

Borough of



St. Helens.

COPY.

MR. JOHN SPEAR'S REPORT

TO THE

LOCAL GOVERNMENT BOARD

ON THE

CONTINUED PREVALENCE OF FEVER

IN THE

BOROUGH OF ST. HELENS.

St. Helens :

PRINTED BY W. FOREMAN, STATIONER, ST. HELENS.

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R E P O R T .

THE Urban Sanitary District of St. Helens, situated on the south-western limits of the Lancashire Coal Field, covers an area of 6,586 acres, and contains a population, according to the census of 1881, of 57,234. The population is mainly aggregated at the north-western extremity of this somewhat extensive area, within the comparatively narrow limits of the town proper; although in the outlying districts, within the borough, there are several hamlets, two or three of which have by recent extension become populous mining villages. The surface of the land, composed of the sands, gravels, and clays overlying the coal measures, with here and there artificial deposits, so extensive perhaps as to require mention here, of chemical waste from the alkali works, is flat or only slightly undulatory, and is traversed by the winding streams which unite towards the eastern part of the district to form the new far-famed Sankey Brook. One of these meanders almost through the centre of the town itself. Its flat banks, and gentle slopes beyond, are in places thickly built upon, and here and there for short distances it is culverted over. It is the natural drainage outlet of the town, and receives the sewage and drainage from the houses and manufactories. The industries of the district are represented by its coal mines, chemical works, principally alkali and copper extracting works, and glass works, and the pollution of the atmosphere by chemical fumes and coal smoke is, as is well known, considerable.

The urban sanitary district is not conterminous with the registration sub-district of St. Helens, and the collection of vital statistics is somewhat further complicated by the fact that the workhouse is without, whilst the county lunatic asylum is within, the borough. In the following table, for the facts contained in which I am mainly indebted to the medical officer of health, the corrections thus rendered necessary have been made.

VITAL STATISTICS, St. Helens Urban Sanitary District, 10 Years 1872-81.

Year.	Births		Deaths (all ages.)		Deaths under One Year.		Rate per 1000 from 7 principal Zymotic Diseases.	Deaths from 7 principal Zymotics.						
	Number.	Rate per 1000 of Population.	Number.	Rate per 1000.	Number.	Rate per 1000 Births.		1	2	3	4	5	6	7
1872	2030	43.7	952	20.9	283	140	4.8	76	21	8	4	19	35	59
1873	2123	44.6	1124	23.6	316	149	5.3	4	19	93	15	9	35	79
1874	2222	45.5	1518	31.1	442	199	9.5	—	29	238	14	41	32	110
1875	2294	45.9	1214	24.3	318	139	5.9	—	4	77	10	31	70	101
1876	2365	46.2	1166	22.8	325	137	5.7	—	101	21	14	7	67	94
1877	2427	46.3	1190	22.7	365	150	3.6	—	2	12	11	48	38	77
1878	2486	46.4	1290	24.1	411	165	4.5	—	4	22	20	15	47	135
1879	2365	45.0	1223	22.3	322	136	5.8	—	143	82	8	2	34	52
1880	2444	43.5	1241	22.1	415	169	4.9	—	4	32	2	37	47	151
1881	2506	43.7	1252	22.0	304	121	3.2	—	14	27	5	3	57	76
Average rates of 10 years	—	45.1	—	23.5	—	151	5.3	.15	.66	1.2	.19	.41	.87	1.8
Average of 20 large English towns in the years 1871-80.	—	36.1	—	24.0	—	173	4.3	.42	.51	.80	.11	.76	.50	1.2

Rate per 1000 of population per annum.

In the following table the death-rate from "fever" in St. Helens, and in England in recent years is compared.

