

Report on a prevalence of typhus at Dudley, and on the sanitary condition of that borough / by Thorne Thorne.

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Report on a Prevalence of Typhus at Dudley, and on the Sanitary Condition of the Borough by Dr. Thorne Thorne.

(Visited June 1871.)

THE following Report is the result of an inquiry made, in accordance with my Lords' instructions, into the sanitary condition of the registration sub-district of Dudley; the immediate cause of the inquiry being the large number of deaths registered during the two past quarters as resulting from "fever."

The registration sub-district of Dudley, which extends over an area of 3,536 acres, is coterminous with the parish, and also with the municipal borough of Dudley, which latter term will, when used in this Report, apply to the locality inspected. The borough of Dudley had, in 1861, a population of 44,975, but according to the uncorrected returns of the census for the present year, the number is only 43,791. The site of the borough is elevated, its mean height above the level of the sea being between 600 feet and 700 feet; it is very undulating, but slopes gradually towards the south. Geologically, the district lies not far from the centre of the South Staffordshire coal field; on its northern boundary the Wenlock limestone of the silurian system has been forced up through the coal measures and forms the castle hill; to the east and less to the south, hills and dykes of basaltic formation are found. The soil overlying the deeper strata, and in most parts of the borough coming actually to the surface, consists either of a white clay, sometimes used for brick-making, or of a clayey soil, both being strong and very retentive of moisture. The principal avocations in which the inhabitants are employed, and which, to a great extent, depend on the geological character of the district, consist of coal, lime, and ironstone mining, various manufactures of iron, especially nail and chain making, and also of glass-blowing and cutting. Forming a portion of the so-called Black Country, the district is in most parts covered by heavy clouds of dense smoke; dwelling-houses and other buildings may be seen cracked broken and even in ruins, owing to the sinking of the surface from mining operations beneath, and to the same cause are due numerous stagnant ponds which lie dotted here and there, and are locally known as "swags." Many of these are now polluted with sewage, as are also the canals which intersect the district, and even the small rivulets and streams which flow in or near the borough, and which once formed a water-supply of boasted purity, have suffered the same lot. Even the Mousesweet Brook, the name of which is but a perversion of "mouth sweet," so proverbially sweet was its water, is now but an open sewer, the contents of which are far too foul to the sense of smell ever to be tested by that of taste.

The district reported on has, since 1853, been under the control of a Local Board of Health, and, since the incorporation of the borough in 1865, that Board has been composed of the Mayor and Town Council for the time being.

Recent Mortality Statistics.—An examination of the death registers for the ten years 1860-69 shows the following results:—

Table I.—ANALYSIS of the Death Registers for the Registration Sub-District of Dudley for the Decennial Period 1860-69.*

Date.	Estimated Population.	Total Deaths from all Causes at all Ages.	Number of Total Deaths per 1,000 of the Population.	Number of Deaths Registered as due to the undermentioned Causes.							
				"Fever."	Scarlet Fever.	Diphtheria.	Small Pox.	Diarrhoea, Choleraic Diarrhoea, Infantile Cholera.	Cholera.	Convulsions.	Phthisis.
1860	45,093	1,001	22.3	32	52	2	...	61	...	118	52
1861	44,975	991	22.2	45	31	4	...	84	...	80	75
1862	44,846	1,185	26.5	57	70	14	...	73	...	102	53
1863	44,736	1,044	23.4	62	42	7	...	60	...	102	61
1864	44,518	1,323	29.7	80	87	3	107	77	...	125	55
1865	44,599	1,059	23.9	75	50	3	14	106	...	88	48
1866	44,381	1,061	24.0	65	28	3	...	52	...	107	56
1867	44,363	893	20.2	25	9	47	...	86	42
1868	44,145	991	22.6	41	23	3	...	100	...	68	69
1869	44,027	1,010	22.9	43	112	6	...	47	1	80	50
Totals during 10 years 1860-69 ...				521	494	45	189	707	3	956	561
				(Average 23.5)							

* This Table does not include deaths occurring among paupers admitted into the Union House from the Parish of Dudley, because the House is in another registration sub-district, and no special notice has been taken of deaths due to mining accidents because their number is too small to have any appreciable effect on the total death-rate. In the three years ending 1869, 33 such deaths took place out of a total of 2,594.

From this it will be seen that the average death-rate for the borough during the ten years has been 23·8 per 1,000 inhabitants, it having varied from about 20 to about 30; but I am of opinion that all these death-rates are artificially low, and that the truth respecting the intensity of death causes cannot be learned from them. For up to about ten years ago the population of Dudley rapidly increased by immigration of working people in the prime of life, as well as in the natural way by excess of births over deaths; between 1831 and 1841 the population rose from 23,043 to 31,232, in 1851 it had risen to 37,954, and in 1861 it was 44,975. This large immigration into Dudley was due to the facilities for finding employment, especially in the mines, and a population thus recruited by healthy persons in the prime of life, must of course have a lower rate of death than one which has its natural proportion of aged persons.

