

## Dr. H. F. Parsons's Report to the Local Government Board on the General Sanitary Condition of Ince-in-Makerfield.

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*General Description.*—Ince-in-Makerfield is an Urban Sanitary District in Lancashire conterminous with the township of the same name. It is bounded on the west by the borough of Wigan, of which it may be considered a suburb; on the south-east by the township of Hindley, and on the north by that of Aspull; the two latter being also Urban Sanitary Districts. It is in the Wigan Union and Registration District, and in the Hindley sub-district, which comprises the townships of Ince, Hindley, and Abram.

The township of Ince, which has an area of 2,320 acres, is of a somewhat triangular shape; the surface slopes gently from an elevation of 250 feet above ordnance datum on the N.E. to 100 feet on the S.W. The geological formation is the coal-measures, which are here exceedingly productive; the deepest collieries in Britain are situated in the township, and the aggregate thickness of the seams of coal worked amounts to 50 or 60 feet. Very little of the surface of the township is cultivated land or pasture; the ground, where not occupied by houses, railways, and collieries, being mostly waste, and often converted into a swamp or pool by the subsidence caused by the removal of the coal from beneath. This subsidence does not take place equally over the whole surface, for where the surface land belongs to the colliery proprietors all the coal is removed from beneath it, whereas under roads or buildings, for damage done to which the colliery proprietors are liable, pillars of coal are left to support the roof. The effects of the subsidence upon buildings are, however, sufficiently obvious in frequent cracks, and in walls and chimneys out of the perpendicular. Owing to the greater subsidence of the ground in the spaces between the streets, it is necessary, when a new street is constructed, to fill up the ground to the proper level. For this purpose shale from the spoil heaps of the collieries, or cinders, are generally used. The coal shale in this district contains less pyrites than is generally the case in other coalfields, it does not ignite spontaneously, and it was stated that offensive gases are not given off as the result of its decomposition. The Medical Officer of Health has on more than one occasion complained to the Local Board of the practice, on the part of the night-soil contractor, of depositing, at the request of the owners, privy refuse as filling-up material on ground intended for building. The Local Board have on each occasion, as I am informed, promptly put a stop to this disgusting practice, and insisted on the removal of that which had been deposited.

The population of Ince consists almost entirely of the labouring classes, and of the small shop-keepers who supply them with the necessaries of life.

Besides the collieries before mentioned, there are in the township extensive iron works belonging to the Wigan Coal and Iron Company, and other companies, and three cotton mills, and many of the inhabitants are employed in mills in Wigan. There are two or three larger houses, formerly gentlemen's residences, but these are now used as offices.

Owing to the commercial depression felt here as elsewhere, there are a good many houses now empty. Overcrowding is said to exist to a certain extent, owing to the bad times; the elder children of a family remaining at home, or two families occupying the same house, in order to save rent. There is a colony of Irish in one part of the township.

*Streets and Dwellings.*—Two main roads, the high roads from Wigan to Manchester and Warrington respectively, traverse Ince in a N.W. and S.E. direction, and are connected by a third road, Ince Green Lane. These, with a street called Belle Green Lane, lately taken over by the Urban Sanitary Authority, are all the roads in Ince repairable at the public expense. The houses grouped along the Manchester Road are called Upper Ince; those along the Warrington Road, Lower Ince.

The greater part of the houses in Ince are cottages, in continuous rows either along the main highways, or in streets leading out of them at right angles. These streets are 30 to 36 feet wide, and open at both ends; there are few closed courts, and those only in the oldest part of the town. There are about 100 back-to-back

houses in the older parts of the town, but the erection of dwellings of this class is now forbidden by the byelaws, which require 150 square feet of open space at the rear or side of each house; and the houses are, as a general rule, provided with doors and windows at both front and back. There are no cellar dwellings. Hence, as regards facilities for ventilation in and around dwellings, Ince is better off than many towns of a similar character. Brick is the usual building material. The cottages have back yards in common; these are not paved, and their surface consists of ashes or bare earth, often uneven and in holes, which serve for the lodgment of filth and stagnant water. Such a surface can never be properly cleansed, and many of the yards were in a very filthy state. The streets not repairable by the Local Board are not metalled or channelled, the surface being formed merely of ashes. Some of them, *e.g.*, Forge Street, Broom Street, and Victoria Street, are in a filthy condition, deep in mud and pools of stagnant water, and with refuse matters of all kinds, including human excreta, lying about. The condition of the private streets has been several times brought before the Board by the Medical Officer of Health. In a special report to the Local Board on the sanitary condition of streets (dated January 24, 1877), he says:—

