

Dr. R. Deane Sweeting's report to the Local Government Board upon a re-inspection of Ilkeston Borough : with especial reference to the use of the hospital for infectious diseases there.

Contributors

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REPORTS

TO THE

LOCAL GOVERNMENT BOARD

ON

PUBLIC HEALTH AND MEDICAL SUBJECTS.

(NEW SERIES No. 50.)

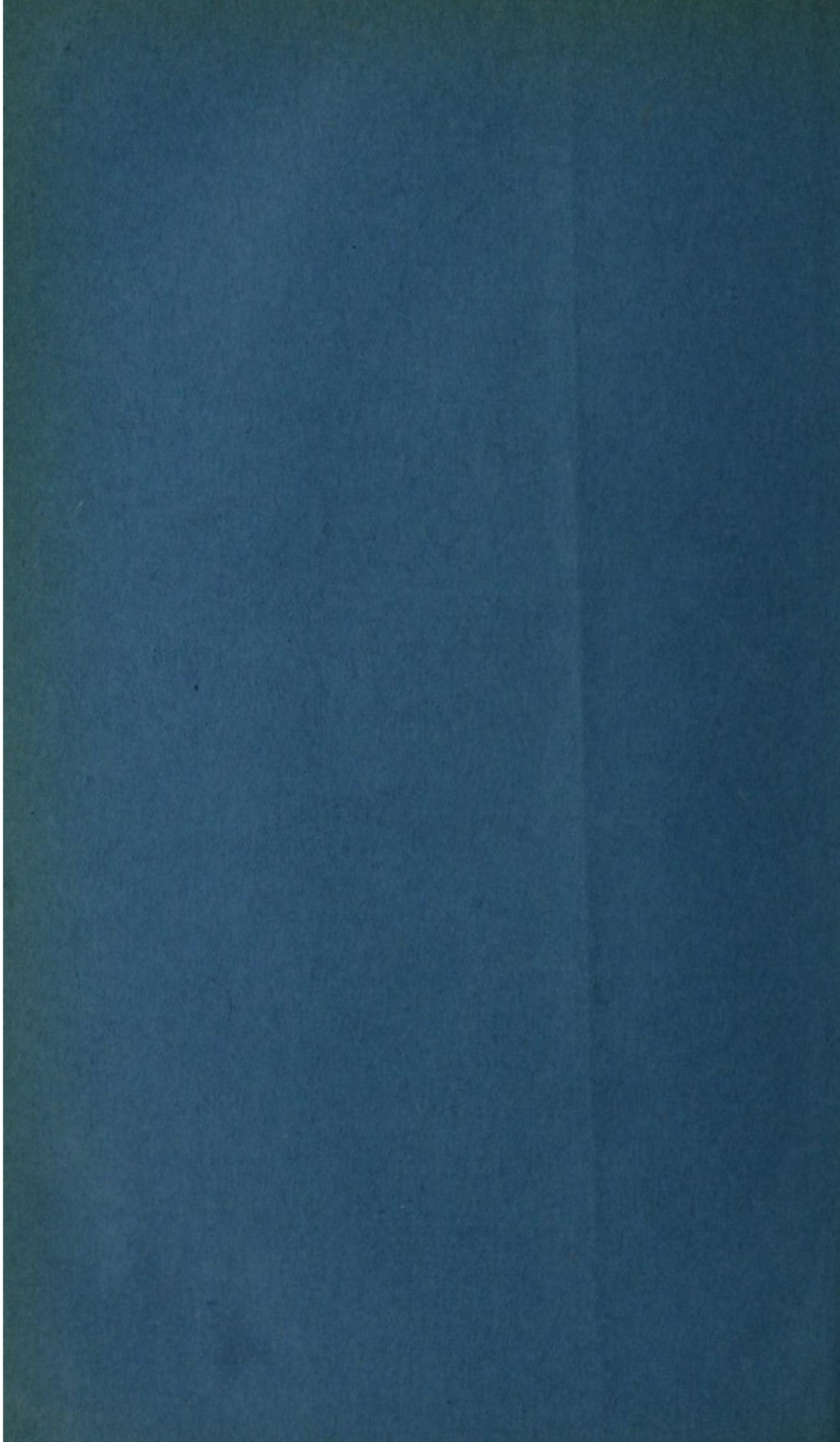
Dr. R. Deane Sweeting's Report to the Local Government Board upon a re-inspection of Ilkeston Borough, with especial reference to the use of the hospital for infectious diseases there.



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Dr. R. Deane Sweeting's Report to the Local Government Board upon a re-inspection of Ilkeston Borough, with especial reference to the use of the hospital for infectious diseases there.

ARTHUR NEWSHOLME,

Medical Officer,

8th February, 1911.