A more important result of the above analysis is that the chief infectious diseases with which Sanitary Authorities are concerned, namely, small-pox, scarlatina, diphtheria, and "fever," taken together, are shown to have caused 1,199 out of the total of 10,568 deaths, being more than 11 per cent. of the mortality from all causes. Further, the diarrhoeal group of diseases, the prevalence of which is also largely related to public sanitary measures, accounts for 6 $\frac{3}{4}$ per cent. of the deaths.

Again, of the deaths registered as due to "convulsions," and which account for no less than 9 per cent. of the whole, many are doubtless due to diseases brought about by living in an impure air. I have also included in the analysis the deaths which have been caused by phthisis, because this disease is now clearly shown to be within the scope of such sanitary measures as lead to the drying of the soil upon which a population lives.

Infant Mortality.—The large death-rate which has taken place amongst infants in the borough will perhaps be most clearly set forth by the following Table (No. II), which compares the death-rate amongst children under 1 year of age in England and Wales with that in Dudley. It shows that the average for the three years ending 1869 was 5·5 per 1,000 of the total population in England and Wales, and 7·0 in Dudley.

Table II.—COMPARISON of the total Death-rate, and that under 1 year of age, in England and Wales, and in Dudley.

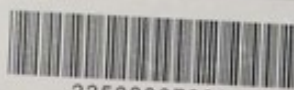
Date.	Locality.	Population.	Deaths from all Causes, at all Ages.	Deaths from all Causes, under 1 Year of Age.	Deaths per 1,000 living, at all Ages, from—	
					All Causes at all Ages.	All Causes under 1 Year of Age.
1867 ..	England and Wales ..	21,429,508	471,073	117,261	22·0	5·5
	Dudley ..	44,263	893	326	20·2	7·3
1868 ..	England and Wales ..	21,649,377	480,622	122,075	22·2	5·6
	Dudley ..	44,145	991	304	22·6	6·9
1869 ..	England and Wales ..	21,869,607	495,086	120,274	22·6	5·5
	Dudley ..	44,027	1,010	298	22·9	6·8

The next Table, consisting of an analysis of the deaths which occurred in Dudley in 1870 brings this portion of the sanitary history of the borough to a more recent date.

Table III.—ANALYSIS of the Mortality Tables for 1870 in the Registration Sub-District of Dudley. Estimated Population, 43,909.

Date.	Total Deaths from all Causes.	Average Total Deaths in corresponding Quarter, for 3 previous Years.	Total Deaths under 1 Year of Age.	Deaths from "Fever."	Deaths from Scarlet Fever.	Deaths from Diphtheria.	Deaths from Diarrhoea.
1870.							
Quarter ending March 31st ..	374	265	128	8	22	2	7
Quarter ending June 30th ..	250	236	100	10	15	2	6
Quarter ending September 30th ..	253	231	95	14	13	..	54
Quarter ending December 31st ..	256	232	69	32	15	1	8
Totals ..	1,133	964	392	64	65	5	75

It shows that, with a still decreasing population the mortality had considerably increased, a total of 1,133 deaths, or 25·7 per 1,000 inhabitants having occurred, as opposed to 965 or 22·6 per 1,000 inhabitants, the average for the three preceding years. Of the 1,133 deaths, 392, actually more than one-third, occurred in children under 1 year of age, the death-rate under 1 year rising to nearly 9·0 per 1,000 inhabitants, as opposed to



7.0, the average in the three previous years. The class of infectious diseases before referred to, and which in 1870 is made up of scarlet fever, diphtheria, and "fever," exhibits a slightly higher death-rate, the real cause of the increase being due to the large mortality caused by "fever." The actual death-rate due to this cause was 1.5 per 1,000 of the population, and it is in the subjoined Table compared with that which occurred during the same period in some of the large towns of England and Wales.

Table IV.—COMPARISON between the Death-rate from "fever" in the Registration Sub-district of Dudley, and in other named Localities, during the Year 1870.

Locality.	Death-rate per 1,000 of the Population from "Fever."
TWENTY LARGE CITIES AND TOWNS IN ENGLAND AND WALES..	0.8
Birmingham	0.6
London	0.6
Bristol.. .. .	0.7
Portsmouth	0.8
Norwich	0.9
DUDLEY	1.5
Liverpool	1.7

It thus nearly doubles that for the large towns in England and Wales, it much more than doubles that for the metropolis, and it even contrives to rival Liverpool.

Finally, in the quarter ending March 31, 1871, 297 deaths were registered, of which 97 occurred in children under 1 year of age; 5 were caused by diarrhoea, 10 by scarlet fever, and 31 by various forms of continued fever, in addition to 2 Dudley cases which occurred in the Union-House. Of these latter 33, 9 were registered as due to typhus, 8 to enteric or typhoid fever, and 16 to "fever."