“In my report for December I called the attention of the Board to the large number of deaths among children under five years of age from chest diseases, and ventured to suggest that the unpaved and wet state of the streets had a great deal to do with the cause of so great a mortality. I feel certain, if the members of your honourable ‘Board’ will examine the state of the following streets, they will agree with me; *viz.*, Stopford Street, Bird Street, Anderton Street, Bridgewater Street, Big Broom Street, Albert Street, Little Broom Street, Morris Street, alias Slack Row, Brook Street, Lord Street, Pickup Street, Caroline Street, Ashton Street, Edward Street, John Street, Keble Street, and Holt Street. I consider Anderton Street the worst; down this street all the night-soil is carried to the depôt; next Lord Street; then Brook Street. If any case of zymotic disease occurs in any of these streets, the evacuations, &c., of the patient are thrown into the street, percolate into the ground, and there remain a source of infection. If these streets were paved, channelled and sewered, it would not only improve immensely the sanitary condition of the parish, but would add greatly to its appearance, and enhance very much the value of the property in the neighbourhood of those streets.”

It would appear that a good deal has been done since the date of this report to remedy the condition of matters therein complained of. All the streets mentioned have been sewered, and some of them repaired with ashes. The Local Board, however, have not put in force the 150th section of the Public Health Act, 1875, considering that as the streets in question were not thoroughfares, they were sufficient for the traffic going through them.

The interiors of a good many of the cottages were in a filthy state, a point to which the attention of the Inspector of Nuisances did not seem to have been directed. It must be admitted that with mud all around, and brought into the house by every incomer, it is difficult for the housewife to keep her abode in a cleanly condition.

*Sewerage and Drainage.*—The sewers which drain Ince have all been constructed by the Local Board since its formation in 1866, with the exception of one in the Warrington Road, which was constructed previously by the surveyors of highways. The latter is a brick culvert, and is said to act efficiently. The sewers laid by the Local Board are of glazed socket pipes with clayed joints from 12 to 24 inches diameter; they are laid for the most part in straight lines from man-hole to man-hole. The bottoms of the man-holes are two feet deeper than those of the sewer pipes, forming catch-pits in which the heavier sediment lodges, and is removed from time to time. I saw several man-holes opened. The sewer pipes were free from sediment and appeared to be working well; there was no offensive smell perceptible. The sewers are ventilated, every 50 to 60 yards, by shafts formed of 9-inch or 12-inch pipes opening in the middle of the roadway. At the upper end of these shafts is an arrangement for deodorizing the sewer air by charcoal, which must seriously interfere with their efficiency as ventilators. Not only is there a basket of charcoal six inches deep through which any sewer air that can escape must force its way, but the top of the shaft is closed with a lid to prevent road dirt falling upon the charcoal, and the current of gas can only escape by passing through 12 oblique lateral holes, each one inch in diameter. There are also a few ventilating shafts up buildings, and some of the street gullies are left untrapped. The sewers are flushed from the water-mains through a 2½-inch hose pipe, and in one case a brook can be turned through the sewer. The sewers are said to have been laid with a fall nowhere less than 1 in 250.

The Manchester Road is divided into two parts by the Leeds and Liverpool Canal, which crosses under it; from this point, Rose Bridge, the sewers fall either way; that on the west side runs westward along the Manchester Road, then turns to the south down Forge Street, and discharges into the Clarrington Brook, a tributary of the River Douglas, forming the boundary between Ince and Wigan. At the outfall of the sewer are some tanks for clarifying the sewage by straining and subsidence. These tanks are two in number, 35 feet long by 10 feet broad, and holding about 7,000 gallons each. Each tank has two upright screens which consist of a bed of small stones contained between perforated boards; each bed is 2 feet 6 inches in thickness. A considerable amount of clarification of the sewage is effected by this arrangement. The sediment is removed from the tanks every six weeks or so by men in the service of the Sanitary Authority, and is allowed to remain in heaps, sprinkled with disinfectants, until taken away by farmers or by the night-soil men. There are no houses very near. The sewer running east from Rose Bridge under the Manchester Road has a similar arrangement, but the tanks are smaller and act less efficiently. The outfall is into another brook which also joins the River Douglas. The gradient of this sewer has been affected by the subsidence of the ground; the pipes were several inches deep in water at one of the man-holes which I saw opened, but there was a good current through it. The occupiers, however, of some shops in the Manchester Road near the upper end of this sewer complained that in wet weather the sewer failed to carry off its contents, which in consequence backed up the cellar drains and flooded their cellars. The marks left by the sewage were to be seen on the cellar walls. These cellars have been constructed since the sewer was laid.