	Rate per 1000 of Population.									
	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.	1880.	1881.
St. Helens76	.74	.66	1.40	1.11	.73	.88	.63	.84	.99
England and Wales.....	.61	.58	.58	.54	.44	.40	.42	.31	.34	.27

With only few exceptions the fever deaths have been recorded under one or other of the synonyms of enteric or typhoid fever, and

this form of fever has undoubtedly been the prevailing disease. The resulting mortality has been considerable, it will be seen, in each one of the ten years; indeed a closer analysis of the returns shows that only *six* of the 120 months—these six widely separated from each other—have bills of mortality free from the record of “fever.” Further, throughout these ten years, there has been in the behaviour of the disease a very close observance of that characteristic which it possesses of assuming a wider prevalence at certain seasonal periods, a characteristic that is apt to be obscured in accidental outbreaks, and one the continued exhibition of which might suggest that the infection, obeying from year to year the natural laws of its development and progress, is running a course little influenced by any but the fixed circumstances of the locality.*

It would seem natural to refer at this point to an impression, somewhat generally shared in, to the effect that some greater fatality, if not some greater prevalence, of fever, as of any other prevailing malady, may be ascribed in a manufacturing town like that of St. Helens to the more than ordinarily polluted atmosphere which the inhabitants of such a town are destined to breathe. Dr. Ballard, in his Report to the Local Government Board on “Effluvium Nuisances,” thus refers to the circumstances of St. Helens in this regard, “. . . . It is surrounded by chemical works, alkali, bleaching powder, glass works, copper works, &c., and is more densely populated and more closely built in than Rulcorn or Widnes, and is so situated as not to be exposed to the constant current of air that those places, built as they are in an extended line on either side of a wide tidal river, are exposed to, so that the vapours pass into the town in any direction of the wind and are more liable to hang about it.” Dr. McNicoll, the Medical officer of Health of St. Helens, has frequently expressed his opinion that the sulphuretted-hydrogen emitted from the heaps of alkali waste, and especially from the liquid which drains from these deposits when it meets the waste acid in the town’s brook, is prejudicial to the health of the localities along the course of the brook, and elsewhere where this nuisance specially arises; and in one report he adds,—“Most epidemics in the town assume a malignant or typhoid type, and this I attribute to the depressing influence of sulphuretted-

* In five of the 10 years, October was the month that had the highest fever-fatality, although in one of these (1879) the fatality of October was equalled by that of June; of the remaining five years September was the most fatal month in two, and November in two, although in one of these latter an equal number of deaths was registered in December. Thus in nine of the 10 years, one or other of the autumn months, September, October, or November, showed the maximum monthly fatality from fever. 1881 was the exceptional year, the highest fatality occurring then in August; and it is interesting to remember that this year was likewise exceptional in the early occurrence of very hot summer weather. (The mean temperature of the air in Liverpool during July, 1881, was $58^{\circ} 8$, with a rainfall of 2.08 inches, during August it was $55^{\circ} 8$ with a rainfall equal to 4.98 inches, and in September it was $54^{\circ} 2$. Speaking of the whole of England, the Registrar General says the mean temperature showed an excess of $3^{\circ} 8$ in July, and a deficiency of $1^{\circ} 8$ in August and $1^{\circ} 2$ in September.

“hydrogen.” I have no additional facts bearing upon this important subject, already so fully discussed in Dr. Ballard’s report above referred to, except that as regards the alleged “malignancy” of previous epidemics I did not gather that this feature had in any marked degree been observed in the late prevalence of fever. Certainly many attacks had been of so mild a character that medical aid was dispensed with ; but, while this is so, the sustained and even increased mortality (see the Tables) would seem to forbid the explanation of this apparent discrepancy of experience, that of late there has been a change for the better in the type of the prevailing disease. Further, as regards the arguments to be derived from the local distribution of the fever, although its prevalence in the town itself appears to have attracted the most local attention, and although the impression is one very generally entertained that the localities immediately adjacent to the brook, where certainly the greatest evolution of sulphuretted-hydrogen occurs, have suffered most severely, yet mortality statistics do not show this ; and unfortunately, no trustworthy record of non-fatal sickness is available. Statistics show that in the six wards of the borough, three of which are mainly urban and the others extra-urban in character, and certain of which are distinctly more exposed than others to the nuisance of sulphuretted-hydrogen, the fever-rate varied for the year 1881 only from 8·5 per 10,000 in the Windle Ward to 12·0 in the Hardshaw and East Sutton Wards ; or, taking the last 10 years for comparison, the mean fever-rates per 10,000 of the population of the several wards have been as follows, mentioning the wards in the order of their importance :—Windle, 7·6 ; Eccleston, 8·2 ; Hardshaw, 8·1 ; East Sutton, 7·0 ; Parr, 6·5 ; West Sutton, 9·2.

