The cost of sewers in Liverpool is estimated at 33s. per lineal yard. Are you aware of the cause of the difference in price?—After some of our sewers have been made we have been obliged to take them up and enlarge them. There is a sewer in Church-street, made a few years ago, and so many sewers have been put into that sewer, that it was not sufficiently large and sufficiently deep.

100. Therefore this enormously increased expense is owing to a deficient system of scientific sewerage at the outset, to their not having taken a sufficiently large area for operations, and to the work having been deficiently executed, and all those unscientific arrangements for the sewerage are now to be remedied at an enormous cost?—In one or two instances.

101. The sewers in Manchester are generally larger than has been found necessary by experience in London, the reason assigned being that this increased size is necessary on account of the quantity of water discharged from the manufactories in Manchester. Is there any similar reason for increasing so materially the size and expensiveness of the Liverpool sewers?—Generally, no.

102. From the experience of Manchester, 19 miles of sewers could have been constructed for 25,080*l.*, or, according to the estimate of the average expense of construction in Liverpool, for 55,176*l.*; but as the Liverpool Commissioners have expended 100,000*l.* upon the construction of their sewers, it appears that the actual expense of construction in Liverpool is nearly double the estimated amount of 33s. per lineal yard, or nearly quadruple the amount for which it is stated in evidence that efficient sewers are constructed in Manchester. Can you state the reason for the very great difference between the estimated and the actual expense of construction in Liverpool?—The sewers stated to be executed in Manchester at an average cost of 15s. per yard vary in size from 15 inches by 12 inches to 42 inches by 24 inches, and of the latter size only one has been executed between June, 1838, and May, 1844, and it appears that during that period no sewer larger than 42 inches by 24 inches have been constructed; but that between 1836 and 1838 one was built 60 inches by 36 inches, at a cost of 41s. per yard; and two, 72 inches by 36 inches, at a cost of 40s. 5*d.* per yard. The average price stated for sewers in Liverpool, viz., 33s. per yard, is for sewers varying from 42 inches by 36 inches to 48 inches by 36 inches, made of sufficient depth to drain the cellars. The greater part of the 19 miles of sewers made between 1829 and 1840, were main sewers, encircling the borough, or acting as great arteries to receive the subsidiary sewers, since made, and now making, and varying in size from 60 inches by 36 inches to 72 inches by 54 inches; the great north tunnel, running from Crown-street to Beacon's-gutter, was 3 miles 320 yards long, and of the above sizes, and cost about 58s. per yard; and such was the size of the Parliament-street, 2400 yards long; the Dale-street sewer, 1800 yards long; the Hanover-street sewer, 2400 yards long, and many others; and few sewers are constructed less than 46 inches by 30 inches, which enables men to enter and clean them.

103. Have the Commissioners constructed sewers within the last year in many streets inhabited by the poorer classes?—Three thousand yards have been done the last year, and within the last six weeks we have ordered 7200*l.* to be laid out in sewers, entirely in that part of the town which has not had them before, all in the lower districts of the town, such as Frederic-street, &c. The Sewerage Board were bound to construct the sewers in accordance with the plan deposited for the Boundary-street; after they accomplished this, they then did those streets which in their opinion was most wanting of sewers, under the advice of their late surveyor, Mr. John Foster. I have also a return of the flagging of courts and alleys that has been done in the town of Liverpool under the Health Act. The quantity of flagging which has been done in the south district is 8375 square yards; in progress 1400 square yards; the quantity of channelling is 4797½ lineal yards; and in progress 600 yards. In the north district the quantity of flagging done is 6881½ square yards; in progress 1360; of channelling 3539; and in progress 660.

104. As a general statement, may it not be safely said that the Commissioners of Sewers in Liverpool have principally sewered the large streets, the streets containing shops, and the residences of the wealthier classes of society, and have not sewered so much in the poorer districts?—Some of those streets are so extremely narrow that you cannot sewer them. Their attention has been paid to all the poor streets that they possibly could, particularly lately.

105. Has this been owing to the necessity of sewerage those streets first in which the highest rates are paid?—I think not. I had a house in Duke-street, where I resided from the year 1814 to within these three years, and I have not a sewer within a quarter of a mile of my own house, although I was a Commissioner, and that is one of the principal streets in Liverpool.

106. It being an undoubted fact that sewers have been principally constructed in the larger and more wealthy streets of Liverpool, and that few have been constructed in the poorer streets, is this owing to the necessity of sewerage first those streets which paid the highest sewerage-rates?—I do not think there was any reason for the Commissioners doing that. I think the Commissioners sewered those streets first that they thought most required it. My opinion is that in a dense population some of the streets are so extremely narrow, and are so small and low, that it is quite impossible to sewer them at all; others we have done within the last few years, in consequence of the same power given us by the new Act.

107. Supposing that the expense of sewerage were levied, as in Manchester and Little Bolton, on the owners or occupiers of the houses, according to the frontage of their property, are you of opinion that the sewerage of Liverpool might be proceeded with much more quickly than by the system of general rates?—I think general rates seem to have answered very well, and they have been collected very well; besides, it seems to me unjust that an individual should

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be required to pay for a sewer according to the frontage of his property, when he has contributed to the general rates for a period of 12 or 14 years, without deriving any particular advantage therefrom. I should therefore prefer the general rating, that all may be placed on an equality, to share the burden and partake of the benefit.

108. During the same period in which the Commissioners in Liverpool have constructed 19 miles of sewers, at an expense of 100,000*l.*, derived from general rates, the Corporation of Manchester have built 32 miles of sewers, by the system which has just been mentioned. Were you aware of this fact?—Not at all.

109. As the Commissioners of Sewers in Liverpool have proceeded with activity, must it not be owing to the difference of the system that so little has been done in Liverpool in comparison with what has been executed in Manchester during the same period, particularly as regards the poorer districts?—I can answer that thus far, that we are limited in our rates in Liverpool; that we could not levy more than so much in the pound, and that the whole of that sum has been expended, that we had the power by the Act of Parliament to levy.

110. But you have not done upon your system much more than one-half what they have in Manchester?—Exactly, because we have not the power.

111. As the immediate call for the outlay for sewerage and paving the poorer districts of Manchester has been found to be very oppressive, do you think it would be an improvement in the system if the expense incurred were paid back in equal annual instalments, with interest, within a given period, say 20 or 30 years; that is, that supposing 10,000*l.* is laid out this year, instead of levying the whole of that by an immediate rate, it should be levied by a rate extending over 20 years, and be paid back by instalments?—I do not see how it could be done.

112. Have you not received complaints of the burden of the expense of flagging?—It has often happened that when our surveyors have gone to apportion the different sums of money to be paid by each person who has a right of passage in different courts, we have found one or two individuals not able to pay at all; that the mortgage has been to the full extent of the value of the house, and the mortgagee has received the whole of the rent as interest, and they have absolutely not had a farthing to do anything, and therefore that has stopped the proceeding.

113. Suppose the expense of laying down a sewer, or paving the court, amounted upon each house in the court to 5*l.*, those houses, perhaps, would not be able to pay the 5*l.*, but they could pay 5s. annually, which would pay it off in a certain number of years?—Yes, I think it would be very easy to do it in that way. In many instances the distress is dreadful, and we know that they cannot pay, but we know human nature is such that if you were to excuse one or two you would have one or two thousand making the same complaint.

114. You say that in many cases the cottage owners have not been able to pay; that the whole of the rent has been absorbed in the mortgage interest; then would it not be better to pay the expense of the improvement in 30 equal annual instalments than to demand it all at once?—Certainly; but my opinion is this, that you are giving facility to men that can pay best. I am sure the cottage owner in Liverpool is a rich man; that in ninety-nine cases out of a hundred the cottage owners are able to pay.

115. And that they ought to be made to pay?—Yes, and that they do not now.

116. In that case you would come immediately upon the owner, and not upon the occupier?—Yes. I think the cottage owners in Liverpool are men that have a large per centage for their outlay.

117. But you stated just now that it was so oppressive to the owners that they could not pay?—That is only in a few cases, where a man only owns a few cottages; but generally those courts are built by owners that are able to pay, and who will not pay.

118. Then any method that could be devised to bring them into assessment, and make them pay, would be an advantage?—That is my opinion.

119. Are there many owners of property of this description whose interest is of short duration?—There are a great number under Corporation leases.

120. Then the expense of improvements operates oppressively upon them?—Not always. I am glad to say that Lord Derby, who has immense property in Liverpool of this description, the very moment this Act came into operation gave an order to his agent, and the whole of his courts were done by himself, at his own expense.

121. But in those cases where there are short leases and short interests was it not severely oppressive?—Certainly; but we are going on the long leases now, and the freehold property. There is a great deal of Corporation property that will come out before the year 1850, and they mean to do away with many of the courts. The Corporation are going upon a very good system; they are going to do away with as much of that property as they can. Where the houses will have to come away in a year and a half, it would be hard to make those people flag those courts, when those courts are going away altogether. Therefore the Health of Town Board have taken the long leases—all that are above 21 years.

122. It has been stated in a letter of Mr. Tomlinson, a barrister of the Inner Temple, that small house property "frequently changes hands, and is generally held by persons of limited means, for short terms, not unfrequently by poor widows, who have no greater interest than for their own lives, and is sometimes held, as in Liverpool, under leases from the Corporation, for the remainder of a term, which the parties have not the means of renewing. Even when owners of the property have the inheritance, such houses are usually first built by small shopkeepers, or retired tradesmen or publicans, and latterly, I am happy to add, by working mechanics, out of their savings, or else by builders of small means, who sell the buildings as soon as finished to persons of the former description." He says, "the temptation to possess such property is the high rate of profit returned from the investment, averaging, I believe, about 8 per cent. Against this is to be set off the labour of frequent collection, and the constant and

Jas. Aspinall, Esq. anxious superintendence which such property requires." Does that agree with your views?
—Yes.

123. Then to people of the class mentioned here the immediate outlay necessary for improvements must be very severely oppressive?—Very.

124. Then you would approve of the principle of spreading the expense over a period of years, so as to render it less oppressive?—Yes, to such people as those, if you can make your clause stringent. There are so many that evade the Act—that really will not pay, and plead poverty—that it ought to be very stringent.

125. Are those cottages exempt from the poor-rates?—The cottage owners are.

126. Are the rates levied upon the occupiers?—The occupiers are rated. The cottages in Liverpool of the annual value of 12*l.* and under, are all included in the poor rate, but the payment of the rate is not enforced, the magistrates being unwilling to grant warrants against this numerous class of occupiers, alleging that they ought to be excused on the score of poverty.

127. Is that the case always?—I think almost always.

128. Are they rated under a special Act?—Yes; we have a special parochial Act.

129. With regard to scavenging, Mr. Holme states as follows. He is asked in what manner the streets are cleansed, and he says, "There are scavengers (generally paupers) employed in cleansing the surface of the streets. The parochial authorities contract with parties for the removal of the mud, &c., for manure; but I am not aware that there are fixed gangs of men to certain districts, for I believe that when the superintendent reports upon a street it is ordered to be cleansed. On this point, however, I do not speak with certainty; but, generally speaking, the streets are in a filthy condition in the lower and northern parts of the town, and are, at certain seasons, especially near the Docks, almost impassable." Are you of the same opinion as to the state of the streets?—They are in a very dirty state, certainly.

130. It is stated in the evidence of the Liverpool Scavenging Committee that there are 65 scavengers engaged in sweeping the streets, and that every street is swept once in the week. Are you aware that in Edinburgh, and in other towns where there is much less traffic than in Liverpool, the streets are swept once every day?—I am not aware of that; but I am quite sure that the Liverpool streets are not swept often enough.

131. It is calculated that 1000 yards form the amount which can be effectually swept by a scavenger in one day. Now, as there are 95 miles of streets in Liverpool which require sweeping, they must contain at least 1,337,600 superficial square yards, on the assumption that none of them are wider than 24 feet, (the smallest size allowed by your Act;) so that with the 65 scavengers in Liverpool, according to this estimate of a man's labour, all the streets could not be more effectively gone over more often than once in three weeks. May not this deficiency of force account for the filthy condition of the streets of Liverpool, as described by Mr. Holme, and other competent witnesses?—I should say that there is less attention paid to that than almost any other arrangement in the town.

132. That is to say, the going over the streets once a week is merely the rule, but it is not the practice?—Certainly.

133. Do you use Mr. Whitworth's machine?—No, but they are going to adopt it. There is one thing I wish to mention, that last year, since we have had more Macadamizing than we had before, the cleansing of the town from the Macadamized roads has cost us 700*l.* or 800*l.* more than it did in previous years; and what is taken from the Macadamized road is not valuable, whereas what was taken from the other was valuable.

134. In clause 20 of the Health Act, powers are given for the cleansing of houses stated to be in an unwholesome condition. Have you yet exercised those powers?—We have not; the bye-laws are preparing, but we want to see the Metropolitan Act, and the Report of this Commission, before we pass our bye-laws.

135. It has been fully pointed out by witnesses before this Commission that the state of houses as to cleanliness is intimately connected with the supply of water. How are the poorer classes in Liverpool supplied with this necessary article for health and cleanliness?—I should say that the poor are very badly supplied.

136. Is it not the case that the water companies serve districts with water only every other day, and then only for a few hours at a time?—It is.

137. So that if the poor have not sufficient vessels to hold the water necessary for two days' supply, or if they do not happen to be at home during the hours of service, they are deprived of the benefit?—Certainly.

138. Taking one house with another, cisterns with ball-cocks cost about 2*l.* So that the alternative of building them necessarily implies a very large investment of capital, which might be saved if the water were kept on constantly in the mains at high pressure, as done at Nottingham, Ashton, and Preston. Are you of opinion that the introduction of a similar system in Liverpool would be productive of great benefit to the health of the town?—I think if they could find the water; but I do not think that if the water was on every day, and the mains were full every day, there would be a sufficient quantity.

139. Are not you going to have plenty of water by means of some new water-works?—Yes, under the new Act.

140. If it could be done it would be a great advantage?—A very great advantage.

141. Are you aware that under the system of constant pressure in those towns which have just been mentioned it has been found by experience that there is actually less waste of water than on the system of intermitting supplies?—I have reason to believe so from what I have heard.

142. Are you decidedly of opinion that the present mode of supply by the water companies is quite inadequate for the preservation of health and cleanliness in the town?—I think there is not sufficient for the poorer classes of the people.

143. Has not the absence of water in your mains proved a serious evil on the occurrence of fires in Liverpool?—Very serious.

144. You have obtained an Act for introducing water to remedy this evil?—Last year.

145. What expenditure will be required for that purpose?—50,000*l.*, and 500*l.* a-year is allowed by the Corporation.

146. Is it the case that a clause in the Water Companies' Acts states that they shall keep water always on in the mains, but that no penalty being attached to its evasion the companies have not done so?—They have not done it.

147. And you have suffered in consequence at fires?—Yes. I have been at fires myself, being the deputy chairman of the fire committee, when I have known more than half an hour to elapse without getting a drop of water.

148. And because the Companies have refused to do so, or have abstained from doing so, the Highway Board, or rather the public, is to be put to the expense of 50,000*l.*, and 500*l.* a-year?—Yes.

149. Are there not two Water Companies in Liverpool at present?—Yes; the Bootle and the Harrington.

150. They have mains laid down in the same streets, and they supply the same districts?—Yes.

151. Are the mains of the new water-works also to be laid down along with those of the present Water Companies?—In some of the same streets.

152. So that thus three capitals and three interests must be paid by the public, whereas one capital and interest would have been sufficient if the supply of water had been efficiently and properly conducted, and had been placed under proper control, so as to protect the public from overcharge?—Certainly. It is my opinion, that if the Gas Companies and the Water Companies had been under the same direction that they are at Manchester, we should have had a better supply of water, and that our rates would have been much less.

153. If the three Companies are to be remunerated, does it not follow that the public must pay three times as much for water as they would pay for water under one Company, properly managed and regulated?—Clearly it would be cheaper, but it does not follow that it would be one-third cheaper.

154. Mr. Holme states as follows: "Liverpool is supplied with water by two public Companies, each having an Act of Parliament, which confers upon them a monopoly of supply. One is termed the Bootle Water Company, the other the Liverpool and Harrington Water Company. The former Company raise their supply from springs at Bootle, distant from the Exchange three miles; and the latter have wells in various parts of the town. The original shares of 100*l.* in the Bootle Company are now worth, in the market, 360*l.*, and those of the Liverpool and Harrington Company are worth 610*l.* The charge for supplying water for domestic use is 1*s.* in the pound on the rental, and it is usually supplied every other day. It therefore follows that, had the corporation or the parochial authorities originally supplied the water from the public funds, and no legislative enactment had given to these Companies exclusive privileges, that we should have been supplied with water at one-sixth of the present price; or, if we had paid the same price, a large disposable revenue would have accrued to the public local exchequer, which would have diminished our taxation, or have enabled the authorities to have established public fountains, and had public reservoirs for the use of the poor in every locality." Do you agree in that?—I will not go so far as one-sixth, but I agree with him that it would be very much cheaper; I agree with him in principle.

155. Does not the same principle apply to your rival Gas Companies?—Certainly.

156. Are you aware that in Liverpool with rival Gas Companies you pay 7*s.* per 1000 cubic feet?—Yes; the very moment we threatened them with a new Company they took it down 1*s.*, and they promised to take it down 6*d.* more.

157. You were paying 7*s.* per 1000 feet, they have reduced it to 6*s.*, and they have promised to give it you at 5*s.* 6*d.*?—Yes.

158. While, with one establishment in Manchester, 5*s.* 2*d.* per 1000 feet is charged?—Yes, I have heard so.

159. There is now an application for a third Gas Company in Liverpool?—There was; it was thrown out.

160. Then in your opinion the effect of establishing a third Company instead of lowering the price of gas, would ultimately be to raise it, as instead of one capital and interest to pay as in Manchester, the public in Liverpool have already to pay two capitals with interest, and in the event of a third Company being established must have to pay three if the Companies are to be remunerated?—I did not exactly agree with their prospectus, but they went to Parliament with the idea that they were to give it us much cheaper.

161. Are you a shareholder in any of the Gas Companies?—I have no shares in either water or gas; here is a statement of the price to-day. In the New Gas Company the price per share was 217*l.*, and in the old 241*l.*

162. What was the original share?—100*l.* each.

163. What was the original price of the water shares?—I believe the Harrington Company was originally 200*l.*, and the Bootle 100*l.* The Bootle Company never any fixed sum. The original shareholders were about 330 in number and paid calls from time to time as the works were in progress, but it has been a losing speculation to the original shareholders. I have also a return of the prices of those shares to-day; the shares of the Harrington Company are 645*l.*, and of the Bootle Company 414*l.*

164. Does not the high price of water which you have stated necessarily imply a denial of water for the purposes of drainage and for the purposes of water-closets and other public uses?—Yes.

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165. And also supplies of water for fires?—Yes; but with regard to the supply of water, I do not think we can find the quantity of water that is wanted.

166. Did the Water Companies, on the application of the town for an Act to obtain a supply or extinguishing fires, endeavour to limit it to the supply of salt water to the mains in order that it might not be used for domestic purposes?—Yes, they did.

167. What was the expense to which the Commissioners of Highways were put by the resistance of the Water Companies to an extended supply for the use of the town?—The Bootle Company did not oppose the Bill, but the other Company, the Liverpool and Harrington did in the Committee of the House of Commons. The amount of expenses incurred for promoting the whole Bill exceeded 2600*l.*; what proportion was incurred in consequence of the opposition I cannot exactly state.

168. Did they succeed in preventing your using that supply for domestic purposes?—For sale. We may give it to the poor and we may make use of it for all public purposes, but we are not allowed to sell it. I have got also an account of the baths in Liverpool. For the north baths the estimated cost is 4300*l.*, including wash-houses. The number of private baths is 18, nine for males and nine for females. There are four shower-baths, two for males and two for females. Four vapour-baths and a large plunging-bath is contemplated. The premises contain 925 square yards of land, which are occupied by the baths and wash-houses. The bath portion of the building is to be two stories high. The cost of the south baths, in Frederic-street was 2300*l.*; keeper 90*l.*; servant 30*l.*; fireman 46*l.* 16*s.*; coal and water 100*l.*; making 266*l.* 16*s.*; and the income is about 270*l.* All that we want to do is just to cover the expenses.