This inquiry was ordered after the receipt by the Board of the annual report of the medical officer of health for 1909, and after correspondence with the Ilkeston Town Council, subsequent to the receipt of the annual report for 1908. A further, and important, object of the inquiry was to ascertain the suitability or otherwise of the present infectious diseases hospital of the borough, in view of the town council's request that section 67 of the Public Health Acts Amendment Act of 1907 should be put in force in the borough.

Ilkeston Borough has been several times inspected by officers of the central health authority. Thus, Dr. (afterwards Sir George) Buchanan inspected the place in 1870, when he found that enteric fever was associated with "widely diffused excremental pollution" of air and water. It was also inspected by the late Dr. Blaxall in 1881, on account of enteric fever, which he ascribed to infected sewer air escaping in and about dwellings, and to infected privies and polluted water: in 1893 by Dr. Wheaton, in connection with the Inland Sanitary survey, when, *inter alia*, he found the hospital very defective: and again in 1899 by the same inspector, who ascribed the prevalence of enteric fever to general pollution of the water supply of the town, which was derived from the Nutbrook, and imperfectly filtered. Dr. Wheaton found that the water of the Nutbrook was grossly polluted by liquid refuse from dwellings at Heanor and by the effluent from Heanor sewage farm.

The area of the borough is 2,526 acres. The population increased from 19,744 at the 1891 Census to 25,384 at that of 1901, and the number of inhabited houses increased from 3,776 to 5,005

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in the same period. The estimated population in 1909 was 30,309 (Reg. Gen. Annual Summary).

The following are the chief sanitary circumstances of the borough now, compared with what they were at the time of Dr. Wheaton's visit in 1899.

Condition of dwellings.—These are, as at Dr. Wheaton's visit, well-built and with sufficiency of open space at the rear. But there are still many unpaved and badly paved back yards in the borough. I found many asphalted yards cracked: defective brick paving is quite a common feature.

The erection of new houses is well-supervised by the surveyor; on an average 160 a year have been erected during 1900-09. The bye-laws regulating them, which were confirmed by the Home Office in 1864, are, however, quite inadequate.

Water supply.—An entirely new supply has been introduced by virtue of the Ilkeston and Heanor Water Board Act of 1901, by which Ilkeston Borough and Heanor Urban District Council are supplied with water from the Merebrook "sough" near Wirksworth. This "sough" is an underground tunnel or adit, cut in 1772, and formerly used for draining the lead mines in this locality. It receives water from a sort of reservoir formed by the damming up by the "Gulf fault" of water falling as rain on the limestone plateau west of Wirksworth. From 14 to 19 million gallons of water issue from the "sough" every 24 hours. The water is led through a brick culvert to a turbine chamber and pumping station. The turbine, with centrifugal pumps, lifts the portion of the "sough" water taken for the supply to iron tanks, whence it gravitates to a water softening plant. This reduces its hardness from 22° to 8°. The water is then pumped to a covered reservoir of 1,400,000 gallons at Chadwick Nick, 700 feet above O.D.; on an average $\frac{1}{4}$ million gallons are pumped daily to this reservoir.

From Chadwick Nick the water gravitates to Shipley reservoir (750,000 gallons), at about 382 feet above O.D., for Ilkeston borough. It is conveyed thence by 12-inch pipes to the confines of the borough, and afterwards by 6-inch, 4-inch and 3-inch branches to the borough generally. Part is supplied by measure, there being at Shipley reservoir (for Ilkeston) three 6-inch "Kent" meters. The total consumption by Ilkeston and Heanor is about 21 gallons per head per diem, of which about 5 gallons per head are supplied by meter.

The above water has been subjected to chemical examination at different times, by Dr. Percy Frankland, by the Derbyshire county analyst, and by the Derbyshire county medical officer, the results being most favourable. The latter officer recently subjected the water to bacteriological examination, with equally favourable results.

There are, however, still in the district a number of shallow dry-steined wells of the kind described by Dr. Wheaton in 1899 as exposed to pollution from middens and house drains. The Ilkeston medical officer of health reports that 93 houses are supplied from surface wells (annual report for 1909). I saw several of these during my inspection; they are usually dry-steined and some 10 to 20 feet deep. Most of them are so placed as to suggest local contamination; some of them are inaccessible and inconveniently situated.