This fairly uniform distribution of the fever, while suggesting a cause or causes not bounded by the narrow limitations I have spoken of, does not however invalidate the indications just now obtained to the effect that local conditions have been mainly contributive to its prevalence ; and investigation of the circumstances of many recent attacks tends strongly to confirm such a conclusion. Investigation showed that numerous small, often widely separated, foci of infection had been formed, and that the few cases grouped around these centres, and not isolated attacks occurring generally without apparent origin, had made up in the main the fever prevalence. It reveals, further, the almost universal existence of the excremental nuisances, such as experience shows to be frequently associated with the prevalence of enteric fever ; and their existence, moreover, in a form well calculated to ensure injurious effects. Thus, from the manner of construction of a large proportion of the streets and rows of St. Helens, yard-space at the rear of the dwellings is often built around on every side, so that stagnation of the atmosphere there is inevitable. Yet it appeared in the course of my inspection, that in such contracted yard spaces, in the cul-de-sack back lanes, polluting that stagnant atmosphere, are often *crowded* nuisances of the kind I have referred to ; enormous accumulations of refuse in deep and rudely constructed cesspit-

middens,—pools of stagnant sewage on unpaved, or if paved, most uneven and dilapidated, yard surfaces. It was chiefly conditions such as these that appeared to be associated with outbursts of fever. It became apparent, in a word, that investigation of the cause of fever in St. Helens resolved itself into an inquiry into the general sanitary condition of the town.

The Sanitary Condition of St. Helens: House Accommodation.—St. Helens is a town inhabited almost exclusively by the working classes; but, keeping this fact in view, and however low may be the standard of comparison, the house accommodation must be regarded as generally unsatisfactory. The older property is built mostly on insufficient space, and without back lanes or passages; and many of the older houses are, from dampness, dilapidation, want of light and ventilation, and of proper conveniences, wholly unfit for habitation. For streets of more recent construction, a back passage three or four feet wide has been provided as a means of access for the scavengers and as a means of ventilation; and still more recently back streets, of a width sufficient to admit the scavengers' carts, have been required. Now as to the structural condition of this newer property, St. Helens has evidently suffered, even more than most towns, from the operations of the speculative builder. Some few years ago the district offered, it appears, a tempting field for such enterprise; and either the powers of the authority, or the administration of these powers, proved inadequate to cope with the emergency. As a result, a considerable proportion of the houses are of the "jerry" class, and a general state of dilapidation is a feature common to whole districts. Let me mention Fenton Street, Cyril Street, Victoria Street, Union Street, and Fox Street, as affording conspicuous examples.

I did not in the course of my inspection meet with any considerable amount of overcrowding; but a practice calculated to lead to this has arisen in some parts of subletting one or two rooms of small dwellings constructed and properly intended only for one occupation. Besides the undue limitation of the room space, the necessary sanitary conveniences prove often in such cases inadequate, and the practice requires regulation.

The System of Refuse Removal.—This is generally the midden system, about 9,000 of the 9,500 houses of St. Helens being scavenged under that plan. The privy-middens are of the most objectionable construction; of large size, built of rough and porous brickwork, and sunk deep beneath the level of the ground. They are usually wet, and very foul, and the contents, which as I had myself many opportunities of seeing are not completely removed, have often to be thrown out on to the unpaved surface of the house yard, and thence, in the older property, to be carried by wheelbarrow or baskets for some distance to the streets, where the matter is often again deposited before its removal. This operation is performed by scavengers in the employ of the Corporation, householders being expected to give notice

when their visits are required. It is carried out at night or early morning, and there is much scattering about of filth, which, by way of sole precaution, is liberally sprinkled over with chloride of lime before the scavengers leave. In the newer property some attempt has been made towards improvement of the middenstead; but beyond the better means of access already spoken of, little success has followed these efforts. The experience indeed of St. Helens in this regard is precisely that of Manchester and other towns where similar attempts were made, before the total abolition of the old cesspit-midden was decided upon. The so-called improvement has mainly consisted in the covering of the ashpit, and the provision of a drain intended to carry off its liquid contents. This latter appliance unquestionably tends to aggravate and add to the nuisance it is meant to remove, and is on every ground to be condemned.*

In one short row an attempt, I saw, had been made to introduce the pail system. The scavenging had been neglected, and the receptacles were overflowing; nevertheless there was a marked absence of that great foulness that attaches to the cess pit-midden.