169. The charge contemplated is very low?—It is very low; there is no profit contemplated.

170. Are those baths very extensively used by the poorer classes?—They are.

171. Is the use of them increasing?—It is.

172. Is not the water sometimes exhausted by the extent to which they are employed?—No, by the neglect of the Water Companies.

173. But it is the fact that they sometimes run out of water?—Yes; but we contemplate now supplying those places by our own mains. There is not a single fountain or a single public pump in the town for the use of the poor, the poor are obliged to pay for every drop of water they get.

174. What do they pay?—From 2*d.* to 3*d.* a-week. Those cottage owners pay so much for a court to the Water Companies. If there are 10 houses in a court they pay 8*s.* for each house. Then the owner collects the rents by the week, and charges the poor people 2*d.* to 3*d.* a-week, so that he charges 12*s.* 8*d.* for each house, whereas he only pays 8*s.*

175. He charges 50 per cent. upon the tenant additional?—Yes.

176. You say that the usual charge is about 2*d.* a-week?—At 2*d.* and 3*d.* I know from what I have heard that they have charged them about 50 per cent. profit upon the rate.

177. In Liverpool lately objections were made to horizontal smokeless flues connected with plans in operation in different buildings. Are you aware that there is any peculiar practice or regulation by law in Liverpool, with respect to the manner in which smoke flues must be applied in buildings?—No, there is not.

178. Nothing beyond what comes under some very general Act?—Nothing but the general Act.

179. Is it not the general opinion in Liverpool as it is in many other towns, that the returns of mortality are not strictly correct because they include a large amount of migratory population, which is the opinion of the authorities of Liverpool, has the effect of making it apparently more unhealthy than it really is?—Decidedly it is so. We were under the New Poor Law Act for a year or two, and I happened to be a magistrate of the county and *ex officio* chairman of the committee, and it came under my particular notice that that really was the case, that the bills of mortality were very defective on account of the migratory population.

180. You mean that there is an apparent increase in the mortality in consequence of the population not being resident but being migratory?—Yes.

181. That the number of deaths among the migratory population being greater in proportion than among the resident population in Liverpool, it makes the mortality appear larger than it ought to be?—Certainly; that is the prevailing opinion in Liverpool.

182. Have you paid any attention, as Chairman of the Health Committee, to vital statistics?—No, I have paid none.

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John Leslie, Esq., was called in and further examined as follows:—

183. When you were last examined before this Commission, you expressed an opinion, derived from your experience of the mode of conducting the business of the Westminster Court of Sewers, that the present constitution of those Courts was ill adapted to the performance of the duties entrusted to the Commissioners: has your further experience tended to confirm that opinion?—Most decidedly so. I have attended most closely to my duties, and have arrived at the conclusion, that an entire change in the mode of appointment of the Commissioners, and also of the constitution of the Court itself, ought to take place.

184. It appears in evidence before this Commission, that a large proportion of the acting Commissioners are in practice in the districts as architects, surveyors, agents, or solicitors, or otherwise connected with building property; do you consider such appointments beneficial to the public interests?—Most decidedly not.

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185. Is there no provision in the law to prevent Commissioners from acting in cases in which they are interested either as principals or agents?—Not in the law as interpreted in the Westminster Commission of Sewers. It is a circumstance of constant occurrence, and upon every occasion I raise my voice against it.

186. Is the King's Scholar Pond Sewer covered in to any considerable extent since you were last examined by this Commission?—Not to any very great length. The Court recently came to a resolution to cover in a certain portion at the public expense, consequent upon a portion being covered in by Mr. Cubitt at his own expense. The whole history of this abominable nuisance will show the imperfection of the present system of appointing Commissioners of Sewers, and how prejudicial its operation is to the public.

187. Will you give this Commission an outline of the history to which you allude?—The then existing line of sewer for this district was in 1807 minutely surveyed by John Rennie, Esq., civil engineer. He reported that it was not only laid down in so irregular a direction, but so imperfectly executed, in such bad repair, and had so bad an outfall into the Thames, that it would only be wasting money to attempt to render it perfect. He considered it advisable that this sewers should not be the principal channel, by which so important a district should be drained. He next stated that, independently of its bad direction and imperfect construction, its outfall into the Thames is so low, and this low or flat land continues to such a distance backward, that, were even the higher parts of the sewer perfect, this alone would be sufficient to condemn it. He then lays down the axiom, that a perfect drainage can be best effected by a perfect outfall, and that such outfall cannot be found in the low and flat marshes between Whitehall and Chelsea. He states he could not find such an outfall higher up the Thames than Scotland-yard, and fixed upon Northumberland-street, where the declivity of the ground extends quite to the Thames. He finally laid down a line from the north end of Baker-street to Piccadilly at the end of Berkeley-street, thence turning eastward to Northumberland-street, thereby cutting off all the immense northern drainage from crossing the Green Park, round the Queen's palace, and down the low and flat lands to the present outlet. The length of this line was 13,015½ feet. But from Piccadilly, at Berkeley-street, to the Thames, the distance was only 4,600½ feet on Rennie's line against 8,005 feet on the old line, a difference of 3405 feet.

188. What was the whole length of the old one?—16,522 feet. The distance saved would have been nearly two-thirds of a mile. Mr. Rennie also stated, as to the form of the sewer,—“I have no hesitation in saying that it ought to be made like a canal tunnel; the bottom should be an inverted arch, the sides curved, the top a kind of ellipsis approaching nearly to a parabolic form, having the longer axis upwards; the pressure is generally most irregular at the top, there being so much loose earth above, and therefore the form should be suited to sustain that irregular pressure.” In this line he obtained a very great fall of 76½ feet in the whole distance, or ⅔ of an inch in every yard. The size of the sewer should be, he reported, 6 feet wide at its commencement and 8½ feet at the lower end. Mr. Rennie's attention was subsequently called to a plan to take the sewer across the Park to Horseferry-road; but, although he considered this proposed plan as second only to the one he had already submitted to the Commissioners, it increased the distance to the outlet at the Thames 2,709 feet; and for the last 5,412 feet of this proposed line, the top of the sewer must be considerably under the level of high water. He then states that the objections to his plan, as to render it ineligible, are not evident to him.

189. Does he mean to infer by that that the sewer proposed by him would not be below the level of high water?—Yes; because at Northumberland-street there is a great declivity, extending quite to the Thames.

190. Was Mr. Rennie's proposition adopted by the Commissioners?—No.

191. Do you consider the rejection of Mr. Rennie's plan to have been advantageous to the public interest?—As it appears to me, from a careful attention to the subsequent proceedings of the Commissioners, and from the expense incurred on the existing sewer, most decidedly the reverse.

192. Can you state to this Commission any of the grounds upon which you have come to this conclusion?—Certainly. They are chiefly on these important points, an enormous outlay of public money, a bad drainage, and a most intolerable nuisance of an open sewer, where the water is penned back during a considerable period of each tide, instead of a great public improvement of a closed sewer with a good outlet to the Thames, as suggested by Mr. Rennie.

193. Was any cause suggested by the Commissioners for not proceeding with Mr. Rennie's plan?—I have found no minutes to that effect in the records of the Court.

194. What is the length of the open sewer?—5,238 feet; but a portion has recently been covered over by Mr. Cubitt (*viz.*, 1,009 feet) at his own expense.

195. So that Mr. Cubitt, for the advantage of the houses in the neighbourhood, as a private individual, not on the public authority, has been induced to cover in a portion of this sewer at his own expense?—Exactly so; but Mr. Cubitt's interest as a great builder requires him to do so.

196. Do you know what has been the outlay on the open portion of King's Scholar Pond Sewer since Mr. Rennie's report against it?—I have a return by me of the principal items from 1808 to June, 1844, and the amount is 70,104*l.* 17*s.* 5*d.*, between 13*l.* and 14*l.* a foot, for what is at present a most disgraceful nuisance in a great metropolis.

197. How soon after the rejection of Mr. Rennie's plan did the outlay upon the line he had condemned commence?—Almost immediately. A special Committee was appointed to direct the works from Charlotte-street, Pimlico, to the outlet at the Thames; and this Committee met 47 times, commencing 23rd August, 1808, ending 9th January, 1810.

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198. Can you inform this Commission what portion of the 70,104*l.* 17*s.* 5*d.* was expended at that time?—Above 23,000*l.* was then laid out. Of that sum there was spent for dinners, and extra coach-hire to the special Committee, 626*l.* 7*s.* 6*d.*; and for compensation for damage 862*l.* 10*s.*

199. Do you happen to know who were the contractors at this period?—Yes; two Commissioners of Sewers, Messrs. Holland and Rowles.

200. When you state they were Commissioners of Sewers, do you mean they were Commissioners of the Westminster District of Sewers?—Certainly.

201. Who was the surveyor?—A Mr. Treadgold, a carpenter, builder, and surveyor in Farm-street, Berkeley-square.

202. Do you happen to know whether he had seen the reports of Mr. Rennie condemning the line of sewer?—It is evident that he had, because, in a report he made to the Committee subsequently to Mr. Rennie's report, he says, 11th June, 1808, "Begging it may be understood that I am most perfectly convinced of the superior advantage of Mr. Rennie's plan, I now proceed, in obedience to the directions I have received, to consider what alteration will be required in the existing sewer from Berkeley-street to the Thames to make it capable of draining the whole district as well above Berkeley-square as below it, extending from Hampstead to the Thames by Tothill Fields."

203. Does he appear to have been aware of the extent of the drainage?—Certainly; he states the length and breadth of the sewer and the district, and as the sullage must be retained there more than four hours in every tide, that it would require a reservoir for the sullage of nearly 24 acres, without reckoning the addition necessary for the enclosures, slopes, &c.

204. Notwithstanding the reports of Mr. Rennie against the line, and the corroboration of his opinion by the surveyor's report just quoted by you, the works proceeded on the condemned line?—Certainly, and under the direction of a Special Committee of Commissioners.

205. Do you know the names of the Commissioners who formed the Committee?—Yes; I have a return by me showing the names and attendances of that Committee, with the expenses for dinners, &c., which, if this Commission requires, I will hand in.

206. Of how many persons did this Committee consist?—The Committee was nominally composed of 34 Commissioners, but some never attended at all and others seldom.

207. Do you happen to know if any of the Commissioners who acted on this Committee had property on the line condemned by Mr. Rennie?—Several of them had.

208. When was the next large outlay on this open sewer?—It began about nine years after, and was as follows: in 1819, 1820, and 1821—28,378*l.* 2*s.* 4*d.* Out of this sum the compensation amounted to 4,298*l.* 14*s.* 9*d.*

209. To whom was this compensation paid?—This was paid to above 40 individuals, in sums varying from 20*s.* to 600*l.*; some of whom were undoubtedly Commissioners.

210. When was the next large expenditure?—It began at the end of another ten years, viz., in 1832 to 1836: works, 11,238*l.* 15*s.*; engineers, 748*l.* 8*s.* 3*d.*; compensation for the damage and the law proceedings not actually paid until 1841, 2,243*l.* 4*s.* 9*d.*; total, 14,230*l.* 8*s.*

211. Under what statute do the Westminster Commission of Sewers appoint Committees?—I know of none, and always object to that course on account of its illegality.

212. After all the enormous outlay upon the open part of this line, much remains to be done?—Certainly; the favourite plan among the most influential Commissioners is still for a reservoir. Mr. Cubitt has offered for the purpose a piece of land which is leased to him by the Crown. The following is something like the plan in embryo:—To cover in the sewer, down to White's Bridge, at an estimated expense of 6,386*l.*; to widen the sewer 20 feet for 830 feet in length, at an estimated expense of 6,600*l.* more: and after this 13,000*l.* had been expended, in addition to the 70,104*l.* already spent on 5,238 feet, there would still remain an open evaporating surface for the filth of this immense district of 4,644 superficial yards; the uncovered length would then be 1,045 feet long and 40 feet in width. If, finally, this reservoir were to be arched over 40 feet in width and 1,045 feet in length, I should imagine 10,000*l.* additional would hardly defray the expense.

213. When an uncovered sewer passes through any property or near any houses, does it not in general put the inhabitants of the immediate vicinity of such sewer in a worse condition, than if they had had no such sewer in the immediate vicinity?—Certainly.

214. Do you consider it to be just or equitable in principle that the occupiers and owners of houses in the immediate vicinity of such uncovered sewers should be put to the whole expense of covering them up for their own protection, or that that should be done at the general expense to cure evils which, as in the case of the main sewers, have been created for the general benefit?—In this particular instance the parties built their houses upon the line of open sewer, and I very much doubt the legality of making people pay, who are residing in the upper parts of the district for a benefit which is local.

215. Does the 70,000*l.* expended comprehend every charge during that period?—Certainly not; only the principal works, not the annual expenses thereon.

216. Do you happen to know how the various sums to defray these and other expenses were raised?—Nominally by the presentment of juries, but which juries for many years of the period were selected for the purpose, and some of them actually the tradesmen of the Court.

217. Can you state any particular instance of large outlay where the persons who were to receive the amount of their accounts from the rates served on the juries?—Certainly; the house No. 1, Greek-street, Soho, where the Sewers' Office is now held, affords a striking case. The house was purchased of the family of a deceased Commissioner for 5,000*l.*; it cost to repair and fit it for the purpose of the Commission, including 148*l.* 12*s.* 6*d.* interest on the tradesmen's accounts, and also including 219*l.* 1*s.* 10*d.* law charges, 4,903*l.* 3*s.* 1*d.*; making the

total charge to the public for that office within a fraction of 10,000*l.* The tradesmen who were employed and received an amount of nearly one-half of the sum expended in repairs and alterations, appear to have been upon the juries at that period.

218. The juries having presented the parties, do you know what the amount of the rates were about that time, commencing with the works at the open part of the King's Scholar Pond Sewer?—The decrees for the various districts were signed as follows:—

		£.	s.	d.
1808.	September 7 . . .	12,899	1	0
1809.	May 26	25,835	2	8
1811.	March 15	27,343	8	4
1812.	November 24 . . .	38,197	8	0
		£104,275	0	0

219. You have stated that the purchase of the office in Greek-street was 5,000*l.*, and that the repairs, &c., cost 4,000*l.* and some odd hundred pounds more?—4,903*l.* 3*s.* 1*d.*

220. Can you give this Commission any details of such expenditure?—I will hand in two returns which will give the detail, excepting the Parliamentary and dinner expenses of the Commissioners and the Committee.

(The Witness handed in the papers.)

221. When did the local Act pass enabling the Commissioners to purchase the house?—52nd Geo. III., local and personal, cap. 48. Royal assent, April, 1812.

222. Was there any outlay before the Act passed?—Yes; because a lease of the premises was first taken which was executed on or about the 29th March, 1811, for a term expiring at Michaelmas, 1833, at a rent of 260*l.*, and land-tax 24*l.* 17*s.*, with a proviso to purchase the freehold. A list of tradesmen to be employed in the repairs was made out in April, 1811, and the office was publicly advertised to be opened at Christmas, 1811.

223. Consequently the enormous expenditure in repairs and alterations must have been incurred prior to the legal authority being obtained to enable the Commissioners so to expend the rates?—Certainly.

224. Do you know the course that was adopted by the Commissioners with respect to obtaining the Act of Parliament to enable them to purchase and fit up this office?—Yes; two surveyors were appointed to value the premises, and as appears from the documents, their sworn valuation amounted to very little more than the sum expended in repairs and alterations alone; but as I have a copy of the valuation, I present it to this Commission.

(The Witness handed in the paper.)

225. That valuation appears to be nearly 500*l.* less than the sum required by the vendors?—Yes; and as I said before, the valuation was but a mere trifle over the outlay in repairs and alterations: I can, if necessary, obtain for this Commission an extract from the minutes of the Parliamentary Committee of the 4th February, 1812, which will show the course of procedure.

226. Was Mr. George Saunders, who presided at this Committee, the gentleman who was Chairman of the Court of Sewers from March, 1808, to February, 1835?—The same person; I believe an architect or surveyor, residing in Oxford-street.

227. Under what authority does the Commission for Westminster, &c., appoint an annual chairman?—We have a bye-law for the purpose, but I deny the legality of the appointment. It throws into the hands of one Commissioner such an enormous power which the statutes and Commission contemplate shall be exercised only by six Commissioners in open Court, and it appears to me to have been and still is a very improper appointment; and it further appears to me to have been the cause which originated the doubtful section in the general law on sewers, viz., 3 and 4 Wm. IV., c. 22, s. 61: "And be it further enacted, that nothing in this Act contained shall extend or be construed to extend to affect, alter, abridge, or interfere with any local or private Act of Parliament for sewers concerning any county, city, town, district, lands, or limits, or any Commission of Sewers in the county of Middlesex, within the distance of 10 miles of the Royal Exchange;" and which is considered by the Westminster Commissioners to exonerate them from the very salutary enactments in this public statute.

228. Then you consider the appointment of an annual chairman not only illegal but decidedly injurious?—Most undoubtedly. This public statute received the Royal assent the 28th of June, 1833; it declares that the laws of sewers are in many respects defective, that doubts have arisen as to the extent of the powers given to Commissioners of Sewers, particularly as to the legal mode of conducting inquiries by juries; also as to the legal power to order new works, and further it authorizes the borrowing of money for such works, and distributing the costs and charges fairly and equitably among the parties who receive benefit, or avoid damage by such works. Next it raises the amount of qualification of Commissioners of Sewers, and requires that each Commissioner before he acts, shall swear as to the nature and locality of that qualification. It also regulates the meetings of Commissioners of Sewers, and enacts that at every meeting a chairman shall be appointed by the majority of Commissioners present. It regulates the inquiries by juries, and declares that they shall be sworn in open Court before the Commissioners, and shall proceed in their inquiry, before and in the presence of the Court, by receiving evidence upon oath, and subject to the same rules, of taking and receiving evidence, as is usual in the Courts of common law. It authorizes all fines, forfeitures, and penalties, to be received in aid of the expenditure. I consider the advantages, to the rate-payers of Westminster would have been very great under this Act, all of these they have lost by the Commissioners considering themselves exempt from the operation of that general statute, owing to the 61st section.

John Leslie, Esq.

John Leslie, Esq.

229. Have the Commissioners ever tried to obtain the power to elect a chairman?—Yes, and also to pay him a salary, as the following extract from a Bill preceding the local Act of 1812, will detail.

Court, 3rd January, 1812.

"And whereas, in consequence of the prodigious increase of buildings within the limits of the said Commission the necessary business of the said Commissioners, has of late become so extensive, and the duties of the chairman so laborious, that it is with much difficulty, a person properly qualified to fill the station can be found willing to give up so great a portion of his time, as the dispatch of business of the said Commissioners necessarily requires, without his having some remuneration for the same, and therefore it is expedient that a chairman of their Court should be appointed with a sufficient salary.

"Be it therefore enacted, that it shall be lawful for the Commissioners for the time being for the limits aforesaid, at the special Court, to be held for that purpose as soon as conveniently may be after the passing of this Act, to appoint any one of the said Commissioners of Sewers for the limits aforesaid, to be the chairman of the said Commission, removable at the discretion of the Court of Sewers, and shall assign him out of the rates, taxes, lots, and wains before mentioned, a competent salary, not exceeding the annual sum of £ , payable quarterly, and a chairman shall be in like manner elected annually, but removable as before-mentioned."

230. What became of this clause in the Bill?—I found the following charge in the solicitor's bill, which explains the matter, "1812, March 13th.—Attending meeting of the Committee at the Swan tavern, Westminster Bridge, in consultation as to the prudence of abandoning the clause for electing the chairman, when Mr. Lewis, and others, agreed on a different clause being introduced."

231. Do you know whether the works under the Commission of Sewers for Westminster, are done under contract?—Yes, at present a rather stringent contract exists; but I am of opinion the stringent stipulations of the contract are evaded.

232. Have the works generally been done under contracts?—It is so understood, but as I have given notice of motion in our Court, to terminate the existing contracts, I have been induced to look closely into the subject, and my investigation led me to obtain a return of all the contractors, and the amounts paid to them during the last 63 years, and I find the following results, a gross charge of 620,451*l.* 4*s.* 1*d.*, by the following contractors:—

1780	to R. Holland.	1822	to Bennett and Hunt.
1800		1830	
1800		1831	
1811	to Holland and Rowles.	1836	to G. and W. Bird,
1810		1837	
1823	to G. W. and S. Bird.	1843	to Bennett and Hunt.