Sewerage and disposal of sewage.—Since Dr. Wheaton's report, inquiries have been held by the Board's Engineering Inspectors, viz.:—by Col. Durnford in 1906 and Mr. Brightmore in 1907, respecting applications for sanction to borrow money for the above purposes, and in June 1909, sanctions were given by the Board for sums amounting to £32,400. As the scheme is in course of being carried out, subject to certain amended plans being approved by the Board, I will content myself with briefly setting out the main points in the new scheme, which has been hastened by the Derbyshire County Council obtaining an Order of Court forbidding pollution of the River Erewash by Ilkeston sewage after a certain date. A new intercepting sewer, $3\frac{1}{4}$ miles long, is being constructed, and a new sewer for the west and south of the borough. These are to deliver sewage on to an area of 33 acres, where it will be treated in a screening tank, and then in septic tanks (holding one day's dry weather flow) and filter beds (taking three days' dry weather flow). It is reckoned that 750,000 gallons a day will be treated. On account of the clayey nature of the subsoil, there will be no subsequent land treatment. To reach the disposal area, the sewage will have to be siphoned under the Erewash Canal and the adjacent Midland Railway Company's land.

The new intercepting sewer is to take the place of the present high level and middle level sewers, which deliver sewage at the southern outfall of the low level sewer at Gallow's Inn. The sewage farm (39 acres) here has been raised above flood level, and will be used when required. The Ives' tanks at this outfall and at the Botany Bay (north outfall) and Potter's lock (central outfall) will be diverted from their former use. Up to now they have been employed to precipitate the sewage with alumino-ferric, the effluent being discharged into the River Erewash, and the sludge pumped on to land. In future, they are to be used as storage tanks, and sewage is to be pumped from them to the new intercepting sewer, duplicate plant being laid down for the purpose.

The sewage farm (19 acres) at Potter's Lock (central outfall) like that at Gallow's Inn (south outfall) will be used when growing crops need irrigation. The farm (40 acres) at Hallam's Fields, at the south-east of the borough, to which the high level outfall sewer formerly discharged, is to be abandoned directly the new intercepting sewer is completed, the land having been sold to the Stanton Iron Company, the Board's sanction not being required. This high-level sewer discharges at present into the mid-level sewer, and by it to the southern outfall; both will be replaced by the new intercepting sewer. The disposal works were in course of construction at my visit, and were apparently being carried out in accordance with the scheme sanctioned by the Board. The sewage farms at the central and southern outfalls appeared in satisfactory condition on the whole.

When the proposed scheme is fully accomplished, the pollution of the river Erewash by Ilkeston sewage, to which the Board's attention has been strongly directed by both Derbyshire and Nottinghamshire County Councils, will be greatly diminished.

With respect to the condition of the present sewers, there is some deposit to be seen at certain of the manholes: this may be largely due to subsidences from coal workings. Flushing at the

manholes by hosepumps is now supplemented by that from two automatic tanks at the heads of certain lines of sewers. Similarly, manhole cover ventilation has been supplemented by 6-in. upcast shafts, 55 of which have already been put up in the borough.

House drainage.—This is on the whole good. But some untrapped sink waste pipes deliver unsatisfactorily to gulleys, viz., without an intervening channel. And there are still a few bell-traps remaining for indoor sinks, though they are being gradually reduced in number. Improvement in these respects is being gradually brought about.

Excrement disposal.—Most of the unsatisfactory midden privies described by Dr. Wheaton still exist. Their number has been diminished from 971 to 859 since his report in 1899. Pail closets have increased from 2,400 to 2,418; water closets, including Duckett's water waste closets, from 678 to 2,255 in the same period. The privy conversions have averaged 26 annually during 1902-09; but they have not been uniform, ranging from 3 in 1904 to 60 in 1905.

Recently, however, the town council have applied to the Board for sections 39-42 of the Public Health Acts Amendment Act of 1907 to be put in force in the borough. The granting of the powers conferred by these sections may be expected to lead to greater activity and more uniform procedure with regard to this much-needed sanitary improvement.

Middens are at present scavenged every three months; pail closets weekly.

Refuse disposal.—Besides privy middens and dry brick ashpits many movable receptacles are in use, either wooden tubs or galvanised zinc pails, the contents of which are said to be removed every week. But heaps of filthy and decaying refuse are to be found in back yards, many of which are littered with this refuse and with ashes. Many of the dry ashpits, too, into which former middens have been converted, are in a dilapidated state.

There are three "tips" for refuse in the borough, which are not altogether satisfactory. Two of them are badly placed, being too close to houses, whilst the third is in a very offensive condition, inasmuch as midden contents are deposited upon it, in addition to house refuse proper.

The town council have a scavenging contract with a private contractor, dated August 1910, by which houses are scavenged for 4s. 9d. each per annum, and schools, factories, &c. for 12s., paid by the town council, and recovered by them from owners, as part of the general district rate. But the occupiers of better class houses, usually of £20 rateable value and over, pay this rate themselves, by arrangement with their landlords. The inspector of nuisances supervises the carrying out of the contract on behalf of the town council, and is given nominally certain controlling powers by virtue of this contract. Judging by the condition of many of the middens and of the back yards, it would probably be a better arrangement if the town council were to undertake the scavenging themselves, in which case the inspector of nuisances would have a freer hand and be able to deal more directly with the workmen than when these are employed by the contractor. Certainly, the existing

middens require to be emptied more frequently than every three months.