Sewerage and Drainage.—The main sewer of St. Helens is, as I have said, the town's brook. It possesses only its natural bed, and in most places its natural clayey or sandy sides; and its generally sluggish stream, reduced sometimes in dry weather to little more than crude sewage, is left to pursue its tortuous course through the district, only hastened here and there by very slight and inconsiderable works, undertaken from time to time, of straightening or dredging. As before stated, it receives, besides ordinary town's sewage, the various drainage matters from the factories, and from special manufacturing products. These practically hide from sight and smell the more common kind of sewage pollution; and the combination of two of them,—the drainage, technically termed "tank liquor," from the alkali waste heaps that are deposited in various parts of the town, especially on or near the banks of the stream, and the waste acid from the alkali works, caused so great a nuisance from the resulting evolution of sulphuretted-hydrogen, that the Authority, considering it impracticable to intercept the sulphur drainage, have of late years prohibited the discharge of acid from the factories into the brook. The result certainly has been to diminish the extent of the atmospheric pollution by sulphuretted-hydrogen; although it may be regretted that the acid, seeing that even very weak acid solutions are apparently largely destructive to much disease-producing material, was, of the two products, the one to be excluded from admixture with the sewage. From the town the brook flows through a thinly inhabited and somewhat desolate country to Warrington, where its great pollution is speedily hidden in the waters of the Mersey.

The sewage is conveyed to the brook by numerous sewers dis-

* The experience in this matter, of which that of St. Helens is corroborative, is fully set forth in the office report on "Means of preventing Excrement Nuisances in Towns and Villages."

charging independently all along its course ; or in the eastern part of the district, where the houses are further removed from the banks of the stream, the sewage is occasionally left to make its own way over the intervening ground. The sewers are of various dimensions—some being small brick culverts, 2ft. 8in. by 1ft. 6in., draining considerable localities, others 12 to 15in. sanitary pipes, and others again mere house drains ; their openings are sometimes almost covered by the silting-up of the mud in the bed of the brook so that the flow of sewage in such cases is partially, or even wholly, impeded ; and this occurs more particularly towards the upper part of the brook where the sewage of some of the more thickly populated districts has to be disposed of. Except the newer ones, these sewers are, moreover, of most defective construction ; are said to leak freely throughout their whole length ; and some of them, although in this some improvement has of late been effected, are unventilated. In these circumstances, while of necessity the sewers retain deposit, no effective flushing is possible ; nor is it attempted, for it is known that no pressure of water within the sewers can be borne. For the same reason, the liquid sewage, when impeded at the outlet, finds ready means of escape into the subsoil. This latter is of a porous nature, and it is fortunate that ground water rarely exists near the surface to be contaminated, and to impede oxidation of impurities.

In St. Helen's it is the rule rather than the exception for new districts to be inhabited even for years before any provision whatever for sewerage is made, and the consequences of this delay are deplorable. Thatto-heath, a district with now some 500 houses, situated on the outskirts of the town itself, affords perhaps the worst example. All the gutters run with sewage ; the soil, which is here only an unusually thin covering of the sand-stone rock, is wet and sodden with sewage ; pools of sewage stand at the back doors of many of the dwellings ; the air is redolent of sewage effluvia. And in other districts, where sewers are now provided, the owners of property have not always been compelled to connect their house-drains. This is the case in the Sutton district (at Water Lane, Herbert St., and elsewhere) ; and in Prescott Road many of the villa residences still drain to a gutter in the rear.

The structural condition of the larger number of the sewers, and the fact that the putrescent ooze of privy-middens is carried into them, render it especially desirable that direct air-communication with the interior of houses should not exist ; and the Authority has of late years acted upon this principle by requiring the waste-pipes from kitchen slop-sinks, &c., both of old and new houses, to be severed, so that their contents may be discharged in the open air. In effecting this simple and most necessary change it has been found possible, however, to create a fresh nuisance. Yard after yard that one enters is found to be more or less fouled, sometimes literally flooded, with slop-water. The yards are mostly unpaved, or, what is even worse, paved loosely with rough and dilapidated bricks or tiles, and the severed drain-pipe does not discharge truly over the gully grating,

even if such a grating be provided close at hand ; hence the nuisance complained of.