The old sewer in the Warrington Road is not provided at its outfall with any arrangement for clarifying the sewage.

No water-closets are connected with the sewers. With the exception of the cellar drains above-mentioned, there appear to be no connections between the sewers and the interior of the houses. The pipes from the slopstones in the sculleries are carried through the walls, so as to discharge in the open air over a trapped earthenware gully. In some cases, however, as in George Street, this arrangement has not been carried out in a workmanlike manner; the brickwork around the gullies has been badly laid, so that the slop-water lodges in pools in the joints, giving off effluvia which must be sometimes drawn up through the untrapped sink-pipes into the houses.

*Water-supply.*—Ince is provided with a public water-supply, which is in the hands of the Local Board. The water is procured from wells in the new red sandstone at Golborne, five miles south of Ince. There are two wells, 150 feet deep, connected by a tunnel which is driven some distance into the rock at the side, its total length being 120 feet. The upper part of the wells is lined with brickwork laid in cement and puddled, and the nearest inhabited house is 500 yards distant, so that the water appears free from any chance of pollution from surface soakings. The water is pumped from the wells into two open reservoirs containing together 700,000 gallons and is then forced to Ince through 12-inch cast-iron pipes enamelled by Dr. Angus Smith's process. The main gives off branches to supply the town, and at its farther end, where it is reduced in size to 8 inches, is connected with a cast-iron tank situated at the highest part of Ince, 100 feet in diameter and 15 feet high, containing over 700,000 gallons, and sufficient for three days' supply. The water is supplied on the constant system, and the daily supply is 180,000 to 200,000 gallons, or about 13 gallons per diem for each of the population. Little is used for trade purposes, and none for water-closets. Each house has, as a rule, its own tap in the scullery.

The water seems free from any risk of pollution, and its physical characters are all that can be desired, but its hardness, though not excessive, renders it less fitted for washing, and even less agreeable to the taste of persons accustomed to soft water, than the moorland waters with which the neighbouring towns are supplied. The appended analysis by Mr. E. Davies, F.C.S., of Liverpool, shows its general character as regards mineral ingredients.

The town's water was first supplied to Ince in 1872. Before that there were only a few wells, and those of doubtful purity, and the people had to draw water for drinking and domestic use from ponds and ditches.

I have no data to show whether the health of the population was favourably affected by the introduction of a purer supply.

*Excrement Disposal.*—There are no water-closets in Ince—none at any rate connected with either the public sewers or water supply. The old-fashioned midden privy is

practically the only method of excrement disposal. In the older parts of Ince the middens are of the worst type, very large—one measured inside 10 feet 6 inches by 6 feet,—very deep, (usually sunk 4 feet below the surface of the ground,) often receiving the drip off the roofs of the privies on either side, and as a natural consequence wet and offensive. Some were leaking over the yard, and few were so contrived that the ashes thrown into the ashpit could mingle with the excreta.

In the case of houses of more recent date the ashpit is of smaller dimensions and provided with door and roof, but in some cases without any opening for ventilation. The privies, too, are as a general rule without a sufficient opening for light and ventilation.

In his reports to the Local Board for April 3rd and May 1st, 1878, the Medical Officer of Health called attention to the state of the yards, privies, and ashpits in the streets leading out of the Manchester Road. He says, "All the ashpits, with the exception of those newly erected, were very large, uncovered, and in a very dilapidated state, and creating a nuisance. I should advise the Board, before the warm weather sets in, to insist upon the ashpits in the district being reconstructed and covered in, or we may expect a continuance of typhoid fever and diarrhœa." The Local Board, however, declined to pass any general resolution on the subject, but decided that each case should be reported and dealt with separately. As a matter of fact, I found that notices were only served upon owners in respect of privies or ashpits that were in a state of dilapidation. In some of these cases the owners had done nothing more than repair the broken walls; in others, the ashpit had been covered in; but in hardly any had it been reconstructed, reduced in size, filled up, or lined with cement. I was informed that most of the house property was in the hands of a number of small owners, and that in the present depressed state of trade in the district there was great disinclination to lay out money on property except for such repairs as were absolutely necessary.