Having given the death statistics, I now pass on to a description of the locality inspected, with a view of showing the relation existing between its sanitary condition and the amount of disease which has so long been prevalent within it. And for this purpose it will be expedient to state at once that the borough of Dudley includes within its area the town of Dudley, the suburb of Kates Hill, and the outlying districts of Netherton and Woodside, all of which are to some extent independent of each other, and will be considered separately.

I. *Description of the Sanitary Condition of the Town of Dudley.*—Dudley town has no special boundaries, it having overstepped the limits formerly known as the "town area;" but its population is estimated at the present date at somewhere under 19,000. The main streets are well macadamized and channelled, the footways are paved either with slabs of stone or with pieces of the basalt from Rowley Hills; but between these streets and others which are unpaved, unchannelled, and in every sense uncared for, almost every intermediate stage may be found.

Sewerage and Drainage.—Standing on an elevated site, which slopes gradually in nearly all directions, and the inclinations of the ground being favourable for natural drainage, the town of Dudley presents certain advantages for sewerage. Nearly due north, there is a natural fall on each side of the Castle Hill towards the valley of the Tame; to the south there is a fall towards the valley of the Stour; and to the east and west the slope of the land is favourable for sewer outfalls. But notwithstanding these natural advantages, large portions of Dudley are still unsewered; some parts, and these populous ones, have no regulated surface drainage whatever, slops and liquid filth may in many parts be seen trickling down the streets, and burrowing out for themselves a channel; imperfect and stopped-up drains may be found passing immediately beneath the flooring of the cottages, emitting most offensive effluvia; sewer ditches run through thickly inhabited districts, and with but few exceptions, the portions sewered are only imperfectly so, many of the sewers being of improper construction, and defective in condition. Even in some of the best streets the sewers are so ill-adapted for their purpose that they fail to drain the cellars, from which a foul and offensive fluid has in some instances periodically to be removed. There is no plan of the sewers, and not much is known concerning them. After leaving the town, the greater portion of the sewage is conducted into catch-pits, in which some of the more solid parts subside; these catch-pits are rude huge holes dug out in the ground, and situated, in at least one instance, within about 40 yards of a group of houses, to the inhabitants of which, the stench produced by them, especially when they are cleaned out, must be all but intolerable. The sewage ultimately finds its

way into canals and watercourses; in no instance is the final mode of dealing with it a proper one.

Closet Accommodation. Removal of Excrement and Refuse.—Amongst the numerous sanitary evils in Dudley, none perhaps are more prominent than the present system, and insufficiency, of closet accommodation, and the absence of proper method in disposing of the excrement and refuse of the population. To a Nuisance Inspector, assisted by ten nightsoil-men and five carters, has been assigned the task of keeping the various premises in Dudley town, and in some of its outlying districts, clean; but a walk through the locality is sufficient to show that the present staff is apparently unable to deal with it. With the exception of a few waterclosets—probably not exceeding fifty or sixty in number—the whole town is dependent on the privy-midden system, associated with great irregularity of excrement and refuse removal. The accommodation is also quite insufficient for the requirements of the population; four, five, six, and even fourteen houses being provided with only one solitary closet. The structures themselves are, in numberless instances, dilapidated; the roofs and doors are broken down, or have entirely disappeared; of the seats, but a vestige sometimes remains; huge middens, capable of containing enormous accumulations, are filled to overflowing, and from these, as well as from underground cesspits, soakage into the surrounding soil takes place freely. Cartloads of refuse too, lie outside the middens, many of which were seen to be incapable of holding more. Neglected and filthy privies, in addition to other nuisances, lie in such close contiguity to houses, that when the windows are thrown open, the only process in any way allied to ventilation which can take place, is that afforded by the exchange of one foul air for another. In some privies the night-soil was found to be on a level with, and even above, the seat; the floors were covered with filth, and their approaches blocked up with ashes and refuse. Accumulations of filth and refuse abounded; they were piled up in heaps at times within only a few feet of cottage doors, and often immediately under their windows, all combining to make many portions of this town about as filthy as any spot which, during a somewhat lengthened experience, I have had occasion to inspect.

Pigsties.—By way of completing the series of possible town nuisances, pigsties are in Dudley sanctioned in thickly populated districts where they add to the many filthy odours, and where they are so neglected that their liquid filth may be seen trickling down the yards even to the cottage walls. It appears that the Nuisance Inspector exceeds his instructions if he interferes with the owner of a pigsty, however filthy its condition, unless a distinct complaint concerning it is made to him; and since many persons do not possess the moral courage to lodge a complaint against a neighbour, and many owners rather prefer the nuisance than otherwise, the evil prospers unchecked.

Water Supply.—Dudley is supplied with water from wells, the majority of which are private ones, and also from the mains of the South Staffordshire Waterworks Company.