As to other house drains, water-closets, with unventilated or only imperfectly ventilated soil-pipes, are not infrequently found in improper situations, close by bedrooms for instance, even in new property—Argyle Street affords an example ; cellars and basement-rooms beneath dwellings are occasionally provided with sinks having drains leading direct to the sewer, and it was a noticeable fact that many houses invaded by fever were so provided. Moreover, until within the last two or three years it was not an uncommon practice to carry drains, imbedded only in clay, close beneath the floors of basement-rooms ; and although this practice has been discontinued, nuisances arising from such previous errors still exist.

Reverting to the larger questions of refuse removal and of the district sewerage, the unsatisfactory position of the town in regard to these matters is not unrecognised by the Authority, and is, indeed, at the present time absorbing much of their attention. Three years ago a Commission was appointed to visit different towns, and to enquire into the systems of excrement and refuse removal that have found most favour ; and, in result, a very general preference seems to be entertained for a system of water carriage, a preference that, having regard to the structural circumstances of much of the town, must be decidedly upheld. Such a change, however, could not properly be effected with the district sewers in the condition I have described ; and the work of their improvement and extension, in itself one of pressing need, becomes therefore of peculiar importance. So long, however, as the crude sewage continues to be thrown into the brook, although the brook may be irretrievably polluted from independent sources, and may pass through a country in its course below St. Helens in which its pollution causes little harm, additions to the district sewage would appear to involve a contravention of the provisions of the Rivers Pollution Prevention Act, and a danger of exciting opposition on the part of riparian owners.*

The alternative course—the sufficient purification of the sewage before its discharge, not necessarily perhaps by such complete and costly means as elsewhere may be deemed necessary—should be faced boldly without further delay. It has hitherto been escaped ; but at too great a cost to the Authority—the cost of not daring to attract attention by the carrying out of those works of improvement in the district sewerage, and of those changes in the system of refuse removal, which have now at least become indispensable to the sanitary well-being of the town.

* A scheme for the sewerage of Thatto Heath was some little while ago abandoned on its becoming probable that application to borrow money for the purpose would be unsuccessful so long as the sewage was discharged unpurified into the brook : and now the difficulty is only overcome by the adoption of a scheme, as to the sufficiency of which I cannot speak, and for the carrying out of which the Authority does not propose to apply for borrowing powers.

Water Supply.—Except for one or two outlying hamlets, and a few isolated dwellings, where the water from shallow wells is still used, the district is wholly supplied from the public mains. The sources of supply, from deep wells in the sand-stone rock, and the method of distribution, were examined, but no information was obtained tending to implicate the public water supply in the prevalence of fever. Certain of these public wells require to be more perfectly protected from the entrance of surface water, and in one instance the possible introduction of water from a pit working has to be guarded against. These matters may well be left to the Water Works Committee of the Corporation, whose administration in the past has been such as to inspire every confidence.

Sanitary Administration.—St. Helens was constituted a borough in 1868, the district, which was then of more limited area, having formerly been administered by a board of commissioners. The rateable value is now estimated at £24,200; and the outstanding debt, contracted on account of gas and waterworks, which pay their own way, and from the flourishing condition of which the inhabitants of course profit, amounts to 314,000. On account of sewerage works only comparatively small sums, mainly recovered as for works of private improvement, have been expended, and only small passing debts on this account have been incurred. The borough rate is equal to 1s. 6d. in the £; the highway rate to 8d. The medical officer of health, Dr. McNicoll, was appointed in 1873; he engages in private practice, and receives a salary of 200. a year, half of which is repaid from the Parliamentary grant. There are two inspectors of nuisances who devote their whole time to public duties; they each receive a salary of 100., no part of which is repaid out of the Parliamentary grant. The borough surveyor, in addition to discharging the ordinary duties of a surveyor, including the supervision of the scavenging department, acts as chief inspector of nuisances, directing mainly the work of the other inspectors. The Authority possesses besides the services of a water and gas engineer.