The Surveyor to the Local Board gave me a lithographed plan of an improved midden closet which he had devised. In this the ashpit was reduced in size—4 ft. 6 in.  $\times$  3 ft. for two privies,—roofed in and ventilated, the brickwork being laid in cement; it was furnished with a grid for sifting the cinders, beneath which was a kind of saddle for directing the fine ashes to either side of the ashpit so as to fall on the excreta. The ashpit had the fault of being sunk 2 feet below the surface of the ground. The grid and saddle were moveable for convenience of cleansing. The Surveyor, however, had been unable to get this plan generally adopted, only a single ashpit having been erected on his pattern.

The removal of night-soil is let to a contractor for 42*l.* 5*s.* per month, 507*l.* per annum; the contractor takes the manure, and the Sanitary Authority supply him with disinfectants. Where, as is frequently the case in the older part of Ince, the passage to the back yard is too narrow to allow a cart to be taken up it, the scavenging is performed in the following laborious and dirty manner: The ashes and night-soil are thrown out from the pit upon the unpaved surface of the yard; thence they are shovelled up into a wheelbarrow, wheeled through the narrow passage, and deposited in a heap upon the street, whence they are again thrown up into the cart. The scattered remnants of the refuse are swept up, and disinfectants sprinkled about; but from the nature of the surface of the unpaved streets and courtyards, some of the foul matter must necessarily soak or be trodden in. The removal of night-soil is effected in the daytime. The privies in Ince are so placed that access can be had to them otherwise than through a house. The scavenging was not performed as efficiently as might be desired. I saw a good many ashpits over-full, the refuse being scattered over the yard around the ashpit door. There are two depôts for the manure, one on the canal bank whence it can be sent away by barge. A circumstance which adds considerably to the difficulty of keeping the ashpits properly scavenged, so long as the present system is continued, is that many of the poorer inhabitants of Ince use as fuel a kind of coarse refuse coal or "bass" which they pick up on the pit banks. This, in burning, leaves a large quantity of shaly ash, which speedily fills up the ashpits, not only necessitating a more frequent emptying, but rendering the contents of so little manurial value that farmers refuse to take them.

For this and other reasons I am inclined to think that the system of scavenging best adapted for Ince would be one in which the ashes and dry refuse are collected separately from the excrement. On suggesting to the officers of the Sanitary Authority who accompanied me on my inspection whether some form of the pail system might not be adopted with advantage, I was assured that no such system would work in Ince, as owing to the rough habits of the mining population, the pails and other breakable parts would be knocked to pieces or used as firewood in a few weeks.

These fears are, I cannot but think, groundless or exaggerated. Learning that the pail system was in use in the adjacent borough of Wigan, I called upon the Medical Officer of Health of that borough, Mr. Barnish, who with the Inspector of Nuisances courteously escorted me to some of the worst parts of the town, and gave me an opportunity of seeing the system in operation among a population as least as rough as that of Ince. The pail closets were greatly superior in cleanliness and comfort to the old midden privies, and I saw no marks of rough usage, and was assured that no difficulty had been met with on this score. That the system proves satisfactory seems to be shown by the fact that although it has only been introduced two years, 1,100 closets have been converted, and only 800 remain on the old system. The cost of conversion, as I am informed, averages about 1*l.* 10*s.* per closet. The cost of removal is about the same as under the old system. I am informed by Mr. Holt, Borough Treasurer, that the annual net cost is about 3,000*l.*, the town council employing their own staff and selling the manure, while two years ago, when the scavenging was let by contract, the lowest tender was 220*l.* per month, and the cost was increasing year by year.

*Sanitary Administration.*—The Local Government Acts were adopted in Ince at a meeting of the ratepayers on September 6th, 1866, and the adoption sanctioned by the Home Office on October 20th. The Local Board held its first meeting on December 19th, 1866. It consists of 15 members, and meets once a month. Since its formation it has expended on public sewers 3,513*l.* 14*s.* 3*d.*, on private drainage 2,087*l.* 5*s.* 5*d.*, on new paving, &c. 7,465*l.* 17*s.* 9½*d.*, and on a public water supply 32,000*l.* The last-mentioned expenditure was defrayed by means of a loan; the others have been paid for out of current rates. Nearly the whole of the above expenses have been incurred since 1870.

The Local Board have appointed Mr. R. S. Hall as Medical Officer of Health at an annual salary of 20*l.*, half of which is repaid by the Local Government Board. Mr. Hall makes systematic inspections of his district, and visits houses where outbreaks of infectious disease have occurred. He submits to the Urban Sanitary Authority monthly, on a printed form, reports on the sickness and mortality of his district, and on any conditions which he may have observed which are likely to affect injuriously the health of the district. These reports appear to be taken into consideration by the Sanitary Authority. The Medical Officer of Health receives from the Registrar monthly lists of the deaths which have occurred in his district, and also immediate notice of deaths from infectious diseases, unless the deceased have been his own patients. There is an Inspector of Nuisances, Mr. Benjamin Howgate, who is also collector, and receives 80*l.* a year salary, of which no part is repaid by the Local Government Board. He gives me the following statement of proceedings taken by him for the abatement of nuisances since his appointment in May 1877.