The supply derived from wells is used only by a minority of the inhabitants. Some wells are from 25 feet to 40 feet deep, others again are shallow surface wells. From many of them, especially the more shallow ones, the water was admittedly too offensive for use; in some instances it actually stank, in other cases, one person using the water would declare it to be nice and sparkling, another, referring to the same water, would state that it was often unfit for domestic purposes, and that it was at times extremely offensive. These opinions are exactly such as might have been anticipated in the case of wells situated, as so many of these are, in close proximity to privies and open middens, from which the rain and slop-water soak into the surrounding soil; for the difference between the sparkling and treacherously refreshing beverage, and the offensive fluid, is simply that which depends upon the quantity, and the state of decomposition, of the contained filth.

The water provided by the South Staffordshire Waterworks Company is derived from a tunnel $4\frac{1}{2}$ miles in length, driven through the red sandstone strata at Lichfield, and capable, as I am informed, of supplying 4,000,000 gallons a day. In aid of this, the Company have power to take from the Bourn Brook, the supply from which is, according to the engineer's estimate, practically unlimited as far as the purposes of the Company are concerned; they have also power to take from the Lemonsley Mill Stream. There are two large storage reservoirs at Lichfield, and one main pumping plant, which consists of three engines of 100 horse-power each. From Lichfield, the mains go along the South Staffordshire Railway to Walsall, and are discharged into a large reservoir there, and again into another at Wednesbury; from here it is taken by gravitation to a third at Conegre, to the north-east of Dudley. This last is simply a basin from which the water is re-pumped into another reservoir at Shavers End, Dudley, which is the storage reservoir for Dudley, and is situated on a summit from whence the entire borough of Dudley, and also the surrounding neighbourhood, is supplied on the constant service supply system. From

Shavers End, the mains pass through the streets of Dudley, and extend to at least some portions of all the outlying districts within the borough limits. As far as the town itself is concerned, the Company state that they are able to supply water to every house, and, with the exception of a few lying near Shavers End reservoir, to carry it to the top floor of every house. Where the water is not carried into the houses, stand-pipes are placed in the court-yards or thoroughfares.

Whilst making my inspection, I received numerous complaints from the poor and also from persons of position in the town, to the effect that the supply delivered by the Company was unsatisfactory, being both insufficient in quantity and objectionable in quality. The taps had, according to these statements, often been turned on and no water was forthcoming; at other times, the water was turbid, occasionally its odour was unpleasant, and at times it contained portions of dead fish. In examining samples of water myself, I on one occasion found it very turbid; a second sample, however, procured immediately afterwards from the same tap was bright and colourless, and subsequent efforts in different parts of the town to obtain another turbid sample met with no success. In view of these complaints, and bearing in mind a former experience of this Company's water, on the occasion of an inspection in a neighbouring town, I placed myself in communication with the resident representative of the Company, and he arranged that one of the Directors and the Secretary to the Company should, in addition to himself, meet with and confer with me on the subject, and accompany me to an inspection of the works so far as they relate to Dudley. At this interview it was admitted that these complaints were not wholly groundless; that several years ago (the exact date was not remembered) the quality of the water was, in all probability, temporarily impaired owing to a neglect on the part of the Company's servants to clean out a reservoir; that during the summer of 1870, when there was an unusual drought, a leakage occurred in the Walsall reservoir, rendering it necessary to empty it; the embankment of the Shavers End reservoir slipped, and its working was unavoidably suspended; one of the pumping engines at Lichfield broke down, and as a result of all these accidents at almost the same date, the Company were unable to meet the wants of the district. I was also informed that any further complaints as to insufficiency of water would almost immediately be rendered impossible, for the Company are just completing additional works from which a considerable district which now in common with Dudley derives its water from Shavers End reservoir, will in future be supplied, and so the water-supply in Dudley will be largely increased. The exact quantity now supplied by the Company per head of the population in Dudley is not known.

I am of opinion that the water supply of Dudley has been unsatisfactory both in quantity and quality. There appears to have been relation between these conditions and the prevalence of disease, (1) by scarcity favouring filth and uncleanness, (2) by a directly injurious action in the case of the water from polluted wells. The Company's water, though justly complained of on account of turbidity, is not shown to have had any direct effect in producing disease.

Condition of Dwelling-houses. Overcrowding.—In the poorer parts of Dudley the dwelling accommodation is essentially bad, the main evils being due to faulty construction, and to the overcrowding both of houses on area, and of persons in wretched ill-ventilated and unventilated apartments.

In many parts of Dudley the houses may be seen grouped closely together, regardless of plan, almost all available space being covered either by the dwellings themselves or by blocks and rows of nail shops, in such a manner as to render proper ventilation impossible. The majority of the yards are dirty, neglected, and unpaved. In their interior many of the houses are extremely filthy, being utterly neglected by both landlord and tenant, and the sleeping accommodation is, in many instances, peculiarly revolting, overcrowding in bedrooms being carried on to the extent of giving to each person less than 90 cubic feet of space; and males and females, married and unmarried, being huddled together without the least regard for health or decency.

But it is by no means necessary to visit the worst parts of Dudley in order to see the constructive evils of the dwelling accommodation; well-to-do tradesmen's houses, of apparently modern date, may be seen without any back openings, even where there is ample space behind them, and so cramped for area that the dust and refuse bins have of necessity been built under the staircase.