The district is largely administered under the powers of a local Improvement Act, obtained in 1869. Apart from the necessary water works clauses, the sanitary provisions go little further than those contained in the general law.* The bye-laws, made in 1870, are in several important particulars far inferior to those of the model code issued by the Local Government Board. They greatly lack in direct-

* The special provisions contained in the following clauses of the local Act, certain of which have been almost entirely overlooked, are however worthy of being recommended to the Authority for careful administration:—Section 103, as to the paving, &c of yards and passages; section 130, prescribing the minimum size and height of certain rooms; section 133, as to the provision of rain-water spouting for buildings; section 148, prescribing the minimum amount of air space required for lodgers. Section 182, as extending apparently the powers given to Urban Authorities under section 39 of the Public Health Act, would be of value were a system of water-carriage of excrement adopted for lower class property.

ness of instruction ; being specially defective in the matter of building regulations, the construction of house drainage, of house foundations, the materials used, &c. Their insufficiency, combined with the want of adequate inspection, is no doubt mainly accountable for the prevalence of "jerry" building, and for the almost universal existence of slop nuisances such as I have earlier in the report remarked upon.

The admistration of the Authority in respect of the supply of water, the sewerage of the town, the removal of refuse, has already been sufficiently dealt with. It may be said again that the unsatisfactory character of the latter work, a work indeed most expensive as well as unsatisfactory, is a feature inherent to the system of middensteads, and that herein little improvement can be looked for until the system is wholly changed.

In the paving and channelling of streets and lanes, while much is still required in certain localities, considerable advance has been made in recent years. The action of the Authority in prohibiting the discharge of acid into the town's brook has been explained. They have not yet seen fit to debar the manufacturers from depositing alkali waste on vacant land within the borough, and this practice continues, with the sole precaution that the refuse is battened down in order to check the immediate evolution of sulphuretted-hydrogen from the matter itself.

In dealing with the spread of infectious diseases the usefulness of the Authority's action has hitherto been much curtailed by the absence of provision for the isolation of infectious cases. This want is now, however, supplied, a house on the outskirts of the town having been secured and converted to the purpose in question. The accommodation it affords will soon, no doubt, need to be extended ; but this, from the circumstances of the building and site, will be a comparatively easy matter. The provision, energetically and judiciously made use of, will doubtless prove of great value. It is obviously desirable that every effort should be made to obtain early information of cases of infectious disease as they arise. At present information of fatal cases only is received, and this, of course, is insufficient, and means always the loss of much valuable time. The Medical Officer of Health has been accustomed to visit houses from which fatal attacks have been reported, and the Inspectors of Nuisances have disinfected dwellings and clothing under his directions. The Authority possesses a disinfecting chamber, an ambulance, and a mortuary.

The time of the Inspectors of Nuisances is occupied to a very large extent, and to the exclusion of duties that more properly devolve upon them, in directing scavenging operations ; for although occupiers of houses are supposed to give notice for the emptying of their middensteads, as a matter of fact the required information comes more often, in the proportion of three times to one, from the inspectors ; and it is to be feared that this duty has come to be looked upon as the main object of their surveys. They have the further special task of watching for the improper discharge of acid from the factories into the

brook, and of seeing that alkali waste is deposited in the manner prescribed. This in a measure explains how it is that the important work, which should never be allowed to flag, of discovering and procuring the removal of nuisances—nuisances such as may be removed by permanent means, has fallen so greatly into arrear.