Slaughter-houses.—There are 19 registered. The condition of many of them is open to objection from bad paving and defective ventilation. Some are very dirty.

Cowsheds, dairies and milkshops.—There are 19 registered cowsheds some of which have dairies attached to them. There are three registered milk sellers. Many of the cowsheds are badly paved and ventilated; some are dark, dirty and dilapidated. The inspector of nuisances has of late been very active in looking after the condition of some of these cowsheds and in serving notices. It is a fairly common practice to store milk in larders with other food.

Bakehouses.—There are 35 of these; most of them are in good condition, a few only showing imperfect through ventilation.

Common lodging-houses.—There are two registered. One of them still has the huge midden mentioned by Dr. Wheaton. The other is overcrowded, having more beds than the cubic space provided warrants. The inspector of nuisances will see that this is remedied.

Offensive trades.—Three tripe boilers establishments are registered; they appear to be carried on satisfactorily.

Hospital for infectious diseases.—This was erected in 1888 on a site of six acres at Little Hallam during a small-pox panic, and was put up as a temporary hospital in about three weeks. It is of the usual character of such buildings, viz., of corrugated iron, with brick piers and concrete foundations. There is no separate administration for the staff, and one disease only can be properly treated at a time. There are on each side a large and a small ward connected together, the two wards on one side being used for males and the two on the other side for females. The large ward measures 30 ft. by 18 ft. by 10 ft., the small 18 ft. by 18 ft. by 10 ft. There is room, therefore, for some 14 patients only, whereas at least 30 beds should be provided for the borough. Each of the large wards has a w.c. and bathroom. Intervening between the two small wards are a nurses' bedroom, 14 ft. by 11 ft. by 10 ft., and a kitchen, 16 ft. by 14 ft. by 10 ft., adjacent to each other. Separated from these by a corridor is an annexe, containing on one side a scullery and bathroom, and on the other a larder and doctor's surgery. Parallel with this corridor and extending along the two small wards and the nurses' bedroom and kitchen is a verandah, provided with seats for patients. A basement has been added in recent years, containing two bedrooms for female staff, one 17 ft. 9 ins. by 13 ft. 6 ins. by 8 ft., the other 13 ft. 3 ins. by 13 ft. 3 ins. by 8 ft.: the floor of each room is more than 3 ft. below the surface of the adjoining ground. Though four or five beds can be put in these rooms, they must be considered as quite unsuitable for their purpose. A bathroom, linen cupboard and w.c. are also provided. A brick outbuilding contains a small hand laundry, an ambulance shed, and a mortuary, as well as a Nottingham steam disinfector, approached from rooms for infected and disinfected clothes, respectively.

The hospital is heated by hot water pipes, a boiler being placed in the basement.

Ventilation of the wards seemed satisfactory, and they were not crowded at my visit. There were only four scarlatinal convalescents in them.

The staff consisted of a matron, a nurse, a servant and a man (for disinfecting &c.).

Sewage is conveyed to a small cesspool, 50 yards from the building. It is emptied monthly, the contents being pumped into a tank-cart and taken to the sewage farm.

Though pleasantly situated, this hospital cannot be said to be in accordance with the Board's views and requirements. It is of unsubstantial structure; all the four wards are in aerial inter-communication; there is no separate administration; the staff sleeping accommodation is bad; there is no proper accommodation for more than one disease at a time; the laundry is inadequate. Appendix A shews that during the eleven years 1899-1909, enteric fever, scarlet fever, small-pox and diphtheria have at one or another time been isolated in this hospital. But, of the total 1,453 notifications of these infectious diseases during this period, only 140 or less than 10 per cent. have been isolated in hospital. The percentage of isolation was for scarlet fever 1.7, for diphtheria 2.5, for enteric fever 22, and for small-pox 43. As bearing on the question whether this small proportion of isolation was due or not to the fact that the town council expected (if they did not actually enforce) payment for treatment there, I have added a note to the return showing the numbers who paid and how many were paid for by the Basford Guardians. It is seen that 79 of the 140 paid for treatment (= about 56 per cent.) of whom 59 were paid for by the guardians. These were admitted on the order of the relieving officer. The number who paid has diminished considerably of late years, and none seem to have paid since 1907. And yet the number of isolations does not seem to have increased since then. It is difficult to appraise this factor of payment, but, on the whole, I think it tended to render the hospital unpopular at the first, and that the unpopularity has remained. I was told that the town council do not now insist so rigorously on payment as formerly; but the inspector of nuisances still has to obtain signature to the form shewn in Appendix B, though payment is now seldom exacted. But the principle is bad, and does not tend to popularise a fever hospital in a working class borough like Ilkeston. I was also informed that the medical men, for pecuniary reasons, would not let their patients go to the hospital. This I can hardly accept, and I am disposed to refer the failure to secure a greater amount of isolation to the medical officer of health having displayed little or no interest in the matter. It passes my understanding how, in his letter to the Board of the 30th June, 1910, he could describe the hospital accommodation as "ample and well-fitted for the purpose for which it is provided; it has served the needs of the borough admirably for the past twenty years."