Total 620,451*l.* 4*s.* 1*d.*

233. Will you present the return itself?—Certainly. (*The Witness handed in the paper.*)

234. The contracts for the long period of 63 years, appear to have been in very few hands. Do you know if any of these contractors were Commissioners of sewers?—I have every reason to believe for nearly the first half of the period they were.

235. What are the circumstances which induce you to think so?—Because in investigating the subject, I found a direct charge brought before the Court of Sewers, in 1772, in the form of a petition, which proves the point, and moreover connects the name of the Commissioner who had induced the Court to appoint his son to do the works, in the manner therein stated with the subsequent contracts, which I have previously detailed to this Commission.

236. Have you a copy of the petition?—I have, and this is it. (*The petition was handed in.*)

237. We observe the name of Holland, together with the addition of his partner, Rowles, from 1780 down to 1811, do you know if they were Commissioners?—Most undoubtedly. I should have gone further back with this inquiry, for I found the name of Holland connected with the works, even prior to the date of the petition; but the accounts have so many erasures, indeed one ledger is labled erroneous, so that no dependence can be placed upon them.

238. Does the Court appear to have taken any steps to prevent the appointment of contractors, who were also at the same time Commissioners?—After the first division of the large outlay on the open portion of the King's Scholar Pond sewer, which I have detailed to this Commission, and after the expenditure on the purchase and repair of the Sewers Office, in both of which Commissioners who had a personal or family interests in the expenditure were concerned, a virtuous fit of indignation seems to have been felt, as the following extracts from the Court minutes, in 1813, will show.

"Sewers Office
for Westminster, &c."

"RESOLVED, that it appears to this Court to be expedient, in conformity with the oath of office, and in order to enable each individual Commissioner to execute the authority given to him under the Commission truly and indifferently, and without favour or affection towards any one; and it is Resolved, that no person being a Commissioner of this Court of Sewers, nor any person related to a Commissioner, of and within the second degree, either by birth or marriage, (uncle and nephew being here deemed to be related to each other in the second degree,) nor any person connected with a Commissioner by co-partnership in any business or concern, shall hereafter be appointed, or continue to hold any office, or place of profit or emolument, under the Commissioners of this Court, or be allowed

to furnish any article, or do any business under the Commissioners, for which the money appertaining to sewers is to be paid, except in cases where the Commissioners are under the necessity of employing any such person by reason of his being the contractor under another Board; and except in cases where an opinion only is to be taken on a specified object.

"And also, that this resolution is not to take effect in regard to any relationship which may exist between a present Commissioner and any Officer now in the service of the Commissioners."

239. Are there any of the Commissioners who were in the Commission of 1806 at present acting under the existing Commission?—Several: indeed it appears to be a sort of hereditary right in several families, as the grandfathers, fathers, sons, uncles, nephews, brothers-in-law, &c., find their way into the Commissions; and although the contractors cannot now be Commissioners, we find their relations and connections among them.

240. There is a bye-law of the existing Commission for Westminster at page 12, excluding any Commissioner, or any person related to a Commissioner, of and within the second degree, either by birth or marriage, from being employed, or allowed to furnish any article, or do any business for which the money appertaining to sewers is to be paid?—Oh yes, there is such a bye-law, and it is now subjected to a very severe test. Among the 24 names recently added to the Westminster Commission are a considerable number of architects or surveyors, agents and solicitors; I ascertained that one of them, who is an architect or surveyor, is the brother-in-law of Mr. Bennett, one of the contractors. In open Court I ascertained the fact from the contractor I have named; I called his attention, and the attention of the Court to the matter, and the result declared was that as Henry Arthur Hunt, Esq., the Commissioner alluded to had not taken the oath of office, the brother-in-law contractor might continue as usual, whereupon I immediately warned Mr. Bennett, the contractor, of the consequences.

241. Are you aware of the manner in which Commissioner's names were recommended for insertion in New Commissions?—The Court gets up a petition to the Lord Chancellor, with a list of names for a new Commission, at the head of which appears a long list, comprising the names of the nobility and eminent persons, the majority of whom, probably 19 out of 20, never qualify; but the acting Commissioners nominate their relatives and friends. I present an extract from the records of the Court, which will show the course of procedure prior to the Commissions of 1806, 1816, 1826, and 1830.*

242. In what form are the contracts drawn up, and in what way are the prices calculated?—The two following papers will show the quiet and easy manner by which Commissioners, who being contractors for the works, obtained an increase of prices; the first paper relates to brick work, &c. &c. The second to the price of timber and deals, by which a sliding scale was introduced and continued to the present time, by means of which, the lower the price put in the contract, as the foundation of the prices therein stated, the larger will be the amount paid to such contractor. The plan seems by this latter paper to have originated with the Commissioner-contractor, and to have been approved by Mr. Saunders, the architect, or surveyor chairman. (*The papers were handed in.*)

243. Does that practice still continue?—Oh yes, as far as it relates to timber and deals.

244. To the present time?—Yes.

245. Will you explain to this Commission how the lower the tender of the contractor is, the larger the amount he will receive?—Certainly; the contract requires that the prices of each item shall be stated, but it contains the following nota bene:—

"The merchants prices for fir timber and deals to be stated upon which the tender for those articles is calculated.

"To be allowed for every 5*s.* advanced on the merchant's prices for fir timber 1½*d.* per foot cube.

"To be allowed for every 20*s.* advanced on the merchant's prices in deals per hundred, 2*d.* for each 12 feet 3 inch deal.

"The prices of timber and deals to be reduced in the same proportion upon any decrease of the merchant's prices."

The present contracts, from which I have extracted the preceding plan, give the prices for fir timber and deals. Fir timber:—Bennett's, 5*l.*; Bird's, 5*l.* 2*s.* Deals per 100:—Bennett's 27*l.*, Bird's 25*l.* 10*s.* Both these contracts commenced at Michaelmas 1841, and in the bills for the first quarter's work to each contractor, 5*l.* 15*s.* per load was allowed as the standard for timber, and 30*l.* per 100 deals; consequently, the lower the estimate, the greater would be the increase of the market price upon which he would be paid. For example,—take the deals, Bennett's, 27*l.*; Bird's, 25*l.* 10*s.*; merchant's price 30*l.* Each contractor being entitled to an advance of 16*s.* 8*d.* on every 20*s.* difference between his offer and the merchant's price, Bennet would receive 29*l.* 10*s.*, while Bird would get 28*l.* 16*s.* 8*d.*; a difference of 13*s.* 4*d.* only per 100 deals, instead of 1*l.* 10*s.*, as offered in the contract. Thus, the difference in the amount of the tender is quite a deception on those who are unacquainted with the operation of the system. The sums actually paid differ but slightly. The account would stand as follows:—

Sums tendered.			Sums actually paid.		
£.	s.	d.	£.	s.	d.
Bennett .	27	0	0	29	10
{ to receive three times 2 <i>d.</i> on each of 100 deals . }			{ = 2 10 0 Total . }		
Bird .	25	10	0	28	16
{ to receive four times 2 <i>d.</i> on each of 100 deals . }			{ = 3 6 8 Total . }		
Difference in tender	1	10	0	Difference paid	0 13 4

* See Appendix, p. 92.

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John Leslie, Esq.

246. How was the standard price for timber and deals obtained?—Until the last few months by the surveyor applying to one of the Commissioners who was a timber merchant, to give the price.

247. If the work had been executed, not by contract in the present mode, but by responsible officers, under the Commissioners, do you conceive that the works would have been better, or worse done than they now are?—I am not able to answer the question. I think the present system is open to great improvement, and I incline to the belief that it is very injurious to the public interest to have standing contracts.

248. From your experience in attending their Court, what is the nature of the alteration you would suggest?—It requires a great deal of consideration to answer that; the most important information I should require would be an Ordnance Survey of the entire of the metropolis.

APPENDIX.

“SEWERS, WESTMINSTER, &c.

“Statement of Proceedings usually adopted upon Applications for the Renewal of Commissions.

“NEW COMMISSIONS, 1806.

Orders of Court,
28th Feb. 1806.

“The Court, taking into their consideration that the Commission under the Great Seal under which they act will expire on the 13th day of April next, and that under the Seal of the Duchy of Lancaster on the 2nd day of June next.

“ORDERED, that a Special Court be summoned for Friday the 21st day of March next, and that the clerk do prepare, and lay before that Court for signature, a petition in the usual form for new Commissions; and that he do wait on the Marquis of Titchfield, the lord lieutenant of the county of Middlesex, requesting his lordship to sign the same.

“ORDERED, that notice be given in the summonses for the said Court, that the petition will be then presented for signature, and that the names of new Commissioners will be then proposed.

Orders of Court,
21st March, 1806.

“The clerk reported that, in obedience to the order of the last Court, he had transmitted to the Marquis of Titchfield, lord lieutenant of the county of Middlesex, then at Welbeck Ollerton, in Nottinghamshire, the petition for new Commissions, together with an extract from the orders of the Court relating thereto, and that his Lordship had returned the petition, having signed it.

“The clerk laid the petition before the Court, when it was signed by the Commissioners present, and the following persons were recommended as proper to be nominated in the new Commissions, in addition to those now remaining whose names are in the existing Commissions.

(Here follow the names of proposed Commissioners.—Between 70 and 80 names added.)

“ORDERED, that a copy of the petition be entered in the Court book, after the orders of the day.

Orders of Court,
16th May, 1806.

“The said Commissions under the great seal, and the seal of the Duchy of Lancaster, were read, and all the Commissioners present were sworn.

“NEW COMMISSIONS, 1816.

Orders of Court,
19th Jan. 1816.

“The Court having inspected their Commissions, and observed that under the Great Seal of the United Kingdom will expire on the 29th of March next, and that under the Seal of the Duchy of Lancaster on the 28th April following.

“ORDERED, that the clerk do prepare, in the usual form, a petition for new Commissions.

“ORDERED, that a special meeting of the Court be summoned for Friday next, the 26th instant, at One o'clock in the afternoon, the Court to be kept open until Four o'clock in the afternoon of the same day, for the purpose of forming a list of names to accompany the petition for new Commissions; and that notice thereof be given in the summonses for that meeting of the Court, and that each Commissioner present at the Court will be requested to give in the names, residence, and description of any two gentlemen whom he may be desirous of nominating.

“ORDERED, that no name be added by any individual Commissioner to the list which is to accompany the petition after the adjournment of the said meeting of the 26th instant.

“ORDERED, that a special meeting of the Court be summoned for Friday, the 9th of February next, and that the list of names proposed for the new Commissions be on that day submitted, in order to its being finally settled, to the end that such names as may be approved by the Court may accompany the petition for the Commissions.

“ORDERED, that the clerk do immediately, after the meeting of the Court on the 9th of February, apply to his grace the Duke of Portland, the lord lieutenant of the county, requesting his signature to the petition for new Commissions.

“ORDERED, if the signature of the Lord Lieutenant of the county can be obtained in due time, that the petition be laid before the Court at its ordinary meeting on the 16th of February, for the purpose of its being signed by the Commissioners present; but if the Lord Lieutenant's signature cannot be procured in due time for that Court, that the chairman be, in that case, requested to call a special meeting of the Court to sign the petition, as soon as it may conveniently be done.

Orders of Court,
26th Jan. 1816.

“The Court nominated the several persons undermentioned as proper to be included in the list of names which is to accompany the petition for new Commissions, in addition to the names of those Commissioners who were nominated in the present Commissions, and are known to be still in existence.

(Here follow the names of proposed Commissioners.—30 noblemen, &c. and 110 others.)

“The several Commissioners present in Court then nominated each two persons for the approbation of the Court, to be recommended for Commissioners in the list to accompany the petition.

“Ordered, that the said recommendation be taken into consideration at the special meeting of the Court, which is appointed to be held on the 9th of February next.

Orders of Court,
9th Feb. 1816.

“Upon a consideration of the several names which the Court resolved, on the 26th ultimo, to include

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in the list to accompany the petition, IT WAS ORDERED, that the following name should be added to the said list,—viz.:

John Leslie, Esq.

“W. Hamilton, of Stanley House, Chelsea, Esq.

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“ORDERED, upon a consideration of the names submitted to the Court on the 26th of January last by the individual Commissioners then present, that the following names be included in the list which is to accompany the petition.

(Here follow the nominations of individual Commissioners.—99 names.)

“ORDERED, that the clerk do forthwith prepare the petition, and complete the list which is proposed to accompany it, and make application to the Duke of Portland, the lord lieutenant of the county, for his signature thereto, and lay the same before the Court at the first meeting which shall occur after the petition shall have been signed by his Grace.

“The clerk reported that, in pursuance of the order of Court of the 19th of January last, he had prepared a petition for new Commissions, and having, immediately after the meeting of the Court on the 9th instant, applied to the Duke of Portland, the lord lieutenant of the county, for his signature, he had obtained his Grace's signature; and having this day laid the petition before the Court, it was signed by the Commissioners thereinmentioned in the form following,—viz.:

16th Feb. 1816.

(Here follows the Petition, &c.)

“New Commissions opened and read.

15th March, 1816.

“NEW COMMISSIONS, 1826.

“The Chairman having apprized the Court that the term of the duration of the Commissions under which they act was about to expire, viz. that under the Great Seal of the United Kingdom on the 19th of February, 1826, and that under the Seal of the Duchy of Lancaster on the 6th day of March following, ORDERED, that the Clerk do prepare, in the usual form, a Petition for New Commissions.

Orders of Court
16th Dec. 1825.

“ORDERED, that a Special Meeting of the Court be summoned for Tuesday the 3rd of January next, at Twelve o'clock at noon, the Court to be kept open until Four o'clock in the afternoon of that day, for the purpose of forming a list of names to accompany the Petition for New Commissions; that notice thereof be given in the summonses for that meeting of the Court; and that each Commissioner present at the Court be requested to give in the name, residence, and description of any one gentleman whom he may be desirous of nominating; at the same time it is recommended that no gentleman may be nominated who does not reside within the district described in the Commissions.

“ORDERED, that no name be added by any individual Commissioner to the list which is to accompany the petition after the adjournment of the said meeting on the 3rd of January next.

“ORDERED, that a special meeting of the Court be summoned for Friday the 13th January next, and that the list of the names proposed for the new Commissions be on that day submitted, in order to its being finally settled, to the end that such names as may be approved by the Court may accompany the petition for the Commissions.

“The Chairman stated to the Court the mode of proceeding, which had been laid down by the Court on the 16th December last, to be followed in the proposed application for new Commissions.

Orders of Court,
3rd Jan. 1826.

“The Chairman having then laid before the Court a letter which he had received from the Lord Bishop of London, nominating Thomas H. Budd, of Bedford-row, London, Gentleman, as a fit person to be named in the new Commissions of Sewers; RESOLVED, that his Lordship not being present in Court, his nomination cannot be received.

“Several of the Commissioners present in Court, then nominated each one person for the approbation of the Court, to be recommended as Commissioners in the list to accompany a petition for new Commissions.

“ORDERED, that the said recommendation be taken into consideration at the special meeting of the Court, which is appointed to be held on the 13th day of this month.

“RESOLVED, that there shall not be added to the proposed list any names, after the adjournment of the Court this day.

“The list of the gentlemen proposed being read from the chair, and a ballot being taken upon each respective name, it was decided that the following names should accompany the petition for new Commissions.

Orders of Court,
13th Jan. 1826.

(Here follow 40 names.)

“ORDERED, that the clerk do forthwith complete the list, and lay the same before the Court on the 20th instant, together with a petition in the usual form for signature.

“The clerk presented this day, in pursuance of the order of the Court on the 13th instant, a petition in the usual form for new Commissions, together with the list of names proposed to accompany the petition, and the said petition having been read, and signed by the Commissioners present in Court, ORDERED, that the clerk do forthwith present the same, and that a copy of the petition and the list be entered after the proceedings of this day.

(Copy of Petition.)

NEW COMMISSIONS, 1830.

“ORDERED, in consequence of the accession of His Majesty King William the Fourth to the throne of these Realms, that steps be taken to obtain a renewal of the Commissions of Sewers (for the city and liberty of Westminster, and such parts of the county of Middlesex as are usually included therewith), and that the same may be directed to such of the Commissioners named in the Commission of 1826, as are known to be now surviving, and none others; and the clerk do ascertain, and report at the next meeting of the Court, what are the steps proper to be taken for obtaining such renewal.

Orders of Court.
6th August, 1830.

“The Court having on the 6th of this month directed, that in consequence of the accession of His Majesty King William the Fourth to the throne of these realms, the proper steps should be taken to obtain a renewal of the Commissions of Sewers, and that the clerk should report what are the steps proper to be taken for obtaining such renewal; the clerk this day reported, that having made enquiry, he had learned that it would be necessary that petitions should be presented for new Commissions, in the same manner as is usual upon the expiration of the Commissions, when it was ORDERED that a petition should be prepared accordingly.

Orders of Court,
20th August, 1830.

John Leslie, Esq.

APPENDIX.

"And a petition having been prepared and submitted to the Court, was approved and signed by the Commissioners present in Court.

"ORDERED, that a copy of the petition, and of the list which accompanied it, be entered after the minutes of this day."

(Copy of Petition.)

Mr. Leslie further examined.

249. This Commission understands that a large work on the Ranelagh main line of sewer recently erected near the Bayswater-road has become in a ruinous state?—So much so that it requires an almost entire reconstruction.

250. Can you give any detail of the circumstances connected with this affair?—The Ranelagh main line of sewer, from the north side of the Uxbridge-road to the Bishop's-road, was an open sewer. As the Commissioners say they cannot do new works (which the Act of Parliament 3 and 4 Wm. IV. c. 22, from which they think themselves exempt, authorizes to be done under certain limitations), the Westminster Commissioners, in my opinion, evade the statute by making what they call a diversion of the old line; in this particular instance the following outline will show the proceedings: To effect this diversion of the open ditch sewer in part only, the surveyors reported that a new sewer, 10 feet wide and 8 feet 6 inches high in the clear, with side walls two bricks thick, would be requisite, the length being 2,600 feet, at 3*l.* per foot lineal—7,800*l.*; that out of this amount there might probably be received from the builders 2,600*l.*, leaving 5,200*l.* to be borne by the district. William Ponsford, a great speculating builder on that estate, had previously petitioned the Court to allow him, at his own expense, to build 300 feet of 3 feet sewer along this new street whereon he was about to erect new houses. The Court refused his petition; but it was arranged that he should pay into Court 1*l.* a-foot, the estimated expense of the sewer he prayed leave to erect, and in such case the Court would undertake to divert the sewer up the new street he was about to make, the district to pay the remainder of the expense of the 10 feet sewer.

On the 3rd of May, 1839, the Court ordered an expenditure of 1410*l.* for the commencement of this diversion, upon William Ponsford, the builder, contributing 300*l.*: this was carried by nine votes against seven. On the 17th May this order was confirmed, and the clerk, after the order for the expenditure of 1410*l.*, and the confirmation thereof, was ordered to inquire if the freeholders on the banks would contribute: and on the 7th June the clerk reported that the freeholders declined to contribute.