Nuisances reported	-	-	-	-	892
Notices served	-	-	-	Verbal 495	} 861
				Written 336	
				Printed 30	
Nuisances abated	-	-	-	-	820
Nuisances not abated	-	-	-	-	47
Works in progress	-	-	-	-	25
Legal proceedings taken	-	-	-	-	3

There is a code of byelaws, which was sanctioned by the Home Secretary on May 11th, 1867, containing provisions for the regulation of new streets and buildings, of slaughter-houses, and of common lodging-houses, also for the prevention of nuisances, and for the cleansing of footways and removal of refuse. The byelaws with reference to the construction of new buildings appear to be strictly enforced. I saw a row of houses standing empty and partly unfinished, which the Surveyor to the Local Board told me he had refused to pass, as not being in conformity with the byelaws, nor provided with sufficient privy accommodation.

At the time, however, when the byelaws were adopted the Local Authority were empowered by law to make byelaws with respect to the structure of walls of new buildings, only for securing stability and the prevention of fires, and not for purposes of health.

There are no common lodging-houses in the district, and only two slaughter-houses which are said to be but little used.

*Population.*—The following figures given me by the clerk to the Urban Sanitary Authority show the rapidity with which the town of Ince has sprung up, owing to the development of the coal trade and other industries :—

Year.	Houses.	Population.	Increase.		Average Inmates per house.
			Houses.	Population.	
1851 - - - -	766 (estd.)	3,670	—	—	4·8
1861 - - - -	1,561	8,266	795	4,596	5·3
1866 (Board formed) -	1,892	9,460 (estd.)	331	1,194	5·
1871 - - - -	2,269	11,988	377	2,528	5·28
1879 - - - -	3,134	14,500 (estd.)	865	2,512	4·6

Thus the population more than doubled between 1851 and 1861, and between 1861 and 1871 increased 45 per cent., or 3·8 per cent. annually. If this rate of increase were maintained, the population at the present time would be 16,140, but it is probable that the rate of increase has of late years been less. Reckoning five inmates to each house, and allowing for those now empty, the present population will be 15,000. The Medical Officer of Health, in his reports, estimates the present population at 14,000, and the clerk at 14,500. The highness of the birth and death rates, even as calculated upon a population of 15,000, renders it probable that these estimates are under, rather than over, the mark.

*Mortality and Sickness.*—The vital statistics of Ince-in-Makerfield for the  $4\frac{3}{4}$  years ending September 1879 are given in the following tables, the population being taken as 14,000.

TABLE 1.

Year.	Births.			Deaths from all Causes.					Deaths from principal Zymotic Diseases.			Deaths under 1 year.		
	Total.	Rate per 1,000.		Number of Deaths.		Rate per 1,000.			Total.	Per 1,000.		Total.	Per 100 births.	
		Ince.	England and Wales.	In Ince.		In Ince.				Ince.	England and Wales.		Ince.	England and Wales.
				Registered in Township.	With Work-house Deaths added.	Registered in Township.	With Work-house Deaths added.	England and Wales.						
1875 -	755	53·9	34·0	373	383	26·6	27·3	22·2	53	3·8	3·3	138	18·4	15·8
1876 -	773	55·2	36·5	368	371	26·3	26·5	21·0	73	5·2	3·0	133	17·2	14·6
1877 -	778	55·6	36·1	393	396	28·1	28·3	20·4	97	6·9	2·6	139	17·9	13·6
1878 -	749	53·5	35·9	384	396	27·4	28·3	21·7	78	5·6	3·3	153	20·4	15·3
1879 -	578	55·0	36·7	246	253	23·4	24·1	21·5	33	3·1	2·3	75	12·9	13·2
(9 months — Jan.— Sept.)														

TABLE 2.

Deaths from	1875.	1876.	1877.	1878.	1879, 9 months.
Small pox - - - -	—	—	—	—	—
Measles - - - -	—	21	11	10	1
Scarlet fever - - - -	14	16	40	14	8
Diphtheria - - - -	—	—	1	1	—
Croup - - - -	—	—	3	10	9
Whooping cough - - - -	16	4	10	4	7
Enteric fever - - - -	8	10	8	11	5
Diarrhœa - - - -	15	22	27	38	10
Cholera - - - -	—	—	—	—	1
Phthisis - - - -	10	12	18	17	20
Bronchitis, pneumonia, and pleurisy	120	97	108	98	49
Heart disease - - - -	10	14	8	5	8
Injuries - - - -	34	17	13	20	15
Other causes - - - -	146	155	146	156	113
Total - - - -	373	368	393	384	246

TABLE 3.