I have little doubt that the above failure to secure hospital isolation has, in the circumstances of housing in Ilkeston, led to a much larger incidence of infectious disease than should have occurred. Taking the mean population in 1899-1909 at about 28,000, an average yearly incidence of some 132 cases of the

infectious diseases which are usually isolated, viz., small-pox, scarlet fever, diphtheria, and enteric fever, or 4·7 per 1,000, is certainly excessive.

Although voluntary notification of phthisis was not adopted by the town council until February, 1910, in 1908 eight cases, and in 1909 seven cases of this disease were admitted to the hospital for open-air treatment. Such use must of necessity have interfered with the use of the hospital for acute infectious disorders, since these could not, under the circumstances of this hospital, be admitted at the same time.

Disinfection.—Sulphur fumigation is the usual mode employed, though recently the formalin lamp has been used for better class houses. There is no proper dealing with clothing and bedding. The steam apparatus at the hospital has not yet been used for general purposes. With some enlargement, the station here might be adapted for the purposes of the whole borough.

BOROUGH OF ILKESTON.

TABLE (A) showing certain vital statistics for the years 1902-9, compared with the average of the "smaller towns" for the same period.

Year.	Estimated Population.	Birth-rate per 1,000.	Death-rate per 1,000.	Infant Mortality per 1,000 Births.	Death-rates per 1,000 persons living from						
					Small-pox.	Scarlet Fever.	Diphtheria.	"Fever."	Measles.	Diarrhoea.	Whooping-cough.
1902 ...	26,112	39·9	18·7	164	0·04	0·19	0·57	0·38	0·15	0·77	—
1903 ...	26,699	40·9	19·3	192	0·07	0·07	0·41	0·15	1·76	0·97	0·75
1904 ...	27,290	39·8	18·0	180	0·04	0·22	0·11	0·22	0·22	1·24	0·91
1905 ...	27,885	36·9	15·8	153	—	0·11	0·04	0·14	0·54	1·86	0·11
1906 ...	28,484	36·8	16·2	180	—	—	0·18	0·14	0·07	2·21	0·11
1907 ...	29,087	33·9	18·3	159	—	0·21	0·17	0·21	1·38	0·41	0·55
1908 ...	29,696	38·9	16·5	151	—	0·03	0·13	0·13	0·03	0·91	0·37
1909 ...	30,309	36·1	18·5	188	—	—	0·20	0·07	1·39	0·76	0·20
Average 1902-9	28,195	37·8	17·7	171	0·02	0·10	0·22	0·18	0·70	1·14	0·37
Registrar-General's Smaller Towns, Average 1902-9.	4,578,134	26·5	14·6	131	0·01	0·10	0·17	0·10	0·31	0·54	0·25

The foregoing table (A), shows for each of the eight years 1902-1909 the birth-rate, general death-rate, infant mortality per 1,000 births, and the death-rates per 1,000 from the seven "principal epidemic diseases" of the Registrar-General. The

° The "smaller towns," of which Ilkeston is one, are, for the years 1902-3, those having a population of 25,000 to 50,000, and for the years 1904-9, those having a population of 20,000 to 50,000 at the census of 1901.

averages of these rates for 1902-1909 are compared with the average rates in 1902-1909 of the "smaller towns," of which Ilkeston is one. It is seen, from this table, that the general death-rate, and infant mortality rate were in each of those years and on the average of 1902-1909, higher than the average of the "smaller towns" in the same period. The average rate of "fever," diarrhoea, and measles was about twice that of the "smaller towns," that of whooping-cough half as much again, that of diphtheria slightly higher, that of small-pox and scarlet-fever the same.

As bearing on the relation of improved water supply to the fatal prevalence of enteric fever, it is of interest to note that, the new public water service having been introduced in the middle of 1904, the average annual "fever" death-rate in 1905-1909 was about a half of that in 1902-04 ($\cdot 14$ compared with $\cdot 25$).