The present sanitary condition of many portions of Dudley will be best understood by the following examples:—

Dock Lane.—In one of the Courts in this lane a house was entered in which six cases of typhus had occurred. There were two filthy bedrooms, in one of which ten persons slept on three separate heaps of shavings, each

person having less than 90 cubic feet of air, and this must have been well saturated with the emanations from a heap of about 300 cubic feet of refuse and excrement, which lay within 5 feet of the dwelling.

Greystone Street.—In this street there is a court containing fourteen houses, but only one closet. The structure was not seen, for it was obscured by a ruined outhouse, and could only have been approached by climbing over a heap of ashes and refuse about 3 feet high, which entirely blocked up a passage 7 feet long, which led to it. This scandalous state of affairs was made worse by the fact, communicated to me, that the closet was doorless; and some of the women in the court told me that it was an outrage upon their sense of decency to expect them to enter such a place, and they refused to do it.

The Barracks.—This group of houses was approached by a long passage, lined to a great extent, on one side by filthy privies, some of which were doorless, roofless, or otherwise dilapidated, and whose contents overflowed and blocked up the passage. The group consists of wretched cottages, nail shops, outhouses, privies, and middens, all packed closely together, there being in some parts hardly room to move about. The dwellings are shamefully neglected and overcrowded; in one of them ten persons reside, and they have all had typhus. They sleep in two horribly filthy bedrooms: in the first are two beds, one of which is occupied by the father, the mother, and an infant; the other by two females, in their 21st and 13th years, and two males, in their 16th and 11th years respectively; the second room contains one bed, which is occupied by three males.

Mill Yard.—The inmates of fourteen cottages here use three privies, which lie in a separate small yard, nearly covered with filth, and empty into one huge midden. The stench in this yard and in the neighbourhood of these cottages defies description.

Birmingham Street.—One of the courts in this street presented the usually filthy appearance found in the poorer parts of the town; refuse and ashes were lying about, and a large neglected midden shared in the task of polluting the atmosphere. In one cottage the family consisted of eight persons, seven had had "fever," and the eighth was apparently sickening of the same disease. They all slept in one room, a dilapidated window in the second bedroom rendering it uninhabitable. Each occupant had somewhat less than 130 cubic feet of air.

Cleveland Street is unchannelled, its surface is furrowed by the flow of slops and rainfall, and heaps of refuse lie about. A narrow passage leads from it to a group of nail shops, which are crowded together on the small open space behind the street. Three privy-middens are provided for twelve of these workshops and fourteen houses, and on estimating the number of occupants both of the shops and houses at five in each (this, I was informed, was a fair estimate), and making a reduction for those who both worked in the nail shops and resided in the houses, I found that 106 persons had the questionable privilege of frequenting the three closets. Their condition under such circumstances may be better imagined than described; suffice it to add that one of the workshops lay 3 feet below the level of one of the middens, and its occupants complained much of the soakage which took place from the latter through the shop wall.

II. *Kates Hill.*—This suburb is situated to the north east of Dudley town, and a considerable portion of it lies on a very elevated site. Many of the streets over which the Town Council as yet exercise no control, are utterly neglected, and pools of slops may be seen lying about them, but the yards and the houses are as a rule superior to those belonging to the poor in the town. The privy-midden system prevails here as in Dudley, and it is similarly mismanaged, but the district being a much less populous one, the evils resulting from it are not so great. The water supply is very scarce; in many parts it is entirely derived from wells, some of which are evidently fouled by privy drainage; a public well appears to afford a pure supply, but many are obliged to walk half a mile to procure it; the Company's water is not yet laid on to the higher portions of the district.

III. *Netherton.*—This is a large and populous district, lying to the south of the town of Dudley, and placed for the purposes of nuisances, with the adjoining district of Woodside under a separate Inspector, assisted by five nightsoil men. The mains of the South Staffordshire Waterworks Company are laid down the streets, but the water is by no means universally used; many of the inhabitants resort to wells sunk in a filth-sodden soil, and others are provided with no water at all. The privy-midden system prevails, and it is only less objectionable than in Dudley, in so far as the Nuisance Inspector is able to empty the middens much more frequently. These middens, however, at times consist merely in a large hole in the ground, with no lining to prevent soakage from them; none of them were seen to be covered in, and hence the rain-water either makes their contents sloppy and offensive, or else it washes them into the neighbouring ground. In many instances the house accommodation is very bad, as the following instance, perhaps an exceptionally bad one, will show.