Deaths at undermentioned ages.	1875.	1876.	1877.	1878.	1879. 9 months.	Total.
Under 1 year - - - -	138	133	139	153	76	1,080
1-5 - - - -	82	89	114	104	52	
5-15 - - - -	21	20	24	26	17	
15-25 - - - -	19	11	17	14	10	684
25-60 - - - -	70	76	65	51	66	
60 and over - - - -	43	39	34	36	25	
All Ages - - - -	373	368	393	384	246	1,764

It will be seen from the preceding tables that both birth and death rates in Ince are high; the former excessively so. The births during the past  $4\frac{3}{4}$  years are equal to an annual rate of 54·6 upon a population of 14,000, or 50·9 upon one of 15,000. It is evident, therefore, that the population must be on the average a young one, consisting mainly of children and of young adults, and those in the prime of life, *i.e.* at the child producing ages.

The average death-rate for Ince during the past  $4\frac{3}{4}$  years has been 26·5, if we take the population as 14,000, or 24·7 if as 15,000. Adding, however, the deaths of persons belonging to the township who have died in the workhouse, which is situated outside the district in the borough of Wigan, these rates will be increased to 27·0, or 25·2 respectively, the average death-rate for England and Wales during the same period having been 21·3. One circumstance, which increases to some extent the mortality in Ince, is the large number of deaths which occur from injuries of various kinds. Ninety-five deaths from injuries occurred during the  $4\frac{3}{4}$  years, the most frequent causes being drowning in the canal, falls of the roof in coal mines, and being run over by railway trains. The death-rate in Ince from the seven principal zymotic diseases of the Registrar General, *viz.*, smallpox, measles, scarlet fever, diphtheria, whooping cough, fever, and diarrhœa, has been on an average during the past  $4\frac{3}{4}$  years 5·0 per 1,000 per annum on a population of 14,000, the average rate for England and Wales having been 2·9. During that period scarlet fever and enteric fever have apparently never been absent from the district for long together, deaths occurring every year.

The mortality among infants and children is also an unfavourable feature in the vital statistics of Ince. Out of every 100 children born, 18·1 die before attaining the age of twelve months, the average throughout England and Wales being 14·5. Again, of the deaths during the period of  $4\frac{3}{4}$  years, more than 60 per cent. have been those of persons under five years of age.

On looking through the returns of deaths to ascertain the causes of this high mortality among children, I find that of 1,080 deaths of children under five years old, which took place since January 1875, 283, or 26·2 per cent., were from bronchitis and other inflammatory diseases of the chest; 264, or 24·4 per cent., from the principal zymotic diseases, *viz.*, scarlet fever, measles, whooping cough, diphtheria, fever, and diarrhœa; 156, or 14·4 per cent., from the wasting disorders of childhood, called on certificates "marasmus," "tabes mesenterica," &c., but which in many instances might most correctly be designated "improper feeding"; and 145, or 13·4 per cent., from "convulsions," the latter a symptom rather than a disease, being produced by a variety of causes, and a common mode of termination to many fatal diseases of childhood.

If we look for the probable causes of this high mortality we find that they may be grouped under two headings: 1st, local unsanitary conditions which the Sanitary Authority in their public capacity can remedy, and 2nd, social and domestic conditions and habits unfavourable to health, which for the most part lie beyond the cognizance of public authorities, and for the remedying of which we must look to education and the gradual adoption of a higher standard of life.

Among the former class I would especially note the unsatisfactory method of excrement disposal mentioned in an earlier part of this report; large wet open middens used in common by several houses, giving off their effluvia—it may be, specifically infected—within five to seven yards of the back doors of the houses; unpaved back yards fouled by excreta and refuse, which can never be properly cleansed, and dirty unmade streets with pools of stagnant water, wetting the feet of those who pass through them, and fouled with refuse and filth of all kinds.