Some reorganisation of the routine work of this department is evidently called for. At present the two inspectors act partly under the control of the medical officer of health, but chiefly, and in regard to every-day work almost exclusively, under the directions of the surveyor, who is thus, as already said, considered a chief sanitary inspector. Now as surveyor, and with the scavenging department on his hands, this officer has, it is apparent, in this rapidly increasing town, sufficient call for all his time and energy; and it is better on other grounds that the health officer should have, under the directions of the sanitary authority, sole control and responsibility in his own department. Dr. McNicoll, in this position, would need no aid from me in organising the work of that department, but it may strengthen his hands if I express my conviction that success will depend chiefly upon the completeness with which attacks upon the injurious conditions existing in the town can be reduced to a system. Hitherto action in this regard has been too fitful and isolated, and too insignificant in its objects and results. Not only might individual nuisances be removed, but small localities should be taken and dealt with in detail. Reports of the inspection of such small localities, giving precedence for this purpose to those that have on any ground attracted attention for their unhealthfulness, should be required periodically of the inspectors. The reports would show in detail, first, the circumstances of the locality as a whole in respect of ventilation and the free circulation of air, with the possibilities of improvement that present themselves, by the removal of obstructions and encumbrances and the opening of cul-de-sac lanes; then the ventilation of individual dwellings, their condition as regards repair, cleanliness, &c.; and lastly, the presence of nuisances, whether from defective drainage, defective privy accommodation, want of proper paving of surfaces, &c., &c. And these reports, after due authentication and revision by the medical officer of health, should be laid before the health committee, with a view to the taking of such measures as will lead, as far as possible, to the *permanent* removal of the injurious conditions observed. The official relationship between the medical officer of health and inspectors should be of the closest; their joint work should be the subject of frequent revision, and, it would seem scarcely necessary to add but for the fact that such provision is not now made,—an office should be set apart in the municipal buildings for the medical officer of health, in which that gentleman would daily meet for consultation the subordinate officers of the department.

These administrative changes effected, and the difficulties connected with the sewerage of the district removed, such I believe are the

wishes of the Authority, and such the general tendency of their views, that a course of continued sanitary improvement for the borough may be confidently anticipated.

(Signed) JOHN SPEAR.

RECOMMENDATIONS.

(1.) The Authority should at once undertake the improvement of the sewerage of the borough. District sewers should, were necessary, be reconstructed, and in all cases should be rendered fit to remove the excreta. The sewerage of new districts should at once be completed, and in future should be provided for before such districts come to be occupied.

(2.) The rapid carrying-off of the sewerage from the precincts of the town should be considered essential, and such provision as may be found to be necessary should be made for its innocuous discharge.

(3.) The sewerage satisfactorily improved, a system of water carriage of excrement will be found the one best suited to the requirements of St. Helens. Water-closets in cottage property should be external to the dwelling, and in courts and common yards, and for low-class property generally, the *trough* form of water-closet is to be preferred. Small moveable receptacles, which might be placed each morning in the streets ready for the early visit of the scavengers, should be used for dry ashes.

Failing the general introduction of a water-carriage system of excrement removal, the privy-middens now existing might with great advantage be replaced by the closets of one or other of the so-called "dry" systems; and this especially in those parts of the town where back yards are conveniently accessible to the scavengers.

(4.) The removal of the large and defectively constructed cess pit-middens from confined situations should be considered imperative. The opening-out of enclosed yard spaces, and the clearing away of encumbrances, so as to improve the ventilation of back streets and courts, might frequently be done with great advantage, and the paving of yards with suitable material, and with proper fall towards the surface drain, should be required.

(5) House drains should in all cases be connected with the public sewers provided. The structural condition of existing house drainage should be the subject of revision in the sense indicated in the report.

(6.) The byelaws of the Authority should undergo revision, and the code drafted by the Board should be accepted as the model in this regard. The due enforcement of regulations thus made should receive the attentive consideration of the Authority.

(7.) The reorganisation of the sanitary department should be effected on the lines indicated in the report. Especially it is necessary that frequent systematic inspection of the district should be made for the purpose of ascertaining what conditions injurious to health exist. Reports upon the results of such inspections should be made at stated intervals to the Authority; and, this information before them, action should be taken under the provisions of the Public Health Act, 1875, or the Local Act which may be applicable. Nuisances which, although at the time abated, are likely to recur, should be dealt with in the manner prescribed by section 95 of the Public Health Act; others, arising from the act or default of the occupier of the premises, should be dealt with immediately by the inspector of nuisances, by the service of a notice upon the occupier.

(8) Effort should be made to obtain early information of the appearance of infectious disease, and, now that a hospital is provided, every case that comes under notice should be the subject of special enquiry on the part of the medical officer of health, in order to determine upon the necessity of the patient's removal. Where disinfectants are supplied to the public by the Authority, the method and object of their use should be fully explained, and their use, if necessary, personally superintended, by a competent officer. Sections 120, 121, 122, and 126, to 129 inclusive, of the Public Health Act, having reference to the spread of infection, should be systematically enforced, under the directions of the medical officer of health.