In the Halesowen Road, stands a row of eight cottages. The first three constitute one property; they have no water supply, the inhabitants being compelled to steal it at night or to procure it from a swag, into which at the time of my visit, house, road and stable drainage were flowing. The privies had evidently been recently reconstructed. In the first of these three cottages seven persons reside, and all have had typhus. In the second, there are ten inmates, who are members of three different families connected by marriage, three have been recently rendered orphans by epidemic typhus. Five of these persons have "fever" now, some of the cases being unquestionably typhus; the remaining five have had typhus. The house contains two bedrooms opening into each other; both are dirty, and their flooring is in parts rotten. In the first room are two beds: in one I saw a case of typhus; and three other persons all females, sleep in the same bed; in the other bed was a child suffering from typhus, and three others occupied it at night; of these four, two were females and two males, the eldest being one of the latter, aged 16. The area of the second bed-

room was almost entirely occupied by the bed, on which lay two men suffering from "fever" (presumably typhus), a third male slept with them at night; the room was very offensive, it had a small window which did not open, but through which, fortunately for the sufferers, some one had, under "the doctor's orders," thrust their elbow. An imperfect drain which passed immediately beneath the flooring of this and the adjoining house added to its natural foulness. In the third cottage six out of seven inmates have had "fever;" they complain of a leakage into their house from the above-mentioned drain. The remaining five cottages belong to a different owner; they are less neglected than the other three, and though the landlord has failed to provide them with a proper water supply, yet an arrangement has been made by which his tenants are allowed to procure it from a tap belonging to some cottages on the opposite side of the road. In two of them "fever" has prevailed, in one a death from it has occurred; the inmates of the remaining three cottages have as yet escaped. Many other houses in Netherton can only be described as somewhat less bad.

IV. *Woodside*.—This populous suburb is to a great extent undrained and is insufficiently provided with water. The closet accommodation, in its general characters resembles that in other parts of the borough, it is in many instances insufficient for the requirements of the population, and some of the structures being doorless, and otherwise unfit for use, some of the inhabitants very naturally refuse to resort to them. Some of the courts are paved, there appeared to be no neglect in the removal of the various forms of refuse, but otherwise the sanitary condition of the place was unsatisfactory.

Undue Prevalence of Disease.

(a.) *Fevers*.—Before entering into any particulars concerning the forms of "fever" which have been prevalent in the borough of Dudley, it will be well to point out the decided though unenviable numerical superiority which the "fever" death-rate in Dudley Town maintains over that in the outlying districts. Having separated, with every possible precaution against error, the number of fatal cases of "fever" occurring in 1870 in the town from those occurring in the suburbs, I find that, in the former they were as 2·2, and in the latter as 0·5, per 1,000 inhabitants.

(1.) *Typhus*.—A glance at the death registers for the last ten years shows that "typhus" is a constant cause of disease and death in Dudley; at the time of my inspection true typhus was epidemic, and many well-marked cases were seen, which presented the ordinary characteristic rash and symptoms. It was impossible to form an accurate estimate of the number of persons who have recently been attacked, but throughout the borough there have been since July last at least 500 cases of "fever," one medical officer alone having attended 300 cases, of which the majority were typhus. Fresh cases, and these almost exclusively of the same type, were ascertained to be daily occurring, whole households being attacked. The chief conditions under which typhus is known to prevail and to spread are, over-crowding, destitution, and filth. Concerning *overcrowding*, nothing further need be stated to show how prevalent it is, but it is necessary to add that it is not due to the want of dwelling accommodation; for when the census of 1871 was taken, it was ascertained that out of a total of 9,927 houses in the borough, 1,353 were uninhabited. This large number of empty houses is stated to be due to the general stagnation of trade in the district, and the statement would appear to receive support from the fact, ascertained at the same time, that throughout the entire borough only six houses were in course of construction. *Destitution* also prevails extensively in Dudley; it is, to a considerable extent, due to the mines in the immediate neighbourhood being worked out, and to many of the glass-houses being closed; but much must also be caused by the reckless improvidence and the intemperate habits of the lower classes of the population. It is amongst the poor and those residing in the worst parts of Dudley that the disease has mainly prevailed, but some members of the better classes who, whilst performing acts of charity or of official duty, have been brought into contact with the sick, have also been attacked. The abject poverty of some of the sufferers was painfully evident; one woman was found in a room, the only article of furniture in which consisted of a rickety wooden bedstead, across which was stretched a piece of sacking; on this she lay dying, being covered only by a few dirty tattered clothes and rags. Many of the patients shared their wretched beds, which in several instances, consisted in a heap of shavings full of vermin, with others who had not yet succumbed to the pestilential atmosphere of the apartments which they occupied, separation of the diseased and the healthy being impossible, for no provision for it had been made by the Health Authority. As regards *filth* I would merely say that the conditions by which the poor were in many localities surrounded were exactly those which always engender habits of filthiness, and filthy their habits most unmistakeably were.

(2.) *Enteric Fever*.—This disease has a well-marked connection with excremental pollution of air, soil, and water. In Dudley this process of pollution is carried out in the most complete manner; the stench in some of the courts and yards was almost unbearable; the open middens favour the saturation of the soil with their foul contents, and through this soil flows the water which finds its way into many of the wells.