Among the latter, so far as I can learn from the medical men and others with whom I have conversed, the principal is the prevalent neglect and mismanagement of children. Early marriages are frequent, and those who become mothers, having been brought up as factory workers, have but little knowledge or experience of the management of a home. Many of the women go out to work, some in masculine attire on the pit-banks, others in the factories, leaving their infants to be taken care of at home by old women or by elder children. I was informed by Mr. White, Certifying Surgeon, that more women were going out to work now than in previous years, partly owing to the depression in the coal trade, the wife having to go out to work to supplement the diminished earnings of her husband, partly to the minimum age for "full-timers" having been raised by the Factory Act, 1877, from 13 to 14, in consequence of which mill-owners have taken on a larger number of old hands, preferring them to "half-timers."

As suggestive instances of the perils to which childhood is exposed in the district, I may mention that in the period of  $4\frac{3}{4}$  years for which I have examined the death returns for Ince, I find that 13 children were found dead in bed with their parents, probably overlaid, and eight were burnt or scalded to death while left in charge of other children. I did not hear of any instances of baby farming, such as would come within the scope of the Infant Life Protection Act. I could not learn that drugging was particularly prevalent. It was stated to have diminished since restrictions were placed on the sale of opiates by the passing of the Pharmacy Act; the principal form in which it exists being the use of various patented "soothing syrups," "teething powders," and "infants' preservatives." I was informed that until lately there was a great dearth of milk in Ince, and that the usual food for children was bread sopped in water. Recently, however, there has been an improvement in this respect, several dealers supplying milk regularly.

Great carelessness appears to prevail among the population at large with reference to the spread of infectious diseases. If a family happen to be attacked with scarlet fever the neighbours all come to see the sick person, and often bring their children. Indeed I was told that it would be considered an unneighbourly act not to do so.

There is constant communication between Ince and Wigan, and the diseases that may prevail in one town are frequently introduced into the other. Children employed as half-timers in factories in Wigan usually attend the schools there. There are several National Schools in Ince. The Inspector of Nuisances, who is also School Attendance Officer, tells me that the managers require a medical certificate of safety before admitting any children from houses in which infectious diseases have existed.

*Disinfection and Isolation of the sick.*—Disinfectants are furnished by the Sanitary Authority to persons whose households are attacked with infectious disease, and the houses are disinfected at its termination, but scarcely in my opinion effectually. The usual method is to pour an ounce or two of hydrochloric acid upon a teaspoonful or two of chlorate of potash, thus evolving chlorine gas. As the amount evolved is not sufficient to prevent the room being occupied at the time that the so-called disinfection is going on, it can hardly be supposed likely to be effectual in destroying any morbid poison that may be present. It is not the custom to remove the wall paper.

The Urban Sanitary Authority has no disinfecting apparatus, the reason assigned being that it is considered that the carrying of infected clothing through the streets would be a greater source of danger to the public health than the disinfection would be of security.

There is in the district no provision for the isolation of persons suffering from infectious diseases. The Wigan Town Council have a small hospital for infectious cases near the border of the Ince district, and the Ince Local Board have on more than one occasion endeavoured to enter into an arrangement for the use of it, but the Town Council have refused, on the ground that the accommodation is not more than they require for their own use. The Ince Local Board have also made overtures to that of Hindley to combine with them for the purpose of providing a hospital, but the Hindley Local Board have declined. I was told, however, that even if a hospital for infectious diseases were provided, it would probably be but little used, as there was a strong prejudice among the people in the district against hospitals of all kinds, so that no one would enter it unless compelled by a magistrate's order, which can only be granted in a small proportion of cases. This prejudice, which is common among ignorant persons elsewhere, may be expected to disappear when people find that their neighbours who have been in the hospital have not been maltreated and "experimented on," but, on the contrary, have been kindly taken care of. No proceedings have been taken under section 126 of the Public Health Act, 1875.

In conclusion, I have to thank the Ince Local Board and their Officers, and the other gentlemen who have supplied me with information for this report, for their courteous assistance.

H. FRANKLIN PARSONS, M.D.

### RECOMMENDATIONS.

1. Continuous attention should be given by the Urban Sanitary Authority and their Surveyor to the state of the sewers, in order to insure that they shall be maintained in repair and properly cleansed and emptied.

The charcoal trays and lids to the ventilating shafts should be removed, as they seriously impede the proper ventilation of the sewer without any compensating advantage.