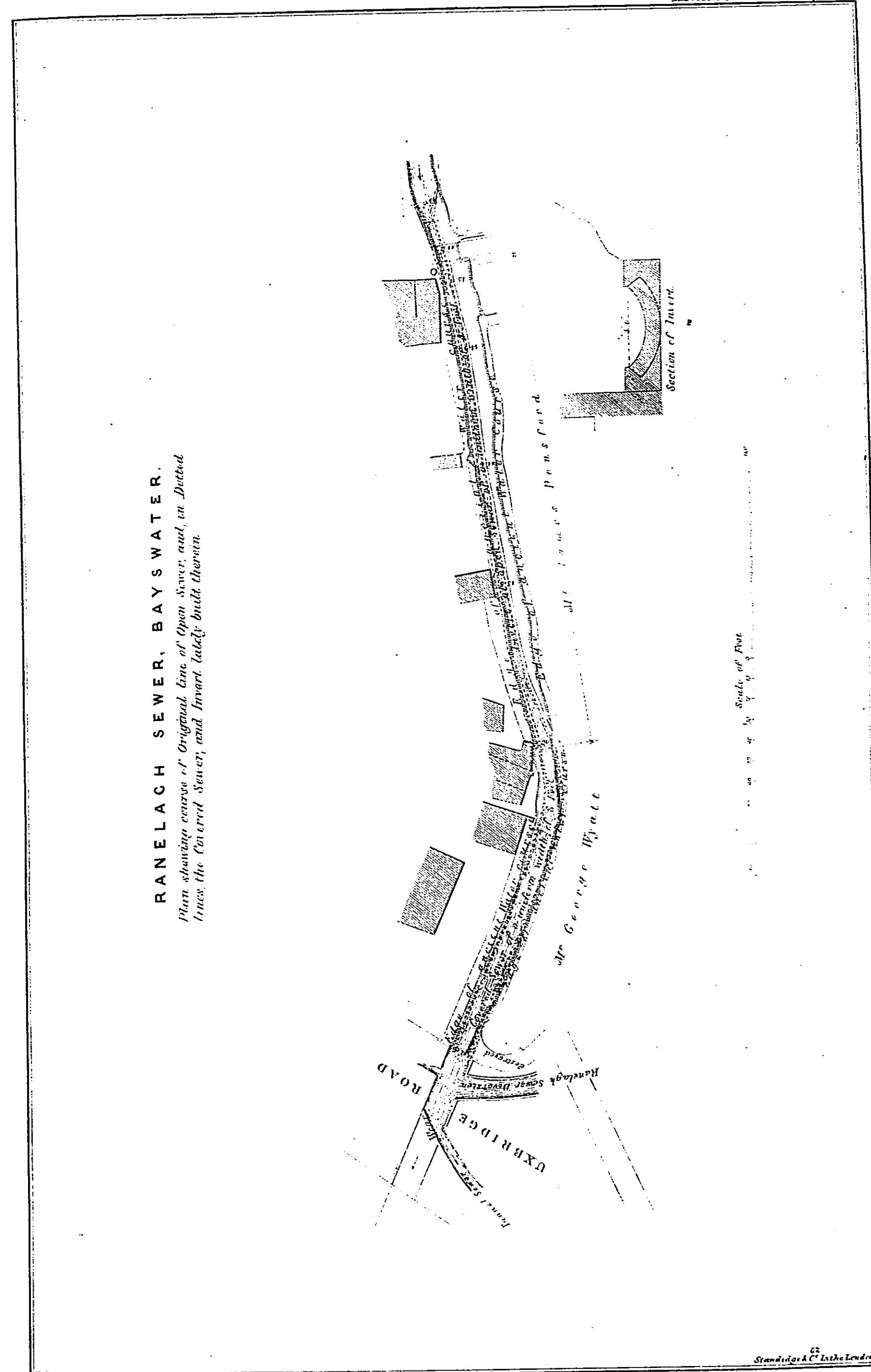
This work was reported to have commenced on the 12th September, 1839, and to have been finished 1st January, 1840, subsequently explained to be a clerical error, and should be 1st February, 1840; and that 468 feet 9 inches was then executed, at a cost of 1444*l.* 8*s.* 7*d.*, about 3*l.* 1*s.* 7½*d.* per foot lineal.

251. Was this work done under contract? and if so, by whom?—Under contract by George Bird, junior; but I am of opinion that the stringent clauses in the contract were in this instance, as in others, evaded.

252. Will you explain to this Commission the points in the contract which you think were evaded?—The contract contains this condition: "The contractor is to deliver to the Commissioners, at their office, on the second day after the work is done, duplicate daily vouchers or accounts in writing of all works done, specifying the quantity and admeasurement thereof, upon a printed form to be furnished by the Commissioners." Consequently, if the report be true that this work was finished 1st February, 1840, the duplicate voucher from the contractor ought to have been presented with the admeasurement, at latest, on the 3rd of February, 1840. Now I find that the chairman and Mr. Dowley, the chief surveyor, visited this work on the 27th January, 1840; that the chairman complained of the work; and that on the 1st February, the day the work is reported as completed, I find Mr. Dowley again on the works, and the observation entered, "Taking down the walls thrown over by the ground."

But the most extraordinary violation of the contract is, that this work, reported to have been finished on the 1st February, 1840, was not actually measured until the 12th May. Although Mr. Bird, the contractor, contrived to charge the Commissioners for this work as follows, which I have extracted from his accounts—

Quarter ending Christmas, 1839.		£.	s.	d.
December 22 to 25.—Diversion of main line from Uxbridge-road, 400 feet				
run of 10 feet sewer, as per estimate, at 3 <i>l.</i> a-foot . . .		1,200	0	0
Quarter ending Lady-day, 1840.				
March 25.—Ranelagh main sewer—				
4,037½ yards digging, 1 <i>s.</i> 9 <i>d.</i>		353	5	7½
22,769 feet reduced brickwork, 12 <i>l.</i>		1,046	7	4½
234-6 ditto in cement		13	15	10½
		1,413	8	10½
Deduct by amount charged in Christmas Quarter		1,200	0	0
		213	8	10½



There are other points in the contract which, on the best evidence I can obtain, have been evaded. One of the conditions is, that "all the works hereinafter mentioned are to be done with the very best materials, and in the most perfect and workmanlike manner." Another is, "that the brickwork to be in every respect of the best workmanship, no four courses to rise more than 12 inches, the cross joints to be well flushed up, and the arches grouted." There is very strong evidence that the work has not been done in the most perfect and workmanlike manner, that the four courses of bricks do rise more than 12 inches, and that there is a great excess of mortar, particularly in the arch.

253. When was the failure in the sewer discovered?—I believe it was known to the officers some time before the Court was made acquainted with the disagreeable fact; it came before the Court on the 3rd of May, when a Special Court was appointed to be held on the 14th of May to inquire as to the failure of the works, at which meeting, being anxious to elicit the whole truth, I gave notice of motion, which was discussed on the 17th of May, 1844. The following extract from the Court minutes will show the object and the result of my motion.

"SEWERS OFFICE FOR WESTMINSTER, &c.

"Extract from the 'Orders of Court,' 17th May, 1844, vol. 45, p. 442.

"MR. LESLIE then moved, pursuant to the notice given by him, That a Court of Sewers be held at the Crown Tavern in the Uxbridge-road, (on an early day,) and that the sheriff be required to summon a legal jury of sewers to attend the Court at that place; and that the jury take a view of the recently constructed main line of the Ranelagh sewer, and receive evidence upon oath as to the defaults therein, whether occasioned by design, construction, or superintendence.

"And Mr. Fuller having seconded the said motion, there appeared Ayes 3, Noes 13.

254. Were any of the 13 Commissioners who voted against an inquiry before a jury into the facts of the case either architects or surveyors?—Yes, six of the 13 were.

255. By your motion it appears that you would have submitted the whole question of the defaults in the sewer, whether as to design, construction, or superintendence, to a jury?—Most undoubtedly, the very terms of the statute, 23 Henry VIII., cap. 5, sec. 3, under which Commissioners of Sewers are issued, point out the course in these words:—"Also to inquire by the oaths of the honest and lawful men of the shire where such defaults or annoyances be, as well within the libertie as without, (by whom the truth may the rather be known,) through whose default the said hurts and damages have happened." And the parties I intended and so stated to the Court to call before the jury were the Rev. Henry Moseley, of King's College, London, and General Pasley, men of the highest rank in science, and above all suspicion. Subsequently a motion was carried to give the contractor notice to reinstate the work. At the following Court he appeared by his solicitor, who after a lengthened verbal exculpatory statement, put in in writing an answer, of which the following is a copy:—

"That having executed my contract for the Ranelagh sewer in accordance with the plans and directions of your officers, I submit that I am not liable to reinstate the existing defects.

(Signed) "G. BIRD, by
"S. GARRARD."

"To the Commissioners of Sewers for Westminster and part of Middlesex.

On Tuesday, the 17th of June, the Court met again, each Commissioner in the interim having been supplied with a copy of a report from Mr. John Phillips, a new clerk of the works just appointed, whose statements had been impugned by Mr. Bird's solicitor at the previous Court. I present a copy of his report.*

256. What was the result of the meeting of the Commissioners on the 17th of June?—The following extract from the Court minutes will give the information:—

"SEWERS.—CITY AND LIBERTY OF WESTMINSTER AND PART OF THE COUNTY OF MIDDLESEX.

"Extract from the 'Orders of Court,' 18th June, 1844.

"It was moved by Mr. John White, and seconded by Mr. Allason,—That the defective form of the sewer, the same having been built with high upright walls, unsupported by counterfoots or concrete backings, and with a flat segmental arch, has been the principal cause of the failure of the sewer, and for which the contractor is not responsible."

"An amendment was then moved by Mr. Willoughby and seconded by Mr. Le Breton,—That the proceedings in this case be placed in the hands of our Solicitors forthwith,—when there appeared Ayes 16, Noes 8."

257. Can you state the whole expense of this diversion of the sewer which is in such a perilous condition?—The first portion was built in 1839-40, the second in April and May 1842; the whole length executed in these two divisions was 1167 feet 9 inches, and the expense 3471*l.* 10*s.* 0*d.*

258. Do you approve of the outlay, supposing the work to have been well done?—Certainly not. I consider the expenditure enormous, and because, almost to the whole extent of the diversion now executed, the original open main line is not thereby relieved, it must exist as a sewer to drain the houses on its bank until another new sewer down Elms-lane is built; therefore I think this diversion as it is called, illegal, as well as not effecting the object of a diversion, viz. the improvement of the old line.

259. What has been done with the old line since the diversion you have been speaking about commenced?—Mr. George Wyatt, the architect, had a petition presented to the Court of Sewers, praying leave, 15 May, 1840, to build 160 feet of wall on the east side of the open

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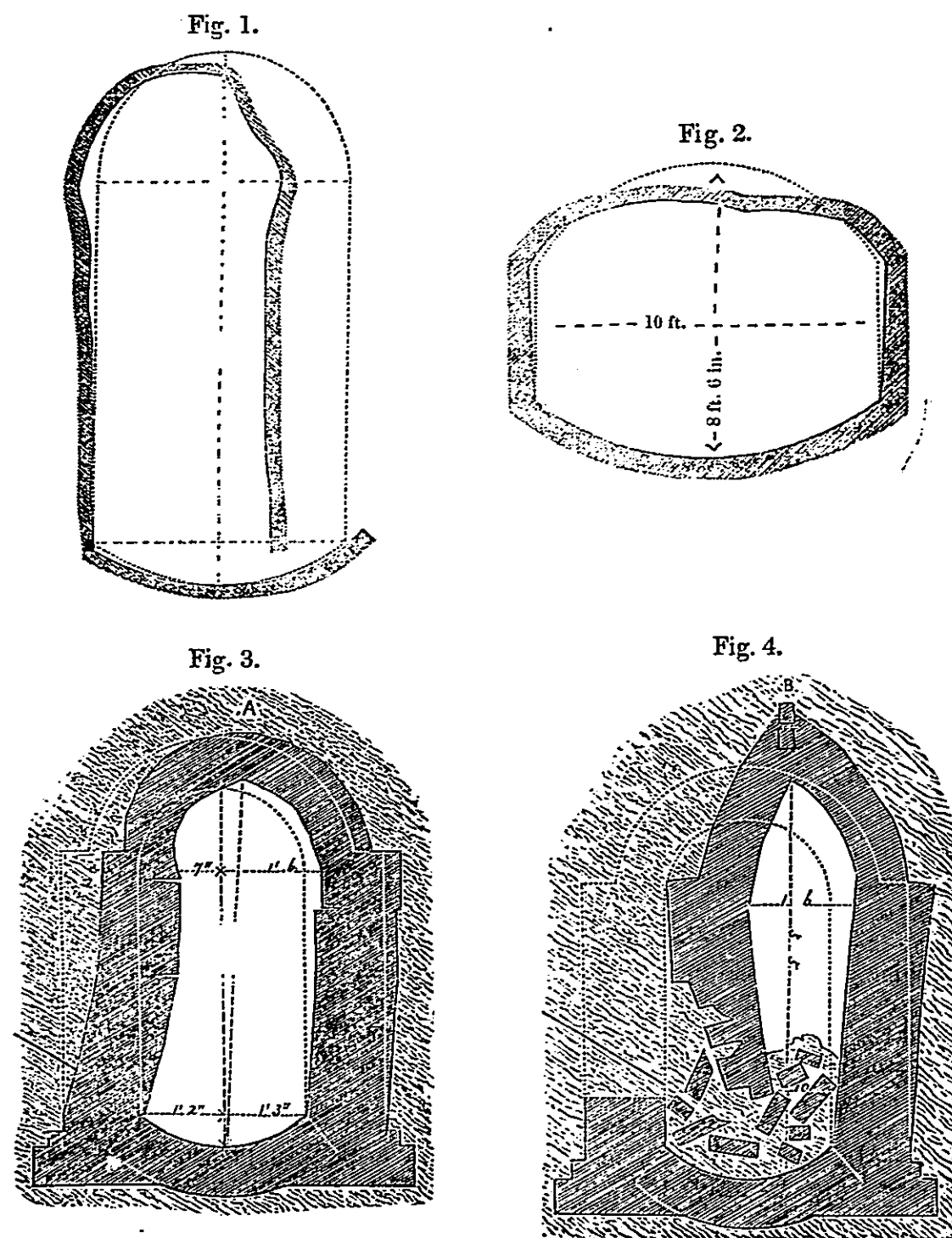
sewer to be the back front of a line of houses, whereupon the surveyors were ordered to report. On the 5th of June the petition was withdrawn, and instead, he asked permission to build 170 feet of sewer, 8 feet wide, in the line of the open sewer, which the Court granted.

260. What was the object of these two petitions?—To further the purpose of a building speculation, because the contraction of the sewer enabled Mr. Wyatt to build his houses so much wider than he could have done if the sewer had remained open. The extent of ground he gained according to Mr. Dowley's statement to my inquiry, was, upon an average, six feet wide the whole length.

261. Then for 170 feet the old sewer is now contracted in width to 8 feet, and covered in, and Mr. Wyatt thereby gained 1020 square feet of land by his petition?—Exactly so, and of incalculable value to his building speculation.

262. Has any further portion of the old line been covered in?—No, on the 4th June, 1841, Mr. Ponsford, the builder, prayed the Court to allow him to continue for 280 feet the sewer eight feet wide as built by Mr. Wyatt. The Court gave him permission, but the work was not done. On the 18th August, 1843, Ponsford renewed his petition. The Court ordered the surveyors to report; after the report, Ponsford was allowed to build an invert four feet wide, provided he made a diversion higher up the sewer, northward, to join the diversion at the south end, to which I have before alluded, and by means of which, the old line loses the flow of the upland waters; and on the 5th January, 1844, the Court abandoned the old line to the proprietors on either side, and the sewage of that ancient line, to the extent thus abandoned, can now only be relieved by another new sewer down Elms-lane, as I have before detailed. But the tracing will more clearly explain the whole affair, which has created so large an expenditure of the sewers-rates.

263. How far is this sewer from the one which, the Commissioners were informed, fell in in February, 1823, near Notting Hill?—They are a very considerable distance apart; but there has been another failure of a sewer lately announced in the same district, built by the same contractor, and under the same clerk of the works. The annexed wood-cuts exhibit the sections of the three sewers that have lately broken in, and the forms that they assumed after the failure. Fig. 1 is the sewer at Notting Hill, built by a private individual, but under the inspection of the officers of the Court. Fig. 2 is the sewer just mentioned, near the Uxbridge-road, as having cost 3*l.* a-foot. Figs. 3 and 4 are different views of one near the Harrow-road. Both of these last sewers were built by the contractors of the Court.



The dotted lines show the regular form of the Sewers.

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264. Can you supply this Commission with any particulars respecting this additional failure in the works, under the Westminster Commission of Sewers?—I will endeavour to give an outline of the proceedings prior to the building of the sewer which has failed, I will then submit the expenditure thereon, and the probable expense of reinstating the works.

A report from the two surveyors, Messrs. Dowley and Doull, with a plan of the ground, was presented to the Court, 21st October, 1842, in which it was shown that 750 feet from the open line of the Ranelagh sewer, across a field to the Harrow-road, belonging to the Great Western Railway Company, the new covered sewer should be done by that Company, that from thence across the Harrow-road, and proceeding along a field at the west side of the Harrow-road, and under the Paddington Canal to its North bank, 800 feet, should be done at the expense of the district of the Ranelagh sewer, and a further length, marked on the plan, by the Governors of the Lock Hospital, at an estimated expense of 600*l.* The Court approved of this Report. On the 6th of January, 1843, a Committee of five was appointed to view the drainage of the Lock Hospital. And the following is the result of their proceedings:—

"The Committee considered the report of the surveyors, and examined the plans and heard Mr. James Oliver, of Desborough Lodge, Harrow-road, the party who complained of the nuisance occasioned by the offensive matter issuing from the Lock Hospital, and passing along an open drain by the side of the High-road; also, Mr. Hardwick, on behalf of the Great Western Railway Company, and Mr. Henry Abrahams, the agent of Mr. John Aldridge, the owner of certain property on the south side of the Harrow-road. They then proceeded to view the spot in question.

"Resolved, that they recommend that the Court should assert its jurisdiction over the entire length of the sewer, from the point north-west of the canal, where it receives the drainage of the High-road; and are of opinion that the neighbourhood must be protected against the nuisance complained of.

"Resolved, that this Committee find that the Lock Hospital has been surreptitiously and improperly drained into the said sewer and that they recommend that such drainage be forthwith stopped; upon which the Committee divided, when there appeared,—Ayes 4, Noes 1.

"Resolved that this Committee entirely approve the line proposed by the surveyors, but that they see no prospect at present of the property in the neighbourhood contributing towards the expense thereof.

265. We perceive that five Commissioners were present at this Committee on view, how many of them were surveyors, architects, or connected with building operations?—The whole were; four were architects or surveyors, and the fifth was, or is, a bricklayer. One of them sold a portion of his property on the spot to the Lock Hospital, another is the surveyor to the Great Western Railway, a third is the district surveyor, and also a surveyor connected with the Paddington estate, and the lands of the Grand Junction Canal Company.

266. It appears, then, that several of the committee who approved of the line proposed by the surveyors to the Court of Sewers, and resolved that "they saw no prospect at present of the property in the neighbourhood contributing towards the expense thereof," were connected with the property to be affected by this sewer?—Yes; several of these Commissioners on that Committee represented the greater portion of the property in that neighbourhood.

267. Were the works ultimately done according to the report of the surveyors?—Yes, according to the line proposed by them, but in defiance of their proposal for charging the expense upon the owners of the adjoining lands. The works through the field of the Great Western Railway Company were done at the expense of the rate-payers, without a farthing contribution from the Great Western Railway Company. The other works, also, were done at the public expense. These two portions cost 1,584*l.* 0*s.* 4*d.* I have got the details of the expense with me, if it is desired that they should be put in.

268. In which portion of this work has the failure occurred?—In the Harrow-road, near the Lock Hospital; and, according to the Report of two of the surveyors, 240 feet will require to be reconstructed at an estimated expense of 360*l.* I submit to this Commission the Report of the surveyors on the failure.* The above wood-cuts (3 and 4) is taken from the drawing laid before the Court.

269. When you were last examined by this Commission you stated that you had given a notice of motion to terminate the existing contracts under the Westminster Commission; did you carry that motion?—I did, and notice thereof was sent to the different contractors, and I followed that up by another notice of motion, the necessity of which I urged by the opinion I entertained, that we were paying most exorbitantly, for the digging particularly: my motion on the 23rd of July was to this effect:—

"That the works (985 feet of sewer in Wellington-street north, Upper Wellington-street, and Bow-street, estimated to cost 1400*l.* 9*s.*) on the eastern division of the Westminster sewers be the subject of a special contract, after public advertisements, and that the excavation and the construction be separately tendered for."

I lost the motion by a majority of four; three voting for the motion, and seven against it.

270. Do you know what the estimated expenditure for digging amounted to?—In the whole line, occasioned principally for the new street and for the purposes of the Holborn and Finsbury district, nearly 12*s.* per foot lineal, 1,672*l.* 2*s.* for 2,840 feet in length.

271. Have you taken any steps in consequence of losing your motion as to a special contract?—I have. I determined upon a thorough and complete sifting of the contracts, and the result is that I have detected a loss to the public of a very serious amount, arising from the mode in which the contracts in 1841 for the Eastern and Western divisions of the Westminster sewers were made.