The proportion of deaths due respectively to typhus and enteric fever cannot be stated, nor can any opinion be formed as to the relative prevalence of the two diseases in the past, though at the present time almost all the prevailing disease is typhus. The deaths from "fever," in proportion to the recorded number of cases, have been few, and it is probable that this has arisen either from the large number of young persons who have been attacked, or from the inclusion of some less serious disease (under the name of simple continued fever), with the two specific fevers, in the records of the medical practitioners. There is no evidence that relapsing fever has prevailed.

(b.) *Diarrhœal Diseases*.—The causes of this group of diseases, which in Dudley has been so specially fatal to young children, are to a great extent similar to those which predispose to enteric fever, and it would be superfluous to enter minutely into them. In 1858 their Lordships' attention having been directed to the excessive mortality from diarrhœa in Dudley a report on the subject was presented to them, and the statement then made that "in the districts which suffer high diarrhœal death-rates, the population either breathes or drinks a large amount of putrefying animal refuse," remains at the present date peculiarly applicable to the borough.

Previous Sanitary History.—Such, then, is the sanitary condition of the Borough of Dudley 17 years after the adoption of the Local Government Act, and notwithstanding a sanitary history which has been pregnant with warning.

In 1832 cholera caused a fearful mortality in and around Dudley; in 1847 a large number of persons died of "Irish fever;" in 1849 and again 1854 cholera, with its usual predilection for its old haunts, revisited the place.

In 1852 Mr. William Lee visited the town on behalf of the General Board of Health, he reported on the sanitary evils prevailing there and pointed out the remedial measures which were required. In his Report he deals at length with the alarming death rate then current, and states that whereas in England and Wales the average age of the population at death was 29 years and 4 months, it was in Dudley no more than 16 years and 7 months. Even allowing for the exceptionally low ages of the Dudley population at that date, one must be permitted to share in Mr. Lee's surprise at the results of his statistical inquiry. His Report continues:—

"In Dudley it appears that about as large a proportion of the entire population dies in the first year of life, as, in other and more healthy districts, dies under 20 years of age; and that in Dudley only about three out of every ten human beings born into the world survive to years of maturity, while at the present time, in districts containing more than 1,000,000 inhabitants, about two-thirds of all born, grow up, and become men and women.

"I am acquainted," he adds, "with no parallel to the case of Dudley, where in a population between 30,000 and 40,000 persons, seven-tenths of the deaths for the last ten years have been in persons under the age of 20 years."

After giving numerous statistics in support of the opinions he expresses, he sums up by stating that "the loss of life at all ages, but especially amongst the young, is so frightful, that it must arouse all who have influence in the town to exertions for its sanitary improvement."

In 1854, 1855, and 1856 Mr. Houghton, then Medical Officer of Health for Dudley, in his Annual and Quarterly Reports, calls the attention of the Board to the numerous sanitary evils prevailing in the district; he reminds them of the severity of former attacks of epidemic disease; he urges them to hasten the improvements upon which the sanitary amelioration of the district depend; and he lays before them in a clear and concise form what he considers the needed improvements to be. Towards the end of 1856, the Board pass a resolution to the effect that the Medical Officer of Health "be removed, as a useless and unnecessary officer."

In 1857 Dr. Bristowe was instructed to report to my Lords concerning the excessive diarrhœal mortality in the parish of Dudley, and in many particulars the description which I have already given of its sanitary condition is but a repetition of that given by him at that date.

Later on, plans for the sewerage and drainage of the district were laid before the Local Board, which then consisted of the Mayor and Town Council, but beyond the fact of money having been borrowed in order to commence the works, no further action has been taken in the matter. It is impossible to form a correct estimate of the amount of money which might have been saved if proper sanitary improvements had been carried out in

Dudley, and if steps had been adopted to raise the standard of health among the population, and to get rid of the large prevalence of preventible disease and death. One thing, however is certain, namely, that the want of action on the part of the Health Authority has tended to increase pauperism and misery, and to render poor rates and other local burthens unnecessarily burdensome. During the recent prevalence of disease, whole households, having been attacked by "fever," have been cast upon the rates, and instances have occurred where entire families of children four and five in number, after having been rendered orphans by the epidemic, have become chargeable to the Union, to be supported for many years to come at the public expense. Viewing the question from the low point of economy alone, the course adopted has been injurious and impolitic.

The remedial measures which I found to be required in the borough of Dudley are—first, such as would promptly deal with the prevalence of zymotic disease; and secondly, such as, by effecting permanent sanitary improvements, would prevent the recurrence of epidemic disease in the district, and generally improve the health of the population.

Whilst in Dudley, I attended a meeting of the Town Council, and in view of the prevalence of fever, I recommended the following measures for immediate adoption:—

1. The provision of hospital accommodation for all persons suffering from infectious diseases, who are "without proper lodging or accommodation." All persons should be deemed as improperly lodged who, when suffering from "fever," occupy crowded, ill-ventilated apartments, or are compelled to share their beds with others. At present the only accommodation provided is that in the Union House; this, however, is quite insufficient for the present requirements of the district, and is besides limited in its use to those who are paupers.