This influence of improved water supply is also shown in Table B which follows. The average case-incidence of enteric fever in the five years 1900-1904 was $0\cdot 22$, compared with $0\cdot 07$ in the five years 1905-1909, or three times greater. This table also shows that the case-mortality per cent., or fatality, of the fever ranged from $11\cdot 4$ to $52\cdot 6$ and averaged $17\cdot 3$.

TABLE (B).—*Enteric Fever in Ilkeston (1900-09), showing the case-mortality per cent. and the case-incidence per cent. of estimated population.*

Year.	Estimated population.	Number of		Case-incidence per cent. of estimated population.	Case-mortality per cent.
		Cases.	Deaths.		
1900 ...	24,946	173	22	0·69	12·7
1901 ...	25,524	30	5	0·12	16·7
1902 ...	26,112	19	10	0·07	52·6
1903 ...	26,699	29	4	0·11	13·8
1904 ...	27,290	36	6	0·13	16·7
1905 ...	27,885	31	4	0·11	12·9
1906 ...	28,484	35	4	0·12	11·4
1907 ...	29,087	20	6	0·07	30·0
1908 ...	29,696	8	4	0·03	50·0
1909 ...	30,309	7	2	0·02	28·6
Average 1900-9.	27,603	38·8	6·7	0·14	17·3

In order to endeavour to discover what etiological factor or factors had been concerned in recent years with this endemicity of enteric fever in Ilkeston, I made detailed inquiry as to the 35 cases notified, with 12 deaths, in the three years 1907-09. (It was not feasible to go further back, on account of removals.)

Briefly, the result of my investigation has been that 12 of the 35 had left the borough and two contracted the disease outside. The ages of the persons attacked ranged from 3 years to 55 years, and of those who died from 3 years to 41 years. It is noteworthy that

17 of the 35 attacks and 7 of the 12 deaths were of persons over 25 years of age.

These 35 cases were fairly distributed over the town, and not specially localised. Water could not be blamed, since there was no explosion of attack, and all but one had town's water, the quality of which has not been impugned. Similarly, the privy midden mode of excrement disposal could not be proved to be a potent factor in the causation of enteric fever. In 7 of the 35 cases midden privies were in use ; in 15 cases pail closets and in 13, water-closets. Upon the number of closets of each kind, as stated on page 4 of this report, these figures give proportions of one case of enteric fever to 122 privies ; one case to 161 pail closets ; and one case to 176 water-closets ; but the numbers are too small to be relied on as a sound basis of comparison, and, moreover, comparison is vitiated by the fact that one privy often serves for two or more houses, whereas water-closets usually, and pail closets to a less extent, serve single houses only. Likewise, milk could not be suspected, since, here again, there was no explosive outburst, and the sources of milk supply were many and various, and no particular source appeared implicated.

It is, however, of some moment that, in 12 instances of the 35, there were histories of the more or less habitual use as food of various kinds of shell-fish, viz. :—mussels, cockles, and whelks, though in only one instance could this cause be definitely given, where a woman had eaten raw whelks a fortnight before attack. But the above facts suggest the likelihood of this factor of causation being more common than has hitherto been ascertained. In support of this, I was medically informed of urticarial rashes and muscular (almost tetanic) spasms, after the eating of shell-fish, but falling short of enteric fever. The implicated molluscs either come direct to fishmongers from Grimsby and Fleetwood ; or, and more usually, are brought in hawkers' barrows from Nottingham.

But, in addition to this suggested source of infection, personal infection played some part in spreading the malady. In the 35 cases, there were three such groups at least, viz.—one of five and two groups of two each, thus accounting for at least six cases. In this regard, it is important to note that only 10 of the 35 cases notified in 1907–09 were removed to the hospital, of which and of the little use to which it is put I have already written above. No other article of food appeared implicated. There was no suggestion of "carrier" cases.

It may, therefore, be stated that the prevalence of enteric fever, which was largely attributed by Dr. Wheaton to polluted water supply from certain streams in the borough, has definitely diminished since this source has been abandoned and a new supply has been introduced, and that the present endemic prevalence of the disease, such as it is, is referable to other causes, such as personal infection ; and, possibly, to the ingestion of specifically contaminated shell-fish.

The average annual diarrhoea death-rate was, in 1906–09, very little lower than that in 1902–05 (1·07 compared with 1·21, *see* Table A), pointing probably to the persistence of nuisances arising from the privy midden system and defective scavenging. This high

diarrhoeal death-rate is largely responsible for the high infant mortality rate in Ilkeston. Thus, in the three years 1907-1909, of 58 deaths from diarrhoea, 49 were under one year.

The Town Council of Ilkeston consists of six aldermen and eighteen councillors. The sanitary committee of the council meet fortnightly, and specially when necessary.