272. Will you detail the course you adopted, and the results of your investigations?—I will.

* See Appendix, p. 99.

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I commenced by asking for the following returns from Bennett's accounts under the present contract:—

- 1st. The number of cubic yards of digging, at 2s.
- 2nd. The number of cubic yards of digging, at 1s. 8d.
- 3rd. The number of rods of brickwork.
- 4th. Ditto in blue lias.
- 5th. Ditto in cement.
- 6th. The number of thousands of brick, at 30s.

But finding that there was some little delay in getting them out, I went myself to the accounts and extracted the returns I wanted during the whole period since the commencement of the present contract, Michaelmas, 1841, eleven quarterly accounts to Midsummer, inclusive.

On inquiring with regard to the present general contracts for works, I was informed that the principal difference in the mode of obtaining these contracts and those of 1836 was this:—In 1836 prices only were sent in by the contractors, and the surveyors and clerks of the works instituted a comparison between them during the sitting of the court, by moneying them out at certain amounts, and the court then accepted that tender which proved to be the lowest. In 1841, however, I am told that it was suggested that much trouble would be saved by requiring the parties themselves to money out their tenders before sending them in, and that this was done by them accordingly before the meeting of the court to open the tenders.

273. Will you now explain the way in which the public has suffered?—Certainly. I speak only of the two divisions, the Eastern and Western, under the same contractor, Bennett. There were five tenders upon printed forms, with quantities supplied to the competitors, stating the amount of each description of work likely to be required. The sums are filled in by the persons contracting, and the amounts added up. They appeared as follows:—

	£.	s.	d.
Joseph Bennett	4,986	8	2
G. W. and W. Bird, jun.	5,079	6	3
Stephen and Mary Bird	5,409	15	5
W. Jackson	5,268	19	2
Jonathan Riches	5,274	5	5

Among the items were 350,000 "stock bricks equal to pattern." These Mr. Bennett put down at 30s. per thousand, 525l. He was, at the time he tendered, supplying the Commissioners under his existing contract with the same bricks at 2l. 2s. a thousand; the actual supply of bricks, instead of 350,000, being only 18,828. The next feature in the case is that a very much less quantity of digging was put down than was actually to be done, for in the form of tender given out to the competitor, 7,450 cubic yards was inserted. The actual quantity done in the year was nearly five times as much, nearly 36,000 cubic yards, and this was charged at 2s. per cubic yard, being 3d. a yard above the next tender. Bennett was declared the lowest, and the public had to pay under the existing contract an excess over the next rejected offer on 29 different items, sums varying in amount from 100 per cent. downwards.

274. What is the whole amount of works done in the Eastern and Western divisions, under the existing contracts?—The eleven quarterly accounts of the existing contracts amount to 41,649l. 17s.

275. Then according to the tender for the four quarters, he should have supplied in the eleven quarters of the existing contract 962,500 bricks, at 30s. a thousand. Do you know how many he did supply?—In the whole period of the eleven quarters only 73,056.

276. Taking the same datum, he should have excavated 20,487 cubic yards; what was the real quantity?—More than four times as much; above 81,000 cubic yards.

277. So that while the public have gained about 30l. on the number of bricks used, they at the same time have lost above 1,000l. on the digging?—Yes, those are about the sums upon those two items; but there are several other smaller items, of which I now give many of the details, upon which a loss has been incurred. It may altogether amount to about 1,500l. It would be a work of very considerable labour to take out all the details; but the above calculations will afford the Commissioners some idea of the pecuniary loss from the carelessness (to say the least of it) with which these tenders and contracts were made.

APPENDIX.

"SEWERS OF WESTMINSTER, AND PART OF MIDDLESEX.

John Leslie, Esq.

Appendix.

"Report of Mr. John Phillips, Clerk of the Works, to the Commissioners of Sewers for Westminster, &c., in substantiation of the Statements which he made as to the Failure of the Ranelagh Main Line of Sewer in Gloucester-road, Paddington.

"Sewers' Office, No. 1, Greek-street, Soho, 7th June, 1844.

"The statements that I made to the Court respecting the cause of failure of the Ranelagh sewer built along Gloucester-road, Paddington, having been impugned, I beg most respectfully to state that, after a careful and minute examination of the work of the said sewer, I am still further convinced of the accuracy of those statements, namely, that the cause of failure is wholly in consequence of the inefficient manner in which the brickwork, in conjunction with the groundwork, has been executed. Seeing the course the question has taken, and believing my character is at stake in this affair, I beg to be allowed to state, that I am prepared to prove those assertions by facts.

"In excavating for this sewer it appears that the ground was dug out somewhat wider than the sewer, including the side walls; so that after the side or abutment walls were built, a space of a few inches in width had to be filled in behind the walls with ground, which, if properly and soundly rammed down, would have been of sufficient solidity to have borne the lateral thrust of the arch, and the superincumbent weight of ground placed above it. The abutment walls are thrust outwards from their perpendicular position to the extent of 3½ inches or more, compressing the ground filled in behind them, which was not properly and soundly rammed, otherwise it would be next to impossible for the abutments to have gone outwards with the pressure to which they have been exposed: moreover, from the appearance of the ground taken out from behind the walls, it has not the tenacity and solidity that ground would have that had been well and soundly rammed.

"As regards the brickwork of the arch of the crown of the sewer, I beg leave to reassert that it has been done in a slovenly and unworkmanlike manner; that no respect has been shown either to properly bonding the bricks together, or in regulating the courses of bricks with equal joints of mortar; for between some joints there is scarcely any mortar whatever, and between others the thickness of mortar varies up to one inch or more. The number of courses of bricks in the bottom half brick ring of the arch are 50, and in some places there are only 49, which is three and four courses less than could and ought to have been got into the bottom ring of the arch; therefore, there are nearly nine inches in thickness of mortar in excess distributed over the arch of the sewer, where bricks ought to have been used instead. I would beg to call attention to the circumstance of one course of bricks being lost in the arch as before stated, a fact in itself evidencing a great want of attention in the execution. The bricks appear to be of good quality. The mortar used was made of Dorking lime and Thames sand, and is not so strong as I should have expected from the nature of these materials—it is in a very friable state, which I should say is caused by the admixture of more water with the lime and sand than was requisite, and too long exposure of the lime to the air; and, moreover, from its appearance, the lime and sand has not been thoroughly mixed. In the composition of mortar no more water should be used than is sufficient to bring it to a tough and proper consistency for using, otherwise it has the effect of destroying the strength of the lime to a considerable degree; and the lime should be used as soon as possible after it has been burnt, otherwise it reabsorbs the carbonic acid, which has been driven off during the process of calcination. Mortar after being used in a wall loses a considerable quantity of its bulk from evaporation and contraction, which causes the walls to shrink and settle; in consequence of this, as little mortar as possible should be used in building a wall, more especially in an arch. In the arch of this sewer, such an unusual quantity of mortar has been used in the joints, and that so irregularly, that it is sufficient in itself to cause a considerable settlement, and also a very great distortion in its form.

"With respect to the abutment walls, the manner in which they have been built is contrary to the contract, which says, that 'the brickwork shall be in every respect of the best workmanship, no four courses to rise more than 12 inches.' There are 15 courses of bricks in the abutment instead of 16, as shown and described in the original drawing of the said sewer. Those 15 courses rise 3 feet 10½ inches, which is 1½ inch in excess over the instructions in the contract, for the like number of courses—this excess is caused by the joints of mortar being too large.

"The average width of the sewer between the abutment walls as built perpendicularly on the invert is 10 feet 3 inches, being 3 inches wider than that shown in the original drawing of the said sewer. Then the springing walls being only 3 feet 10½ inches high, it was necessary to elevate the centre 1½ inch above the springing walls, for the purpose of keeping the requisite height from the top of the centre of the invert to the under side of the arch, and in consequence of the increased width, and the 1½ inch less in height of the springing walls, the arch line is lengthened on each side, making the springing point 1½ inch below what it would have been had the walls been carried up to their intended height. This 1½ inch added to the versed sine of the arch in the original drawing, which is 2 feet 10 inches, will make the versed sine of the arch as built 2 feet 11½ inches. Then taking the chord line of the arch at 10 feet 3 inches, and the versed sine at 2 feet 11½ inches, I find the length of the arch line is 12 feet 4 inches, and 4-tenths, which divided by 53 courses of bricks, gives 2 inches and 8-tenths for each course including the joint of mortar; then for eight courses there would be 1 foot 10 inches and 4-tenths, and having measured eight of the bricks taken out of the arch after being cleansed of the mortar, I find they measure 1 foot, 9 inches, and 4-tenths. Therefore, taking this sewer as actually built with its increased width, 53 courses of bricks could have been got into the arch with ease, and then allowing ample joints for mortar, which would be a quarter of an inch in the centre of the half-brick ring. It is the usual practice in building brick arches for bridges, &c., to allow for each ring at its soffit 1 foot 10½ inches, to the utmost, for eight courses of bricks.

"I would beg to observe, that there is one section, No. 28, which shows the side walls in a perpendicular position, the arch is gone upwards on one side, and is come down on the other, that is, at the haunches, which, I should say, is caused by the thick and unequal joints of mortar being compressed or giving way with the weight of ground placed on the arch, as the ground could not possibly have had the effect of causing the distorted form there shown.

"Therefore, taking into account the inefficient manner in which the ground work was executed, namely, the neglect to properly back up the abutment walls and spandrels of the arch with ground well

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Appendix.

and soundly rammed, and also the inferior and unworkmanlike manner in which the brickwork has been executed, more particularly in the arch, I am of opinion that the failure of the said sewer is entirely attributable to these causes.

(Signed) "JOHN PHILLIPS, Clerk of the Works."

"COMMISSIONERS OF SEWERS FOR WESTMINSTER, AND PART OF MIDDLESEX."

"Sewers' Office for Westminster, &c., 12th July, 1844."

"In obedience to the order of the Committee on View on the 28th of the last month, to report on the failure of the sewer in the Harrow-road, Paddington, near to the Lock Hospital, we would observe that, with the view to prevent the mischief that would inevitably accrue to the neighbourhood by the waterway becoming totally blocked or stopped up by any sudden collapse or falling in of the said sewer, and also to enable us to form an opinion as to the causes of the failure, we have had the earth entirely removed from off the arch, as also chases cut through the side walls and invert, at the part where the brickwork assumed the most dangerous and alarming condition."

"Having carefully and minutely examined the work, and judging by the direction in which the fractures have taken place, as also from the nature of the ground through which the sewer is built, we are induced to conclude that the mischief is to be attributed to a combination of circumstances, more particularly to the slipping in of the ground on the eastern side of the sewer."

"The first opinion we would express is, that due and timely precaution was not taken in securing the sides of the excavation at the time of building the sewer, and that there had been a tendency in the ground to slip previously to the completion of the work—in our minds fully indicated by the workmen not having ventured to take out the whole of the temporary cross struts, some of which still pass through each of the side walls."

"We would next observe that the sides of the excavation, at the part where the greatest mischief has taken place, were cut to a depth of about 27 feet, and were of unequal height; added to which, the highest side (that on the east) has to sustain the weight of the main turnpike road, along which loaded waggons are constantly passing, necessarily causing considerable vibration, thereby increasing the natural disposition of the ground to move."

"A third and serious evil has, in our opinion, arisen from the surface of the roadway being so formed, that whatever water might fall upon it would have a tendency to flow into the field over the sewer, and find a passage, by the upright planks left in upon the completion of the work, to the back of the springing wall."

"To the injurious effect of this, combined with the causes before mentioned, the whole of the failure, as shown in the accompanying sections, may, in our opinion, be traced."

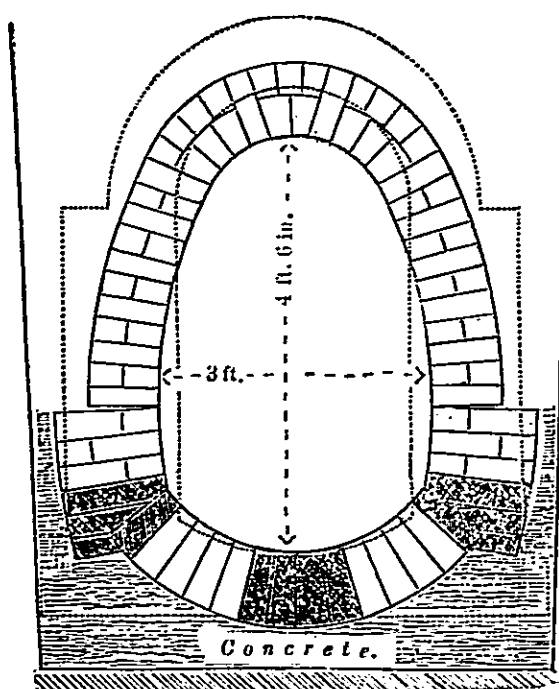
"With reference to the materials with which the sewer has been constructed, we would state that the bricks and mortar appear to be of good and proper quality, but that the workmanship generally, especially in the outer rim of the upper arch, is not so perfect as it ought to have been; nor are we at all satisfied that the ground was soundly and properly punned or rammed behind the side or springing walls. We would, however, beg most distinctly to state that, although much of the mischief might have been somewhat diminished by due and proper care in the execution of the work, yet the necessity for rebuilding the sewer, as occasioned by the failure, would not have been prevented."

"Beneath, we beg to submit an estimate of what we imagine would be about the cost of reinstating the work, which we strongly recommend should be done with as little delay as possible, as, from the length and depth of ground now taken out, it would be impossible, in the event of much rain falling, to guarantee the security of the roadway."

"The total length which, in our opinion, it will be necessary in part to take down and rebuild, in order to reinstate the sewer, is about 240 feet, the cost of which, including digging and strutting the ground, and rebuilding the defective arch and side walls with new materials, we estimate at about 360*l*."

"JOHN DOWLEY, Surveyor.
"GEORGE HAWKINS, Assistant Surveyor."

NOTE.—The annexed wood-cut shows the section of a new form of sewer ordered by the Court, September 27, 1844. The dotted lines denote the sectional form of sewer previously in use.



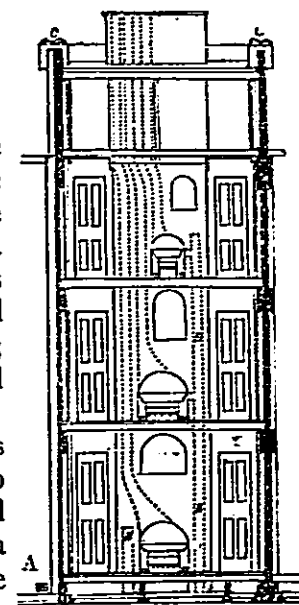
ILLUSTRATIONS of SUGGESTED MODES of VENTILATING DWELLINGS.

Referred to in the Evidence given by William Hosking, Esq., Architect.—First Report, Quest. 2857.

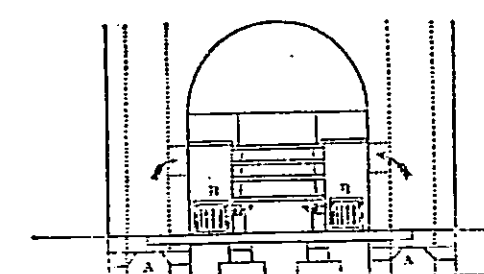
A.A.A. Gratings and double air bricks admitting the external air underneath the ground-floor, which is laid on interrupted footings to allow a free circulation under the joists and sleepers.

B.B.B. Flues by which the air is conducted from underneath the ground-floor to the backs and sides of the fire-places, and thence through slots in the checks of the grates to the rooms, and through small holes in the backs of the grates to feed the fires. It is presumed, that when a fire is burning in the grate it will occasion a draft through the perforations at the back, which will give a more complete combustion of the smoke than can be obtained when air is admitted to the fire from the front only. When the grate becomes heated it will warm the air at the sides, and cause it to enter the room through the slots; the room will thus be warmed with less expenditure of fuel than is required when the cold external air forces itself in to supply the fire.

C.C.C. Smaller air flues having openings at the ceiling level of the rooms intended to carry off heated and foul air. The room can have no tendency to become close, as the unwholesome air will escape through these openings, and its place be supplied by air from the pure air flues, B.B., whether there is a fire or not. The openings into these flues are proposed to be formed over the tops of the closets in the recesses, and to be concealed by a projecting luffer-board, leaving an opening also from the closet itself.



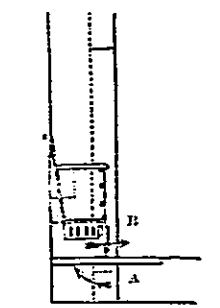
Elevation Plan and Section of a Grate, showing the manner in which it is proposed to admit Air to the Room and Fire by means of Slots furnished with sliding Regulators.



A. Opening into air flue.
B. Sliding regulators.



A. Air flue.



A. Opening into air flue.
B. Sliding regulators.

The Arrows indicate the direction of the Current.

SUPPLEMENT.

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SUPPLEMENT.

A LIST OF THE TOWNS VISITED BY THE COMMISSIONERS.

Birmingham	R. A. SLANEY ESQ.	Newcastle-on-Tyne, with Gateshead	DR. D. B. REID.
Wolverhampton		Sunderland	
Bilston		Carlisle	
Wednesbury		Durham	
Walsall		North Shields	
Dudley		South Shields	
West Bromwich			
Kidderminster		Woolwich	CAPT. W. DENISON, R.E.
Stourbridge		Salisbury	
Burslem			
Lane-end and Longton	SIR HENRY T. DE LA BECHE.	Nottingham	J. R. MARTIN, ESQ.
Newcastle-under-Lyme		Coventry	
Shrewsbury		Leicester	
Chester		Derby	
Gloucester		Norwich	
		Portsmouth	
Bristol and Clifton			
Bath		York	JAMES SMITH, ESQ.
Frome		Hull	
Swansea		Huddersfield	
Merthyr Tydfil		Leeds	
Brecon		Bradford	
		Halifax	
Liverpool	DR. LYON PLAYFAIR.	Sheffield	
Manchester, including Salford, Pendleton, and Chorlton			
Ashton			
Rochdale			
Preston			
Wigan			
Bury			
Great and Little Bol- ton			

TABLE in illustration of the Statement in respect to the Increase of Births being consequent upon an excessive rate of Mortality, extracted from Tables in the Occupation Abstract of the Population Returns for England and Wales, p. 10.

England and Wales.	Annual Proportion per Cent. of Deaths of Children under One Year of Age to total Births.	Proportion of Annual Deaths to each 10,000 of the Population.	Proportion of Annual Births to each 10,000 of the Population.	Assumed Natural Increase of the Population from Births per Cent. from 1831 to 1841.	Proportion of Annual Marriages to each 10,000 of the Population.	Proportion of Young Children alive under 5 Years of Age to each 10,000 of the Population.	Proportion of Persons alive above 50 Years of Age to each 10,000 of the Population.
Eleven Counties where the proportion of Deaths of Children in proportion to total deaths is the least	10·7	192·9	291·5	9·8	67·4	1294	1575
Eleven Counties where the proportion of Deaths of Infants under one year of age is intermediate	12·9	204·1	302·8	9·8	68·8	1315	1485
Eleven Counties where the proportions of Infant Deaths to total deaths are intermediate	14·8	219·1	327·3	10·8	76·6	1334	1378
Eleven Counties where the proportions of Infant Deaths to total deaths are the highest	16·4	229·3	339·3	11·0	84·0	1263	1335

CITIES AND TOWNS.

COMPARATIVE POPULATION in 1831 and 1841, showing the Rate of Increase or Decrease per Cent. (placed in the Order of their Rate of Increase or Decrease.)