2. Thorough cleansing and disinfection of all houses and articles within them which are capable of retaining infection.

3. Thorough cleansing and disinfection of all privies and middens situated in localities where disease is prevalent.

The other permanent sanitary improvements which are required in Dudley are as follows:—

1. The carrying out of a thorough system of sewerage and drainage is urgently required throughout the borough. On the adoption of this recommendation the health of the population largely depends, and it is the only means by which many of the present flagrant sanitary evils, such as the fouling of "swags," and the pollution of air by means of open sewer-ditches and pools of slops and liquid filth, can possibly be remedied. The attention of the Local Board of Health of Dudley has often been called to this great sanitary want, and it is to be hoped that in view of the serious amount of preventable disease and death with which the borough has recently been visited, it will at last be met by prompt and energetic action.

2. The provision for every house of a proper water supply. The Town Council has power under 11 and 12 Vict., c. 63, sec. 76, and 21 and 22 Vict., c. 98, sec. 51, upon the Report of the Surveyor that any house is without a proper supply of water, and that such a supply can be furnished at a rate not exceeding the water rate authorized in the latter Act, to compel such supply to be taken. This power should at once be exercised in the case of all houses without water, or obtaining water from wells liable to pollution. The South Staffordshire Waterworks Company express their readiness to supply water to houses of a rental of not more than 6*l.*, upon terms which seem to come within the requirements of this provision; but they require, in addition, the guarantee of the owner that the water shall be paid for. With reference to the Company's water, I am of opinion that steps should be taken to remove from it the suspended matter which causes the turbidity so much complained of.

3. The adoption of a proper system of excrement and refuse disposal. Even with a thorough system of sewerage it is questionable whether a water-closet system could be carried out throughout Dudley, and hence the choice of the Local Authority will for at least a large portion of their district be limited to either the earth-closet system or to a system of frequent removal by cartage from properly constructed privy-middens or pail-closets. The special advantages which, under different circumstances, attach to these systems, are fully explained in a Report on certain means of preventing excrement nuisances in towns and villages (Appendix to the 12th Report of the Medical Officer of the Privy Council), to which I would refer the Town Council for complete details; but it will be well here to state that at Dudley the abundance of clay supplies at once a soil which is peculiarly adapted to the requirements of the dry-earth system, and also that if the privy-midden system be determined on it should be carried out on the following principles:—Each structure should be detached, and should be built as far from all dwelling-houses as it conveniently can be; it should be roofed in,

so as to exclude all rain-water; it should be used as the receptacle for ashes and dry refuse, either by making the seat to lift by a hinge or otherwise; slops should be carefully excluded; the privy-pit should be composed of impervious materials, should not be below the level of the adjoining ground, and should be of such capacity as to need emptying at least once a week. The number of closets should also be increased, the minimum being one to every three houses.

A much more efficient system of refuse and excrement removal is also required. In the town of Dudley the present staff would appear to be quite insufficient. It is, however, highly probable that, with a system of properly constructed and properly managed privy-middens, the cost to the ratepayers will in this matter, instead of being increased, be in reality decreased, for it is a comparatively trifling thing to empty a large number of privy-pits constructed on the above-mentioned principles, whereas the time and labour at present expended in the process are very considerable; thus I am informed that it often takes four nightmen, in addition to several carters, an entire night to empty a single midden. Finally, I would observe that the present plan of carting all the night-soil and refuse on to a field near the town, where it is not even protected from the view of passers-by is highly objectionable, and calls for remedy.

4. The provision of an appropriate place to which the bodies of persons dying from infectious diseases can be removed, and from whence they can be buried without unnecessary delay.

5. Pigsties should not be permitted in the town or in any populous districts within the borough limits. In 1854 the Local Board of Health very properly defined an area within which no pigs should be kept, but this regulation is not enforced by those now in authority.

6. All "undedicated streets" should at once be placed in a proper condition of repair and order, and put under the control of the Town Council. All yards and passages should be paved.

7. The crowding together of houses, and the faulty structure of dwellings generally should be dealt with. The enforcement of the bye-laws of the Local Board of Health, and the adoption of the "Act to provide Better Dwellings for Artizans and Labourers, 1868," supply ample powers for this purpose.

8. The overcrowding of persons in houses should be prevented, when it is opposed to the laws of health.

9. The appointment of a Medical Officer of Health is, in my opinion, essential to the sanitary well-being of the borough, and on this officer should be put the responsibility of investigating all matters relating to the health and sanitary condition of the borough, and of advising the Town Council thereon. Advantage would also be found in authorizing him to act, within certain limits, on the part of the Council in matters coming under the provisions of the 48th section of the Sanitary Act, 1866, and also in giving him a general control over nuisances, over-crowding, disinfection, and all other matters essentially medical in their nature.

*Medical Department of the Privy Council Office,
August 18, 1871.*