2. The present offensive arrangements for the storage and removal of excrement should without delay be abolished, and some better system substituted. If the Urban Sanitary Authority consider that the water-closet system is not applicable to the circumstances of the district, some one of the "dry" systems should be adopted. If middens or fixed receptacles for night-soil be retained, they should be constructed in accordance with the following principles:

- (a.) The receptacle should be so constructed as to allow of the frequent application and thorough mixture with the excreta of dry ashes or of earth.
- (b.) The receptacle should be roofed or covered in so as to keep out the rain, and should be provided with doors and sufficient means of ventilation by shaft or otherwise.
- (c.) The receptacle should be constructed of non-absorbent impervious materials so as to be water-tight.
- (d.) The bottom of the privy should be at least three inches above the level of the ground.
- (e.) The dimensions of the receptacle should be as small as practicable.
- (f.) The privy should be removed from the house to a sufficient distance to obviate nuisance, and it should be provided with sufficient means of access for emptying otherwise than through the house.

Some method in which the excreta are received into moveable receptacles and kept apart from the bulk of the dry refuse will probably be found best adapted to the requirements of the district. On this point the attention of the Urban Sanitary Authority may advantageously be given to the official report to the Local Government Board, "On certain means of preventing excrement nuisances in towns and villages."

The Urban Sanitary Authority might also with advantage inspect the working of the pail system in the adjacent borough of Wigan, and other towns.

For the effectual working of any system, it will probably be found necessary that the Urban Sanitary Authority should take the removal of excrement and refuse into their own hands.

3. The provisions of section 150 of the Public Health Act, 1875, should be put in force with respect to the levelling, metalling, channelling, and making good of those private streets which are in a condition to require it.

The common courtyards should be properly levelled so as to slope to the grids in order that surface water may run off, and they should be either paved or asphalted so as to be capable of proper cleansing.

4. Frequent and systematic inspections of the district should be made by the Inspector of Nuisances, with a view to ascertain what nuisances exist in it requiring removal. These inspections should extend to the interiors of the dwelling-houses as well as to their surroundings.

The Urban Sanitary Authority should use such powers as they possess under the Public Health Act, 1875, including byelaws under section 44, for the prevention of nuisances arising from the throwing of refuse and offensive matters upon streets, courts, and waste ground.

The Urban Sanitary Authority should enforce the cleansing and purifying of all houses which may be found in such a condition as to be a nuisance or injurious to health.

5. All houses in which infectious disease has existed should be effectually disinfected by fumigation with sulphur, and by removal of wall paper and limewashing.

Efficient means should be provided by the Sanitary Authority for the disinfection of clothing and bedding that have been exposed to infection. This object will probably

be best secured by the provision of a disinfecting oven, in which an equable temperature of 220°-240° Fahrenheit can be maintained for some hours. Provision should be made for the conveyance to the disinfecting apparatus of articles needing disinfection with such provisions that no risk to the public need be apprehended.

6. Some provision should be made for the isolation of cases of infectious disease. This should not be delayed until another epidemic has actually broken out, as the chief use of such accommodation is to isolate the first cases of disease, and thus prevent it from gaining a footing in the district. As a commencement under the present circumstances of the district, a detached cottage standing in its own ground in which a man and wife without family might reside to take care of the house when empty, and to nurse any patients that might be admitted, would probably be the most readily available and cheapest arrangement.

The byelaws in force in the district should be revised, and, where necessary, brought into accordance with the present state of the law.

Provisions should be made with respect to new buildings for purposes of health. This the Urban Sanitary Authority have power to do under section 157 of the Public Health Act, 1875. For instance, it would be well to adopt a requirement that whenever houses are built upon made ground, the site of the house shall be covered with a layer of concrete or other impervious material in order to prevent noxious emanations from the soil being sucked up into the house.

The Urban Sanitary Authority should consult the series of Model Byelaws lately issued by the Local Government Board.

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## APPENDIX.

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### ROYAL INSTITUTION LABORATORY, LIVERPOOL.

#### ANALYSIS of Ince Water obtained from Wells sunk in the Red Sandstone Rock at Golborne.

Organic and other volatile matters, per gallon	-	-	1.75
Mineral matters	-	-	30.62
			32.37
Total residue on evaporation			32.37

The mineral matter consists of—

Chloride of magnesium	-	-	Small quantity.
„ of sodium	-	-	Do.
„ of potassium	-	-	Very small quantity.
Sulphate of lime	-	-	Do.
„ of magnesia	-	-	Abundant.
Carbonate of lime	-	-	Do.
„ of magnesia	-	-	Do.
Oxide of iron	-	-	Small quantity.
Nitrates	-	-	Trace.

Hardness before boiling	-	-	14
„ after boiling	-	-	7.5
			6.5
			6.5

This water is of good quality, being free from organic matter of animal origin. The hardness is the only objectionable feature, and this is not at all excessive.

(Signed) EDWARD DAVIES, F.C.S., &c.

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