John Tobin, M.D. (R.U.I.), is the medical officer of health. He was appointed in 1903 at £120 a year, half repaid by the county. He had been previously in office in 1894 and 1895.

Dr. Tobin keeps no journal, or any kind of record of his work, except the register of notifications. He makes a report to the sanitary committee of the town council every fortnight; but this is mainly statistical and quite perfunctory. He leaves the committee usually after presenting his report. He makes little or no inspection of the borough, and leaves this duty to the inspector of nuisances. In fact, he depends upon this officer almost entirely, even as to the origin of infection, which he seldom investigates himself. Dr. Tobin has a large private practice, and the claims of this militate against any marked activity on his part as medical officer of health. A properly trained officer is needed for such an important borough as Ilkeston, and it would be preferable if he were independent of private practice.

Mr. J. B. Duro was appointed inspector of nuisances in 1902 at £110 a year, increased to £120 in 1903, half repaid by the county. A proposal to re-appoint him until July 31st, 1913, is now before the Board.* He holds the certificate of the Royal Sanitary Institute. Formerly, he held a similar appointment at Sheffield.

Mr. Duro knows the borough thoroughly, and makes frequent and thorough inspections. The number of preliminary and statutory notices that he has served in 1902-09 since his appointment have numbered 1,568, viz., 810 preliminary and 758 statutory, and the total visits 10,910, including 8,532 house-to-house inspections, so that about 18 per cent. of these inspections were followed by notices, and 14 per cent. of the total visits. According to his books, 13 of the 758 statutory notices were not complied with; proceedings followed in 5 cases. Most of the remaining 8 related to privy conversion, where notice to provide a water closet resulted in the provision of a pail closet instead. Mr. Duro not only performs a good many of the duties of the medical officer of health, including investigation as to the origin of infectious diseases, but he sees after the removal of cases to the hospital, even accompanying the ambulance in place of a nurse. He keeps his books well and accurately: I tested this by visiting places entered in his journal where compliance with preliminary abatement notices was said to have taken place. He supervises the scavenging arrangements according to the contract in force; but there would be advantage if the town council undertook removal themselves, as in that case Mr. Duro would be in even closer touch with the workmen who carry this out. The condition of some of the middens and of many back yards in the borough indicate the need for improvement in this respect, as mentioned above.

* The Board have now sanctioned this proposal at a salary of £130 per annum.

Dr. Marion Archibald (M.D., Ch.B.), was appointed assistant medical officer of health in July, 1910. She also acts as health visitor, to carry out the Notification of Births Act, 1907. Her predecessor, the first lady assistant medical officer of health, was appointed in 1908. She is school medical officer as well. She visits mothers on the third day after parturition, and fills up a suitable form. She distributes cards containing rules for feeding, and visits premature and delicate children again within a month. Parents are also encouraged to bring weakly babies to her office at the town hall for advice. She informed me that she had come across unusually few dirty houses in the borough, and that the people were cleanly on the whole; but that improper feeding and generally careless tending were important factors in producing the fatal diarrhœa which largely contributed to the high infant mortality in the borough.

Female factory labour is not directly concerned with the high infant mortality that obtains in the borough. It is true that several thousand girls are employed in the lace and hosiery factories in and close to the borough; but in nearly all instances they cease their employment when they marry, though some continue work at home as "out-workers"; married women only work at these factories, as a rule, if childless or deserted. In many manufacturing towns, such as Ilkeston, factory workers marry early, without proper equipment for the duties of motherhood, and many such young mothers are of poor physique; their first or second baby being often weakly at birth, and habitually hand-fed. But *Dr. Archibald* tells me that this is not true of the mothers of Ilkeston generally, most of whom are able to feed their offspring at the breast. And yet a great many of these waste away and die before attaining twelve months, indicating that even when there is breast feeding other influences may lead to high infant mortality. This is rather to be correlated with improper and irregular feeding by ignorant mothers, combined with a general want of care of their babies by them, leading to marasmic conditions, often associated with diarrhœa. It cannot, therefore, be said of Ilkeston, whatever may be the case elsewhere, that industrial employment of women is a large factor in the production of high infant mortality. Similar ignorance and carelessness account in a large degree for the high mortality from measles and whooping cough in the borough (*see* Table A above). Young children are recklessly exposed to the infection of these diseases by careless mothers.

Of the probable influence of nuisances from the privy system and defective scavenging in the production of infantile diarrhœa I have already spoken.

Bye-laws with respect to (a) new streets and buildings and (b) nuisances were confirmed by the Home Office as far back as 1864. They are altogether of obsolete type and do not contain important provisions in relation to public health authorised by the legislature in the past 40 years: they should be superseded by new codes. The Board have been in correspondence with the town council on the matter; but so far nothing appears to have been settled.