	Population within the same limits in		Increase per Cent.		Population within the same limits in		Increase per Cent.
	1831	1841			1831	1841	
West Bromwich	15,327	26,121	70·4	Reading	15,595	18,937	21·4
Bishop Wearmouth	14,462	24,206	67·4	Wakefield	12,232	14,754	20·6
Dukinfield	14,681	22,394	52·5	King's Lynn	13,370	16,039	20·0
Preston	33,112	50,131	51·4	Great Bolton	28,299	33,610	18·8
Merthyr Tydvil	22,083	34,977	50·8	Gloucester	11,933	14,152	18·6
Bradford	23,223	34,560	48·8	Warrington	16,018	18,981	18·4
Wolverhampton	24,732	36,382	47·1	Bristol	103,886	122,296	18·3
Woolwich	17,661	25,785	46·0	Maidstone	15,387	18,086	17·5
Southampton	19,324	27,744	43·6	Deptford	19,795	23,165	17·0
Ecclesall Bierlow	14,279	19,984	40·0	Cambridge	20,917	24,453	16·9
Liverpool	189,242	264,298	39·6	Newcastle-on-Tyne	42,760	49,860	16·6
Durham	10,135	14,151	39·6	Rochdale	58,441	67,889	16·2
Bilston	14,492	20,181	39·3	Sheffield	59,011	68,186	15·5
Derby	23,627	32,741	38·6	Oxford	20,649	23,834	15·4
Northampton	15,351	21,242	38·4	Carlisle	20,006	23,012	15·0
Walsall	15,066	20,852	38·4	The Metropolis	1,471,941	1,690,084	14·8
Ashton-under-Lyne	33,597	46,304	37·8	Brighton	40,634	46,661	14·8
Wednesbury	8,437	11,625	37·8	Yarmouth	21,115	24,086	14·1
Bury	15,086	20,710	37·3	Coventry	27,070	30,743	13·6
Cheltenham	22,942	31,411	36·9	Canterbury	13,679	15,435	12·8
Dudley	23,043	31,232	35·5	Wrexham	11,408	12,797	12·1
Blackburn	27,091	36,629	25·2	Stockport	25,469	28,431	11·6
Huddersfield	19,035	25,068	31·7	Shields, North	67,44	75,09	11·3
Oldham	32,381	42,595	31·5	Exeter	28,242	31,312	10·9
Heaton Norris	11,238	14,629	30·2	Colchester	16,167	17,790	10·0
Manchester	227,808	296,183	30·0	Worcester	17,811	19,473	9·3
Halifax	15,382	19,881	29·9	Chester	21,344	23,115	8·3
Birmingham	146,986	190,542	29·6	Plymouth, Devonport, and Sonehouse	75,534	80,059	6·0
Lane-end and Longton	9,608	12,345	29·5	York	26,260	27,818	5·9
Gateshead	15,177	19,505	28·5	Saddleworth	15,986	16,829	5·3
Swansea	13,256	16,787	26·6	Portsmouth	50,389	53,032	5·2
Burslem	12,714	16,091	26·5	Nottingham	50,680	53,091	4·8
Hull	32,958	41,629	26·3	Macclesfield	23,129	24,137	4·4
Chatham and Rochester	26,376	33,174	25·7	Norwich	61,116	62,344	2·0
Hanley and Shelton	16,888	20,564	25·5	Bath	38,063	38,314	0·7
Little Bolton	12,896	16,153	25·3	Shields, South	9,074	9,082	0·0
Leicester	40,512	50,733	25·2				
Stoke-upon-Trent	37,220	46,342	24·5				
Leeds	123,393	151,874	23·1				
Ipswich	20,528	25,264	23·1	Sunderland	17,060	17,022	0·2
Wigan	20,774	25,517	22·8	Shrewsbury	21,297	20,921	1·8
Lincoln	13,203	16,172	22·5	Frome	12,240	11,849	3·2
Stourbridge	6,148	7,481	21·7	Kidderminster	14,981	14,399	4·0

COUNTIES.

SUPPLEMENT.

COMPARATIVE POPULATION in 1831 and 1841, showing the Rate of Increase per Cent. (placed in the Order of their Rate of Increase.)

	Population.		Increase per cent.
	1831	1841	
Monmouth	98,130	134,355	36·9
Glamorgan	126,612	171,188	35·2
Durham	253,910	324,284	27·7
Lancaster	1,336,854	1,667,054	24·7
Stafford	410,512	510,504	24·3
Carnarvon	66,448	81,093	22·0
Surrey	486,334	582,678	19·8
Warwick	336,610	410,715	19·3
Chester	334,391	395,660	18·3
York, West Riding	976,350	1,154,101	18·2
Brecon	47,763	55,603	16·4
Middlesex	1,358,330	1,576,636	16·0
York, East Riding	168,891	194,936	15·4
Derby	237,170	272,217	14·7
Kent	479,155	548,337	14·4
Cambridge	143,955	164,459	14·2
Lincoln	317,465	362,602	14·2
Cornwall	300,938	341,279	13·4
Bedford	95,483	107,936	13·0
Southampton (Hants)	314,280	355,004	12·9
Northumberland	222,912	250,278	12·2
Flint	60,012	66,919	11·5
Gloucester	387,019	431,383	11·4
Merioneth	35,315	39,332	11·3
Northampton	179,336	199,228	11·0
Nottingham	225,327	249,910	10·9
Berks	145,389	161,147	10·8
Worcester	211,365	233,336	10·4
Huntingdon	53,192	58,549	10·0
Sussex	272,340	299,753	10·0
Dorset	159,252	175,043	9·9
Rutland	19,385	21,302	9·9
Hertford	143,341	157,207	9·6
Leicester	197,003	215,867	9·5
Essex	317,507	344,979	8·6
York, City and Ainsty	35,362	38,321	8·3
Pembroke	81,425	88,044	8·1
Devon	494,478	533,460	7·8
Somerset	404,200	435,982	7·8
Wilts	240,156	258,733	7·7
Salop	222,938	239,048	7·0
York, North Riding	190,156	204,122	7·0
Buckingham	146,529	155,983	6·4
Suffolk	296,317	315,073	6·3
Oxford	152,156	161,643	6·2
Denbigh	83,629	88,866	6·2
Cardigan	64,780	68,766	6·1
Norfolk	390,054	412,664	5·7
Carmarthen	100,740	106,326	5·5
Anglesey	48,325	50,891	5·3
Cumberland	169,681	178,038	4·9
Montgomery	66,482	69,219	4·1
Radnor	24,651	25,356	2·8
Westmoreland	55,041	56,454	2·5
Hereford	111,211	113,878	2·4
Total of England	13,091,005	14,995,138	14·5
Total of Wales	806,182	911,633	13·0

SUPPLEMENT.

Towns having
local Improvement
Acts.

A LIST OF TOWNS HAVING LOCAL IMPROVEMENT ACTS.

(PASSED SINCE THE YEAR 1800.)

Those marked * have Acts for supplying the Town with Water.

Abergavenny	55 G. 3, xxiv.	Cap.
*Aberystwith	5 and 6 W. 4, clvi.	
Abingdon	6 G. 4, clxxxix.	
*Accrington (Lancaster)	4 and 5 V. xxvii.	
Alnwick	3 G. 4, xxvii.	
Andover	55 G. 3, xliii.	
Ashford	5 G. 4, liii.	
*Ashton-under-Lyne	7 and 8 G. 4, lxxvii.	
	9 G. 4, xlii.	
	W. 6 G. 4, lxvi.	
	W. 5 and 6 W. 4, lxi.	
Banbury	6 G. 4, cxxx.	
*Barnsley	3 G. 4, xxx.	
	W. 7 W. 4 and 1 V. lxxxii.	
Barnstaple	51 G. 3, cliv.	
Basingstoke	55 G. 3, vii.	
Bath	54 G. 3, cv.	
Walcot	6 G. 4, lxxiv.	
Bathwick	41 G. 3, cxxvi.	
Bedford	43 G. 3, cxxviii.	
Beverley	48 G. 3, lxxxvii.	
	6 G. 4, cxxxviii.	
*Birkenhead	3 and 4 W. 4, lxviii.	
	1 and 2 V. xxxviii.	
	W. 4 and 5 V. lxii.	
*Birmingham	41 G. 3, xxxix.	
	52 G. 3, cxiii.	
	9 G. 4, liv.	
	2 and 3 V. lxxxviii.	
	W. 7 G. 4, cix.	
Bishop Wearmouth	50 G. 3, xxv.	
Blackburn	43 G. 3, cxxv.	
Bognor	5 and 6 W. 4, ci.	
*Bolton, Great	57 G. 3, lix.	
	W. 5 G. 4, cxxx.	
*Bolton, Little	11 G. 4, and 1 W. 4, xlv.	
	W. 5 G. 4, cxxx.	
Boston	46 G. 3, xl. and xli.	
Bradford (Wilts)	2 and 3 V. lxiii.	
*Bradford (York)	43 G. 3, xc.	
	W. 5 and 6 V. vi.	
Bridgewater (Somerset)	7 G. 4, vii.	
*Brighton	50 G. 3, xxxviii.	
	5 G. 4, clxxx.	
	W. 4 and 5 W. 4, lxii.	
*Hove	11 G. 4, and 1 W. 4, xvi.	
	W. 4 and 5 W. 4, lxii.	
Bristol—amending 6 former Acts	46 G. 3, xxvi.	
	3 G. 4, xxiv.	
	3 and 4 V. lxxvii.	
*Burnley	59 G. 3, xxxiv.	
	W. 59 G. 3, xxxii.	
Burslem	6 G. 4, cxxxi.	
*Bury (Lancaster)	W. 1 and 2 V. xxix.	
Bury St. Edmunds	51 G. 3, ix.	
*Canterbury	4 G. 4, lvii.	
	6 G. 4, clxxviii.	
	4 and 5 V. lxvi.	
	W. 5 G. 4, cxxxi.	
Cardiff	7 W. 4, and 1 V. xviii.	
Carlisle	44 G. 3, lviii.	
	7 and 8 G. 4, lxxxvi.	
*Carmarthen	45 G. 3, ciii.	
Chelmsford	3 G. 4, lix.	
Cheltenham	46 G. 3, cxvii.	
	1 and 2 G. 4, cxxi.	
	3 and 4 W. 4, xxi.	
	W. 5 G. 4, cxxxii.	
	W. 2 and 3 V. xxv.	
*Chester	43 G. 3, xlvii.	
	W. 7 G. 4, cx.	
*Chesterfield	6 G. 4, lxxvii.	
	W. 48 G. 3, cxxxviii.	
Chichester	47 G. 3, lxxxiv.	
	1 and 2 G. 4, lxviii.	
Chippenham	4 and 5 W. 4, xlvii.	
Chipping Wycombe	53 G. 3, cxliv.	
Cirencester	6 G. 4, clxxxiv.	
Clifton (Dartmouth Hardness, Devon.)	55 G. 3, xxviii.	
*Colchester	51 G. 3, xliii.	
	W. 48 G. 3, cxxxvii.	
*Colne (Lancaster)	W. 46 G. 3, xxvii.	
Cowes (Isle of Wight)	56 G. 3, xxv.	
Crediton	6 and 7 W. 4, xxv.	
*Croydon	10 G. 4, lxxiii.	
	W. 41 G. 3, cxxvii.	
Darlington	4 G. 4, iii.	
Dartford	54 G. 3, cviii.	
Daventry	46 G. 3, cxviii.	
*Deal	52 G. 3, lxviii.	
	W. 4, and 4 V. cxiii.	
*Deptford and Greenwich	W. 49 G. 3, clxxxix.	
	W. 51 G. 3, cxlv.	
Derby	6 G. 4, cxxxii.	
Deritend and Bordesley—See Birmingham.		
Devizes	6 G. 4, cxlii.	
Doncaster	43 G. 3, cxlvii.	
Dorchester	4 and 5 W. 4, xvi.	
Dover	50 G. 3, xxvi.	
	11 G. 4, and 1 W. 4, cxvii.	
Downham Market	5 and 6 W. 4, lii.	
Duddeston-cum-Nechells	10 G. 4, vi.	
*Dudley (Worcester)	W. 4, and 5 W. 4, xlii.	
*Dukinfield	W. 6 and 7 W. 4, lviii.	
Durham	3 G. 4, xxvi.	
Evesham	5 G. 4, lxvii.	
*Exeter	46 G. 3, xxxix.	
	50 G. 3, cxlvi.	
	2 and 3 W. 4, cvi.	
	W. 3 and 4 W. 4, xxxi.	
	3 and 3 W. 4, xxxii.	
	5 and 6 W. 4, xcvi.	
	3 and 4 V. lviii.	
Fleetwood	5 and 6 V. xlix.	
Frome	50 G. 4, lxii.	
Gainsborough	49 G. 3, iv.	
Gateshead	54 G. 3, cix.	
Glastonbury	51 G. 3, clxxxiii.	
*Gloucester	59 G. 3, lxxi.	
	4 and 5 W. 4, xl.	
	1 and 2 G. 4, xxii.	
St. James and St. Paul, 2 and 3 W. 4, lxxxix.		
	W. 6 and 7 W. 4, lxvii.	
Godalming	6 G. 4, clxxvii.	
Gosport	54 G. 3, xx.	
Gravesend	56 G. 3, lxxxvii.	
	3 and 4 W. 4, li.	
	3 and 4 V. lx.	

SUPPLEMENT.

Towns having
local Improvement
Acts.

Greenwich	4 G. 4, lxx.	Cap.
	6 and 7 W. 4, lxxiii.	
	11 G. IV. and W. 4, xlviii.	
	9 G. 4, xliii.	
Guildford	52 G. 3, li.	
*Halifax	4 G. 4, xc.	
*Harwich	59 G. 3, cxviii.	
*Hastings	1 G. 4, xii.	
	2 and 3 W. 4, xci.	
*Haverfordwest	5 and 6 W. 4, lxxiii.	
	W. 3 and 4 W. 4, ciii.	
Hereford	56 G. 3, xliii.	
Amended by	1 and 2 V. lxix.	
Herne (Kent)	3 and 4 W. 4, cv.	
Hertford	9 G. 4, xxxviii.	
*Huddersfield	1 G. 4, xliii.	
	W. { 7 and 8 G. 4, lxxxiv.	
	1 and 2 V. lxiv.	
	4 and 5 V. lx.	
Ipswich	55 G. 3, xxvi.	
	1 and 2 G. 4, civ.	
	7 W. 4, and 1 V. lxxxiii.	
*Keighley	5 G. 4, xxxii.	
	W. 56 G. 3, xliii.	
Kidderminster	53 G. 3, lxxxiii.	
*King's Lynn	43 G. 3, xxxvii.	
	W. 10 G. 4, v.	
*Kingston-upon-Hull	41 G. 3, lxv.	
	50 G. 3, xli.	
	W. 6 and 7 V. lxxxiii.	
	3 and 4 V. lxxvi.	
Sculcoates, part of Hull	41 G. 3, xxx.	
Kington (Hereford)	10 G. 4, cii.	
Knaresborough	4 G. 4, xxxv.	
Lancaster	5 G. 4, lxvi.	
Leamington Priors	6 G. 4, cxxxiii.	
	6 and 7 V. lix.	
Ledbury	5 and 6 W. 4, i.	
*Leeds	43 G. 3, xii.	
	49 G. 3, cxii.	
	55 G. 3, xlii.	
	55 G. 4, cxvix.	
	5 and 6 V. civ.	
	W. 7 W. 4, and 1 V. lxxxiii.	
*Leek	6 G. 4, lxxi.	
	W. 7 and 8 G. 4, xxxvii.	
Leominster	48 G. 3, cxlviii.	
	1 and 2 V. xiv.	
*Lewes	46 G. 3, xliii.	
	W. 3 and 4 W. 4, civ.	
The Cliffe (Sussex)	9 G. 4, xxv.	
*Lichfield	46 G. 3, xlii.	
	55 G. 3, xxvii.	
(Includes Water.)		
Lincoln	9 G. 4, xxvii.	
Little Horton	43 G. 3, xc.	
*Liverpool	1 G. 4, xlii.	
	6 G. 4, lxxv.	
	5 and 6 W. 4, liv.	
	7 W. 4, and 1 V. xcvi.	
	2 and 3 V. xcii.	
	7 G. 4, lvii.	
	11 G. 4, and 1 W. 4, xv.	
	7 W. 4, and 1 V. cvi.	
Repealing in part 10 former Acts 5 and 6 V. cvi.		
	50 G. 3, cxlv.	
	W. { 53 G. 3, cxvii.	
	3 G. 4, lxxxvii.	
	7 and 8 G. 4, xxxvi.	
*Toxteth Park	5 and 6 V. cv.	
	W. 7 and 8 G. 4, xxxvi.	
Louth	6 G. 4, cxxix.	
Lowestoft	50 G. 3, xlii.	
*Macclesfield	54 G. 3, xxxii.	
	6 G. 4, cxvii.	
	W. 11 G. 4, and 1 W. 4, cxxiv.	
*Maidstone	42 G. 3, xc.	
	59 G. 3, xvi.	
(Includes Water.)		
*Manchester	53 G. 3, lxxii.	Cap.
	59 G. 3, xxii.	
	1 and 2 G. 4, cxxvi.	
	5 G. 4, cxxxii.	
	9 G. 4, cxvii.	
	11 G. 4, and 1 W. 4, xlvii.	
	1 W. 4, xvi.	
	7 W. 4, and 1 V. cxii.	
	2 and 3 W. 4, xxxvi.	
	6 and 7 W. 4, xvi.	
	2 and 3 V. ii.	
	2 and 3 V. lxxxvii.	
	6 and 7 V. xvii.	
	7 and 8 V. xli.	
	49 G. 3, cxlii.	
	53 G. 3, xx.	
	56 G. 3, xii.	
	W. { 1 and 2 G. 4, xlvii.	
	4 G. 4, cxv.	
	4 and 5 V. viii.	
	5 G. 4, xc.	
*Hulme	5 G. 4, xc.	
*Salford	11 G. 4, and 1 W. 4, viii.	
	7 and 8 V. xxxiii.	
	Parts of Manchester	
Ardwick	6 G. 4, v.	
Chorlton-on-Medlock	3 G. 4, xiv.	
	2 and 3 W. 4, xc.	
Margate	53 G. 3, lxxxii.	
	6 G. 4, xx.	
Maryport (Cumberland)	3 and 4 W. 4, cxiii.	
Melksham	56 G. 3, xxvi.	
Middleborough	4 and 5 V. lxv.	
Milton-next-Sittingbourne	44 G. 3, xix.	
	1 and 2 V. ii.	
Minster (Kent)	41 G. 3, liv.	
*Monmouth	58 G. 3, lxxx.	
	W. 58 G. 3, lxxxv.	
Newbury	6 G. 4, lxxii.	
Newcastle-under-Lyme	59 G. 3, lxxi.	
*Newcastle-upon-Tyne	52 G. 3, lxxvi.	
	7 W. 4, and 1 V. lxxii.	
	4 and 5 V. lxxi.	
	W. { 4 and 5 W. 4, xviii.	
	3 and 4 V. lxxvii.	
Newport	7 G. 4, vi.	
New Sarum	55 G. 3, xxxii.	
Newton Abbott	6 and 7 W. 4, lxxxiii.	
Northampton	54 G. 3, cxviii.	
	6 and 7 V. lxxxviii.	
Norwich	46 G. 4, lxvii.	
	6 G. 4, lxxxviii.	
	2 and 3 V. lxii.	
*Nottingham	7 G. 4, cxi.	
	W. { 7 and 8 G. 4, lxxxii.	
	7 G. 4, cxvii.	
*Oldham	6 G. 4, clxxi.	
	W. { 1 and 2 V. xcvi.	
Oswestry	49 G. 3, cxl.	
Oundle	6 G. 4, xxxii.	
Oxford	52 G. 3, lxxii.	
	5 and 6 W. 4, lxix.	
*Pembroke	W. 9 G. 4, cxix.	
Plymouth	45 G. 3, xxxiv.	
	3 G. 4, li.	
	51 G. 3, cii.	
	5 G. 4, xxii.	
*Pontefract	50 G. 3, xl.	
*Portsmouth	49 G. 3, cxviii.	
	7 and 8 G. 4, xxxviii.	
*Portsea	7 G. 4, lxiv.	
	6 and 7 V. xxxv.	
	W. { 49 G. 3, cxviii.	
	7 and 8 G. 4, xxxviii.	
*Preston	55 G. 3, xxii.	
	W. { 2 and 3 W. 4, xxvii.	
	6 and 7 V. xxxii.	
*Ramsgate	W. 5 and 6 W. 4, vi.	
*Reading	7 G. 4, lvi.	
	W. { 7 G. 4, xxxiii.	
	5 and 6 W. 4, lxxxi.	

Boroughs having bye-laws for the prevention of nuisances.

		Cap.
Taunton	57 G. 3, lxv.	
	3 and 4 W. 4, xlvii.	
	49 G. 3, lxxxiv.	
	3 and 4 V. xliii.	
*Teignmouth	6 and 7 W. 4, lix.	
Tenby1 and 2 V. xiii.	
Tetbury	57 G. 3, ii.	
Tiverton	3 G. 4, lx.	
Topsham	6 and 7 V. lxxviii.	
Tormoham	5 and 6 W. 4, xlv.	
	5 and 6 W. 4, cviii.	
Truro	5 and 6 W. 4, c.	
*Tunbridge Wells	5 and 6 W. 4, lxxii.	
*Turton and Entwistle (Lancaster)	W. { 2 & 3 W. 4, xxiv.	
	1 and 2 V. xxx.	
Uxbridge	46 G. 3, lx.	
Walsall	5 G. 4, lxxviii.	
Walton	4 and 5 V. lxx.	
Wantage	9 G. 4, xc.	
Ware	51 G. 3, viii.	
*Wakefield	W. 7 W. 4, and 1 V. lv.	
	4 and 5 V. lxi.	
Warrington	53 G. 3, cxviii.	
Weymouth and Melcombe Regis.	50 G. 3, clxxxvii.	
Wedmore	5 G. 4, xxvi.	
Wells, (repealing three former Acts)	1 and 2 G. 4, xii.	
Weston-super-Mare	5 and 6 V. xx.	
Whitby	7 W. 4, and 1 V. x.	
*Whitehaven	46 G. 3, cxv.	
	56 G. 3, xlv.	
	58 G. 3, xv.	
Winchester	48 G. 3, ii.	
Windsor, New	47 G. 3, viii.	
Wisbeach	59 G. 3, cxi.	
Wolverhampton	54 G. 3, cvi.	
*Woolwich	47 G. 3, cxi.	
	W. 48 G. 3, cxlvi.	
*Worcester	4 G. 4, lxxx.	
	7 W. 4, and 1 V. lviii.	
Workington	3 and 4 V. xlv.	
Worthing	43 G. 3, lix.	
	49 G. 3, cxiv.	
	1 and 2 G. 4, lix.	
Yarmouth, Great	50 G. 3, xxiii.	
Yeovil	11 G. 4, and 1 W. 4, cxvi.	
York	49 G. 3, cxixvi.	
	50 G. 3, lxxxvi.	
	55 G. 3, lxxi.	
	6 G. 4, cxxvii.	
	3 and 4 W. 4, lxii.	
	3 and 4 V. xli.	

Yarmouth, Great.

110 SUPPLEMENT to SECOND REPORT of COMMISSIONERS of INQUIRY

SUPPLEMENT.

RETURNS of Paving, Lighting, and Cleansing BOARDS, made by the VESTRY CLERKS of the several Parishes in WESTMINSTER, MIDDLESEX, and SURREY, situated within the limits of the Metropolis, adopted in the Population Returns in 1831.

* * These returns do not include the City of London, but comprise the district within the limits of the Act for regulating Buildings in the Metropolis (14 Geo. III. c. 78), now repealed, with the addition of the parish of Kensington, being the district of the Metropolis adopted by the Census Commissioners in 1831, now containing a population of 1,585,418. The paving, lighting, and cleansing, as well as the sewerage of all the parishes within the City of London, is executed by Commissioners appointed by the Corporation.

Parish.	Number of Boards.	Local Acts.
Christ Church, Middlesex . . .	One Board acting under . . .	12 Geo. 3, c. xxxviii. 28 Geo. 3, c. lx.
Christ Church, Surrey . . .	Two	51 Geo. 3, c. xxxii. 31 Geo. 3, c. lxi. 6 Geo. 3, c. xxiv.
St. John's, Southwark . . .	One	11 Geo. 3, c. xvii. 28 Geo. 3, c. lxxviii.
St. Saviour, Southwark . . .	Two	44 Geo. 3, c. lxxxvi. 52 Geo. 3, c. xiv.
St. John, Hackney	Two— (For Lighting) (For Highways)	4 Geo. 3, c. xliii. 5 & 6 Wm. 4, c. 50.
St. Mary, Newington, Surrey . . .	Six— (For Highways)	5 & 6 Wm. 4, c. 50. 6 Geo. 3.
* * One of the Boards for paving extends into the parish of St. Saviour's.		11 Geo. 4, c. xlv. 57 Geo. 3, c. iii. 17 Geo. 3, c. xxiii. 3 & 4 Wm. 4, c. xc.
St. Anne, Limehouse	Three	29 Geo. 2, c. lxxxvii. 27 Geo. 3, c. lxxxvii. 54 Geo. 3, c. xciv. 22 Geo. 3, c. lxxxvii. 57 Geo. 3, c. lxxxvii.
St. Matthew, Bethnal Green . . .	One (Commercial Road)	9 Geo. 4, c. cxii. 6 Vict. c. xxxiv.
St. Luke, Middlesex	One	50 Geo. 3, c. cxlix. 2 Wm. 4, c. xiii.
St. Margaret's, Westminster . . .	Two	22 Geo. 3, c. xlv. 5 Wm. 4, c. xviii.
St. Giles-in-the-Fields, and St. George, Bloomsbury	Three (Tothill Fields) (Foundling Estate, Lincoln's Inn Fields.)	6 Geo. 4, c. cxxxiv. 59 Geo. 3, c. lxxiii. 34 Geo. 3, c. xevi.
St. Mary, Islington	One	5 Geo. 4, c. cxxv.
St. Mary, Whitechapel	Six (Parts in Middlesex) (Parts in the City of London)	46 Geo. 3, c. lxxxix. 23 Geo. 3, c. xci. 11 Geo. 3, c. xii. 11 Geo. 3, c. xv.
St. John, Wapping	One for Paving, and one for Lighting	52 Geo. 3, c. lxxv. 5 Wm. 4, c. xviii.
St. James, Westminster	One	35 Geo. 3, c. lxxiii.
St. Mary-le-bone	One	3 Geo. 4, c. lxxxiv 22 Geo. 2, c. l.
St. Leonard, Shoreditch	Four	42 Geo. 3, c. xlii. 8 Geo. 3, c. xxxiii. 37 Geo. 3.
	Highway Board . . .	17 Geo. 3. 5 & 6 Wm. 4, c. 50.
St. Clement Danes	One	23 Geo. 3, c. lxxxix.
St. John, Westminster	One	22 Geo. 3, c. xlv.
Paddington	One	5 Geo. 4, c. cxxvi.
St. Andrew, Holborn	Four, (London Liberty) (Upper Liberty) (Saffron Hill Liberty) (Ely Place)	2 & 3 Wm. 4, c. lxvi. 46 Geo. 3, c. lxxvi. 5 & 6 Wm. 4, c. xviii. 5 & 6 Vict. c. xlviii.
St. James, Clerkenwell	One	14 Geo. 3, c. xxiv. 17 Geo. 3, c. lxiii.
St. John, Clerkenwell	One	10 Geo. 4, c. ci. 11 Geo. 3.
St. George in the East, Middlesex	Three	46 Geo. 3, c. lxxxvii. 17 Geo. 3, c. xxii. 22 Geo. 3, c. lxxxvi.
St. Sepulchre, Middlesex	One	12 Geo. 3, c. lxxviii.
St. George, Hanover Square . . .	Two	7 Geo. 4, c. cxxi. 7 Geo. 4, c. lviii. 4 Wm. 4, c. lviii.
Kensington	Ten	5 & 6 Wm. 4, c. 50. 35 Geo. 3. 43 Geo. 3, c. x. 59 Geo. 3, c. cxx. 5 Geo. 4, c. cviii. 5 & 6 Vict. c. xix. 6 & 7 Vict. c. xxxiii. 3 & 4 Wm. 4, c. xc.

into the STATE of LARGE TOWNS and POPULOUS DISTRICTS. 111

Returns made by the Vestry Clerks of the several Parishes in Westminster, Middlesex, and Surrey, &c.—continued.

SUPPLEMENT.

Parish.	Boards.	Local Acts.
St. Mary Magdalen, Bermondsey * * Part of the Parish included in St. John's, Southwark.	Five, acting under	6 Geo. 3, c. xxiv. 43 Geo. 3, c. cxxxii. 55 Geo. 3, c. lxxxvi. 59 Geo. 3, c. xxi. 4 Geo. 4, c. lxxv. 4 Geo. 4, c. xci. 4 & 5 Wm. 4, c. xcv.
St. Mary-le-Strand	One	51 Geo. 3, c. lxiv.
St. Mary, Rotherhithe	Two	23 Geo. 3, c. xxxi. 57 Geo. 3, c. xxix.
St. Paul, Shadwell	Two—for Paving, Lighting, and Cleansing	50 Geo. 3, c. ccviii.
St. Martin-in-the Fields	One	23 Geo. 3, c. xc. 30 Geo. 3, c. lxxvi.
St. Luke, Chelsea	Three— (Hans Towns) (For Highways) (For Lighting)	43 Geo. 3, c. xi. 5 & 6 Wm. 4, c. 50. 3 & 4 Wm. 4, c. xc.
St. George the Martyr, Southwark	Four	10 Geo. 4, c. cxxviii. 5 & 6 Wm. 4, c. ix.
St. Pancras	Sixteen.	41 Geo. 3, c. cxxxi. 43 Geo. 3, c. cxxxix. 52 Geo. 3, c. lxxiv. 57 Geo. 3, c. xxv. 4 & 5 Vict. c. lxxv. 5 & 6 Vict. c. li.
	(Southampton Estate) . . .	39 & 40 Geo. 3, c. xlix. 3 Geo. 4, c. lxxxii.
	(Bedford Estate)	29 Geo. 3.
	(Camden Town)	3 Geo. 4, c. lxxxii.
	(Somers Town)	3 Geo. 4, c. lxxxii.
	(Calthorpe Estate)	54 Geo. 3, c. cxxxix.
	(Skinner's Estate)	48 Geo. 3, c. lxxxviii.
	(Foundling Estate)	34 Geo. 3, c. xcvi.
	(Brewer's Estate)	51 Geo. 3, c. clv.
	(Battle Bridge)	54 Geo. 3, c. clxxiii. 56 Geo. 3, c. lxxxii. 5 Geo. 4, c. lxx.
	(Harrison Estate)	50 Geo. 3, c. clxx.
	(Union Estate)	54 Geo. 3, c. clxxiii.
	(Lucas Estate)	50 Geo. 3, c. cxlvii. 8 Geo. 3.
	(Doughty Estate)	16 Geo. 3. 25 Geo. 3.
	(Kentish Town)	37 Geo. 3, c. lxxx.
	(Other portions of this Parish are under the Directors of the Poor and the Commissioners of Woods and Forests.)	55 Geo. 3, c. lviii. 57 Geo. 3, c. xiv. 7 & 8 Geo. 4, c. xlv. 4 & 5 Vict. c. lxxvii. 6 & 7 Vict. c. lx.
St. Ann, Soho	One	23 Geo. 3, c. xliii.
Stepney	Three	50 Geo. 3, c. lxxxiii. 1 & 2 Geo. 4, c. lxxii.
St. Botolph, Aldgate	One	43 Geo. 3, c. xxxviii.
Lambeth	Seven	52 Geo. 3, c. cxii. 52 Geo. 3, c. cxvii. 3 Geo. 4, c. cxii. 7 Geo. 4, c. xxxv. 7 & 8 Geo. 4, c. xxxix.
St. Paul, Covent Garden	One Highway Board . . .	10 Geo. 4, c. cxxix. 5 & 6 Wm. 4, c. 50. 10 Geo. 4, c. lxviii.

SUPPLEMENT.

EXTRACTS from the Returns to the Questions circulated, showing the Number of Houses supplied with Water by Pipes, and System of Supply in the several Towns.

Towns.	Total Number of Houses.	Number of Houses supplied by Pipes.	How Supplied.
Ashton-under-Lyne	4,703	4,000	Water Company.
Bath	5,775	..	The Corporation and 7 Water Companies.
Bilston	4,151	334	Dudley Water Company.
Birmingham	40,281	8,000	Water Company.
Bolton, Little	3,450	Generally every house	Ditto.
Bradford	7,246	..	An Act just obtained.
Brecon	1,500	170	Town Commissioners.
Bristol	9,887	A few	Private individuals.
Burslem	3,013	2,000	By private individuals.
Bury	5,260	2,980	Water Company.
Carlisle	3,675	None	By carts and carriers.
Chester	5,206	2,000	Water Company.
Clifton	1,987	404	Private individuals.
Coventry	7,200	400	Ditto.
Derby	6,823	570	Private individuals.
Dudley	5,828	700	Water Company.
Durham	2,373	None	By carts and carriers.
Frome	2,703	Very few	No public supply.
Gateshead	3,297	110	Newcastle Company.
Gloucester	2,702	308	Water Company.
Halifax	4,134	3,050	Ditto.
Hanley and Shelton	4,663	1,200	Private individual.
Huddersfield	4,873	3,770	Water Company.
Hull	8,136	..	Corporation Waterworks
Kidderminster	3,100	None	No public supply.
Leeds	33,902	..	Water Company.
Leicester	11,741	None	No public supply.
Liverpool	44,326	*45,758	Water Companies.
Logton	2,505	Nearly all	The Duke of Sutherland
Manchester and Salford	57,238	30,000	Water Company.
Merthyr Tydvil	6,504	None	No public supply.
Newcastle-under-Lyme	2,039	215	Private individual.
Newcastle-on-Tyne	15,000	1,350	Water Company.
Norwich	14,855	4,000	Private individuals.
Nottingham	11,617	3,500	Water Companies.
Pendleton, part of Salford	2,137	None	No public supply.
Portsmouth	10,452	4,600	Water Company.
Preston	9,984	5,026	Ditto.
Rochdale	8,266	2,800	Ditto.
Salisbury	2,606	None	No public supply.
Sheffield	25,000	19,000	Water Company.
Shields, North	4,000	233	Ditto.
Shields, South	3,911	179	Private individuals, and a Water-Company.
Shrewsbury	4,029	1,500	Ditto.
Stourbridge	1,496	..	By wells.
Sunderland	6,086	670	Water Company.
Swansea	3,796	470	Ditto.
Walsall	4,500	None	No public supply.
Wednesbury	2,300	None	Ditto.
West Bromwick	5,000	None	No public supply.
Wigan	4,907	No answer	
Wolverhampton	6,600	None	No public supply.
Woolwich	3,503	1,350	Water Company.
Wrexham	2,800	None	No public supply.
York	5,958	..	Water Company.

* This number is from the Returns made by the two Companies, and may be explained by two or three tenants occupying the same house.

METROPOLITAN SEWERS.—Abstract of Returns of Expenditure and Cost of Management.

	Works.	Management.	Gross.	Expense of Management per Cent.
Westminster Commission :—	£. s. d.	£. s. d.	£. s. d.	
8½ years, ending 1830	211,193 9 3	26,406 1 5	237,599 13 8	11
Annual average	24,846 6 0	3,106 12 0	27,952 18 0	
10 years, ending 1840	191,155 12 2	39,052 4 7	230,207 16 9	16½
Annual average	19,115 11 2	3,905 4 5	23,020 15 8	
Holborn and Finsbury Commission :—				
11 years, ending 1830	35,243 5 9	16,757 13 2	52,000 18 11	32
Annual average	3,203 18 8	1,523 8 5	4,727 7 2	
Holborn				
10 years, ending 1840	37,973 2 4	15,244 17 11	53,218 0 3	28½
Annual average	3,797 6 2	1,524 9 9	5,321 16 0	
11 years, ending 1830	46,916 5 7	21,359 1 9	68,275 7 4	31
Annual average	4,265 2 4	1,941 14 8	6,206 17 0	
Finsbury				
10 years, ending 1840	39,106 0 2	16,922 11 9	56,028 11 11	30
Annual average	3,910 12 0	1,692 5 2	5,602 17 2	
Tower Hamlets Commission :—				
10 years, ending 1830	28,423 15 0	25,443 12 9	53,867 7 9	48
Annual average	2,842 7 6	2,544 7 3	5,386 14 9	
10 years, ending 1840	45,402 5 3	21,603 10 4	67,005 15 7	32
Annual average	4,540 4 6	2,160 7 0	6,700 11 6	
Surrey Commission :—				
21 years, ending 1830	221,209 3 10	17,566 3 1	238,775 6 11	7
Annual average	10,533 15 5	836 9 8	*11,370 5 1	
8 years, ending 1840	95,035 10 7	14,106 12 1	*109,142 2 8	12½
Annual average	11,879 8 10	1,763 6 6	*13,642 15 4	
* Exclusive of interest upon annuities.				
Total annual average Expenditure for the last 10 years			54,288 15 8	
City of London :—*				
1825.—Sewers	6,548 14 0	661 11 6	7,500 19 10	8½
The gross amount is made up by				
balance overpaid, 1824	70 14 4			
In aid of building sewer, Christ's Hospital	100 0 0			
One year's interest on 2000 <i>l.</i>	100 0 0			
	270 14 4			
Cleansing, Paving, and Lighting	37,409 15 0	6,285 2 7	48,002 19 9	13
The gross amount is made up by				
expense of new sewers	1,238 7 6			
Purchase of ground to improve streets	230 0 0			
Interest and discharge of bonds	880 0 0			
Life annuities granted	923 10 0			
Repayment of 1000 <i>l.</i> and interest	1,036 4 8			
	4,308 2 2			
1841.—Sewers	14,050 2 6	1,562 19 9	15,633 2 3	10
Cleansing, Paving, and Lighting	34,221 0 0	7,194 14 11	54,973 15 5	13
The gross amount is made up by				
life annuities granted	2,547 0 0			
Transfer of sewers rate account	5,000 0 0			
Purchase of ground thrown into the public streets	5,611 0 6			
Applied to discharge monies raised on credit of Sunday toll	400 0 0			
	13,588 0 6			
1842.—Sewers	12,070 4 0	921 13 6	12,991 17 6	7
Cleansing, Paving, and Lighting	30,735 6 3	5,880 1 4	41,945 6 7	14
The gross amount is made up by				
life annuities granted	2,547 0 0			
Purchase of ground thrown in to public streets	2,582 19 0			
Applied to discharge monies raised on credit of Sunday toll	200 0 0			
	5,329 19 0			

* In the City the duties of paving, cleansing, and lighting are discharged by the Commissioners of Sewers.

SUPPLEMENT.

SEWERS.—Abstract of Returns, Rack Rental of Assessable Property, Number of Houses, Amount of Population, and Annual Average Rate in the £ for 10 Years.

Commissions.	Rack Rental of Assessable Property.	Estimated Number of Houses.	Estimated Amount of Population.	Average Annual Rate for 10 Years.	Remarks.
City of London . . .	£ 1,002,960	17,647	125,008	d. 4	. .
Westminster:—					
Eastern division . .	800,499	14,939	370,916	13 $\frac{3}{4}$	Land is rated one-third the rate on houses.
Western division . .	1,328,759	18,701		1 $\frac{1}{2}$	
Ranelagh division . .	585,476	15,423		3 $\frac{1}{2}$	
Counters Creek division.	134,349	3,925		4	
Tower Hamlets:—					
Spitalfields level . .	628,522	55,104	347,382	2	* The litigation carried on by the inhabitants prevented any rate being made on this level from 1829 to 1840. In 1840 a rate 1s. 6d. 1841 " 1s. 1843 " 1s.
Hackney Brook level . .	123,377			* 4 $\frac{1}{2}$	
Wapping level . . .	44,023			1 $\frac{1}{2}$	
Limehouse level . . .	15,210			3	
Tower-hill level . . .	23,944			$\frac{1}{2}$	
Hermitage-street level . .	18,964			$\frac{1}{2}$	
Upper Limehouse level . .	13,607			1	
Holborn and Finsbury:					
Holborn division . . .	886,500	17,780	124,460	2	. .
Finsbury " " " . . .	856,550	35,093	245,651	2	. .
Surrey and Kent Commissioners.	902,361	55,230	413,518	between 5d. & 6d. = 5 $\frac{1}{2}$ d.	. .
	7,365,101	233,842	1,626,935	2 $\frac{3}{4}$	average (nearly)

SEWERS, WESTMINSTER, &c.