Those with respect to slaughter-houses are of more modern date, having been confirmed by the Board in 1893: they do not appear to be as fully enforced by the town council as they might be.

Regulations under the Dairies, Cowsheds and Milkshops Order, were drawn up in 1907. The inspector of nuisances is now actively engaged in having them carried out; but this work proceeds slowly, in view of the many other duties that he has to perform.

In concluding this report, I desire to cordially acknowledge the valuable help of the officers of the Town Council during my inquiry.

RECOMMENDATIONS.

1. New series of bye-laws as to (a) new streets and buildings and (b) nuisances should be drawn up, under the Public Health Act, 1875, and the Public Health Acts Amendment Act, 1890, and submitted to the Board for approval without delay. Especially, bye-laws as to paving of back yards should be drawn up, under Section 23 of the latter Act.

The existing bye-laws as to slaughter-houses require to be more strictly enforced.

2. All shallow wells in the borough that are found to be exposed to pollution should be abolished, and the public service substituted.
3. Sections 39 to 42 of the Public Health Act Amendment Act of 1907, when declared in force by order of the Board, should be vigorously enforced, so as to secure the rapid and regular conversion of midden privies into water-closets. Meanwhile, the borough council should act on their powers under the Public Health Acts to secure the improvement of insufficient and unsatisfactory closet accommodation.
4. Scavenging of middens and ash-receptacles, as well as of refuse generally, should, in lieu of the existing contract system, be carried out by the town council by their staff.
5. A destructor should be provided for dealing with refuse; and the present tips should be abolished.
6. The regulations under the Dairies, Cowsheds, and Milkshops Order require to be more actively carried out.
7. The present unsatisfactory infectious diseases hospital should be enlarged and improved. The isolation of a much larger proportion of the cases notified in the borough should be secured in such an improved hospital. This would be facilitated if payment for treatment were abolished in ordinary cases.
8. Steam disinfection should be employed for clothing, bedding, and belongings of infectious patients. For this purpose,

the question of enlarging the present disinfecting station at the hospital should be considered, with a view of rendering this available for the whole borough.

9. The town council should take into serious consideration the question of appointing, on the expiry of the term of the present officer, a medical officer of health of special qualifications, if possible to devote the whole of his time to public duties.

R. DEANE SWEETING.

APPENDIX A.

BOROUGH OF ILKESTON.

Return showing number of Notifications of Infectious Disease and number of Cases treated at Hospital from January 1st, 1899, to December 31st, 1909.

Year.	Scarlet Fever.		Diphtheria and Membranous Croup.		Enteric Fever.		Small-pox.	
	No. of cases notified.	No. treated at hospital.	No. of cases notified.	No. treated at hospital.	No. of cases notified.	No. treated at hospital.	No. of cases notified.	No. treated at hospital.
1899 ...	27	—	17	—	77	33	—	—
1900 ...	142	3	17	—	173	32	—	—
1901 ...	63	—	15	—	30	14	—	—
1902 ...	76	1	40	—	19	—	20	—
1903 ...	55	—	33	—	29	—	4	1
1904 ...	78	—	9	—	36	—	20	18
1905 ...	85	1	21	—	31	7	—	—
1906 ...	18	1	29	2	35	6	—	—
1907 ...	48	—	25	1	20	6	—	—
1908 ...	23	5	44	3	8	2	—	—
1909 ...	5	—	74	2	7	2	—	—
Total ...	620	11	324	8	465	102	44	19

Note.—The total number of cases of the above diseases in the 11 years 1899–1909 was 1,453, of which 140 or less than 10 per cent. were treated in hospital.

Of the 140 cases treated in hospital, 79 were paid for, viz., 59 by the guardians and only 20 by other persons.

Of the 11 cases of scarlet fever treated in hospital, 4 were paid for—3 by the guardians.

Of the 8 cases of diphtheria, 3 were paid for, none by the guardians.

Of the 102 cases of enteric fever, 71 were paid for—55 by the guardians, most of these being in the years 1899–1901.

Of the 19 cases of small-pox, only 1 was paid for, and that by the guardians.

The number of hospital cases in which repayment has been made has diminished in recent years. No payments were received during the years 1908–1909.

APPENDIX B.

TO THE MAYOR, ALDERMEN AND BURGESSES OF THE BOROUGH OF ILKESTON.

1. Name.....
2. Address.....
3. Suffering from an Infectious Disease, viz. :—

I do hereby consent to
being taken to the Sanatorium at Little Hallam, and I agree to pay for medical
attendance, maintenance and lodging, such sum as the Health Committee of the
Corporation shall determine.

Dated this day of 1909.

(Signed).....

Witness.....