EXTRACTS from Orders of Court, relating to the arrangement made for settling the Boundaries between the Westminster and the Holborn and Finsbury Commissioners.

16th June, 1815.

ORDERED, that the surveyor do prepare, within a week from this time, a copy of the plan showing the line of demarcation between the Commission of Sewers for the Holborn and Finsbury Division and this Commission, as settled at a meeting of the Deputations from the two Commissions on the 28th April last, with the small deviation therefrom, since agreed upon by the surveyors of the respective Commissions; the plan in other respects to remain the same as laid down at the said meeting.

ORDERED, that the clerk do transmit the copy of the plan above mentioned to the office of the Commissioners of Sewers for the Holborn and Finsbury Division, accompanied by a letter, requesting that it may be examined by the surveyor of that Commission, and if found to be correct that it may be laid before their Court at its next meeting, in order that it may receive the signature of the Chairman of that Commission; and further, that the clerk do request that in the mean time the surveyor to the Holborn and Finsbury Division may send to this office on his part a copy of the said plan, with the small deviation above mentioned, in time for its being examined by the surveyor to this Commission, and laid before the Court on the 21st July next, in order to its being signed by the Chairman of this Commission; the two plans to be afterwards interchanged, as proposed at the meeting of the deputations from the two Commissions before mentioned.

21st July, 1815.

The surveyor presented, in pursuance of the Order of Court on the 16th ultimo, a plan showing the line of demarcation between the Commission of the Holborn and Finsbury Division and this Commission, which he had received from the surveyor to that Commission, and stated, that having examined the same, he had found it to be correct. And the said plan having been approved by the Court, it was Ordered, that it should be signed by the Chairman as follows, viz. :—

"Approved, and signed by order of the Court of Sewers for the City and Liberty of Westminster, and part of the County of Middlesex, this 21st day of July, 1815.

"GEORGE SAUNDERS, Chairman."

And the said plan so signed was then sent to the office of the Holborn and Finsbury Commission.

And a counter plan having been received during the sitting of the Court from the Holborn and Finsbury Commission, signed by the Chairman of their Court, it was verified by the signature of the Chairman of this Court, and deposited with the records of this Commission.

SUPPLEMENT.

The two following Clauses are extracted from an Act, 56 George III. cap. 87, for granting certain powers to the Gas Light and Coke Company. They are repeated almost verbatim in the Acts relating to the following Gas Companies:—City of London, 57 Geo. III., c. 23: South London, 1 & 2 Geo. IV. c. 51; Aldgate, &c., 4 Geo. IV., c. 98; Southwark, 5 Geo. IV., c. 78; Independent, 10 Geo. IV., c. 118; British, 10 Geo. IV., c. 127.

CLAUSE XI.—"And be it further enacted, That the Court of Directors of the said Company shall, and they are hereby required, within one calendar month after every half-yearly general meeting of the said Company, or oftener, if required by the Right Honourable the Secretary of State for the Home Department for the time being, to transmit to the said Secretary of State a report in writing, signed by the governor, deputy governor, or one of the directors of the said Company, of the state of the said Company and of their works, and the means possessed by the said Company for securing the continuance of their operations, and such other matters relating to the works and proceedings of the said Company as the said Secretary of State shall from time to time require."

CLAUSE XII.—"And be it further enacted, That all stations and works of the said Company shall be open at all convenient times for the inspection and examination of such person or persons as the said Secretary of State for the Home Department for the time being shall appoint from time to time for that purpose; and the said Company shall, and they are hereby required to conform to such regulations and proceedings in the several parts of their works and operations, as well in respect of those already erected or executed as of such as shall hereafter be erected and executed, as the said Secretary of State shall consider necessary and proper, and shall direct to be adopted, for the better and more effectually lighting the several parts of the metropolis, and the suburbs, liberties, and precincts thereof, where the mains and pipes of the said Company shall lie, and for more effectually securing a proper and permanent supply of gas for lighting the public lamps therein, and for assisting and advancing the benefits to be derived from an active and efficient police, and for such other purposes as to the said Secretary of State shall seem meet and proper for the advantage of the public."

Clauses in Acts of Parliament relating to gas companies.

Empowering the Secretary of State to issue regulations for the management of the works.

EXTRACT from an Act, 4 George IV., cap. 119, enlarging and amending several Acts relating to the Gas Light and Coke Company.

Part of CLAUSE IV.—"And provided also, That all the other main and service pipes and apparatus now belonging to the Gas Light and Coke Company, without the line first herein before described, shall be given up to the said Imperial Gas Light and Coke Company, upon a like valuation and payment as aforesaid, whenever the Secretary of State for the Home Department for the time being, or such appointee as aforesaid, shall certify that the inhabitants of the district without the line first herein before described may, in his judgment, depend upon an equal supply of gas light from the said Imperial Gas Light and Coke Company to the supply which they have heretofore received from the said Gas Light and Coke Company; and until such certificate be granted, it shall be lawful for the said Gas Light and Coke Company to continue such supply of gas without the line aforesaid as if this Act had not been passed; and, upon such certificate as aforesaid being granted, the said Imperial Gas Light and Coke Company shall pay to the said Gas Light and Coke Company the value of such main and service pipes and apparatus as the said Gas Light and Coke Company shall be possessed of without the line herein before described, and which they are not at liberty to retain for four years from the passing of this Act as aforesaid."

PROVISIONS for the regulation of Lodging-houses, extracted from the Local Act for the Burgh of Calton, (part of the City of Glasgow, in the County of Lanark,) for the Regulation and Inspection of Lodging-houses—3 Victoria, cap. 28.

CLAUSE XX.—"And whereas the keepers of lodging-houses of an inferior description for the accommodation of mendicants, strangers, and other persons, for the night or other short periods, allow the same to be crowded by receiving more lodgers than such lodging-houses are adapted to contain with a due regard to health, and allow persons affected with fever and other diseases of a contagious nature to remain in them till infection has been communicated to other lodgers, and receive other lodgers into the apartments and beds from which diseased persons have been removed without any purifying or other disinfecting process; be it enacted, That no keeper of such lodging-house within the said district shall accommodate or receive such lodgers without such house having been inspected and approved of for that purpose by the superintendent of police, or an inspector to be appointed by the said Commissioners, which superintendent or inspector shall have power and is hereby authorized from time to time to fix and determine the number of lodgers who may be accommodated in each such lodging-house; and the names of the keepers of such lodging-houses shall be recorded by the said Commissioners in a register to be kept for the purpose, and may order that a ticket containing the number of lodgers for which the house is registered, and any rules or instructions of the said Commissioners regarding health, cleanliness, or ventilation, shall be hung up or placed in a conspicuous part of each room into which lodgers are received; and keepers of all such lodging-houses shall at all times give access thereto when required by the said superintendent or inspector, or other officer of police, for the purpose of inspection and inquiry, or for the purpose of any disinfecting process, which the magistrates, or any one of them, may order; and if any keeper of such lodging-house shall offend against any of these provisions, he or she shall be liable for each such offence in a penalty not exceeding two pounds, to be recovered in the summary manner provided by the said first-recited Act and this Act."

Lodging-houses.—Provisions in force at Calton, part of city of Glasgow.

CLAUSE XXI.—"And be it enacted, That all keepers of such lodging-houses shall, in the event of any person in their respective houses becoming ill of fever or any other disease, be bound to make intimation thereof to the superintendent of police or inspector, in order that the nature of the complaint of such person may, if he think fit, be ascertained, and that the complaint may be treated; and the said provost, bailies, and dean of guild, or any one of them, are hereby authorized to order such persons to be removed; and, if any lodger or other person in any such lodging-house shall have been confined to bed for forty-eight hours by illness without the keeper of such house making intimation as aforesaid, such keeper shall for such neglect be liable in a penalty not exceeding two pounds, to be recovered in the summary manner provided by the said first-recited Act and this Act."

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CLAUSE XXII.—“ And be it enacted, That on its being ascertained that any contagious or infectious disease has occurred in any such lodging-house, or in any house or apartment in any common tenement, or in any narrow, densely-inhabited, or ill-ventilated situation, or in any other place where there may be reasonable apprehension of such disease spreading or continuing, it shall be lawful to the said magistrates, or any one of them, not only to cause the remaining lodgers to be removed from such lodging-houses, but to cause and direct all proper measures to be taken, and all matters or things to be done, for disinfecting and cleaning of such houses or apartments, and for the washing and purifying of the persons and clothes of the inhabitants thereof, as shall appear to the said magistrates, or any one of them, as aforesaid, to be indispensably necessary for the preservation and security of the inhabitants in the neighbourhood and others against the danger of contagion or infection, unless due precaution shall appear to have previously been taken for such purposes by the inhabitants of such houses or apartments; and, in order to the measures hereby authorized being carried into effect, it shall be lawful to any officer of police, or other person appointed by such magistrates, to enter any such house or apartment, and to do or assist in doing all matters and things for the purposes aforesaid; and, in the event of access to such house or apartment for such purposes being refused, it shall be lawful to the said magistrates, or any one of them, to grant warrant for entering such house or apartment by force, if necessary.”

Regulations issued
under the above
Act.

Form and Regulations adopted under the above Act.

“BURGH OF CALTON AND MILE-END.

“Lodging-house, No. of Register,

, and consists of

“Is situated in No.

and is kept by

“The number of the keeper's family, including self, is

“The keeper of this house is allowed to receive lodgers therein at a time, in addition to own family; and, if a larger number is admitted, or any of the provisions of the Police Acts, or rules or instructions of the Commissioners of Police, are violated, the keeper incurs a penalty not exceeding 2*l.* for each offence.

“Court House, Calton, , 184 .

Superintendent of Police.

“In addition to the provisions contained in the Police Acts, the Commissioners of Police have, in terms of the powers thereby conferred on them, enacted, and appointed all keepers of lodging-houses to observe the following Rules and Instructions:—

“1. The floors are to be washed at least twice in each week, viz., on Wednesday and Saturday.

“2. The walls are to be whitewashed, and the houses thoroughly cleaned, on the first day of each of the months of June, August, November, and March, or on the following day, if any of these days falls on Sunday.

“3. The blankets used in all lodging-houses are to be thoroughly cleaned and scoured on the eighth day of each of the months of June, August, November, and March, or on the following day, if any of these days falls on Sunday; and, if any person or persons in such house shall be affected with fever or other infectious disease, the blankets and bed-clothes used by such person or persons shall be thoroughly cleaned and scoured immediately after the removal of such person or persons; and the bedding used by such person or persons affected with contagious disease, shall be fumigated immediately after the removal of such person or persons; and, where the bedding used is shavings or straw, the same shall be burned immediately after such removal.

“By order of the Board of Police of Calton.”

MEMORIAL from the SOUTHWARK and VAUXHALL WATER COMPANIES.

To the Commissioners for Inquiring into the State of large Towns and Populous Districts.

Memorial from the
Southwark and
Vauxhall Water
Companies.

1. The Directors of the Southwark and Vauxhall Water Companies beg leave respectfully to call the attention of the “Commissioners for Inquiring into the State of large Towns and populous Districts,” to the following statement of facts, relating to the supply of water to the Metropolis south of the Thames.

2. The Companies by which that portion of the Metropolis is supplied (the Southwark, the Vauxhall, and the Lambeth Water Companies) were, from the periods of their being respectively established, and prior to 1834, in possession of charters which more or less permitted or encouraged competition; but in that year having all had occasion to apply to the Legislature for further powers to raise capital, certain restrictions, which tended in some cases to preserve the several Companies districts free from the operations of the others, were removed, and from that period a competition, in which sometimes two, sometimes all three Companies, were engaged has ensued, which was in full activity during the years 1839, 1840 and 1841, and which has only completely ceased since 1842.

3. The results of that competition were as inconvenient to the public as they were disastrous to the Companies, and afforded the very strongest illustration of the truth of the doctrine laid down by the Committee of the House of Commons in 1819, that the principle of competition cannot with advantage be applied to the operations of Water Companies.

4. As regards the Companies, the result of the struggle was an immense expenditure of capital in utter waste—double or treble sets of mains and pipes, being laid down in districts, where one set would better have served the inhabitants. An enormous annual outlay, equally in utter waste—in the salaries of canvassers and commission to agents, who procured tenants—in the bills of plumbers who changed the service-pipes of the tenants from one set of mains to another—in the charges of taking up and re-laying roads and

SUPPLEMENT.

pavements on the like occasions*—in double and treble sets of turncocks and pipe-layers—and, as the climax of absurdity, a payment of all parochial and district rates in every parish on all the pipes of all the Companies in proportion to the capital expended on assumed profits or interest, which it is needless to say had no existence. These expenses being accompanied by a great reduction of rates, the result was such as might have been anticipated; one of the Companies, overwhelmed with difficulties and debt, ceased to pay dividends to its shareholders; the other two must shortly have arrived at the same condition; and the total return on more than half a million of capital expended has not since been, and is not now, more than £2½ per cent. per annum.

5. The inconvenience as regards the public was scarcely less striking. The funds which should have been devoted to improving the supply of water were wasted—the districts which, being densely peopled, were supposed likely to yield a return, were encumbered with double and treble sets of pipes, and disturbed by the daily breaking up of the streets and roads, consequent on the incessant change of tenants from one Company's mains to those of another—while other districts less thickly inhabited were left without the supply necessary for domestic convenience, or protection from fire. The impoverishment of the Companies, arising from the double source of unnecessary expenditure and uncalled for reduction of rates, tended to incapacitate them from adequately discharging their duties to the public, and left them neither means, leisure, nor inclination, for improving to the utmost the supply of water given to their tenants. Independently of the wasted capital in superfluous mains and pipes, the sum, as above stated, annually thrown away in plumbing, paving, and canvassing, was more than adequate to the depuration by deposit and filtration of the supply to all the tenants of the three Companies. Neither was the sole end, which it might perhaps be supposed competition would answer, permanently attained. The prospect of impending ruin compelled a suspension of hostilities, and the rates of the whole district were raised to a level, which though still very low as compared with the rest of London, are yet at least as high as would have obtained had there been no competition.

6. The cessation of the competition and of the consequent absorption of the means and attention of the Companies has already begun to produce its natural and salutary effect. The Southwark Company have already in full operation at Battersea reservoirs of deposit and filtration, which enable them to supply to all their tenants, 18,000 in number, perfectly pure and bright water, while in every part of their district the mains are charged at a high pressure for the extinction of fire. Arrangements are already made requiring only the authority of Parliament, for carrying the agreement between the Companies into effect for amalgamating the Southwark and Vauxhall Companies, and that portion of the Metropolis south of the Thames served by the united Companies, and comprising 34,000 to 35,000 tenants will then have a supply, not to be surpassed in quality or abundance.

7. Of the facts above stated, it is believed that the Commissioners are already to a considerable extent in possession; but the Directors are prepared to afford, in the fullest detail, whatever information respecting the affairs of the Companies the Commissioners may require.

8. The Directors beg leave further to state that they shall be ready most willingly to concur in any plans which the Legislature or Executive Government may prescribe or suggest for the better securing the public health, safety, or convenience,—feeling convinced that the interests of their shareholders will be best consulted by their furnishing to all classes, under all circumstances, supplies of water, to which no reasonable objection as regards either quality or price can be taken.

9. With the above statement of facts relating to the supply of water south of the Thames, and the expression of their readiness to concur in any plans of improvement, the Directors would have rested satisfied, in the full conviction that the diffusion of the information obtained by the Commissioners must ultimately ensure the prevalence of sound opinions on the important question of the supply of water to large towns, had they not observed that notice has been given of an application to Parliament, for a bill for the establishment of a Company, to supply the Metropolis south of the Thames, as well as some portions of the town on the north of the Thames, with water from the Wandle.

10. They cannot anticipate that a scheme so extravagant as that which has been announced will receive the sanction of Parliament; but as the striking evidence collected by the Commissioners can scarcely yet be supposed to be fully and generally known either to the members of the Legislature or to the public, and the results of carrying the scheme into effect would be disastrous in no common degree both to the existing Companies and the inhabitants of the districts they supply, the directors feel that they should be wanting in their duty alike to the public, and those, whose interests they are bound to protect, did they not respectfully urge upon the Commissioners the importance of some expression of opinion, as the result of the information of which they are already in possession, which might excite the attention and awaken the caution both of the Legislature and the public.

11. The outlay on the scheme proposed (the using the waters of the Wandle at their junction with the Thames, culverts being brought down from the source of the river on either side to prevent the influx of any and all drainage) would be, even supposing the plan otherwise practicable or expedient, preposterously great. The whole expense of depositing, filtering, and bringing the water from Wandsworth and distributing it

* The expenditure of the three Companies for these three items alone, namely, canvassing and commission, plumbers' bills and taking up and re-laying pavements, &c., amounted in the year 1841 to not less than £4,300.

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through the wide districts to be served, being to be incurred in addition to the great expenditure necessary for the formation of the culverts to intercept the drainage, and the compensation to millers for the diversion of the feeders, on which they must at least partially rely, and to other parties, whose grounds the culverts must traverse.

12. This outlay, as regards the districts south of the Thames alone, would certainly not fall short of, it would probably exceed, the £500,000 or £600,000 already expended by the three South Metropolitan Water Companies; and the result would be, only, to bring to these districts an inferior supply of water; the Thames water, when filtered, being, as well by reports of the most eminent chemists, as by common experience, ascertained to be softer and fitter for domestic use than the water of the Wandle.

13. But the entire waste of the capital expended would be but the commencement of the evil created by the execution of the proposed scheme. The competition recently terminated would be renewed with augmented fierceness, as added capital would have to find remuneration from the same amount of tenants. The existing Companies would, it might be thought, derive some advantage in the struggle from the superior fitness for domestic purposes of Thames water over the Wandle water; but experience has shown and especially in poor districts, such as the greater portion of the metropolis south of the Thames, that cheapness is the great element of successful warfare; and the old Companies, equally with the new Company, would be driven to compete with each other down to the point of general ruin. This struggle would last probably for some years,—attended, of course, by all its usual concomitants, treble and quadruple sets of mains and pipes in every street, treble and quadruple officers and servants, treble and quadruple parish rates, and thousands annually spent in plumbers' bills and paving.

14. The conflict would of course also have its usual termination. The Companies would either agree to divide the whole district among them, or they would agree to a scale of rates. But there would then be an additional half million on which interest must be paid, and an additional establishment to be supported,—burthens which an augmentation of from 50 to 100 per cent. of the present rates would scarcely suffice to support. That such would be the inevitable result of the establishment of the proposed Company, the Directors are quite sure that the Commissioners are prepared, from the information already in their possession, confidently to anticipate.

15. The Directors will conclude the observations, with which they have ventured to trouble the Commissioners by calling their attention to one consideration, which seems to them of no trifling importance with reference to the question to which the foregoing statement relates. It is highly probable, certain perhaps, that the result of the inquiries of the Commissioners will be a general conviction that more extended supplies of water than are at present distributed in great towns, are imperatively required for many purposes of public health, safety, and convenience. It is further probable, the Directors presume, that whatever might be the theoretical advantages of such a plan, neither the Legislature nor the public would be at once prepared to commit to the charge of the Executive Government the whole machinery of supply. It remains only that the existing establishments should continue to be the agents for the distribution of water, subject to such control as the Legislature may think fit to impose, intrusted with the various duties naturally connected with the supply of water, and remunerated to such extent and by such process as to Parliament may seem reasonable. The Directors are quite satisfied that in all the measures for an extended supply of water which might be thought desirable for the public welfare, the existing Companies would be found willing coadjutors, but they cannot perceive how the Water Companies are to be made efficient instruments in any such system unless the services of each Company be restricted to a given district. They do not see how an effectual responsibility for the discharge of the contemplated duties can be created when two, three, or more Companies are simultaneously serving in the same districts, nor how the remuneration for what may probably be in many cases a large preliminary outlay, can be secured to the Company by which it will have been incurred.

Signed by order of the Board of
Southwark Water Company.

JAMES ROSSITER, *Secretary.*

Signed by order of the Board of
Vauxhall Water Company.

WM. BUTTERWORTH, *Secretary.*

10 Jan. 1845.

REFERENCES.

North of the Thames;

GREEN WESTMINSTER & PART of MIDDLESEX.

RED THE REGENT'S PARK. The narrow line shows the *Sewers* passing through parts of the District under the Jurisdiction of the Westminster Commission.

